Advisory Boards

Minutes and Records

January 31, 2025
1/31/2025
January 31, 2025

1. Affordable Housing Advisory Committee

1.A. Affordable Housing Advisory Sub-Committe Meeting _ January 10, 2025 *(2025-228)*

ATTACHMENTS

1. January 10, 2025 AHAC Agenda Packet_Final
2. January 10 2025 AHAC Public Notice

1.B. Affordable Housing Advisory Committee- January 16, 2025 *(2025-351)*

ATTACHMENTS

1. January 16, 2025 AHAC Agenda - FINAL
2. January 16, 2025 AHAC Public Notice

2. All Terrain Vehicle Park Ad Hoc Committee

3. Animal Services Advisory Board

4. Bayshore Beautification MSTU Advisory Committee

5. Bayshore/Gateway Triangle Local Redevelopment Adv Board

6. Black Affairs Advisory Board

6.A. Black Affairs Advisory Board - January 13, 2025
(2025-373)

ATTACHMENTS

1. Black Affairs Advisory Board January 13, 2025, Meeting notice
2. Black Affairs Advisory Board November 18, 2024, Minutes Signed
3. Black Affairs Advisory Board September 23, 2024, Minutes Signed
4. Black Affairs Advisory Board January 2025 Agenda

7. Board of Building Adjustments and Appeals

8. Coastal Advisory Committee

9. CSRM Coastal Storm Risk Management Feasibility Study Advisory Committee

10. Code Enforcement Board

11. Collier County Citizens Corps

12. Contractors Licensing Board

13. Comprehensive Watershed Improvement Program Committee

14. Development Services Advisory Committee

14.A. Development Services Advisory Committee - Land Development Review Subcommittee - October 10, 2024 *(2025-50)*

ATTACHMENTS

1. DSAC-LDR 10.15.24 Final Agenda Packet
2. DSAC-LDR 10-15 Public Notice

14.B. Development Services Advisory Committee - Land Development Review Subcommittee - December 17, 2024 Canceled *(2025-51)*

ATTACHMENTS

1. DSAC-LDR 12-17 Public Notice

14.C. Development Services Advisory Committee - Utilities Subcommittee - October 29, 2024 *(2025-334)*

ATTACHMENTS

1. DSAC-Utility 10-29-24 Final Agenda Packet
2. DSAC-Utility 10-29 Public Notice

14.D. Development Services Advisory Committee - Utilities Subcommittee - November 18, 2024 *(2025-335)*

ATTACHMENTS

1. DSAC-Utility 11-18-24 Final Agenda Packet
2. DSAC-Utilities 11-18 Public Notice

14.E. Development Services Advisory Committee - December 04, 2024 *(2025-336)*

ATTACHMENTS

1. DSAC 12.04.2024 Final Agenda Packet
2. DSAC 12-04-24 Public Notice

14.F. Development Services Advisory Committee - January 01, 2025 - No Meeting *(2025-337)*

ATTACHMENTS

None

15. Emergency Medical Authority

16. Floodplain Management Planning Committee

17. Forest Lakes Roadway and Drainage MSTU Advisory Committee

17.A Forest Lakes Roadway & Drainage MSTU Advisory Committee - December 3, 2024 *(2025-359)*
.

ATTACHMENTS

1. TMS - Forest Lakes MSTU 12-03-24 Tuesday
2. Agenda & Backup - Forest Lakes 12-03-24
3. Signed Minutes - Forest Lakes 11-05-24

18. Golden Gate Beautification MSTU Advisory Committee

18.A Golden Gate Beautification MSTU Advisory Committee - Golden Gate 12-17-24 *(2025-361)*
.

ATTACHMENTS

1. TMS - Golden Gate MSTU 12-17-24 Tuesday
2. Agenda & Backup - Golden Gate 12-17-24
3. Signed Minutes - Golden Gate 11-19-24

19. Golden Gate Community Center Advisory Board

20. Golden Gate Estates Land Trust Committee

21. Golden Gate City Economic Development Zone Advisory Board

22. Haldeman Creek Dredging Maintenance MSTU Adv Committee

23. Historical/Archeological Preservation Board

24. Immokalee Beautification MSTU Advisory Committee

24.A Immokalee Beautification MSTU Advisory Board - January 15, 2025 *(2025-346)*
.

ATTACHMENTS

1. MSTU Public Notice - 01.15.25
2. MSTU Agenda - 01.15.25
3. MSTU Minutes - 12.11.24

25. Immokalee Local Redevelopment Advisory Board

25.A Immokalee CRA Advisory Board - January 15, 2025 *(2025-345)*
.

ATTACHMENTS

1. CRA Public Notice - 01.15.25
2. CRA Agenda - 01.15.25
3. CRA Minutes - 12.11.25

26. Infrastructure Surtax Citizen Oversight Committee (ad hoc)

26.A. Infrastructure Surtax Citizen Oversight Committee September 12, 2024 and November 14, 2024.
(2025-229)

ATTACHMENTS

1. 2024-09-12 Infrastructure Surtax Citizen Oversight Committee - Public Agenda
2. 2024-11-14 Infrastructure Surtax Citizen Oversight Committee - Public Agenda
3. 9.12.24 Surtax Meeting - Public Notice
4. 11.14.24 Surtax Meeting - Public Notice
5. 2024.09.12_Approved Meeting Minutes
6. 2024.11.14_Approved Meeting Minutes

27. Land Acquisition Advisory Committee

27.A. Agenda Items *(2025-325)*

ATTACHMENTS

1. 1-8-2025 CCLAAC Agenda
2. 4.A. 2024 Cycle AAL - 12-6-2024
3. 4.A. Status of Acquistions 12-20-24
4. 4.B.1. Karlsson Trust ICSR_rev12-9-2024
5. 5.B.1. I-75 and Everglades Blvd ICSR
6. 5.B.2. Edwards Trust and Golden Land Partners ICSR
7. CCLAAC Meeting Minutes (signed) 12-4-2024

28. Lely Golf Estates Beautification MSTU Advisory Committee

29. Library Advisory Board

29.A. Library Advisory Board - January 15, 2025 *(2025-296)*

ATTACHMENTS

1. LAB Agendas - January 15 2025_Annual Meeting
2. Hybrid Remote LAB Meeting Notice_January 15 2025_Annual
3. Approved November 20 2024 LAB Meeting Minutes

30. Ochopee Fire Control District Advisory Committee

31. Parks and Recreation Advisory Board

32. Pelican Bay Services Division Board

32.A. Pelican Bay Services Division Board - Jan. 8, 2025 *(2025-212)*

ATTACHMENTS

1. Pelican Bay Services Division Board Public Notice - Jan. 8, 2025
2. Pelican Bay Services Division Board Agenda Packet - Jan. 8, 2025
3. Pelican Bay Services Division Board Approved Minutes - Dec. 11, 2024

33. Productivity Committee

34. Public Art Committee

35. Public Safety Coordinating Council

36. Public Transit Advisory Committee

37. Radio Road Beautification Advisory Committee

38. Rock Road MSTU

38.A Rock Road Improvement MSTU Advisory Committee - December 11, 2024 *(2025-360)*
.

ATTACHMENTS

1. TMS - Rock Road MSTU 12-11-24 Wednesday
2. Agenda & Backup - Rock Road 12-11-24
3. Signed Minutes - Rock Road 11-13-24

39. Tourist Development Council

40. Vanderbilt Beach Beautification MSTU Advisory Committee

41. Vanderbilt Waterways MSTU

42. Water and Wastewater Authority

Collier County
GROWTH MANAGEMENT
COMMUNITY DEVELOPMENT
HOUSING POLICY & ECONOMIC
DEVELOPMENT DIVISION

Affordable Housing Advisory Sub-Committee
Attendance Roster – Date: January 10, 2025

AHAC Members

****Must have (6) members for a quorum****

Chairwoman, Mary Waller:	Present - remote/zoom
Paul Shea:	Present - remote/zoom
Jennifer Faron:	Present - remote/zoom
Catherine Myers:	Present - remote/zoom
Hannah Roberts:	Present - remote/zoom

Staff Members

Name	Title	
Cormac Giblin	Director, Housing Policy & Economic Development, GMCD	Present-Remote
Sarah Harrington	Manager, Planning, Housing Policy & Economic Development, GMCD	Present
Priscilla Doria	Ops Support Specialist II, Housing Policy & Economic Development, GMCD	Present

Public Attendees

NAME	REPRESENTING	PHONE No. or email
Bridget Corcoran	Collier County	239-252-2055
David Koval	Collier County Commissioner	239-961-2268

Collier County
Affordable Housing Advisory Sub-Committee (AHAC)

REMOTE/HYBRID

AGENDA

Growth Management Community Development Department
Housing Operations Conference Room 201
2800 N. Horseshoe Dr., Naples, FL 34104

January 10, 2025, 9:00 AM

AHAC Sub-Committee Members

Jennifer Faron
Mary Waller
Hannah Roberts
Paul Shea
Catherine M. Myers

COLLIER COUNTY STAFF
Cormac Giblin, Director, Housing Policy & Economic Development
Sarah Harrington, Planning Manager, Housing Policy & Economic Development
Priscilla Doria, Ops Support Specialist II, Housing Policy & Economic Development

NOTE: ALL PERSONS WISHING TO SPEAK ON ANY AGENDA ITEM MUST REGISTER PRIOR TO SPEAKING. ALL REGISTERED SPEAKERS WILL RECEIVE UP TO THREE (3) MINUTES UNLESS THE TIME IS ADJUSTED BY THE CHAIRMAN. DURING COMMITTEE DISCUSSION, COMMITTEE MEMBERS MAY ASK DIRECT QUESTIONS TO INDIVIDUALS. PLEASE WAIT TO BE RECOGNIZED BY THE CHAIRMAN AND STATE YOUR NAME AND AFFILIATION FOR THE RECORD BEFORE COMMENTING.

IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS MEETING, YOU ARE ENTITLED, AT NO COST TO YOU, THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE COLLIER COUNTY FACILITIES MANAGEMENT DEPARTMENT. ASSISTED LISTENING DEVICES FOR THE HEARING IMPAIRED ARE AVAILABLE IN THE COUNTY COMMISSIONER'S OFFICE.

1. **CALL TO ORDER & PLEDGE OF ALLEGIANCE**

2. **ROLL CALL OF COMMITTEE MEMBERS AND STAFF**

3. **APPROVAL OF AGENDA AND MINUTES**

   a. Approval of today's agenda

4. **INFORMATIONAL ITEMS AND PRESENTATIONS**

5. **PUBLIC COMMENT**

   a. Persons wishing to speak must register prior to speaking. All registered speakers will receive up to three (3) minutes unless the time is adjusted by the Chairman.

6. **DISCUSSION ITEMS**

   a. Tenant Pay Increase

7. **STAFF AND COMMITTEE GENERAL COMMUNICATIONS**

8. **NEW BUSINESS**

9. **ADJOURN**

10. **NEXT AHAC MEETING DATE AND LOCATION: January 16, 2025, at 9:00 AM Conference Room 609/610 - Growth Management Community Development Department**

AHAC Subcommittee Recommendation 10/15/24
Affordable Housing Rental Unit Tennant Grace Period Policy

Each tenant will be given a 12-month grace period once they are found to be out of compliance during a yearly monitoring. Tenant Household Income will be calculated in accordance with LDC Section 2.06.05.B.4. (using most recent filed tax return).

> This Policy does not apply in the event that the tenant's change in income is the result of: (1) a change in employment; (2) a change in marital status; or (3) additional income from sources other than the tenant's current employer.

Scenario:

1. A household is initially income qualified to lease an affordable unit.
2. At some point the tenant receives a promotion/raise that pushes them over the income limit.
3. Tenant's new income is reported on their yearly tax return.
4. During the yearly monitoring the tenant is found to be over income.
5. Tenant is put on notice that their household income will be recalculated at the next yearly monitoring, and if still over income, the developer must replace them with an income qualifying household; alternatively, the developer could certify the occupant of an alternate unit.

Existing AHDB LDC Section on How Income is Calculated:

2.06.05.B.4. Income verification. The County Manager or designee or the developer shall obtain written verification from the potential occupant (including the entire household) to verify all regular sources of income to the potential tenant/owner (including the entire household). The written verification form shall include, at a minimum, the purpose of the verification, a statement to release information, employer verification of gross annual income or rate of pay, number of hours worked, frequency of pay, bonuses, tips and commissions and a signature block with the date of application. The verification shall be valid for up to 90 days prior to occupancy. Upon expiration of the 90-day period, the information may be verbally updated from the original sources for an additional 30 days, provided it has been documented by the person preparing the original verification. After this time, a new verification form must be completed. The income verification may take the form of the most recent year's filed income tax return for each occupant who had filed and will occupy the affordable housing unit.

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

January 3, 2025

FOR IMMEDIATE RELEASE

Notice of Hybrid Remote Public Meeting
Affordable Housing Advisory Sub-Committee
Collier County, Florida

January 10, 2025
9:00 A.M.

Notice is hereby given that the **Affordable Housing Advisory Sub-Committee** will meet on **Friday, January 10th at 9:00 a.m.** in Housing Operations Conference Room 201 located at 2800 North Horseshoe Dr., Naples, Florida 34104. If you would like to participate electronically, please contact Priscilla Doria via email at Priscilla.Doria@colliercountyfl.gov by Wednesday, January 8, 2025, no later than 3:30 p.m.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting.

Two or more members of the Collier County Planning Commission (CCPC) may be present and may participate at the meeting. The subject matter of this meeting may be a future item for discussion and action at a future CCPC meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Cormac Giblin at (239) 252-2460 or Sarah Harrington at (239) 252-4211.

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Collier County
Growth Management Community Development

Affordable Housing Advisory Committee
Attendance Roster – Date: January 16, 2025

AHAC Members
****Must have (6) members for a quorum****

Commissioner Dan Kowal:	Present	**Gary Hains:**	Present
Stephen Hruby:	Present	**Catherine Myers:**	Present
Jennifer Faron:	Present	**Andrew Terhune:**	Present
Mary Waller:	Present	**Hannah Roberts:**	Present
Todd Lyon:	Present	**Paul Shea:**	Excused
Arol Buntzman:	Present	**Robert Mulhere:**	Present

Staff Members

Name	Title	
James French	Department Head, GMCD	
Cormac Giblin	Director, Housing Policy & Economic Development, GMCD	Present
Jaime Cook	Director, Development Review, GMCD	
Michael Bosi	Director, Planning & Zoning, GMCD	
Kristi Sonntag	Director, Community & Human Services, PSD	Present
Donald Luciano	Assistant Director, Community & Human Services, PSD	
Derek Perry	Assistant County Attorney, County Attorney's Office	
Sarah Harrington	Manager, Planning, Housing Policy & Economic Development, GMCD	Present
Priscilla Doria	Ops Support Specialist II, Housing Policy & Economic Development, GMCD	Present
Tracey Smith	Grants Coordinator II, Community & Human Services, PSD	Present
Lisa Carr	Supervisor-Grants, Community & Human Services, PSD	Present

Collier County

GROWTH MANAGEMENT
COMMUNITY DEVELOPMENT

Affordable Housing Advisory Committee

Sign-in Sheet (Public)

January 16, 2025

Please Print

NAME	REPRESENTING	PHONE No. or email
[illegible]		
~~[illegible]~~		
[illegible]		
Todd Lyon		
Michael Puchalla	Housing Alliance, CCCLT, HELP	michael@collierhousing.com
Joel Thomason	clerk's office	847-309-5120
Kenny Bowan	MHP	941 726 6819
Bridget Corcoran	Collier Co.	239-252-2055
Ashley Perez	Aspire Naples	239-989-2448
Zach Hurley	Aspire Naples (cig)	859-814-8923
John Tatum	Wingate	214-577-7791
Bob Mulhere		
Aurora Wells	Housing Alliance, CCCLT, HELP	239-821-3675

Collier County
Affordable Housing Advisory Committee (AHAC)

AGENDA

Growth Management Community Development Department
Conference Rooms 609/610
2800 N. Horseshoe Dr., Naples, FL 34104

January 16, 2025, 9:00 AM

AHAC MEMBERS

Steve Hruby, Chair
Jennifer Faron, Vice Chair
Mary Waller, Member
Gary Hains, Member
Hannah Roberts, Member
Andrew Terhune, Member
Commissioner Dan Kowal, BCC Liaison
Arol Buntzman, Member
Todd Lyon, Member
Paul Shea, Member
Catherine Myers, Member
Bob Mulhere, Non-Voting Member

COLLIER COUNTY STAFF

Jamie French, Department Head, GMCD
Michael Bosi, Director, Planning & Zoning
Jaime Cook, Director, Development Review
Cormac Giblin, Director, Housing Policy & Economic Development
Sarah Harrington, Planning Manager, Housing Policy & Economic Development
Derek D. Perry, Assistant County Attorney, County Attorney's Office
Donna Guitard, Management Analyst I, GMCD
Priscilla Doria, Ops Support Specialist II, Housing Policy & Economic Development

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1. CALL TO ORDER & PLEDGE OF ALLEGIANCE

2. ROLL CALL OF COMMITTEE MEMBERS AND STAFF

a. Paul Shea – Excused Absence
b. Selection of Chair/Vice Chair for 2025

3. APPROVAL OF AGENDA AND MINUTES

a. Approval of today's agenda

4. INFORMATIONAL ITEMS AND PRESENTATIONS

a. Update from McDowell Housing Partners
b. B2R20 (Matthew Smith)

5. PUBLIC COMMENT

a. Persons wishing to speak must register prior to speaking. All registered speakers will receive up to three (3) minutes unless the time is adjusted by the Chairman.

6. DISCUSSION ITEMS

a. Select committee member for ranking and review for CHS grant application cycle (Tracey Smith)
b. January 2025 Apartment Survey (Lisa Carr)
c. Tenant Income Grace Period Policy
    a. Sub-Committee Recommendation
    b. Staff Recommendation

7. STAFF AND COMMITTEE GENERAL COMMUNICATIONS

8. NEW BUSINESS

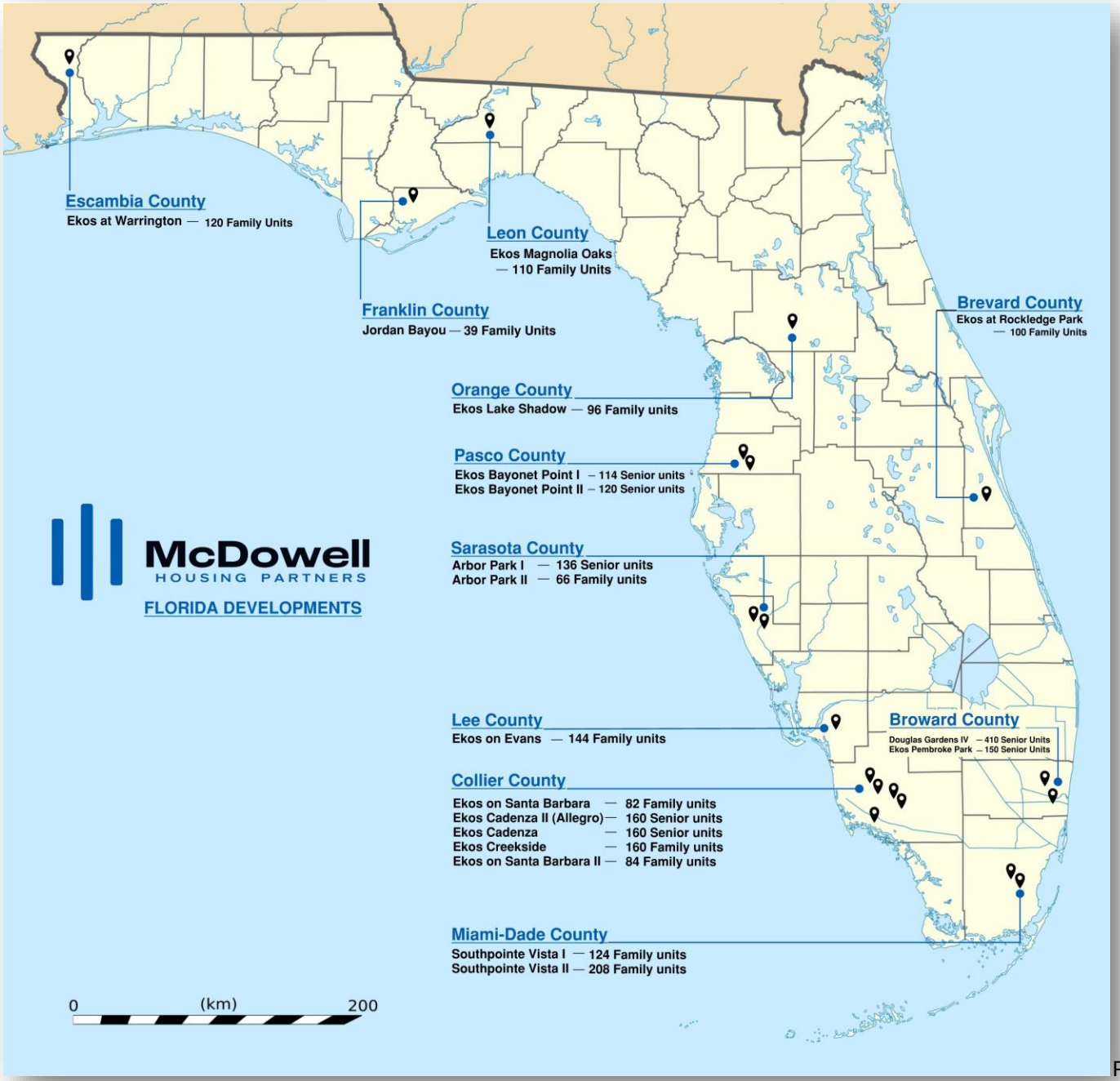
9. ADJOURN

10. NEXT AHAC MEETING DATE AND LOCATION: March 18, 2025, at 9:00 AM Conference Room 609/610 - Growth Management Community Development Department

Collier County Development Update: Current and Upcoming Pipeline



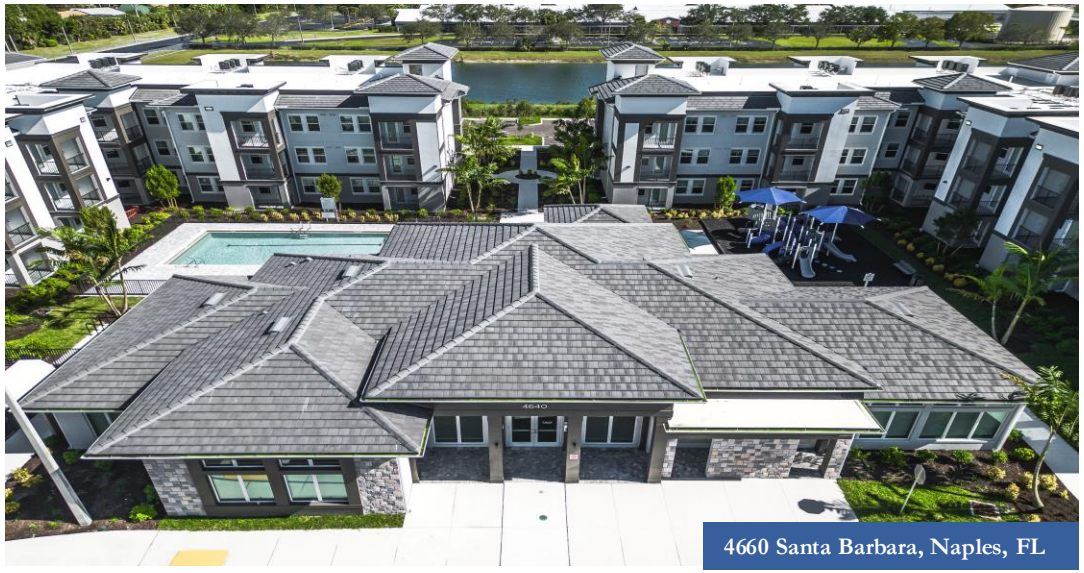
MHP Project Overview



MHP Project Overview

Property	Type	Location	Financing Structure (Excluding Conventional Debt)	# Units	Status
Ekos Arbor Park (Phase I)	New Construction	North Port/Sarasota, FL	4%, LIHTC, NHTF, SAIL , FHFC Bonds	136	Completed 2024
Ekos Magnolia Oaks	New Construction	Tallahassee/Leon County, FL	4% LIHTC, Tallahasee CRA loan	110	Completed 2023
Ekos Lake Shadow	New Construction	Eatonville/Orange County, FL	9% LIHTC	96	Completed 2024
Ekos on Santa Barbara	**New Construction**	**Naples/Collier County, FL**	**4% LIHTC, CDBG-DR, Collier Co SLFRF (ARPA)**	**82**	**Completed 2023**
Ekos Allegro	**New Construction**	**Naples/Collier County, FL**	**4%LIHTC, SAIL, Collier Co SHIP**	**160**	**Completed 2024**
Ekos Lakeview Preserve	New Construction	Irving/Dallas, Texas	9% LIHTC	84	Completed 2023
Ekos City Heights	New Construction	Austin, Texas	4% LIHTC, Austin RHDA Loan	179	Completed 2024
Silverpointe	New Construction	Ocala, Marion Co, FL	9% LIHTC	90	Completed 2024
Jordan Bayou	New Construction	Carrabelle, Franklin County, FL	HOME	39	Completed 2020
Douglas Gardens IV	New Construction	Pembroke Pines/Broward, FL	4% LIHTC, Broward Co Loan, Broward Co Bonds	410	Est. Q2 2025
Ekos Cadenza	**New Construction**	**Naples/Collier County, FL**	**4% LIHTC, SAIL, NHTF, ARPA Loan**	**160**	**Est. 2025**
Southpointe Vista (Phase I)	New Construction	Goulds/Miami Dade, FL	9%, Miami-Dade Surtax and Inflation Reduction Loan	124	Est. Q1 2025
Ekos Bayonet Point (Phase I)	New Construction	Pasco County, FL	9%, LIHTC, NHTF, Pasco County HOME	114	Underwriting
Southpoint Vista (Phase II)	New Construction	Goulds/Miami Dade, FL	4% LIHTC, SAIL, Miami-Dade Surtax, NHTF	208	Underwriting
Ekos Creekside	**New Construction**	**Collier County, FL**	**4% LIHTC, SAIL, Collier County Surtax**	**160**	**Underwriting**
Ekos Pembroke Park	New Construction	Pembroke Park, Broward Co, FL	4% LIHTC, SAIL, Broward County HOME	150	Underwriting
Ekos Arbor Park (Phase II)	New Construction	North Port/Sarasota, FL	9% LIHTC	66	Underwriting
Ekos Santa Barbara (Phase II)	**New Construction**	**Collier County, FL**	**4% LIHTC, CDBG-DR**	**84**	**Underwriting**
Ekos on Evans	New Construction	Ft. Myers/Lee County, FL	4% LIHTC, CDBG-DR	144	Underwriting
Ekos at Warrington	New Construction	Pensacola/Escambia County	4% LIHTC, SAIL	120	Underwriting
Ekos at Rockledge Park	New Construction	Brevard County, FL	4% LIHTC, CDBG-DR	100	Underwriting
Ekos Bayonet Point (Phase II)	New Construction	Pasco County, FL	4% LIHTC, SAIL	120	Underwriting

Ekos on Santa Barbara, Collier County, FL



4660 Santa Barbara, Naples, FL

Workforce Family

- 100% Occupied – 1 Month Lease up. Waitlist 1600+
- Property Type: Two Garden-Style Apartments w/ surface parking and stand-alone clubhouse
- Demographic: Family
- Number of Units: 82
- Construction Type: Concrete Block
- Funding: 4% Tax Credits with CBDG-DR (Ian)
- Development Cost: $25,450,000

Highlights and Amenities

- Ground Lease from Collier County
- Multipurpose Clubhouse with
- Media-Room
- Fitness Center
- Large Pool
- Tot Lot and Picnic Area
- Covered BBQ Gas Grills
- Resident Programs and Services: Financial Management, Adult Literacy, Daily Activates
- Sunshine Health Partnership






STOP





Ekos Allegro, Collier County, FL



8455 Rattlesnake Hammock Rd, Naples, FL

Highlights and Amenities

- Partnership: Collier County Community Land Trust
- Partnership: County Community & Human Services Administration (Meal Program)
- Partnership: SW Florida Health Care Network
- Community Room with Kitchenette
- Arts and Games Area
- Theater Room
- Private Offices for Rent
- Medical Screening Room
- Courtyard with Pickleball, Dog Park, Community Garden, Covered BBQ Grills
- Resident Programs and Services:
    - Assistance with light housekeeping, adult literacy, daily activities

Senior Affordable

- Opened Oct. 2024
- 91 One Bed/Ba and 61 Two Bed/Ba
- 100% leased by end of Nov.
- Property Type: Midrise 5-Story
- Demographic: Senior (62+) Tax Exemption/Zoning Mandate
- Construction Type: Block & Concrete Plank
- Funding: 4% LIHTC + SAIL + Tax Exempt Bonds
- Development Cost: $50,125,756















Ekos Cadenza, Collier County, FL



Highlights and Amenities

- Partnership: Collier County Community Land Trust
- Partnership: County Community & Human Services Administration (Meal Program)
- Partnership: SW Florida Health Care Network
- Standalone Clubhouse
- Fitness Center
- Cyber café
- Resort Style Pool
- Resident Programs and Services:
    - Assistance with light housekeeping, adult literacy, daily activities

Senior Affordable

- Completion December 2024
- Number of Units: 160
- 25 Studios, 80 One Bed/Ba, 55 Two Bed/Two Ba
- Property Type: Midrise 5-Story
- Demographic: Senior (62+) Tax Exemption/Zoning Mandate
- Construction Type: Block & Concrete Plank
- Funding: 4% LIHTC + SAIL + Tax Exempt Bonds
- Development Cost: **$51,074,809**











Ekos Creekside, Collier County, FL





- Utilized Live Local Preemption and Live Local SAIL Funding
- Closing Q1 2025
- Number of Units: 160
- Property Type: Midrise 7 Stories
- 98 One Bed/Ba, 48 Two Bed/Ba, 14 Three Bed/Two Ba
- Construction Type: Block & Concrete Plank
- Funding: 4% LIHTC + SAIL + Tax Exempt MMRB
- Est. Development Cost: $63,808,624
- Income/Rent Limits

AMI	Count	%
30%	16	10%
50%	80	50%
80%	64	40%

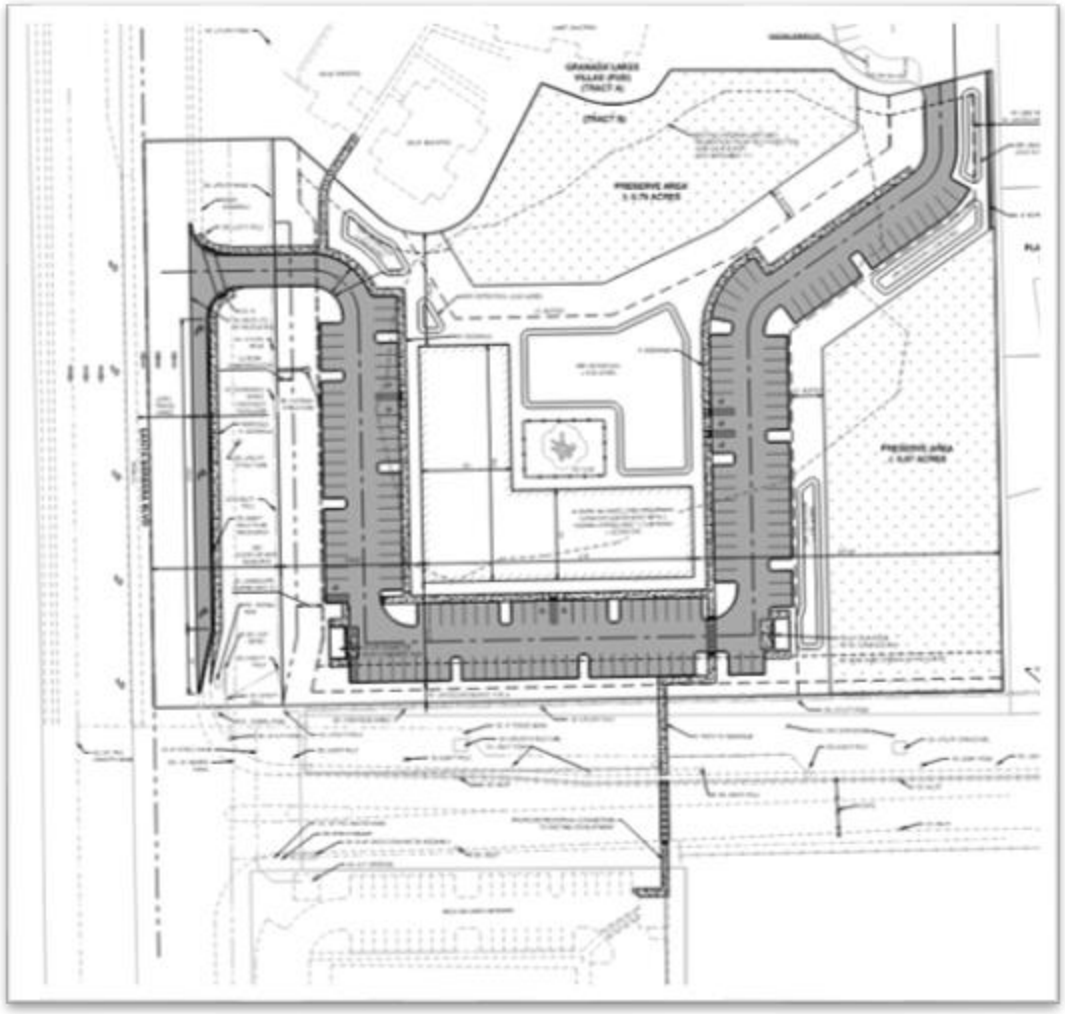
•Challenges: RM-25 Zoning for Lower Density MF

- Parking Requirements
- Open Space
- Setbacks
- Public Lift Station
- Cannot be Built Again: Adopted Ordinance, No Live Local PUDs → 25du/ac Max and Height Limit

Pre-Development

Ekos Santa Barbara II





- Utilized County Ordinance for Density Bonus
- Closing Q1 2026
- Number of Units: 84
- Property Type: Midrise 4 Stories
- 60 One Bed/Ba, 24 Two Bed/Two Ba
- Construction Type: Block & Concrete Plank
- Funding: 4% LIHTC + **CDBG-DR** (Hurricane Ian) + Tax Exempt Bonds
- Est. Development Cost: $34,196,392

AMI	Count	% of Total Units
30%	13	15%
60%	32	38%
70%	39	46%
	84	

Challenges:

- Public Hearing Process
- Access & Potential Traffic Congestion on Santa Barbara Blvd
- Parking Requirements
- Santa Barbara Landings PUD restrictions
- Stormwater & Site Utilities

Who We Serve

HUD release: 4/2/2024
Effective: 4/1/2024
Implement on/before: 5/16/2024
4/22/2024 add HS Gulf & Levy

2024 Income Limits and Rent Limits
Florida Housing Finance Corporation
Multifamily Rental Programs and CWHIP Homeownership Program
NOTE: Does not pertain to CDBG-DR, HHRP, HOME, NHTF or SHIP

County (Metro)	Percentage Category	Income Limit by Number of Persons in Household										Rent Limit by Number of Bedrooms in Unit					
		1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5
Collier County	**20%**	**14,620**	**16,700**	**18,780**	**20,860**	**22,540**	**24,200**	**25,880**	**27,540**	**29,204**	**30,873**	**365**	**391**	**469**	**542**	**605**	**667**
(Naples-Immokalee-	25%	18,275	20,875	23,475	26,075	28,175	30,250	32,350	34,425	36,505	38,591	456	489	586	678	756	834
Marco Island MSA)	**28%**	**20,468**	**23,380**	**26,292**	**29,204**	**31,556**	**33,880**	**36,232**	**38,556**	**40,886**	**43,222**	**511**	**548**	**657**	**759**	**847**	**934**
	30%	21,930	25,050	28,170	31,290	33,810	36,300	38,820	41,310	43,806	46,309	548	587	704	813	907	1,001
	33%	**24,123**	**27,555**	**30,987**	**34,419**	**37,191**	**39,930**	**42,702**	**45,441**	**48,187**	**50,940**	**603**	**645**	**774**	**895**	**998**	**1,101**
	35%	25,585	29,225	32,865	36,505	39,445	42,350	45,290	48,195	51,107	54,027	639	685	821	949	1,058	1,168
	40%	**29,240**	**33,400**	**37,560**	**41,720**	**45,080**	**48,400**	**51,760**	**55,080**	**58,408**	**61,746**	**731**	**783**	**939**	**1,085**	**1,210**	**1,335**
	45%	32,895	37,575	42,255	46,935	50,715	54,450	58,230	61,965	65,709	69,464	822	880	1,056	1,220	1,361	1,502
	50%	**36,550**	**41,750**	**46,950**	**52,150**	**56,350**	**60,500**	**64,700**	**68,850**	**73,010**	**77,182**	**913**	**978**	**1,173**	**1,356**	**1,512**	**1,669**
	60%	43,860	50,100	56,340	62,580	67,620	72,600	77,640	82,620	87,612	92,618	1,096	1,174	1,408	1,627	1,815	2,003
	70%	**51,170**	**58,450**	**65,730**	**73,010**	**78,890**	**84,700**	**90,580**	**96,390**	**102,214**	**108,055**	**1,279**	**1,370**	**1,643**	**1,898**	**2,117**	**2,337**
Median: 104,300	80%	58,480	66,800	75,120	83,440	90,160	96,800	103,520	110,160	116,816	123,491	1,462	1,566	1,878	2,170	2,420	2,671
	120%	**87,720**	**100,200**	**112,680**	**125,160**	**135,240**	**145,200**	**155,280**	**165,240**	**175,224**	**185,237**	**2,193**	**2,349**	**2,817**	**3,255**	**3,630**	**4,006**
	140%	102,340	116,900	131,460	146,020	157,780	169,400	181,160	192,780	204,428	216,110	2,558	2,740	3,286	3,797	4,235	4,674

NOTES: Rents do not reflect the reduction for Utility Allowances

Ekos Creekside - Family
Naples, FL - Collier County
4% Tax Credit

PROJECT UNIT MIX

UNIT TYPE	COUNT	AMI %	UNIT SIZE	EXTENDED SF	GROSS LIHTC RENT	UTILITY ALLOWANCE	NET LIHTC RENT
1 BR	10	30%	613 SF	6,130 SF	$587	$98	$489
1 BR	49	50%	613 SF	30,037 SF	$978	$98	$880
1 BR	-	60%	613 SF	-	$1,174	-	$1,174
1 BR	39	80%	613 SF	23,907 SF	$1,566	$98	$1,468
2 BR	48	30%	895 SF	4,475 SF	$704	$116	$588
2 BR	24	50%	895 SF	21,480 SF	$1,173	$116	$1,057
2 BR	-	60%	895 SF	-	$1,408	-	$1,408
2 BR	19	80%	895 SF	17,005 SF	$1,878	$116	$1,762
3 BR	1	30%	1,082 SF	1,082 SF	$813	$135	$678
3 BR	7	50%	1,082 SF	7,574 SF	$1,356	$135	$1,221
3 BR	-	60%	1,082 SF	-	$1,627	-	$1,627
3 BR	6	80%	1,082 SF	6,492 SF	$2,170	$135	$2,035
	-	-	-	-	-	-	-
TOTAL	**160**		**739 SF**	**118,182 SF**			

Macro Challenges

- Capital Cost
  - LIHTC Pricing
  - Const Debt
- Insurance Cost
- Inflationary Pressures
  - OpEx
- Regulatory Burdens
- Limited Subsidy

Collier County Challenges

- Scarce (Entitled) Land
- Expensive Land
- NIMBY
- Live Local Limitations
- Parking Requirements
- Construction
  - Local Subcontractors
  - Material Cost
  - Market Isolation
- Storm Impacts
- Permit Processing/Entitlements



Let's Do More

- Advocacy
- Local Land Development Code
- Local Incentives
  - Fee Waivers/Deferrals
- Tax Exemption (LL Modifications)
- Insurance Programs
- Partnerships
  - Local Governments
  - CRAs
  - **Employers**



THANK YOU!

Contact Info

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McDowell HOUSING PARTNERS

COLLIER COUNTY AFFORDABLE HOUSING ADVISORY COMMITTEE INTRO PRESENTATION



B2R20

Build-to-Rent-to-Own

WHAT IS BUILD TO RENT TO OWN ("B2R2O")?

Build to Rent to Own ("B2R2O") is a non-profit initiative to develop homeownership opportunities for members of the Collier County "community workforce" — broadly defined as those making between 60% and 120% of the Area Median Income, with an emphasis on essential service personnel.

B2R2O MISSION

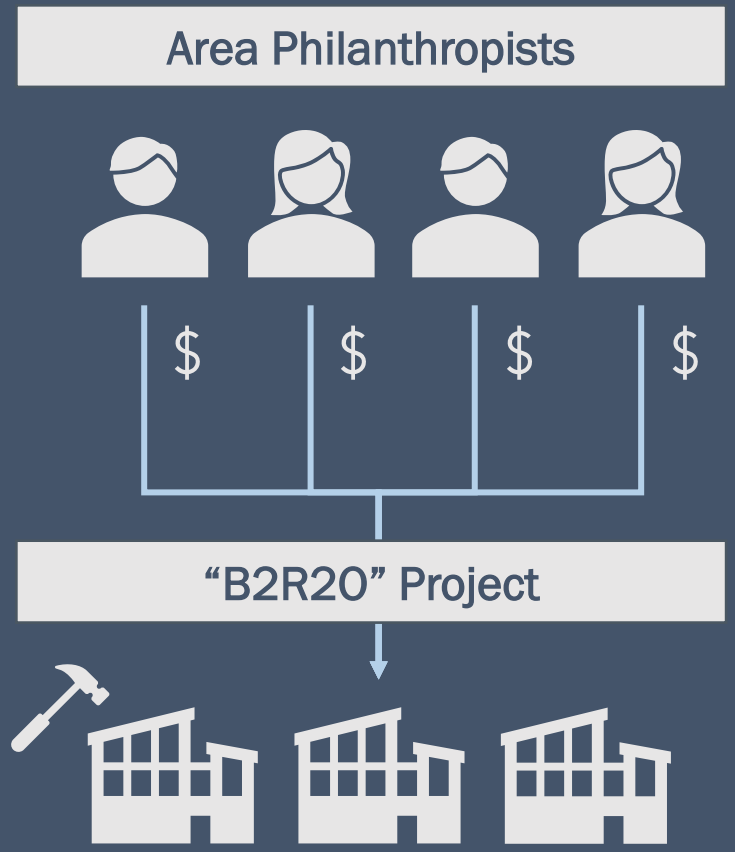
Offer stable, secure financial pathway to homeownership in order to:

- Retain, attract, and increase the tenure of a high-quality community workforce in Collier County
- Ensure project's long-term affordability to provide future opportunities for low- and moderate-income homebuyers



STEP 1: SITE SELECTION

A partnership formed between B2R20 and the Collier County Community Land Trust ("CCCLT") identifies un- or under-developed land sites in Collier County that are suitable for workforce housing (single family townhome product)



STEP 2: FLEXIBLE FUNDING

Area philanthropists commit capital to B2R2O projects at flexible, below-market terms:

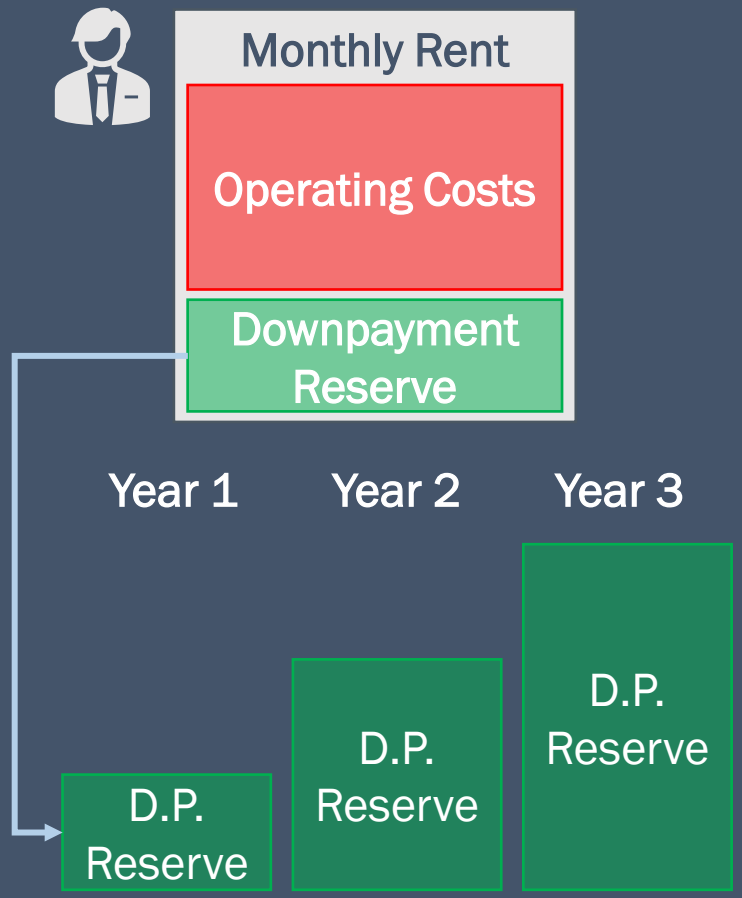
- Recoverable Grants & Program Related Investments (available exclusively to non-profits)
    - Zero- or low-interest loan-like investments
- Flexibility on prepayment and repayment



STEP 3: BENEFICIARY SELECTION

Members of the community workforce apply for the B2R2O Program:

- MUST be employed full-time in Collier County
- MUST meet income and credit score minimums
- PREFERENCE for essential service personnel and County employees

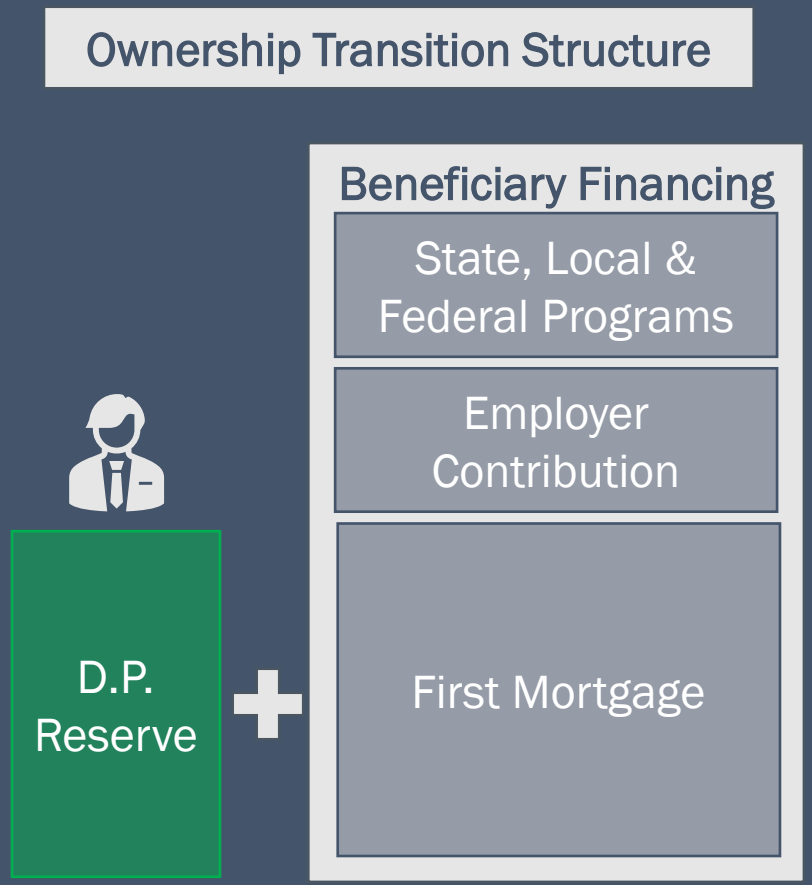


STEP 4: RENT TO OWN AGREEMENT

Selected Beneficiaries enter the B2R2O Program through a Rent to Own Agreement:

- 3 year rental period
- Mandatory participation in educational program
- Rent charged tied to 30% of gross income
- Percentage of rent charged goes towards funding a reserve account for Beneficiary's downpayment

STEP 5: OWNERSHIP TRANSITION



After the 3-year rental period, B2R20 assists Beneficiaries in purchasing their unit through:

- Traditional retail mortgages through partner banks and financial institutions
- Employer-funded downpayment assistance
- Other State, Local & Federal programs designed to assist low- and moderate- income homebuyers

GRANT CYCLE TIMELINE 2025-2026			
DATE	**ACTION**	**RESPONSIBILITY**	**COMPLETED**
12/10/2024	Fiscal provides available funding dollars for 2025-2026 Application Cycle	Darrick, Mark (Maggie)	12/4/2024
12/10/2024	Application edits sent to Ryan at Neighborly	Tracey	12/6 (initial edits), 12/12 (2nd edits)
12/19/2024	Public Notice Published	Tracey	12/19/2024
12/19/2024	Email to partners + Social media blast (#1) (this is the Public Notice)	Tracey to coordinate with Quest	12/19/2024
12/30/2024	Email to partners + Social media blast (#2) (This is the Public Notice)	Tracey to coordinate with Quest	12/30/2024
1/7/2025	Grant Pre-Application Opens	Tracey	1/7/2025
1/17/2025	Grant Pre-Application Closes at 12 noon	Tracey	
1/21/2025 -1/23/2025	Pre-Apps reviewed by staff (H3)	CHS Team	
01/27/2025-01/31/2025	Grant 1:1 TA Meetings (H3)	CHS Team	
by 01/31/2025	Internal confirmation of R/R committee members	Tracey	
2/3/2025	Full grant application portal opens	Tracey	
2/7/2025	Memo to County Manager for approval of the selection of R/R Committee	Tracey	
2/24/2025	Grant Application Portal Closes 12 noon	Tracey	
2/25/2025-3/03/2025	Staff Vet All Applications and clear deficiencies (H3)	CHS Team	
3/4/2025	R/R Training: Neighborly Software, Scoring of Applications and Powerpoint Review (H3)	TBD	
3/5/2025	Release Grant Applications to R/R Committee for individual scoring	Tracey	
3/6/2025	Request Level One Risk Assessment from GCU (every applicant)	Tracey/GCU	
3/19/2025	Fiscal provides current available funding dollars for 2025-2026 Application Cycle	Darrick, Mark (Maggie)	
3/26/2025	R/R Committee Presentations (Services) (Facilities Training room)	CHS Team	
3/27/2025	R/R Committee Presentations (Capital Projects) (Facilities Training room)	CHS Team	
3/28/2025	CDBG/HOME/ESG Agreement templates provided by GCU and available for use	GCU Team	
3/31/2025	Memo to the County Manager for approval of suggested Conditional Awards	Tracey	
4/4/2025*	Denial & Conditional Awards letters out to Subrecipients (Cc: Grants Compliance)	Tracey	
3/31/2025-4/11/2025	Grant Coordinators & subrecipients finalize scope of services, beneficiaries, etc.	Grants Coordinators/Subrecipients	
4/8/2025	Preparation of 2025-2026 Action Plan - include conditional awards in AAP	Tracey/FHC	
4/30/2025	Subrecipient Agreements finalized and submitted to CAO	Grants Coordinators/Subrecipients	
5/12/2025	Advertise Public Notice for PY2025 Annual Action Plan	Tracey	
05/13/2025-06/13/2025	Public Comment Period for Annual Action Plan	Tracey	
5/20/2025	Upload Subrecipient Agreements & Annual Action Plan in CivicPlus for 6/24/25 BCC meeting	Tracey	
5/29/2025	Public Hearing for PY2025-2026 Annual Action Plan	Tracey	
6/24/2025	BCC Approval of FY 2025-2026 Action Plan & Projects/Activities	Tracey	

***Contingent on whether approval has been received by CM**

Collier County Community and Human Services Division
Quarterly Rental Apartment Inventory Survey January 2025
Information deemed reliable but should be independently verified

Very Low-Income (VLI): Means a household earning between 30% and 50% of the Area Median Income

Low-Income (LI): Means a household earning between 50% and 80% of the Area Median Income

Moderate Income (MI): Means a household earning between 80 and 120% of the Area Median Income

Property Name	Property Address	Phone #	1/1 Rental Rate	2/2 Rental Rate	3/2 Rental Rate	Total # of Units in Development	Occupancy Rate	Total Available Units as of January 1, 2025	January 2025	January 2024	January 2023	January 2022	Jan 2020	Oct 2019
Goodlette Arms	950 Goodlette Rd N Naples, FL - 34102	(239) 262-3229	$ 1,713.00	N/A	N/A	242	100.0%	0	Very-Low Income $1,173	Very-Low Income $1,123	Very-Low Income $1,061	Very-Low Income $948		
Wolfe Apartments *	4620 16th Pl SW #303, Naples, FL 34116	(239)-353-8746	$ 700.00	$ 900	N/A	46	100.0%	0	**0**	**2**	**0**	**0**	**0**	**0**
Bembridge- The Harmony on Santa Barbara (Ekos)	4640 Santa Barbara Blvd	(239) 686-0050	$ 1,008.00	$1,212	$1,398	82	100.0%	0						
Saddlebrook Village	8685 Saddlebrook Cir, Naples, FL 34104	(239) 354-1122	N/A	$ 1,230	$ 1,407	140	100.0%	0						
Whistler's Green	4700 Whistlers Green Cir, Naples, FL 34116	(239) 352-2999	$ 1,103	$ 1,313	$ 1,511	168	100.0%	0						
Ekos Allegro (Ekos Cadenza II)	8455 Ratt;esnake Hammock Rd	(239)955-8679	$ 1,064	$ 1,280	N/A	160	100.0%	0						
Bear Creek	2367 Bear Creek Dr, Naples, FL 34109	(239) 514-0600	N/A	$ 1,282	$ 1,477	108	100.0%	0						
Brittany Bay	14815 Triangle Bay Dr, Naples, FL 34119	(239) 354-2002	$ 1,080	$ 1,295	$ 1,600	392	99.2%	3						
Brittany Bay II	14925 Lighthouse Rd, Naples FL 34119	(239) 354-2002	$ 1,080	$ 1,295	$ 1,600	392	100.0%	0						
Brittany Bay III- Vanderbilt Place	14915 Lighthouse Rd, Naples FL 34119	(239) 354-2002	$ 1,080	$ 1,295	$ 1,600	392	100.0%	0						
Osprey's Landing	100 Ospreys Landing, Naples, FL 34104	(239) 261-5454	$ 1,110	$ 1,329	$ 1,538	176	100.0%	0						
Jasmine Cay	100 Jasmine Circle Naples, FL - 34102	(239) 963-9920	N/A	$ 1,580	$ 2,668	73	100.0%	0	Low Income	Low Income	Low Income	Low Income		
Tuscan Isle - Saddlebrook Village	8650 Weir Dr, Naples, FL 34104	(239) 304-3668	$ 1,112	$ 1,332	$ 1,544	298	100.0%	0	$1878 2/2	$1,797 2/2	$1,698 2/2	$1,518 2/2		
Whistler's Cove	11400 Whistlers Cove Blvd, Naples, FL 34113	(239) 417-3333	$ 1,111	$ 1,333	$ 1,551	240	100.0%	0	**6**	**0**	**0**	**3**	**84**	**135**
Villas of Capri *	7725 Tara Cir, Naples, FL 34104	(239) 455-4600	$ 1,110	$ 1,336	$ 1,488	235	98.7%	3						
College Park	6420 College Park Cir, Naples, FL 34113	(833) 219-9964	N/A	$ 1,340	$ 1,556	210	100.0%	0						
Summer Lakes I - Donovan Center PUD	5600 Jonquil Ln, Naples, FL 34109	(833) 290-3367	$ 1,121	$ 1,347	$ 1,562	140	100.0%	0						
Summer Lakes II - Bosley PUD	5520 Jonquil Ln, Naples, FL 34109	(833) 290-3367	$ 1,121	$ 1,347	$ 1,561	276	100.0%	0						
George Washington Carver Apt	350 10th St N Naples, FL - 34102	(239) 261-4595	$ 1,272	$ 1,506	$ 1,814	70	100.0%	0						
Gordon River Apartments - (Still Water)	1400 5th Ave N. Naples, FL 34102	(239)263-7700	N/A	$ 1,750	$ 1,950	96	100.0%	0						
Noah's Landing- Golden Gate Commerce Park PUD *	10555 Noah's Cir, Naples, FL 34116	(239) 775-7115	$ 2,002	$ 2,400	$ 2,898	264	100.0%	0						
Naples Place I-III	4544-4626 Sunset Rd, Naples, FL 34116	(239) 450-9126	$ 1,200	$ 1,900	$ 2,350	170	100.0%	0						
Atrium Gulfshore *	5301 Summerwind Dr, Naples, FL 34109	(239) 597-6605	$ 1,668	$ 2,224	N/A	368	98.6%	5						
10x Living (Alvista at Laguna Bay) *	2602 Fountainview Cir, Naples, FL 34109	(239) 254-7889	$ 1,698	$ 2,088	N/A	456	97.1%	13						
Jade at Olde Naples *	402 11th St N, Naples, Fl 34102	(239)213-5888	$ 1,800	$ 2,150	N/A	104	98.1%	2						
River Reach *	1970 River Reach Dr #179, Naples, FL 34104	(239) 643-2992	$ 1,932	$ 2,209	N/A	556	97.8%	12						
Milano Lakes *	3713 Milano Lakes Circle, Naples, FL 34114	(239) 558-1534	$ 2,297	$ 2,416	$ 2,703	296	98.6%	4						
Malibu Lakes *	2115 Malibu Lakes Circle, Naples, FL 34119	(239) 596-0035	$ 1,809	$ 2,109	$ 2,799	356	97.5%	9						
Sierra Grande at Naples *	6975 Sierra Club Cir, Naples, FL 34113	(239) 529-5631	$ 2,061	$ 3,351	$ 5,134	300	100.0%	0						
Somerset Palms	15985 Arbor View Blvd, Naples, FL 34110	(888) 479-3911	N/A	$ 2,150	$ 2,200	169	94.7%	9	Moderate Income/ $2817 2/2	Moderate Income/ $2697 2/2	Moderate Income/ $2547 2/2	Moderate Income/ $2,277 2/2	Moderate Income/	Moderate Income
Briar Landings	1385 Wildwood Lakes Blvd, Naples, FL 34104	(239) 455-2400	$ 1,600	$ 2,000	N/A	240	93.8%	15	**326**	**346**	**100**	**4**	**486**	**653**
Oasis Naples	2277 Arbor Walk Cir, Naples, FL 34109	(239) 598-9944	$ 1,800	$ 2,150	N/A	216	99.5%	1						
Bermuda Island	3320 Bermuda isle Cir., Naples, FL 34109	(888) 415-1140	$ 1,609	$ 2,199	$ 2,809	360	100.0%	0						
The Point	2155 Great Blue Dr, Naples, FL 34112	(239) 417-5500	$ 1,724	$ 2,002	$ 2,724	248	100.0%	0						
Advenir Aventine *	9300 Marino Cir, Naples, FL 34114	(239) 793-4603	$ 1,943	$ 2,088	$ 2,905	350	99.1%	3						
Aster at Lely Resort *	8120 Acacia St, Naples, FL 34113	(239) 919-8375	$ 1,849	$ 2,373	$ 3,509	308	94.2%	18						
Orchid Run *	10991 Lost Lake Drive, Naples, FL 34105	(833) 676-4450	$ 2,028	$ 2,354	$ 2,729	282	96.5%	10						
Meadow Brook Preserve *	1130 Turtle Creek Blvd, Naples, fL 34110	(239) 579-9420	$ 1,875	$ 1,999	$ 2,633	268	85.8%	38						
Crest Apartments - Vincentian PUD (The Crest) *	11496 Sumter Grove Cir Naples, FL 34113	(239)963-1209	$ 2,097	$ 2,334	$ 3,100	200	96.5%	7						
Inspira Apartments *	7425 Inspira Circle, Naples, FL 34113	(239) 298-5680	$ 1,975	$ 2,225	$ 2,773	304	96.4%	11						
Mer Soleil *	4250 Jefferson Ln, Naples, FL 34116	(239) 354-1155	$ 1,700	$ 2,125	$ 2,600	320	95.9%	13						
I-75/Alligator Alley - (Edge 75) *	120 Bedzel Cir, Naples, FL 34104	(239) 276-7770	$ 1,950	$ 2,295	$ 2,700	320	93.4%	21						
The Coast Residences	1600 Wellesley Cir, Naples, FL 34116	(239) 353-1211	$ 1,683	$ 2,020	N/A	200	92.0%	16						
Tree Farm - (Addison Place)	8677 Addison Place Circle, 34119	(239) 232-6109	$ 1,900	$ 2,700	$ 2,959	294	100.0%	0						
Laurel Ridge	5460 Laurel Ridge Ln, Naples, FL 34116	(239) 353-7766	N/A	N/A	$ 2,200	78	76.9%	18						
Wild Pines Of Naples *	2580 Wild Pines Ln, Naples, FL 34112	(239) 793-6419	$ 1,690	N/A	N/A	200	100.0%	0						
Naples 701 *	3531 Plantation Way, Naples, FL 34112	(239) 775-8000	$ 1,495	N/A	N/A	188	98.9%	2						
Belvedere Apartments (Belvedere At Quail Run) *	260 Quail Forest Blvd, Naples, FL 34105	(239) 434-0033	$ 1,765	$ 2,853	N/A	162	97.5%	4						
Legacy Naples Apartments *	7557 Campania Way, Naples, Fl 34104	(239) 354-7417	$ 2,001	$ 2,584	$ 3,547	304	95.1%	15						
The Springs at Hammock Cove *	4360 Petal Dr, Naples, FL 34112	(239) 203-3972	$ 1,866	$ 2,436	$ 2,534	340	92.1%	27						
The Coast (Berkshire Lakes) *	3536 Winifred Row Ln, Naples, FL 34116	(239) 455-8174	N/A	N/A	$ 2,324	146	88.4%	17						
Waverley Place *	5300 Hemingway Ln, Naples, FL 34116	(239) 353-4300	$ 1,700	$ 1,925	$ 2,020	300	91%	27						
Saxon Manor Isles- (Meadow Lakes) *	105 Manor Blvd, Naples, FL 34104	(239) 403-4130	$ 1,843	$ 2,485	$ 2,561	252	93.7%	16						
Briarwood- Lago Apartments (Lago Apartments)	10200 Sweetgrass Circle. Naples, Fl 34104	(239)384-6881	$ 2,195	$ 2,715	$ 3,338	320	97.8%	7						
Atlis - Santa Barbara *	4710 Atlis Drive, Naples Fl 34104	(239)-372-9850	$ 2,414	$ 2,864	$ 3,572	242	60%	0						
Marea *	3550 Putney Court, Naples FL 34112	(239) 944-7080	$ 2,281	$ 3,057	$ 3,648	300	89%	15						
Mark Lane Apartments *	15500 Mark Lane, Naples FL 34119	(239) 631-9325	$ 2,250	$ 2,815	$ 3,500	286	96.9%	9						
Allura	16210 Allura Circle, Naples FL 34110	(239) 788-2641	$ 2,479	$3,048	$3,479	320	95.0%	0						
The Pearl (Founders Square) *	8820 Walter Way Naples, FL 34120	(239)-294-8985	$ 2,224	$ 2,770	$ 3,575	400	100.0%	0						
Magnolia Square *	5934 Premier Way Suite 2100, Naples FL 34109	(239) 932-6899	$ 2,698	$ 2,804	$ 4,667	290	100.0%	0	**0**	**250**	**439**	**87**	No Moderate Data	No Moderate Data
Amberlin *	8630 Amberlin Way Naples, Fl 34114	(239) 350-1566	$ 1,799	$ 2,763	N/A	188	TBA	Under Development						
Ekos Cadenza at Hacienda Lakes	8471 Rattlesnake Hammock Rd	TBA	N/A	N/A	N/A	160	TBA	Under Development	Market Rate	Market Rate	Market Rate	Market Rate		
Blue Coral Apartments	5035 Aspire Way	TBA	N/A	N/A	N/A	234	TBA	Under Development						
Renaissance Hall (Golden Gate Golf Course)	4100 Golden Gate Pkwy	TBA	N/A	N/A	N/A	400	TBA	Under Development						
Amerisite- Latigo Apartments (FIORI)	8710 Collier Blvd	TBA	N/A	N/A	N/A	303	TBA	Under Development						
Sub-Total Naples		**Median**	**$ 1,765**	**$ 2,117**	**$ 2,600**	**16,298**	97.7%	370	**370**	**598**	**439**	**98**	**570**	**788**
Farm Worker Village	2225 Chadwick Cir, Immokalee, FL 34142	(239) 842-0327	$ 595	$ 645	$ 700	276	100%	0						
Sanders Pines	2449 Sanders Pine Cir, Immokalee, FL 34142	(239) 657-8333	N/A	$ 742	$ 792	41	100.0%	0						
Willowbrook Place	1836 Ash Ln, Immokalee, FL 34142	(239) 657-3204	$ 734	$ 817	N/A	41	100.0%	0						
Esperanza Place	2357 Esperanza Way, Immokalee, FL 34142	(239) 657-2009	$ 755	$ 845	$ 905	47	100.0%	0						
Main Street Village	104 Anhinga Cir, Immokalee, FL 34142	(239) 657-6576	N/A	$ 925	$ 995	79	100.0%	0						
Garden Lake Apartments	1050 Garden Lake Cir, Immokalee, FL 34142	(239) 657-3204	$ 764	$ 892	N/A	65	100.0%	0	Very-Low Income $1,173 2/2	Very-Low Income $1,123 2/2	Very-Low Income $1,1061 2/2	Very-Low Income $948 2/2	Very-Low Income	Very-Low Income
Heritage Villas	1810 Lake Trafford Rd, Immokalee, FL 34142	(239) 657-3204	$ 830	$ 937	N/A	41	100.0%	0						
Summer Glenn	1012 Summer Glen Blvd, Immokalee, FL 34142	(239) 657-3204	$ 824	$ 970	N/A	45	100.0%	0	**0**	**6**	**5**	**23**	**33**	**44**
Eden Gardens 1&2	1375 Boxwood Drive, Immokalee, FL 34142	(239) 657-7900	N/A	$ 1,095	$ 1,100	92	100.0%	0						
Southern Villas	1802 Custer Ave.,Immokalee, FL 34142	(239) 657-3204	$ 917	$ 1,078	$ 1,273	35	100.0%	0						
Casa Amigos	2683 Amigo Way, Immokalee, FL 34142	239-657-2009	N/A	$ 1,173	N/A	24	100.0%	0						
Immokalee Senior Housing (Bromelia Place)	612 N 11th St Immokalee, FL - 34142	(239) 657-3649	$ 978	$ 1,137	N/A	30	100.0%	0						
Immokalee Apartments	601 W Delaware Ave, Immokalee, FL 34142	(239) 657-6185	N/A	$ 1,295	$ 1,483	100	100.0%	0						
Oak Haven	580 Oakhaven Cir, Immokalee, FL 34142	(239) 658-5920	N/A	$ 1,290	$ 1,481	160	100.0%	0	Low Income $1,878 2/2	Low Income $1,878 2/4	Low Income $1,698 2/2	Low Income $1,518 2/2	Low Income	Low Income
Crestview Park (First Phase)(The Ashley Apartments)	715 Crestview Dr, Immokalee, FL 34142	(877) 475-1665	N/A	$ 1,271	$ 1,452	208	100.0%	0	**0**	**0**	**0**	**0**	**12**	**10**
Crestview Park II (Second Phase)(The Ashley Apartments)	722 Crestview Dr, Immokalee, FL 34142	(877) 475-1665	N/A	$ 1,267	$ 1,448	96	100.0%	0						

Collier County Community and Human Services Division
Quarterly Rental Apartment Inventory Survey January 2025
Information deemed reliable but should be independently verified

Very Low-Income (VLI): Means a household earning between 30% and 50% of the Area Median Income

Low-Income (LI): Means a household earning between 50% and 80% of the Area Median Income

Moderate Income (MI): Means a household earning between 80 and 120% of the Area Median Income

Property Name	Property Address	Phone #	1/1 Rental Rate	2/2 Rental Rate	3/2 Rental Rate	Total # of Units in Development	Occupancy Rate	Total Available Units as of January 1, 2025	January 2025	January 2024	January 2023	January 2022	Jan 2020	Oct 2019
Cypress Run	550 Hope Circle, Imokalee, FL 34142	(239) 657-9032	$ 768	N/A	N/A	39	100.0%	0						
Timber Ridge	2711 Wilton Ct, Immokalee, FL 34142	(239) 657-8333	N/A	N/A	$ 792	35	100.0%	0						
Immokalee Fair Housing Alliance	2032 Corazon De La Comunidad CIR	TBA	N/A	N/A	N/A	128	TBA	Under Development						
Sub-Total Immokalee		**Median**	**$ 768**	**$ 1,024**	**$ 1,100**	**1,582**	100.0%	**0**	**0**	**6**	**5**	**23**	**45**	**54**
Grand Total		**Median**	**$ 1,700**	**$ 1,925**	**$ 2,200**	**17,880**	**97.9%**	**370**	**370**	**604**	**544**	**121**	**615**	**842**

AHAC Subcommittee Recommendation 01/10/2025
Affordable Housing Rental Unit Tenant Grace Period Policy

If at time of the annual compliance monitoring, a developer/ landlord is found to have a tenant no longer meeting the income requirements, the developer/ landlord has the option of allowing the tenant to remain in the unit for up to and not to exceed a 12-month grace period from the date of the annual monitoring. When a tenant exceeds the income requirements, the developer/ landlord has the option to utilize a floating unit within the development to substitute the unit occupied by the tenant that is no longer income qualifying for an alternative unit within the development that is income qualifying. In all cases, the developer/ landlord shall still be responsible for maintaining the agreed to mix of total number of units per %AMI income categories as approved by the governing documents. Tenant Household Income will be calculated in accordance with LDC Section 2.06.05.B.4. (using most recent filed tax return).

Scenario:

1. A household is initially income qualified to lease an affordable unit.
2. At some point the tenant's income increases pushes them over the income limit.
3. Tenant's new income is reported on their yearly tax return.
4. During the yearly monitoring the tenant is found to be over income.
5. Tenant is put on notice that their household income will be recalculated at the next yearly monitoring, and if still over income, the developer must replace them with an income qualifying household; alternatively, the developer could certify the occupant of an alternate unit.

Existing AHDB LDC Section on How Income is Calculated:

2.06.05.B.4. Income verification. The County Manager or designee or the developer shall obtain written verification from the potential occupant (including the entire household) to verify all regular sources of income to the potential tenant/owner (including the entire household). The written verification form shall include, at a minimum, the purpose of the verification, a statement to release information, employer verification of gross annual income or rate of pay, number of hours worked, frequency of pay, bonuses, tips and commissions and a signature block with the date of application. The verification shall be valid for up to 90 days prior to occupancy. Upon expiration of the 90-day period, the information may be verbally updated from the original sources for an additional 30 days, provided it has been documented by the person preparing the original verification. After this time, a new verification form must be completed. The income verification may take the form of the most recent year's filed income tax return for each occupant who had filed and will occupy the affordable housing unit.

Staff recommendation 01/16/2025 AHAC Meeting
Affordable Housing Rental Unit Tenant Grace Period Policy

Policy Name: Affordable Housing Rental Unit Tenant Grace Period

Purpose: To allow Apartment Managers and Tenants a mechanism that allows greater flexibility and compliance options when a tenant's income increases above required local limits.

Background: It is the desire of Collier County to ensure that Affordable Housing Set-Aside units are occupied by households meeting program requirements. It is also the desire of Collier County to provide local flexibility in compliance monitoring, when possible, by allowing adequate notice and options to tenants and landlords. Members of the community have requested and supported this policy.

Applicability: This Policy shall apply to Affordable Housing Set-Aside units that are restricted by local PUD and/or GMP commitments.

Affordable Units that are subject to other local, State, or Federal restrictions shall abide by the regulations governing those programs.

Policy: All Affordable Housing Set-Aside units shall be monitored annually to ensure compliance with local restrictions.

If at the time of the annual compliance monitoring, a developer/ landlord is found to have a tenant no longer meeting the income requirements, the developer/ landlord has the following options:

1) The landlord and tenant are put on notice that their household income has risen above the maximum allowable limit for an affordable set-aside unit. The landlord and tenant will be given a 12-month grace period during which the tenant's income may be recalculated due to changing household dynamics, HUD Income Limit updates, or other factors. If upon recalculation, the tenant's income comes into compliance, they shall be allowed to stay in the unit and the landlord will be considered in compliance with monitoring regulations.

2) If at the conclusion of the 12-month Grace Period, the tenant's income is still over the limit, the Landlord/Developer may substitute the unit occupied by the tenant that is no longer income-qualifying for an alternative unit within the development that is occupied by a household that is income qualifying ("floating units").

Household Income will be calculated per LDC Section 2.06.05.B.4. (allowing use of the most recently filed income tax return).

NEW RESIDENIAL UNITS APPROVED IN 2024

	Application Number	Project Name	Hearing Date	Outcome: Ordinance/ Resolution /Other	Maximum Number of Residential Dwelling Units Allowed	New Residential Dwelling Units Approved (zoned)	New Affordable Dwelling Units Approved (zoned)	Percentage Affordable	Area Median Income Level (AMI) Commitment
1	PL20220004175	12425 Union Road RPUD	1/9/2024	Res. 2024	109 RU	109	0	0.0%	None
2	PL20220002704	135 Price Street (From A to RSF-2)	6/11/2024	2024-29	3 SF	3	0	0.0%	None
3	PL20220005665	Elanto at Naples RPUD	9/10/2024	2024-31	309 MF	309	31	10.0%	31 units @ 50%
4	PL20230017241	Immokalee One-Stop MPUD	9/10/2024	2024-33	61 MF	61	0	0.0%	None
5	PL20220003804/PL20220003805	JLM Living East Residential Overlay Rural Fringe Mixed Use	9/24/2024	2024-42	305 MF	305	92	30.0%	46 units @ 60% 46 units @ 80%
6	PL20220001011 / PL20220001010	Mattson at Vanderbilt RPUD	10/22/2024	2024-45	150 MF Rental	150	72	30.0%	15 units @ 50% 22 units @ 80% 35 units @ 100%
7	PL20240000904	Ekos Creekside (Fka Ekos on Collier)	10/8/2024	Live Local	160 MF Rental	160	160	100.0%	16 units @ 30% 80 units @ 50% 64 units @ 80%
8	PL20230007874	Tollgate Commercial Center PUD	11/12/2024	2024-47	110 MF Rental	110	33	30.0%	16 units @ 80% 17 units @ 100% 77 units @ 120% Rent Only
9	PL20210003111/ PL202100036112	Fiddler's Creek PUDA	12/10/2024	2024-tba	750	750	225	30.0%	113 @ 80% 112 @ 100%
			2024 New Residential Units Approved			**1,957**	**613**	**31.3%**	

Updated 12.19.24

Recent BCC Actions since 11/19/24 mtg							
12/10/2024	Fiddlers Creek PUDA	750 Rental	225 Affordable	15%@80%	15%@100%	112	113
1/14/2025	Multifamily Parking Discussion	No APRS					
Upcoming Scheduled Pubic Hearings							
1/28/2025 BCC	Tamiami Trail Greenway Rd MPUD	300 Rental	90 Affordable	15%@80%	15%@100%	45	45
2/20/2025 CCPC	Tamiami Trail 58 Acre PUD	400 Rental	120 Affordable	15%@80%	15%@100%	60	60
3/25/2025 BCC	OR	186 Owner	28 Affordable	15%@120%		28	
2/20/2025 CCPC	NC Square MPUD	249 Rental	74 Affordable	15%@80%	15%@100%	37	37
4/8/2025 BCC							
3/6/2025 CCPC	CHP Final Initiatives	Nighttime hearing					

Staff recommendation 01/16/2025 AHAC Meeting ((v2.0))
Affordable Housing Rental Unit Tenant Grace Period Policy

Policy Name: Affordable Housing Rental Unit Tenant Grace Period

Purpose: To allow Apartment Managers and Tenants a mechanism that allows greater flexibility and compliance options when a tenant's income increases above required local limits during the term of their lease.

Background: It is the desire of Collier County to ensure that Affordable Housing Set-Aside units are occupied by households meeting program requirements, as verified and certified by the developer/landlord. It is also the desire of Collier County to provide local flexibility in compliance monitoring, when possible, by allowing adequate notice and options to tenants and developers/landlords. Members of the community have requested and supported this policy.

Applicability: This Policy shall apply to Affordable Housing Set-Aside units that are restricted by local PUD and/or GMP commitments.

Affordable Units that are subject to other local, State, or Federal restrictions shall abide by the regulations governing those programs.

Policy: All Affordable Housing Set-Aside units shall be monitored annually onsite or via desk review to ensure compliance with local restrictions.

Annually, at the time of tenant lease renewal, the developer/landlord shall determine if the tenant continues to meet the household income limits as established by the PUD and/or GMP. If the tenant exceeds the household income limits, the following applies:

1) The developer/landlord puts the tenant on notice that their household income has risen above the maximum allowable limit for an affordable set-aside unit. The tenant will be given a 12-month grace period, from the date of lease renewal, during which the tenant's income may be recalculated due to changing household dynamics, HUD Income Limit updates, or other factors. If upon recalculation, the tenant's income comes into compliance, they shall be allowed to stay in the unit and the developer/landlord will be considered in compliance with monitoring regulations.

2) If at the conclusion of the 12-month Grace Period the tenant's household income still exceeds the limit, the developer/landlord may substitute the unit occupied by the tenant that is no longer income-qualifying for an alternate unit within the development that is occupied by a household that is income-qualifying ("floating units").

If at the time of the annual compliance monitoring, a developer/landlord is found to have a tenant no longer meeting the income requirements, the following applies:

1) The developer/landlord and tenant are put on notice that tenant's household income has risen above the maximum allowable limit for an affordable set-aside unit. The developer/landlord and tenant will be given the remainer of their 12-month grace period during which the tenant's income may be recalculated due to changing household dynamics, HUD Income Limit updates, or other factors. If upon recalculation, the tenant's income comes into compliance, they shall be allowed to stay in the unit and the landlord will be considered in compliance with monitoring regulations.

2) If at the conclusion of the 12-month Grace Period, the tenant's income is still over the limit, the developer/landlord may substitute the unit occupied by the tenant that is no longer income-qualifying for an alternative unit within the development that is occupied by a household that is income qualifying ("floating units").

Household Income will be calculated using of the most recently filed income tax return.

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

January 9, 2025

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Affordable Housing Advisory Committee
Collier County, Florida

January 16, 2025
9:00 A.M.

Notice is hereby given that the **Affordable Housing Advisory Committee** will meet on **Thursday, January 16th at 9:00 a.m.** in Conference Room 609/610 located at 2800 North Horseshoe Dr. Naples, Florida.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting.

Two or more members of the Collier County Planning Commission (CCPC) may be present and may participate at the meeting. The subject matter of this meeting may be a future item for discussion and action at a future CCPC meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Cormac Giblin at (239) 252-2460 or Sarah Harrington at (239) 252-4211.

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Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

January 9, 2025

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Collier County Black Affairs Advisory Board
Collier County, Florida

January 13, 2025
6:00 p.m.

Notice is hereby given that the **Collier County Black Affairs Advisory Board** will meet on **Monday, January 13,** at **6:00 p.m.** in the Golden Gate Community Center, 4701 Golden Gate Pkwy, Naples, Florida.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of that board.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information on this meeting or to apply to become a board member, call Maria Hopkins at (239) 252-8113 or email Maria.Hopkins@colliercountyfl.gov.

###

MINUTES

BLACK AFFAIRS ADVISORY BOARD MEETING
Golden Gate Community Center
4701 Golden Gate Pkwy
Naples, FL 34116
November 18, 2024 / 6:00 PM

Members Present
John Newton (Chair)
Vincent Keeys
Hilda Cececharles
Jean-Paul
Micheal Patterson
Jeris Smith

Members Absent

Staff Present
Maria Hopkins, Public Information Coordinator II / Staff Liaison

Public
Diann Keeys
Cluny Joseph
Keesha Monsmue
Herbert Smith
Phyllis Tylier

I. Call to Order & Welcome

- **The Black Affairs Advisory Board (BAAB) was called to order at 6:15 p.m.**

- **Approval of vacant Black Affairs Advisory Board Applications during the November 18, 2024, meeting, the Black Affairs Advisory Board voted 5-1 to recommend the appointment of the following members:**

  The board voted to approve the following appointments to the Black Affairs Advisory Board:
  - Bessie M Brown to serve until 6/25/2029
  - Jenny Carls Ronald to serve until 06/28/2027
  - Jimmy Bayes to serve until 06/28/2027

  Alternates if the approved members do not accept appointment:
  - Jerry Haynes
  - Sefinew Birhan Mengistu
  - Wilson Lubin

  Vote: 5-1 in favor of the appointments.

Notes:
One Black Affairs Advisory board member recused herself from the vote, expressing concerns about the voting process and advocating for a more standardized and ethical approach to appointing board members.

- **Approve minutes from June 17, 2024, and August 15, 2024**

The board voted to approve the minutes from the following meetings:
  - June 17, 2024
  - August 15, 2024

Vote: 6-0 in favor of approving the minutes.

VI. Upcoming Meetings

No Meeting is scheduled for December 2024.

VII. Adjourn

Having no further business, the meeting was adjourned at 7:34 pm.

Respectfully Submitted:

Maria Hopkins,
Public Information Coordinator II

Approved by:

Chairperson or Designee

MINUTES

BLACK AFFAIRS ADVISORY BOARD MEETING
Golden Gate Community Center
4701 Golden Gate Pkwy
Naples, FL 34116
September 23, 2024 / 6:00 PM

Members Present
John Newton (Chair)
Vincent Keeys
Hilda Cececharles
Jean-Paul
Micheal Patterson
Jeris Smith

Members Absent

Staff Present
Maria Hopkins, Public Information Coordinator II / Staff Liaison

Public
Diann Keeys
Jerry Haynes
Jenny G.R. Joseph
Sharren P Franklin

I. Call to Order & Welcome

- The Black Affairs Advisory Board (BAAB) was called to order at 6:10 p.m.
- Paster Jean-Paul requested assistance in securing a permanent location for his language classes. The board advised him to discuss this matter with the school board and county commissioners, offering to facilitate a meeting if needed.
- Mr. Newton stressed the importance of the board developing a plan with key focus areas such as affordable housing, education, and communication.
- A discussion ensued regarding the target demographic for the board's initiatives. Mr. Keeys emphasized the need for the Black Affairs Advisory Board to be more inclusive and consider the needs of all demographics when advising the Board of County Commissioners.
- Mr. Keeys suggested referencing the 2020 Census data to analyze the county's demographics and better understand community needs.
- Mr. Newton highlighted the importance of effective public communication.

- Maria Hopkins outlined the current emergency communication process, which includes translating all information into Spanish and Creole and disseminating it to local media and external agencies.
- The meeting adjourned at 7:00 p.m.

VI. Upcoming Meetings

The next meeting will be held on October 21, 2024, at 6:00 p.m. at the Golden Gate Community Center.

VII. Adjourn

Having no further business, the meeting was adjourned at 7:00 pm.

Respectfully Submitted:

Maria Hopkins,
Public Information Coordinator II

Approved by:

Chairperson or Designee

AGENDA

BLACK AFFAIRS ADVISORY BOARD MEETING
Golden Gate Community Center
January 13, 2025
6:00 PM

1. CALL TO ORDER AND WELCOME
- **Introductions**

2. OLD BUSINESS
- **Review and Approve minutes from September 23, 2024, and November 18, 2024**

3. NEW BUSINESS
- Naples Black Cemetery project
- MLK events, Black Heritage Month, and events
- Plan for the year (Planning Committee development) to establish whether the board will be "Reactive" or "Proactive"

4. PUBLIC COMMENT

5. MEMBER/STAFF COMMENTS

6. **UPCOMING MEETINGS –** (To be determined)

7. ADJOURN

Collier County

Growth Management Community Development

Development Services Advisory Committee

Land Development Review Subcommittee

Tuesday, October 15, 2024
3:00 pm

2800 N. Horseshoe Dr.
Naples, FL 34104
Growth Management Community Development Department
Conference Room 609/610

If you have any questions or wish to meet with staff, please contact,

Eric Johnson at (239) 252-2931 or Eric.Johnson@colliercountyfl.gov

Collier County

DSAC – Land Development Review Subcommittee

2024 Land Development Code Amendments

Agenda

Tuesday, October 15, 2024

3:00 pm

2800 N. Horseshoe Dr., Naples, FL 34104

Growth Management Community Development, Conference Rooms 609/610

NOTICE:

Persons wishing to speak on any Agenda item will receive up to three (3) minutes unless the Chairman adjusts the time. Speakers are required to fill out a "Speaker Registration Form", list the topic they wish to address, and hand it to the Staff member before the meeting begins. Please wait to be recognized by the Chairman and speak into a microphone. State your name and affiliation before commenting. During the discussion, Committee Members may direct questions to the speaker.

Please silence cell phones and digital devices. There may not be a break in this meeting. Please leave the room to conduct any personal business. All parties participating in the public meeting are to observe Roberts Rules of Order and wait to be recognized by the Chairman. Please speak one at a time and into the microphone so the Hearing Reporter can record all statements being made.

1. Call to order - Chairman.
2. Approval of Agenda
3. Old Business
4. New Business
    a. PL20240009067 Guesthouse Rentals in Urban Estates Page 3
5. Public Speakers
6. Upcoming DSAC-LDR Subcommittee Meeting Dates:
    a. Tuesday, November 19, 2024 – TBD
    b. Tuesday, December 17, 2024 – TBD
7. Adjourn

For more information, please contact Eric Johnson at (239) 252-2931
or at Eric.Johnson@colliercountyfl.gov

LAND DEVELOPMENT CODE AMENDMENT

PETITION
PL20240009067

ORIGIN
Board of County Commissioners (Board)

SUMMARY OF AMENDMENT
This LDC amendment establishes interim regulations for the rental of guesthouses within the Urban Golden Gate Estates. LDC amendments are reviewed by the Board, Collier County Planning Commission (CCPC), Development Services Advisory Committee (DSAC), and the Land Development Review Subcommittee of the DSAC (DSAC-LDR).

HEARING DATES

Board	TBD
CCPC	TBD
DSAC	TBD
DSAC-LDR	TBD

LDC SECTION TO BE AMENDED

2.03.01	Agricultural Districts
5.03.03	Guesthouses

ADVISORY BOARD RECOMMENDATIONS

DSAC-LDR	DSAC	CCPC
TBD	TBD	TBD

BACKGROUND
The provisions for guesthouses were first adopted in 1974 when the Coastal Planning Area District regulations were established. This ordinance defined them as an "accessory dwelling unit," which was to be "used exclusively for the non-commercial accommodation of friends or relatives of the occupant or owner of the principal dwelling." In 1976, the provisions were clarified to prohibit the leasing or renting of a guest accommodation facility and to allow one guest house to be a permitted accessory use in both the Agricultural (A) and Estates (E) zoning districts. Since then, the guesthouse provisions have been amended from time to time, but the prohibition of renting them has remained.

On February 14, 2023, the Board discussed an item sponsored by Commissioner McDaniel that sought to amend the LDC to the allow the rental of guesthouses. During the presentation, Commissioner McDaniel suggested that the rental of guesthouses should be restricted to homesteaded properties located in the urban Estates—the rationale of the restriction being that on-site landlords do a good job of managing the actions of their tenants. The Board members further discussed the prospect of the amending the LDC but later agreed that Commissioner Hall should first discuss the matter with the Affordable Housing Advisory Committee (AHAC) before the Board gives direction to staff.

On May 15, 2023, staff presented the prospect of guesthouse rentals within the Urban Golden Gate Estates to the AHAC. The AHAC supported looking at the rental of guesthouses as a possible solution to the affordable housing shortage within the County. The motion recognized that it was the desire of AHAC to increase supply and to allow this in the Urban Estates. It also was their desire to recommend exploring guesthouse rental for the Rural Estates. Finally, the program should be offered to homesteaded properties (and that the exemption would remain) and that it should be kept at market-rate rents. The AHAC wanted staff to provide the Board with the rent-ranges and the percentage of homesteaded properties out of the 3,559 targeted properties.

On May 14, 2024, the Board discussed Item 11.A. under the County Manager's Report, which was a recommendation to provide staff direction on the Board's request for staff to gather input on the community's desire to allow for the legal renting of guesthouses within the urban Estates Zoning District, based upon the conclusions provided for within the Guesthouse Rental White Paper. By a vote of 4-1, the Board directed staff to move forward with an LDC amendment with the provision in writing of the one-year revisit and a specific

report from Code Enforcement.

The provisions for the Density Rating System in the Future Land Use Element (FLUE) of the Growth Management Plan recognizes that guesthouses are considered accessory dwellings and are not counted toward density. However, the Density Rating System in the FLUE is only applicable to certain geographic areas of the County and yields to either the Immokalee Area Master Plan or Golden Gate Area Master Plan (GGAMP), where applicable, in matters of density and application. The geographic area encompassed by this LDC amendment is located within the jurisdiction of the GGAMP, specifically the Urban Golden Gate Estates Sub-Element. According to the Estates Designation of the Urban Golden Gate Estates Sub-Element of the GGAMP, this designation is characterized by low density semi-rural residential lots within limited opportunities for other land uses. Typical lots are 2.25 acres; however, there are some legal non-conforming lots as small as 1.14 acres. Residential density is limited to a maximum of one unit per 2.25 gross acres, or one unit per legal non-conforming lot of record, exclusive of guesthouses. Multiple family dwelling units, duplexes, and other structures containing two or more principal dwellings are prohibited in all Districts and Subdistricts in the Estates Designation. The density exclusion for guesthouses is also provided for in the Residential Estates Subdistrict of the Estates – Mixed Use District. Since the Urban Golden Gate Estates Sub-Element is silent with respect to the rental of guesthouses, no GMP amendment will be necessary or required to amend the LDC to allow guesthouse rentals in the Estates zoning district.

Transportation Planning staff reviewed the proposed Amendment and anticipates there will be minimal impacts on the road network based on the following findings:

- There are a limited number of parcels effected by the amendment.
- The Urban Subdistrict contains an established road network with major north-south and east-west arterials and collectors.
- Traffic impacts resulting from the rental units should more widely be distributed within the subdistrict compared to traditional PUD developments with single point trip impacts.
- There is a reasonable network of interconnected local-neighborhood roads providing alternative routes.
- There are numerous goods/services/employment opportunities adjacent to this subdistrict area to reduce trip lengths on the network compared to longer rural commuter-residential trips.

FISCAL & OPERATIONAL IMPACTS	**GMP CONSISTENCY**
Fiscal and operational impacts are to be determined.	The proposed LDC amendment has been reviewed by Comprehensive Planning staff and may be deemed consistent with the GGAMP.

EXHIBITS: None

Amend the LDC as follows:

2.03.01 - Agricultural Districts

A. Rural Agricultural District (A). The purpose and intent of the rural agricultural district (A) is to provide lands for agricultural, pastoral, and rural land uses by accommodating traditional agricultural, agricultural related activities and facilities, support facilities related to agricultural needs, and conservation uses. Uses that are generally considered compatible to agricultural uses that would not endanger or damage the agricultural, environmental, potable water, or wildlife resources of the County, are permissible as conditional uses in the A district. The A district corresponds to and implements the Agricultural/Rural land use designation on the future land use map of the Collier County GMP, and in some instances, may occur in the designated urban area. The maximum density permissible in the rural agricultural district within the urban mixed use district shall be guided, in part, by the density rating system contained in the future land use element of the GMP. The maximum density permissible or permitted in A district shall not exceed the density permissible under the density rating system. The maximum density permissible in the A district within the agricultural/rural district of the future land use element of the Collier County GMP shall be consistent with and not exceed the density permissible or permitted under the agricultural/rural district of the future land use element.

1. The following subsections identify the uses that are permissible by right and the uses that are allowable as accessory or conditional uses in the rural agricultural district (A).

* * * * * * * * * * * * *

b. Accessory uses.

* * * * * * * * * * * * *

6. One guesthouse ~~Guesthouses~~, subject to LDC section 5.03.03.

* * * * * * * * * * * * *
\# \# \# \# \# \# \# \# \# \# \# \# \#

5.03.03 – Guesthouses

Where a guesthouse is an allowable use, it shall be permitted only in compliance with the following standards. See LDC section 1.08.02 Guesthouse for additional information.

A. No guest accommodation facility in a single-family residential district, whether a freestanding guest house or guest accommodations which are structurally integrated with the main dwelling, may be utilized for commercial purposes.

B. Leasing or renting a guest accommodation facility shall constitute a violation of this LDC, except as provided for in LDC section 5.03.03 F.

C. If the principal dwelling ~~a main residence~~ is leased or rented, a guest accommodation facility accessory to it may not be occupied by the property owner, since that would constitute the unlawful utilization of single-family zoned property for two-family dwelling purposes.

D. The following site design standards apply to all guest-houses:

1. Minimum lot area shall be 43,560 square feet.

2. Minimum lot width shall be 105 feet.

3. The maximum floor area shall be forty (40) percent of the air-conditioned, enclosed living area (excluding garages, carports, patios, porches, utility areas, and the like) of the principal dwelling.

4. Detached guest-houses shall not be closer than twenty (20) feet to the principal dwelling.

E. A guesthouse may be constructed prior to a principal dwelling, provided the guest house meets the minimum requirements of a single-family residence in the district in which it is being constructed. At such time as a principal residence is constructed, then the floor area percentages listed above shall apply.

F. The leasing or renting of a guesthouse shall be prohibited unless the following requirements are met:

1. The subject property is located within the Estates (E) zoning district west of Collier Boulevard.

2. The subject property is owner-occupied where the landlord, as defined by Florida Statutes section 83.43, makes permanent residence within the principal dwelling and to whom a homestead exemption, as defined in Florida Statutes section 196.031, has been granted and continues or remains.

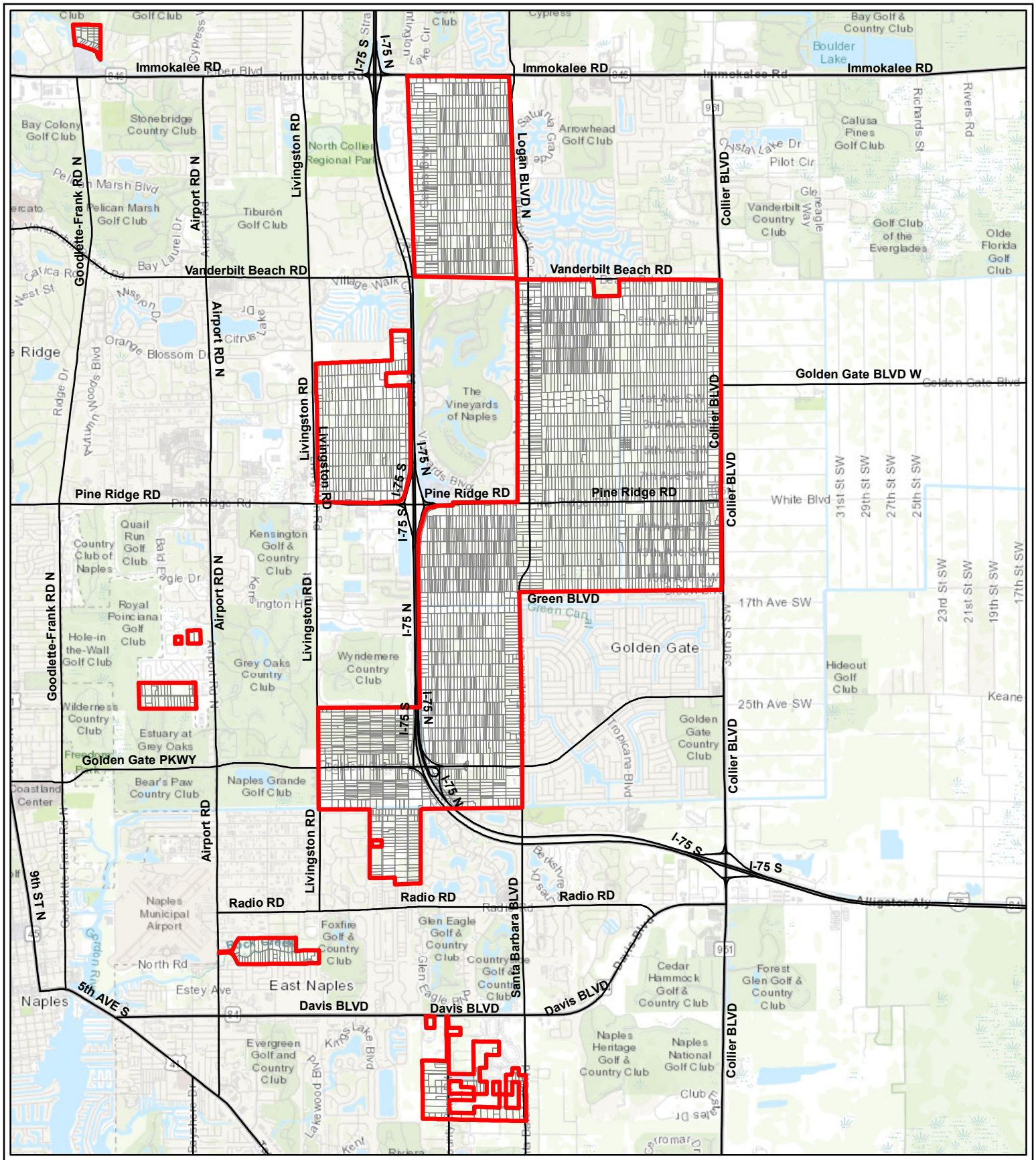
3. If the Property Appraiser determines the landlord is no longer eligible, entitled, or qualified to receive the homestead exemption, the continued leasing or renting of the guesthouse shall constitute an unlawful utilization of the guesthouse, effective upon the date when the Property Appraiser provides written notification via certified letter of the denial of the homestead exemption.

4. The guesthouse must contain sleeping facilities, a bathroom, and a kitchen.

5. A minimum of one off-street parking space shall be required for each guesthouse permitted under this subsection.

6. The Administrative Code for Land Development shall establish the process and application submittal requirements to lease or rent a guesthouse under this section.

# # # # # # # # # # # #



Collier County
Growth Management
Community Development Department

Date: 7/29/2024

Guest House Study Area
(Estates zoned parcels west of Collier Blvd.)

Parcels

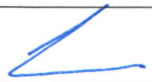
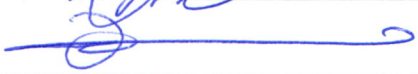
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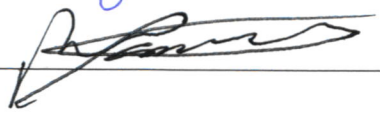
Document Path: M:\GIS_Requests\2024\07-July\GSD-43562 Map of Golden Gate Estates (EricJohnson)\MXD\Final Guide Study Boundary.mxd

Attendance Roster – Date: October 15, 2024

DSAC – Land Development Review Subcommittee

Must have (3) members for a quorum

Committee Members	
Name	**Signature**
Clay Brooker:	
Blair Foley:	
Robert Mulhere:	
Mark McLean:	
Jeffrey Curl:	

Staff Members	
Mike Bosi, Planning and Zoning Division Director	
Eric Johnson, LDC Planning Manager	
Richard Henderlong, Planner III	
Josephine Medina, Planner III	
Angela Galiano, Planner II	
Rey Torres Fuentes, Operations Support Specialist I	

Attendance Roster – Date: October 15, 2024

DSAC – Land Development Review Subcommittee

Public Sign-in Sheet

Please Print

jillfrosenfeld@gmail.com

NAME	REPRESENTING	PHONE NO.
JILL ROSENFELD	Self	201.540-9844
Cheryl Konesol	self	249 352 0703

PLEASE PRINT CLEARLY

Collier County
Growth Management Community Development

Agenda Item No.: 4 **Agenda Item Topic:** Guest House Rentals
(For Public Comment, list topic)

Meeting Date: 10/15/24

Name: JILL ROSENFELD Address: 2230 10TH AVE NE

Representing/Petitioner: SELF Other:

COLLIER COUNTY ORDINANCE NO. 2003-53, AS AMENDED BY ORDINANCE 2004-05 AND 2007-24, REQUIRES THAT ALL LOBBYISTS SHALL, BEFORE ENGAGING IN ANY LOBBYING ACTIVITIES (INCLUDING, BUT NOT LIMITED TO, ADDRESSING THE BOARD OF COUNTY COMMISSIONERS), REGISTER WITH THE CLERK TO THE BOARD AT THE BOARD MINUTES AND RECORDS DEPARTMENT.

YOU ARE LIMITED TO THREE (3) MINUTES FOR YOUR COMMENTS AND ARE TO ADDRESS ONLY THE CHAIR.

PUBLIC COMMENT IS NOT INTENDED TO BE A FORUM FOR SELF-PROMOTION. PUBLIC COMMENT SPEAKERS WHO ENGAGE IN ADVERTISING THEIR BUSINESS, PERSONAL POLITICKING, OR OTHER FORMS OF SELF-PROMOTION, WILL BE ASKED TO LEAVE THE PODIUM.

PLEASE GIVE THE COMPLETED FORM TO THE STAFF LIAISON.

PLEASE PRINT CLEARLY

Collier County

Growth Management Community Development

Agenda Item No.: _____ **Agenda Item Topic:** _____

Meeting Date: 10/15/24 (For Public Comment, list topic) _____

Name: Chery l Koncso l Address: 5631 STANDING OAKS CN

Representing/Petitioner: Self Other: _____

COLLIER COUNTY ORDINANCE NO. 2003-53, AS AMENDED BY ORDINANCE 2004-05 AND 2007-24, REQUIRES THAT ALL LOBBYISTS SHALL, BEFORE ENGAGING IN ANY LOBBYING ACTIVITIES (INCLUDING, BUT NOT LIMITED TO, ADDRESSING THE BOARD OF COUNTY COMMISSIONERS), REGISTER WITH THE CLERK TO THE BOARD AT THE BOARD MINUTES AND RECORDS DEPARTMENT.

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PLEASE GIVE THE COMPLETED FORM TO THE STAFF LIAISON.

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

October 3, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Development Services Advisory Committee
Land Development Review Subcommittee
Collier County, Florida

October 15, 2024
3:00 p.m.

Notice is hereby given that the **Collier County Development Services Advisory Committee - Land Development Review Subcommittee (DSAC-LDR)** will meet on **Tuesday, October 15,** at **3:00 p.m.** in Conference Room 609/610 of the Growth Management Community Development Department building, 2800 N. Horseshoe Drive, Naples, Florida.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item.

About the public meeting:
Two or more members of the Board of County Commissioners and the Development Services Advisory Committee may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting or Development Services Advisory Committee meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380 as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Eric Johnson at (239) 252-2931.

###

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

December 10, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Development Services Advisory Committee
Land Development Review Subcommittee
Collier County, Florida
CANCELED

December 17, 2024
3:30 p.m.

Notice is hereby given that the **Collier County Development Services Advisory Committee - Land Development Review Subcommittee (DSAC-LDR)** meeting scheduled for **Tuesday, December 17, 2024** at **3:30 p.m.** in Conference Room 609/610 of the Growth Management Community Development Department building, 2800 N. Horseshoe Drive, Naples, Florida, 34104 has been canceled.

For more information, call Heather Cartwright-Yilmaz at (239) 252-8389.

###

Collier County

Growth Management Community Development

Development Services Advisory Committee

Utility Subcommittee

Tuesday, October 29, 2024
2:00 pm

2800 N. Horseshoe Dr.
Naples, FL 34104
Growth Management Community Development Department
Conference Room 609/610

If you have any questions or wish to meet with staff, please contact,

Rey Torres Fuentes at (239) 252-5727 or
Rey.TorresFuentes@colliercountyfl.gov

Collier County

Development Services Advisory Committee

Utility Subcommittee

Agenda
Tuesday, October 29, 2024
2:00 pm
2800 N. Horseshoe Dr., Naples, FL 34104
Growth Management Community Development, Conference Rooms 609/610

NOTICE:
Persons wishing to speak on any Agenda item will receive up to three (3) minutes unless the Chairman adjusts the time. Speakers are required to fill out a "Speaker Registration Form", list the topic they wish to address, and hand it to the Staff member before the meeting begins. Please wait to be recognized by the Chairman and speak into a microphone. State your name and affiliation before commenting. During the discussion, Committee Members may direct questions to the speaker.

Please silence cell phones and digital devices. There may not be a break in this meeting. Please leave the room to conduct any personal business. All parties participating in the public meeting are to observe Roberts Rules of Order and wait to be recognized by the Chairman. Please speak one at a time and into the microphone so the Hearing Reporter can record all statements being made.

1. Call to order - Chairman.
2. Approval of Agenda
3. New Business
    a. Revision to the Utilities Standard Manual
4. Old Business
5. Public Speakers
6. Adjourn

For more information, please contact Rey Torres Fuentes at (239) 252-5727
or at Rey.TorresFuentes@colliercountyfl.gov

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
Introduction			
1	Introduction	Modified third paragraph to 'introduction' explaining PE responsibilities. Web page reference change.	None
Section 1 – Design Criteria			
2	Cover Page	Web page reference change.	None
3	Table of Contents	Modified Table of Contents to reflect changes and correct scrivener's errors.	None
4	3.3 Wastewater pump stations	Revised section 3.3 Wastewater Pump Stations. Added section 3.3.1 Private Pump Stations.	None
Section 2 - Technical Specifications			
5	Cover Page	Web page reference change.	None
6	Table of Contents	Modified Table of Contents to reflect changes.	None
7	017839 Project Record Documents	Corrected scrivener's error on paragraph 1.3.C. Added notes m and n to part (3.2 B.6) identifying that m) meter boxes and n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables shall be depicted from source to County asset found in associated rights-of-way and utility easements be included on record drawings.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
8	020500	Connections to existing systems	Revised section 1.3 General Requirements (F.2 and F.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
9	221336	Diesel Backup Pump	Add sections 1.1 B, 2.5A, and 2.5B on platform requirements.	$10,000 - $30,000 Depending on site
10	263213.13	Standby Diesel Generators	Add sections 1.01.A.12, 2.05A, 2.05B, and 2.05C on platform requirements.	$10,000 - $30,000 Depending on site
11	330518	Laying and jointing buried pipelines	Changed language in Part 3.2 A.2. to decrease vertical dip tolerance from 1.5” to 1.0”.	None
12	331619	Hydrants	Revised section 3.1 A to indicate that hydrant clearance shall be based upon manufacturers recommendations.	None
13	312316	Excavation – Earth and Rock	Revised section 1.4 Site Conditions (C.2 and C.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
14	330502	High Density Polyethylene (HDPE) Pipe and Fittings	Revised section 2.1A eliminating PE3408 and added PE4710. Revised section 2.1F eliminating PE3408 and added PE4710. Removed cell classification 345434C and 345434E and added cell classifications 445574C and 445574E.	None
15	333200	Pump Stations	Added language to 1.1 SCOPE OF WORK ‘FOR COUNTY PUMP STATIONS’. Added language to 1.1.A. This section includes the following items for ‘COUNTY owned and operated pump stations:’	None
16	333200	Pump Stations	Add section 1.2 ‘Scope of Work for Private Grinder Pump Stations’	None
17	333200	Pump Stations	Add language to 1.1F to include gates.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
18	333200	Pump Stations	Added communications (1.1G.) note requesting letter of availability	None
19	333200	Pump Stations	Add sections 1.1 H, 2.1 R, and 2.1 S on platform requirements.	$10,000 - $30,000 Depending on site
20	333200	Pump Stations	Add 'For County Pump Stations' to section 2.1 heading.	None
21	333200	Pump Stations	Revised section 2.1 J. Added language for 2-Watt digital radio. Added pump controller type to be utilized.	None
22	333200	Pump Stations	Added section 2.2 'Materials for Private Pump Stations'. Added section 3.1 'Installation'.	None
23	409500	Fiber-Optic Communication Standards	New Fiber-Optic Communication Standards	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
Section 3 - Utilities Detail Drawings				
24	Cover Page		Web page reference change.	None
25	Table of Contents		Modified Table of Contents to reflect changes and correct scrivener's errors.	None
26	Various Details – Title Block Addition		Collier County title block added to details: G-1, G-4, G-5, G-6, G-10, NP-E1, NP-E2, NP-E3, NP-E4, NP-E5, NP-E6, NP-E7, NP-E8, NP-E9, W-5, W-6, W-11A, W-16, WW-1, WW-4, WW-5, WW-6, WW-10, WW-15, WW-16, WW-17, WW-18, WW-18A.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
27	G-10	Pipe Restraint Schedule	The detail was modified to include additional restrained pipe length tables for vertical bends.	None
28	G-12	IT Fiber-Optic Telecommunications	New Detail	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
29	W-1	Temporary Blowoff Assembly with Bacterial Sample Point Detail	Corrected PDF to reflect 2014 revision.	None
30	W-2	Automatic Water Main Flushing Device Detail	Corrected PDF to reflect 2014 revision.	None
31	W-3	Fire Hydrant Detail	Replaced FH connection point range (MIN 18", MAX 24") with note 'Height of the hydrant was set based upon manufacturers recommendation'.	None
32	W-3	Fire Hydrant Detail	Added distance from EOP/Curb to fire hydrant based on rural or urban area.	None
33	W-6	Permanent Bacterial Sample Point Detail	Brass models added to approved product list. Stainless steel models removed.	Potential cost savings
34	W-12	Typical short and long side water service meter setting detail for connection to water main	Temporary construction fence graphic added around the water meter boxes, with note referencing 'Note 8' on Detail W-12A. Revised meter callout to 'AMI/AMR meter'.	$200/installation
35	W-12A	Service connection sizing chart and notes	Added note # 8 to Equipment Specifications, calling out temporary construction fence installation.	$200/installation
36	W-13	3" and over potable water meter assembly detail	Added note # 9 to Equipment Specifications including maintenance access in County CUE or R/W.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
37	W-14	4" and over potable water fire and domestic meter assembly detail	Added note #10 to Equipment Specifications including maintenance access in County CUE or R/W.	None
38	WW-2	Private Force Main Connection to County Force Main Detail	Corrected PDF to reflect 2018 revision.	None
39	WW-3	Precast reinforced concrete manhole detail	Removed rebar callouts on MH sidewall and base slab. Replaced with ASTM callouts. Added min slab and sidewall thicknesses notes.	None
40	WW-4	Shallow manhole detail	Removed rebar callouts on MH sidewall and base slab. Replaced with ASTM callouts. Added min slab and sidewall thicknesses notes.	None
41	WW-5	Drop manhole detail	Removed rebar callouts on MH sidewall and base slab. Replaced with ASTM callouts. Added min slab and sidewall thicknesses notes.	None
42	WW-6	Manhole ring and cover detail	Updated new required manhole dimensions.	None
43	WW-6	Manhole ring and cover detail	Added note to call out for revised ring and cover models.	None
44	WW-7	Pump Station Detail - Profile	Mark # 3 for access door was modified by adding, '(Opposite discharge piping)'. Also added to detail callout.	None
45	WW-7	Pump Station Detail - Profile	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
46	WW-7	Pump Station Detail - Profile	Mark # 7 was modified by adding the sentence 'RAM-NEK may be used in lieu of o-ring rubber gaskets (see specification Section 034100)'.	None
47	WW-7	Pump Station Detail - Profile	Mark #7 was modified by adding the sentence, 'Pump Station wetwell shall be designed by a Florida Professional Engineer and signed and sealed shop drawings shall be submitted.'	None. Already a requirement

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
48	WW-7	Pump Station Detail - Profile	Mark # 8 was modified by adding the text ‘with external weight/lever’.	None
49	WW-7	Pump Station Detail - Profile	Added reference to plan sheets under profile callout ‘Section A-A’.	None
50	WW-7	Pump Station Detail - Profile	Removed rebar callouts for base slab and top slab. Added note, ‘Wall reinforcing per ASTM C-478. Added note, ‘Top slab, 8” min thickness’. Revised footer dimension to ‘A+32” min’. Added mark references.	None
51	WW-7D	Private Grinder Pump Station Detail	Detail added to County detail set.	None
52	WW-8	Pump Station Detail - Plan	Mark # 4 was modified by adding the sentence ‘No spacers permitted between check and plug valves’.	None
53	WW-8	Pump Station Detail - Plan	Mark # 8 was modified by adding the text “with external weight/lever”.	None
54	WW-8	Pump Station Detail - Plan	Mark # 14 was modified by adding the sentence “Single door panels to open away from wetwell”.	None
55	WW-8	Pump Station Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top.	Potential cost savings
56	WW-8	Pump Station Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
57	WW-8	Pump Station Detail - Plan	Note added next to Dimension Table, ‘(To be completed by EOR)’.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
58	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
59	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
60	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
61	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 10 was added: "IT telecommunications panel: See technical specification 409500 and detail G-12, where applicable". IT telecommunications graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
62	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
63	WW-8A	Community Pump Station with Generator Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top.	Potential cost savings
64	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
65	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
66	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 2 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
67	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 4 was modified by adding the sentence "No spacers permitted between check and plug valves".	None
68	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
69	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
70	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
71	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt.	Potential cost savings
72	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	An additional concrete post was added to the control panel.	Approx. $500

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
73	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
74	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
75	WW-9	Pump Station Control Panel Detail	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
76	WW-9	Pump Station Control Panel Detail	Added callouts to details: 'Square D Powerblocks to be installed in j-box' & 'Plastic Unistrut endcap callout'	$50/pump station for Square D Powerblocks
77	WW-9	Pump Station Control Panel Detail	Note # 9 was added: "Side panel penetrations are acceptable with the use of Myers Hubs".	$250.00/Hub (Only used when necessary)
78	WW-9	Pump Station Control Panel Detail	Note # 10 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
79	WW-9	Pump Station Control Panel Detail	Note # 11 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station
80	WW-9	Pump Station Control Panel Detail	Note # 12 was added: ''All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware".	None
81	WW-9	Pump Station Control Panel Detail	Note # 13 was added: "All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner".	None
82	WW-9	Pump Station Control Panel Detail	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
83	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
84	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
85	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Added callout to detail: ‘Square D Powerblocks to be utilized in j-box’.	$50/pump station
86	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 8 was added: “Side panel penetrations are acceptable with the use of Myers Hubs”	$250.00/Hub (Only used when necessary)
87	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 9 was added: “Phase monitor to be installed parallel with FPL meter (on FPL side)”.	$100-$350/Monitor (Prices vary with voltages)
88	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 10 was added: “CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings”. Updated detail to show fittings under control panel.	$50/pump station
89	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
90	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
91	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
92	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
93	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
94	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
95	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Added callout to detail: 'Square D Powerblocks to be utilized in j-box'.	$50/pump station
96	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 8 was added: "Side panel penetrations are acceptable with the use of Myers Hubs"	$250.00/Hub (Only used when necessary)
97	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 9 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
98	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 10 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
99	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
100	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
101	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None
102	WW-12	Sewer Clean-out Detail - Non Paved Areas	Corrected PDF to reflect 2014 revision.	None
Section 4 – Appendices				
103	Cover Page		Web page reference change.	None
104	Table of Contents		Modified Table of Contents to reflect changes	None

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
105	Appendix B Water Meter Sizing Form	The demand range table on the Water meter sizing form (pg.1) was updated and taken from AWWA M22 Table 6-1 (Third Edition). The flow ranges for 3/4", 1", 1 ½", and 2" meter sizes are flow ranges for positive displacement meters. The flow ranges for 3", 4", 6", 8" and 10" meter sizes are flow ranges for turbine class II meters. (This table can vary depending on meter type). Modified language on signature line (pg.1). Replaced 'Stamp' with 'Seal'. The fixture flow value worksheet (pg.2) was updated and taken from the Florida Building Code (2023 Edition).	None
106	Appendix F Approved Products List	• Appendix F was revised to include new products that are to be placed on the approved product list.	Approx. $100 increase for water and IQ meter boxes (only identified fiscal impact to Developers)
107	Appendix G Approved Backflow Devices	• Added LF to models that are used in residential service and available in both Lead Free and Not Lead Free • Changed 4000B-LBV (less ball valve) to 4000B so all models in that section are comparable and include ball valves • Deleted 4000B-FP since it is not available lead free and this section serves residential requiring lead free • Deleted OSY on 975XL since it is not available lead free – All models in that section would include ball valves – No one offers a lead free ¾" – 2" OSY valve • Changed Wilkins model number to include bypass 950XLTDA – All models in this section are not lead free since these are dedicated Fire Lines – This is allowable – All models shown are standard w/OSY valves • Added large diameter stainless models	None
108	Appendix H IQ User Application and Agreement	Added basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water	None

INTRODUCTION

This Manual has been established by action of the Board of County Commissioners and is authorized by County Ordinance 2004-31, as amended.

This Utilities Standards Manual has been prepared to guide the design, construction, and asset management of potable water, non-potable irrigation water, and wastewater system extensions to Collier County Water-Sewer District (COUNTY) utilities; the Manual applies to utilities in new developments in the County, as well as County Projects involving utilities.

The following standards shall be included in the design and preparation of plans and specifications for all utilities construction projects for Collier County, including utilities and services connected to the COUNTY's utilities systems or constructed for future transfer of ownership to the COUNTY. These standards are provided for uniformity in utilities construction within Collier County, and represent MINIMUM standards acceptable to the COUNTY. The Engineer of Record shall review these MINIMUM standards for applicability and acceptance for the proposed construction project. Where necessary, additional design features shall be provided to prevent system failures, severe damage to other property or serious injury to persons. The Engineer of Record shall be responsible for the specific project under their control.

Not all specification details may apply to an individual project; however, approval of utilities construction within Collier County will require conformance to applicable requirements of these specifications. Approval of any deviation from the specifications must be obtained utilizing the appropriate form included in Appendix A, Utility Deviation Form.

NOTE: Go to Collier County Public Utilities Engineering and Project Management Resources Webpage for the latest revisions to the Utilities Standards Manual.

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SECTION 1

DESIGN CRITERIA

For the latest revisions to the Design Criteria, please visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

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DESIGN CRITERIA

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PART 1 GENERAL

1.1. Pipeline Separation Requirements

1. Potable water pipelines shall be separated from wastewater lines and /or stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. The 18 inches minimum vertical separation distance does not apply to separations of sewer laterals and potable water pipeline installations. 57 stone shall be utilized for separation between wastewater lines and stormwater lines if separation is less than 18 inches.

2. Non-potable irrigation water pipelines two inches and larger shall be separated from potable water mains, wastewater lines and/or stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of five feet as shown in the Utilities Detail Drawings.

3. Wastewater lines shall be separated from stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of five feet. All pipeline crossings with vertical clearance less than 18 inches shall be made using a full 20 foot length of thickness Class 200 AWWA C900 PVC pipe or Class 235 AWWA C905 PVC pipe, centered on the crossing. The sewer pipe in these locations shall be back-filled with bedding stone or sand to a height six inches above the crown of the pipe.

4. Potable water, non-potable irrigation water, and wastewater pipelines shall be separated from telephone, power, cable and gas sleeves/lines and any other underground utilities by a minimum clear vertical distance of 18 inches and horizontal distance of five feet.

5. Potable water, non-potable irrigation water, and wastewater lines shall be separated from raw water mains by a clear vertical distance of 18 inches and a horizontal distance of 10 feet. Stormwater lines shall be separated from raw water mains by a clear vertical distance of 18 inches and a horizontal distance of five feet.

6. Wastewater lines shall be separated from public drinking water supply wells by a horizontal distance of 100 feet. Wastewater lines shall be separated from private drinking water supply wells by a horizontal distance of 75 feet.

7. Also see separation requirements in Section 020500, 1.3.F.

8. Potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a minimum setback of five feet from the centerline of the pipe to residential roadways, curb and gutters, structures, fence posts, walls, or plantings not specifically allowed by ordinance. Also, potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a minimum setback of 10 feet from the centerline of the pipe to a building and shall not be placed beneath any existing or proposed building or structure. Additionally, potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a five-foot minimum setback from the center line of pipe to the edge of a right of way (ROW) or County utility easement (CUE), unless there is an adjacent CUE.

1.2. Horizontal Directional Drilling

When horizontal directional drilling is used on any capital improvement project for the Public Utilities Department, detailed construction drawings shall be prepared by a Licensed

Professional Engineer registered in the State of Florida which, at a minimum, show the following information:

1. The proposed entry and exit point of the drill
2. The overall geometry of the drill include entry and exit angles, minimum and maximum bending radii, and the horizontal and vertical path of the drill
3. The minimum and maximum depth of the drill
4. Minimum separation distances between adjacent pipes, structures, watercourses, etc.
5. The estimated pull back force required for the drill

The design Engineer shall calculate the estimated pull back force required for the directional drill and ensure that it does not exceed the maximum allowable safe pull back forces as defined by the Plastic Pipe Institute's (PPI) Handbook for Polyethylene Pipe, Chapter 12 – Horizontal Directional Drilling.

		Safe Pull Back Force, lbs.	
Size	Nom. OD	DR 9	DR 11
4	4.800	8,217	6,876
6	6.900	16,980	14,208
8	9.050	29,210	24,442
10	11.100	43,942	36,770
12	13.200	62,141	51,998
14	15.300	83,486	69,859
16	17.400	107,977	90,353
18	19.500	135,613	113,478
20	21.600	166,395	139,235
24	25.800	237,395	198,647
30	32.000	365,201	305,592
36	38.300	N.A.	437,764

Source: Table 6, "PE4xxx 12 hour Pull DIPS Size", *Handbook for Polyethylene Pipe, Second Edition,* Plastic Pipe Institute

PART 2 POTABLE WATER AND NON-POTABLE IRRIGATION WATER SYSTEMS

All potable water, non-potable irrigation (including reclaimed or reuse) water and raw water pipe, material, equipment and appurtenances shall be new, and shall conform to Section 2, Technical Specifications and Section 3, Utilities Detail Drawings.

All material and equipment designed or used in connection with a potable (drinking) water system shall conform to the requirements of the National Sanitation Foundation (NSF) Standard 61, "Drinking Water System Components – Health Effects" and the Reduction of Lead in Drinking Water Act amending the Safe Drinking Water Act.

2.1 Pipe and Fitting Material

All potable water or non-potable irrigation water pipelines shall be constructed of ductile iron, HDPE, or PVC pipe, and shall utilize pipe meeting the requirements of the Technical Specifications. HDPE shall not be used for pipelines with service connections.

All pipe and pipe fittings shall contain no lead pursuant to the Reduction in Lead in Drinking Water Act. All pipe and pipe fittings installed shall be color coded or marked in accordance with F.A.C. 62-555.320(21)(b)3.

Potable water pipelines shall be blue in color. Raw water pipelines shall be white in color. Non-potable irrigation, reclaimed, and reuse water pipelines shall be pantone purple in color.

All Ductile Iron buried water main pipelines shall have blue stripes applied to the pipe wall. If tape or paint is used to stripe pipe during installation, the tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe.

All buried water pipelines and mains, except those installed by horizontal directional drilling or jack-and-bore methods, shall be marked using metalized warning tape for HDPE and PVC pipe and non-magnetic for ductile iron pipe. The locator tape shall be placed in the pipe trench two feet below grade or one-half the pipe's bury, whichever is less, and labeled "potable water" or "non-potable water" as applicable. Horizontal directional drilling shall include installation of at least two locating tone wires as described in the Technical Specifications.

All water main aerial crossings shall be Pressure Class 350 flanged ductile iron pipe and shall be coated on the exterior using a suitable grade of appropriately colored, field applied (or factory applied with field touch-up as required) epoxy coating. Potable water mains shall be painted Federal Safety Blue. Raw water mains shall be painted white. Non-potable irrigation, reclaimed, and reuse water mains shall be painted Pantone Purple 522C. Specific colors shall be subject to approval of the County Manager or designee. All nuts and bolts used in aerial crossings shall be stainless steel. All canal, river, or creek crossings shall be aerial, unless otherwise approved by the County Manager or designee. Aerial crossings shall be designed to incorporate valves or other flow regulation devices in accordance with F.A.C. 62-555.320(21)(b). Aerial crossings shall be designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property Owners. Submit aerial pipe and flange computations, including support and anchor design, for review. The submittal must be signed and sealed by a Florida registered Licensed Professional Engineer.

2.2 Design of Pipeline Size and Location

2.2.1 Water Pipeline Sizing Criteria

All potable water mains to be maintained by the COUNTY shall be a minimum of six inches in diameter. Hydraulic calculations shall show the capability of maintaining required fire flow (according to NFPA 1) plus potable demand as required below.

Water systems shall be designed to maintain adequate flows and pressures and water quality standards as established by Florida Department of Environmental Protection (FDEP). The following criteria shall be used to design water systems and analyze model chloramine dissipation:

A. Minimum residual node pressure within a proposed project system shall be 20 psi under peak hour with fire flow conditions, assuming a source pressure verified by the results of a fire flow test not older than six months. The design source pressure shall be calculated as follows: $P_d = P_s - (P_s - P_r) (D / Q)^{1.85}$, where P_d is the design source pressure (i.e. theoretical residual pressure for the design demand), P_s is the static pressure from the fire flow test, P_r is the residual pressure from the fire flow test, D is the design demand (i.e. peak hour demand plus required fire flow), and Q is the flow rate from the fire flow test.

B. The design Engineer shall model the proposed system, including all dead ends, for chloramine dissipation and assume a chloramine residual of 2.0 ppm at the entrance point to the project.

C. When estimating potable water demands multiply the estimated wastewater flows from Part 3 Wastewater Collection and Transmission Systems by 1.4.

D. The standard chloramine decay rate is - 0.012 ppm per hour. Using the decay rate and solving for the elapsed time from the initial chloramine level to the minimum chloramine level residual of 0.6 ppm in the following: 0.6 ppm = 2.0 ppm x e^(-0.012 ppm x #hours) => time = 100.33 hours.

The Project Engineer shall submit an analysis to the Growth Management Department as part of the review package, certifying that all points within the proposed system shall maintain a minimum level of 0.6 ppm chloramine residual under the conditions listed above.

Systems unable to meet minimum design requirements or maintain minimum chloramine residual levels shall not be eligible for ownership and maintenance by the COUNTY.

Water mains not designed to carry fire flows shall not have fire hydrants connected to them.

2.2.2 Distribution System Layout

Potable and non-potable irrigation water pipelines and fittings, except for service piping, shall have a minimum depth of 30 inches and a maximum depth of 48 inches below finished grade.

Water distribution systems shall be designed so that all systems are located adjacent to, and are accessible from, paved or unpaved roadways so as to allow access for short and long term maintenance, repair, and/or replacement of such system.

New potable water distribution systems shall be designed as “looped” systems to avoid dead ends. A “looped” system should have two independent connections off the source main (unless served by a master meter). If two independent connections aren’t possible, a stub out for future development in a location agreed to by the County shall be provided in an easement or ROW to the limits of the project. In cases where no nearby water main is available for looping, a County approved automatic flushing device (AFD) shall be provided at each dead end of a water main. An AFD shall also be provided near the mid-point of a looped water main unless the design engineer can provide information to confirm that the minimum residual chlorine will be maintained based on the predicted water consumption at the time of County acceptance of the water main. At no time shall a dead end serve more than 149 residential units. On dead end water mains that do not have service connections, no automatic flushing devices are required.

Installation of the automatic flushing devices shall be designed so as to prevent erosion of nearby areas as well as prevent silt and sediment transport.

All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development. Master meters and backflow assemblies shall be located within a County Utility Easement (CUE), which shall be located outside of, but contiguous to, the road Right-Of-Way (ROW).

Deviations from these design parameters shall only be approved in cases where such installations can be shown to be necessary in order to comply with minimum chlorine residuals or other FDEP quality parameters, unless otherwise approved by the County Manager or designee. In such cases, the water main shall be located within a separate tract of land or CUE dedicated to the Water-Sewer District. Such tracts shall be delineated with fencing, landscaping, signage, pavement, or other methods determined to be acceptable to the Water-Sewer District. All such installations shall require approval from the Water-Sewer District. In addition, an agreement shall be provided authorizing the COUNTY to traverse all private property outside of the CUE for the purpose of access, maintenance, repair, and/or replacement of such main. The agreement shall also hold the COUNTY harmless for any damage to the private property resulting from the COUNTY’s maintenance, repair and/or replacement activities within or outside of the CUE.

The encasement of potable water mains in concrete shall only be made after review and approval by the County Manager or designee.

2.2.3 Valve Locations

Valves shall be provided at all intersections and branches in sufficient numbers as to allow for zone isolation of distribution areas in order to limit impacts of line breaks and service disruptions to customers. In-line gate valves shall be provided in accordance with AWWA requirements and at no greater than 1,000 foot intervals when no other valves exist within internal distribution systems. All gate valves 20 inches and smaller shall be of the resilient-seated wedge type, conforming to AWWA C509 or C515, or latest revisions thereof. All gate valves or plug valves 30 inches or larger shall have a concrete slab placed under the valve to help distribute the total weight of the valve and reduce line sagging. See Technical Specifications 331200 2.3.A.2. All valves shall be furnished with valve boxes extending to finished grade as shown in the Utilities Detail Drawings (G-7).

2.3 Conflict Crossings

All storm sewer, non-potable irrigation water mains, and wastewater transmission system conflicts with water systems or portion(s) thereof that must be crossed shall be performed using AWWA C900 Class 200 or C905 Class 235 PVC with ductile iron fittings. All fittings shall be adequately restrained using retainer glands, stainless steel rods, or see County Approved Product List, Appendix F. Transitional fittings, when approved by the County Manager or designee, shall be located as close to the point of conflict as possible. Air release assemblies shall be provided as specified in Subsection 2.7 herein, below. Gradual deflection of the water line in lieu of using fittings to clear the conflict shall not be permitted if cover exceeds five feet. A minimum vertical clearance of 18 inches shall be provided between the water main and bottom of conflict. A deviation form will not be required for separation of sewer laterals and potable water pipeline. Maximum depth of 48 inches below final grade is exempt when dipping under conflicts in which case the water main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less.

2.3.1 Subaqueous Canal Crossings

Potable and non-potable subaqueous crossings shall be designed to a minimum depth of 36 inches below the design or actual bottom, whichever is deeper, of a canal and other dredged waterway or the natural bottom of streams, rivers, estuaries, bays, and other natural water bodies. If not practical to design the project with a minimum 36 inch cover, alternative construction features must be installed to ensure adequate protection of the pipeline.

All subaqueous crossings must be introduced/discussed at a plan Pre-Submittal Conference. It is important that representatives from the Water Department or Wastewater Department and GMD be present for approval at the plan Pre-Submittal Conference.

A permanent easement is needed when there is no room available in the ROW.

When crossing watercourses, the following shall be provided:

A. The pipe shall be of special construction (HDPE), having welded (butt fusion) watertight joints;

B. Valves shall be provided at both ends of the subaqueous crossing for isolation, testing, or repair of the line. The valves shall be easily accessible and not subject to flooding. The valve closest to the supply source shall be in a below grade vault as per FDEP requirements and constructed to meet FDOT standards. All welding shall be done above ground. Water, reclaimed water, and wastewater lines shall have two air release valves between the two valves;

C. Permanent taps shall be made on each side of the valve within the manhole to allow insertion of a small meter to determine leakage and for sampling purposes. The taps will allow for a three quarter inch meter to be attached;

D. The HPDE pipe shall be encased in HDPE DR11 casing;

E. Pressure test according to Section 022501;

F. Conform to HDPE Specifications, Section 330502.

Warning signs shall be placed along the banks of canals, streams, and rivers clearly identifying the nature and location of subaqueous crossings. The signs shall state the type of pipeline and the depth of pipeline below design or natural bottom of the water body. Warning sign shall be aluminum and have minimum dimensions of four feet wide by two feet high with a minimum of two inch lettering.

2.4 Fire Service Systems

All private fire service systems for sprinkler systems, wet standpipe systems, and privately-owned or controlled distribution systems shall be installed with an appropriate back flow prevention device with a leak detection meter. The backflow device shall be sized by the Developer's Engineer and shall be purchased, owned and maintained by the private service owner. The COUNTY requires all privately-owned backflow devices to be certified at the time of installation and on an annual basis by a Certified Backflow Tester (University of Florida, TREEO Center, or equivalent certification program). The results shall be submitted to the County Manager or designee. The County Manager or designee will require all privately owned metering devices to be certified for accuracy at the time of installation. Fire meter devices using a three quarter to two inch metering device shall be re-calibrated to manufacturer's specifications every five years, replaced every 10 years, or replaced immediately upon meter failure. Fire meter devices greater than two inches shall be re-calibrated to manufacturer's specifications every five years and replaced immediately upon meter failure. The County Manager or designee will inform the owner by mail prior to the due date. Private owner(s) shall submit certification results to the County Manager or designee within 60 days of the due date.

2.4.1 Fire Service Meters for Residential Systems

Residential projects such as, but not limited to, single family, multi-family condominiums, trailer parks, mobile home parks, etc. utilizing a master meter shall pass all fire flow through such meter. The meter shall be sized to pass the domestic coincident draft plus rated fire flow at the AWWA pressure loss specifications.

2.4.2 Fire Service Meters for Commercial and Other Non-residential Systems

Commercial projects such as, but not limited to, shopping centers, malls, retail, and industrial buildings shall pass all fire flow through a potable master meter or have a separate fire service connection to the water distribution main. The Fire Service meter and isolation valves shall be extended above final grade as shown in the Utilities Detail Drawings. For meter reading purposes, metering devices shall lie within a County Utility Easement (CUE) that shall be dedicated separately to the Board for the appropriate Water-Sewer District or in conjunction with the easements for any on-site utility system(s).

The Owner shall purchase and install an approved backflow device with a leak detection meter at no expense to the Water-Sewer District.

2.5 Connections to Collier County Facilities

Connections to existing COUNTY water mains shall be constructed as described in Section 2, Technical Specifications and shown in Section 3, Utilities Detail Drawings. These details shall apply to all connections to existing systems including, but not limited to, hot taps and extensions from existing dead end systems. A section of pipe shall be inserted into the gap to connect the

new construction to the existing systems for the purpose of accomplishing line flushing. Immediately upon completion of the flush, the connection shall be removed. A jumper shall be installed (see detail W-4) until final connection is authorized by the County Manager or designee and approved by the FDEP at the completion of construction and after satisfactory completion of all test procedures and bacterial clearance of the new water system or portion(s) thereof.

Steam condensate, cooling water from engine jackets, or water used in conjunction with heat exchangers shall not be returned to potable water mains.

2.6 Water Services

2.6.1 Service Pipelines

All building lots and parcels of land within a development shall be provided with a means for potable water service and non-potable irrigation water service by the developer. Accessibility to lands on the opposite side of a roadway shall be provided by the installation of water service conduits. Conduits shall be a minimum of four inch diameter PVC, with a minimum cover of 24 inches. Such pipelines shall extend at least five feet past the edge-of-pavement or back of curb where provided and shall run from lot corners on one side of the street to a lot corner on the opposite side and shall be capped and marked with an electronic marker (see County Approved Product List, Appendix F). Service pipelines shall be polyethylene of a minimum of one-and-one-half inches in diameter. Service pipelines under pavement shall be in conduits in all scenarios for County owned services.

2.6.2 Water Meters

Water meters shall be properly sized, based on the total calculated service demand for water, according to the Collier County Water Meter Sizing Form (Appendix B). The properly sized water meter shall be installed according to specifications and standards. Any deviation from the determined meter size shall require an approved Deviation Request.

All water meters larger than two inches shall be installed above ground. These meters shall be equipped with a backflow preventer and installed by the Contractor at his expense. The type of backflow device utilized shall be on the Water Department’s list of Approved Backflow Devices (Appendix G).

All large potable meters shall be purchased by the owner and installed by the Developer's Contractor. The systems’ master meter assemblies shall be built in accordance with the current design details shown in the Utilities Detail Drawings. Alternate designs may be permitted upon submission of design details for review and approval. The location of all meters (potable and non-potable) shall be clearly shown on the construction plans.

All potable water and/or non-potable irrigation water meters shall be equipped to accept the COUNTY’s Automatic Meter Reading (AMR) units shown on the Utilities Detail Drawings. Two inch and smaller meter units will be installed by the COUNTY. On meters three inches and larger, contact the Water Distribution office to determine the necessary AMR equipment for the meters. All meters shall be turned over to the technician performing the full bore flush prior to the acceptance of the meter.

Temporary meters may be applied for by phoning the Water Distribution office between 7:30 a.m. and 4:00 p.m., Monday through Friday, under the conditions provided by the ordinance.

Temporary meters shall be installed for the purpose of supplying construction water to meet the COUNTY requirement for new water line construction as listed below and require a minimum of 48 hours advance notice. All backflow devices shall be reduced pressure type and shall be certified as required by the ordinance, provided by the Contractor, and be of an approved type.

Temporary meters shall be installed as shown in the Utilities Detail Drawings.

2.7 Air Release Assemblies

Air release assemblies shall be installed at all high points on all County owned mains where air will not be released through service lines, and on both sides of conflict crossings (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). In cases where reversal of flow is not expected, the air release assembly shall be provided at high points and on the upstream side of conflict crossings. A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, “Air-Release, Air Vacuum, and Combination Air Valves”. Air valves shall be suitable for use with potable water or non-potable irrigation water. For all water or non-potable irrigation water mains 14 inches and smaller, see the County Approved Product List, Appendix F. For potable water or non-potable irrigation water mains 16 inches and greater, the design engineer shall be responsible for air valve selection and sizing. An isolating valve shall be provided below the air valve to allow removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

2.8 Concrete Collars

All gate valve boxes, air release assemblies, and permanent sample points outside paved surfaces shall be provided with a concrete collar set to finish grade. Such collar(s) shall have a minimum thickness of six inches and the outside dimension of the pad shall be as shown in the Utilities Detail Drawings. Concrete shall have minimum compression strength of 3000 psi at 28 days.

2.9 Testing and Clearance Procedures

All water systems or portion(s) thereof shall be subjected to pressure testing and disinfection conforming to the AWWA Standards C600, C602, C605, and C606, or latest revision(s) thereof.

Under no circumstances shall any person other than an authorized COUNTY Water Department employee operate valves, make service taps or otherwise tamper with COUNTY Distribution system or portion(s) thereof. Failure to comply with these requirements will place such individual in jeopardy of legal action by the COUNTY pursuant to US Code, COUNTY Ordinances and/or Resolutions in effect at the time of the violation.

2.9.1 Pigging

All lines larger than 12 inches in diameter shall be pigged with a new pig to clear debris prior to flushing. Refer to specifications section 025400, 3.1.

2.9.2 Flushing

Full-bore flushing shall be coordinated with COUNTY Water Distribution personnel and shall require 48-hour notice to Water Distribution prior to performance. During flushing the Contractor will be permitted to install a spool piece to close the gap as shown in the Utilities Detail Drawings. Upon completion of such flushing, connection to the COUNTY's systems or portion(s) thereof shall be returned to the configuration shown in the Utilities Detail Drawings. Refer to specifications section 025400, 3.1.

2.9.3 Line Filling

Lines under construction shall be filled utilizing water supplied by the temporary meter and such filling shall be performed by the Contractor in accordance with required procedures including those outlined herein below.

2.9.4 Chlorination

Line chlorination shall be performed utilizing water supplied by the temporary meter for the purpose of chlorinating newly constructed potable water lines. Such procedure shall be performed by the Contractor, and shall require 48-hour notice to Water Distribution prior to performance.

2.9.5 Post-Chlorination Flushes

The Contractor using the temporary construction meter shall perform Post Chlorination Flushes. All chlorine injected into the system for disinfection shall be flushed from the system at least 24 hours prior to collection of Bacteriological Samples.

The initial flush volume equal to the volume of water main being flushed shall be captured and properly disposed of, such that no chlorinated water enters into a storm water system and/or is discharged to the ground; all regulatory requirements for the protection of the environment shall be met.

2.9.6 Bacteriological Samples

Bacteriological sample collection shall be performed utilizing water supplied by the temporary meter in order to supply pressure during sample collection of newly constructed potable water lines. Such procedure shall require 48-hour notice to Water Distribution prior to performance. These procedures shall be performed on Monday through Thursday, excluding holidays, unless otherwise directed by the County Manager or designee.

2.10 Laboratory Testing and Sample Collection

All new potable and raw water systems shall be subject to bacteriological sample collection and testing. Sample collection and laboratory analyses shall be performed by COUNTY certified laboratory technicians only. The Contractor or his agent shall provide the equipment required in Section 2, Technical Specifications, to supply a continuous sample at the points indicated on the engineer's construction drawings. Sample points having a one day total of 200 non-coliform bacteria or greater shall be considered as failed samples. Samples containing one coliform bacteria or greater shall be considered as a failed sample. All potable water piping up to and including 8-inches in diameter shall pass bacteriological tests within sixty (60) days of being

placed in service. All potable water piping greater than 8-inches shall pass bacteriological tests within forty-five (45) days of being placed in service.

Sample collection and sample laboratory analyses costs shall be borne by the developer. For Utilities Capital Projects that are run by the COUNTY for the COUNTY, one set of tests (including water costs) are provided by the COUNTY free of charge and the contractor shall pay for any additional tests.

PART 3 WASTEWATER COLLECTION AND TRANSMISSION SYSTEMS

All wastewater pipe, material, equipment and appurtenances shall be new, and shall conform to Section 2, Technical Specifications and Section 3, Utilities Detail Drawings.

Wastewater systems shall be designed to maintain adequate flows and standards as established by Florida Department of Environmental Protection (FDEP), using the equivalent residential connection (ERC) value of 250 gallons per day per residential unit (broken down to 100 gallons per day per person and 2.5 people per household) and F.A.C. 64E-6.008 for non-residential. The peak hour factor shall be determined using the equation:

$$\frac{(18+\sqrt{\text{population in thousands}})}{(4+\sqrt{\text{population in thousands}})}$$

Populations for non-residential units shall be derived using the estimated average daily flows calculated using Table 1 in Rule 64E-6.008 of the Florida Administrative Code, divided by the average daily flow per capita of 100 gallons.

All wastewater projects shall be designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, non-contact cooling water, and sources of uncontaminated wastewater as specified in F.A.C. Chapter 62-610 and comply with Ordinance 2012-13 “Collier County Industrial Pretreatment Ordinance.”

3.1 Gravity Sewer Systems

3.1.1 Pipe and Fitting Materials

Gravity sewer pipe and materials shall conform to Technical Specifications for polyvinyl chloride (PVC) pipe and fittings. All pipelines shall be green in color.

3.1.2 Design of Pipeline Size, Depth and Location

All gravity sewer mains constructed shall be a minimum of eight inches in diameter. The minimum depth of cover over all gravity sewers shall be 36 inches. All gravity sewer designs shall consider buoyancy of sewers, and appropriate construction techniques to prevent floatation of the pipe where high groundwater conditions are anticipated.

All gravity mains eight inches or larger are allowed to be core bored into existing manholes. The manhole must be restored as per Section 333913. An inspector from the Wastewater Collections Department must be present during manhole restoration.

Hydraulic Design Requirements - All gravity sewers shall be designed to give mean velocities, when flowing full or half-full of not less than two feet per second, based on Manning’s formula. When calculating full-flow velocity, use a Manning’s Roughness Coefficient of n=0.013. Design wastewater system with uniform slope between manholes. The following are the minimum allowable design slopes that may be provided for each pipe size listed:

Minimum Slope in Feet per One Hundred Feet (ft/100'):

Sewer Size	Slope (ft/100 ft)	Sewer Size	Slope (ft/100 ft)
8 inch	0.40	18 inch	0.12
10 inch	0.28	21 inch	0.10
12 inch	0.22	24 inch	0.08
15 inch	0.15		

Special attention shall be given to gravity lines that receive flows from wastewater transmission or re-pumping facilities. Due care shall be taken in these cases to ensure that no surcharge conditions occur downstream due to excessive flow rates. Under no conditions shall pipe of a diameter larger than that necessary for proper hydraulic design as determined by the COUNTY Growth Management Division or Public Utilities Engineering and Project Management Department be permitted for use on any project.

All sewers shall be designed to prevent superimposed loads.

3.1.3 Gravity Sewer Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a bell or manhole.

3.1.4 Gravity Sewer Laterals

Laterals shall be extended to the property line or easement limit for all installations.

Laterals shall be a minimum of six inches in diameter. Lateral shall have a minimum depth of 30 inches and a maximum depth of 48 inches below finished grade. In locations where a minimum depth of 30 inches cannot be provided, laterals shall be C900, DR 14 PVC pipe. At no time shall the depth of a lateral be less than 24 inches. At no time shall a lateral be core bored into manholes. Upon installation, all lateral ends shall be plugged. A cleanout shall be provided at the end of each lateral prior to the end plug and a maximum of every 75 feet. Intermediate cleanouts shall be located on the back side of the curb or gutter (where available). Typical lateral and cleanout standards are shown in the Utilities Detail Drawings. The cleanout riser and cap shall be set 24 inches above finished grade. All COUNTY-owned sewer cleanouts shall be provided with an electronic marker and concrete collar as shown in Utilities Detail Drawings (see County Approved Product List, Appendix F). Electronic markers shall be placed 24 inches below final grade at the cleanout, for COUNTY inspector to see during final plumbing tie-in inspection. At no time shall the connection to the lateral be made to the cleanout riser or any part of the vertical assembly. Either a single six inch diameter or larger lateral to each property or a single six inch or larger lateral with a double wye shall be provided.

3.1.5 Manholes

Precast concrete manholes shall be installed at the end of each wastewater main, at all changes in grade, size, or horizontal alignment, and at all main pipe intersections, shall be spaced at distances not greater than 400 feet and shall be placed in pavement or equivalently stabilized surface (or future pavement). For sanitary sewers with a diameter greater than 15 inches, the maximum distance between manholes is 450 feet. All gravity collection mains shall terminate in a precast concrete manhole.

Minimum inside diameter of all manholes shall be four feet. The angle between the inlet and outlet pipe within manholes shall be no less than 90 degrees. A drop pipe shall be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Drop manholes shall be constructed with an outside drop connection encased in concrete, as shown in the Utilities Detail Drawings. See FDEP Wastewater Checklist Form 62-604.300(8)(a), "Manholes" section, for further design requirements, as well as Specification Section 333913 and the Detail Drawings.

3.2 Force Mains

3.2.1 Pipe and Fitting Materials

Force main pipelines and fittings shall be a minimum of four inches in diameter. All force mains shall be constructed of PVC, HDPE, or ductile iron pipe and shall utilize pipe meeting the requirements of the Technical Specifications. The use of ductile iron pipe on force mains is restricted to aerial crossings and above ground flanged pipe only. A plug valve is required to delineate ownership between County owned and privately owned force mains.

All HDPE and PVC buried pipelines shall be color-coded as described in the Technical Specifications. Force main pipelines shall be green in color.

Buried force mains, except those installed by directional drill or jack-and-bore methods, shall be marked using metalized warning tape for PVC. The metalized warning tape shall be placed in the pipe trench at two feet below grade or one-half the depth of the pipe's bury, whichever is less, and labeled "WASTEWATER FORCE MAIN." Electronic markers (see County Approved Product List, Appendix F) shall be placed 24 inches below final grade, above the force main, at all bends or changes in alignment, valves, and every 250 feet. Horizontal directional drilling shall include installation of at least two locating tone wires as described in the Technical Specifications.

All force main aerial crossings shall be Pressure Class 350 flanged ductile iron pipe and shall be coated on the exterior using a suitable grade of Safety Green colored, field applied (or factory applied with field touch-up as required) epoxy coating. Specific color shall be subject to approval of the County Manager or designee. All nuts and bolts used in aerial crossings shall be stainless steel. All canal, river, or creek crossings shall be aerial, unless otherwise approved by the County Manager or designee. Aerial crossings shall be designed to incorporate valves or other flow regulation devices in accordance with F.A.C. 62-604.400(2)(k)5. Aerial crossings shall be designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property Owners. Submit aerial pipe and flange computations, including support and anchor design, for review. The submittal must be signed and sealed by a Florida registered Licensed Professional Engineer.

3.2.2 Design of Pipeline Size and Location

Force mains shall be sized to provide a desired flushing velocity of two and one-half feet per second with a minimum allowable velocity of two feet per second. The maximum allowable velocity in wastewater force mains is six feet per second. The minimum size force main conveyed to the CCWSD shall be four inches in diameter. Approved mechanical thrust restraints are required at pipe joints where specified in the Utility Standards.

Minimum cover for force mains shall be 30 inches. Maximum cover shall be 48 inches after final project grading is complete except when dipping under conflicts in which case the force main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less. The design engineer shall strive to minimize the number and frequency of dips (maintaining a horizontal run line through intermittent grade changes, by deviation). An air release valve is required at all dips. Engineers should evaluate possibilities of lowering storm drainage piping or dipping potable water and non-potable irrigation water main to avoid dips in the force main.

When force mains are interconnected with a gravity sewer system, for transmission purposes through that system, interconnection shall be as shown in the Utility Standard Drawings. No force main laterals shall be core bored into manholes.

3.2.3 Valves

All connections of privately-owned and maintained wastewater force mains to the Wastewater Department's force mains shall be connected through a check valve housed in a structure as shown in the Utilities Detail Drawings which shall allow performance of required maintenance, and shall be owned and maintained by the property owner.

Sufficient plug valves shall be provided to allow for zone isolation of wastewater transmission areas in order to limit the impact of line breaks. In-line plug valves shall be provided at no greater than 1,000 foot intervals per COUNTY requirements.

3.2.4 Force Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a valve and cap/plug.

3.2.5 Air Release Assemblies

Air release assemblies shall be provided at all high points and on the upstream side of conflict crossings at which the force main passes under the conflict (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. Air valves (see County Approved Product List, Appendix F) utilized on raw sewage facilities shall be designed and manufactured specifically for use with domestic sewage. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, "Air-Release, Air Vacuum, and Combination Air Valves". When installed, the air valve shall be provided with a shut-off valve to allow isolation and removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

3.3 Wastewater Pump Stations

Wastewater pump stations shall be designed and constructed in accordance with FDEP regulatory requirements, Section 2 Technical Specifications, National Electrical Code (NEC) Requirements, and Section 3 Utilities Detail Drawings.

Pump Station wetwells shall be designed to withstand flotation forces with the assumption that the structures are empty and ground/flood water elevation is at the top of the structures. The design shall consider the potential for damage or interruption of operation due to flooding. Pump

station structures and electrical and mechanical equipment shall be designed to be protected from physical damage by the 100-year flood event. Pump stations shall be designed to remain fully operational and accessible during the 25-year flood event. Pump stations shall be designed to avoid operational problems from the accumulation of grit.

Pump stations shall be designed to be readily accessible by maintenance vehicles, including pumper trucks, during all weather conditions. Pump stations shall be designed and located on the site to minimize adverse effects from odors, noise, and lighting. Pump stations shall be located on the site to have a minimum separation of 20 feet from the edge of the CUE for the pump station to edge of a body of water and 15 feet from the edge of the CUE for the pump station to a residential structure (including appurtenances).

The effective volume of wet wells shall be based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycling time. Pump stations requiring a pump motor of twenty horsepower or greater shall operate by a VFD (variable frequency drive) that varies the operating speed of the pump based on wet well water levels. Pump stations shall have a compacted earth berm on three sides with 3:1 slopes to divert liquid toward the ROW. Top of berm shall be 12 inches wide and six inches higher than back of curb (with curb) or edge of pavement (without curb). Minimum berm height shall be six inches.

Emergency pumping capability shall be provided for all pump stations. A pump station that is connected directly to the County transmission force main from a development (Community Pump Station) and any pump station that receives flow from one or more upstream pump stations or discharges through a force main 12 inches or larger (see FAC 62-604.400 (2)(a)1) shall have uninterrupted pumping capability (standby Diesel pump or generator) with three days of fuel storage (compliant with Technical Specification 263213) and a concrete pad for a future odor control system.

Alternatively, emergency pumping capability may be achieved by connecting the pump station to at least two independent utility substations, each capable of starting and operating the pump station at its rated capacity. Regardless of the type of emergency standby system provided, a force main riser with rapid connection capabilities and appropriate valving shall be provided for connecting a portable pump. All pump stations shall conform to these standards and shall be conveyed to the Collier County Water-Sewer District in accordance with the utilities conveyance policies and procedures outlined in the Collier County Utilities Standards and Procedures Ordinance (Ord. No. 2004-31 as amended), unless approved for private ownership and maintenance by Deviation and in accordance with Section 3.3.1 below.

All pump stations shall be protected from lightning and transient voltage surges.
All pump stations shall be located at least 100 feet from a public drinking water supply well and 75 feet from a private drinking water well. The design and siting of new private pumping stations shall minimize adverse effects resulting from odors, noise, and lighting.

All pump stations shall have water available to them. Available water means a water main is accessible in the adjacent ROW or CUE.

Landscaping is not required, per these standards, to be installed around wastewater pump stations. If landscaping is provided, it shall be maintained by the developer, homeowners association, or land owner and shall NOT be located in the CUE. Landscaping, if provided, shall be located as to not block access or interfere with operations. If plant material dies, it is the

responsibility of the landscaping owner to replace it. The landscaping shall be maintained to not block telemetry antenna line of site.

3.3.1 Private Pump Stations

Private pump stations shall not receive flow from any other pump station and shall only serve one property parcel. All private pump stations may be privately monitored and maintained by deviation. All new private pump stations shall be grinder pump stations. Positive or semi-positive displacement grinder pumps equipped with thermal overload protection shall be standard on all private grinder pump stations. All new private pump stations shall conform to the design criteria specified in Subsection 3.3 above, unless otherwise specified in this subsection, and shall be configured to facilitate routine maintenance without entering the wet well.

Except in the case of a simplex station serving a single-family residence, private pump stations shall have multiple pumps capable of handling peak flow with one pump out of service. Peak flow shall be calculated as the peak hour flow (per Part 3) divided by a factor of 0.7. This is based on peak hour flow typically being around 70 percent of the peak flow over a briefer (approximately 15-minute) time period[1]. Where possible, pumps shall be selected so that the design operating range is within ten percent (10%) (on a flow basis) of the maximum efficiency point identified by the manufacturer. Otherwise, the pump model that would operate closest to its maximum efficiency point should be selected based on the average head condition.

Design flow shall be calculated in accordance with Part 3, except that average daily flow for a residential project shall be determined from Table I in paragraph 62-6.008(1)(b), F.A.C., based on the number of bedrooms and building area. An assumption of 350 gallons per day per residential unit shall be used if bedroom count and building area are unknown.

The table below defines volumetric terms used in this subsection based on the demarcating design elevations (e.g., storage volume is between the pump on and alarm elevations):

<table>
<tr><th>Elevation</th><th colspan="2">Terms</th></tr>
<tr><td rowspan="2">Top/Overflow</td><td></td><td></td></tr>
<tr><td rowspan="2">Reserve Volume</td><td rowspan="3">Reserve Capacity</td></tr>
<tr><td>Alarm</td></tr>
<tr><td rowspan="2">Storage Volume</td></tr>
<tr><td>On</td><td rowspan="2">Effective Volume</td><td rowspan="3"></td></tr>
<tr><td rowspan="2">Off</td></tr>
<tr><td></td></tr>
</table>

Residential private pump stations shall have a sufficient combination of storage volume and pump rate to avoid an alarm condition during a peak flow of 46 gallons over a 2-minute period, which represents simultaneous discharge from a bathtub and clothes washer with a high probability of occurrence[2], assuming the basin level is at the pump on elevation just prior to the peak flow occurring.

Non-residential private pump stations shall be designed for simultaneous discharge from multiple plumbing fixtures as determined by the plumbing system designer. Check pump station

[1] Water Pollution Control Federation. (1986). *Alternative Sewer Systems* (Manual of Practice No. FD-12, Facilities Development).
[2] American Society of Civil Engineers. (1969). *Combined Sewer Separation Using Pressure Sewers* (FWPCA Report ORD-4).

capacity using the equation, Q = (V-S)/t, where Q is the minimum pump discharge rate (gpm), V is the volume of peak flow (gal), S is storage volume (gal), and t is the time window (duration) of peak flow (minutes).

The minimum storage volume required to attenuate peak flows is 25 gallons. In no case shall the pump rate be less than 5 to 10 gpm, depending on the storage volume. If the storage volume is 25 gallons, the minimum for attenuation, the pump rate shall be no less than 10 gpm. For storage volumes equal to or greater than 50 gallons, the pump rate shall be no less than 5 gpm. Interpolate the minimum pump rate accordingly if the storage volume is between 25 and 50 gallons.

In-ground installation of a grinder pump station may require a ballast or concrete anchor of proper dimensions and weight to counteract the buoyant forces exerted on the station. Designers of privately-owned pump stations shall adhere to the manufacturer's guidelines and sound engineering practice for counteracting buoyancy.

Unless a standby power generator is connected to the pump station, every private pump station shall have a standard generator receptacle (see Appendix F) and a minimum reserve capacity of half the average daily flow volume, but no less than 50 gallons, as contingency for a power outage or equipment malfunction.

In instances where the reserve capacity (i.e., volume above the pump-on elevation) is less than double the peak hour flow, the private pump station shall be furnished with an external pump-out connection.

New private pumping stations shall be enclosed with a fence or otherwise designed with appropriate features to prohibit the entry of animals and unauthorized persons.

All private pump stations connected with the County's wastewater collection system are required to be inspected, maintained, and repaired on a routine basis. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rules, and regulations to perform preventive maintenance and respond to any service interruption. In accordance with 62-604.400(2)(d), F.A.C., the operator's emergency telephone number shall be displayed on an unobstructed sign made of durable, weather-resistant material and posted at a location visible to the public.

3.4 Connections to Collier County Facilities

Connections to existing COUNTY wastewater mains shall be constructed as described in the Technical Specifications and shown in the Utilities Detail Drawings. These details shall apply to all connections to existing systems.

All projects shall be designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water mains passing through or coming into contact with any part of a sewer manhole.

3.5 Tests and Inspections

Tests and inspections of all wastewater systems or portion(s) thereof shall be performed in accordance with the Technical Specifications before acceptance of the systems or portions thereof by Collier County.

3.6 Wastewater Pump Station Asset Management

Asset management is required for proper use and maintenance of these wastewater facilities. State of Florida DEP regulations state: "…systems shall be operated and maintained so as to provide uninterrupted service…" To accomplish this obligation on privately owned wastewater pump stations, the owner(s) of each such station shall:

A. Maintain a permanent fence with a sign mounted thereon, which sign shall include the correct name and phone number(s) of at least one emergency contact individual and the correct name(s) and phone number(s) of the station's operator as well as the station's owner(s). The text on the sign must be immediately updated if and when any of the information on the sign becomes outdated.

B. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rule or regulation, for operations, preventive maintenance, and to respond to each service interruption, if any, at that station.

The above requirements are mandated by the Florida Department of Environmental Protection regulations: Florida Administrative Code, Subsection 62-604.400(2)(d).

PART 4 ELECTRICAL AND CONTROL SYSTEMS

4.1 Electrical and Control System Material

All electrical devices such as motor starters, breakers, and control centers shall be manufactured to current NEMA standards. The construction of each device shall conform to the NEMA rating for the environment of that device.

All programmable logic controllers (PLC) shall be manufactured by Allen-Bradley. The PLC model for each specific application shall be coordinated with the Utilities Engineering Department.

END OF SECTION 1

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SECTION 2

TECHNICAL SPECIFICATIONS

For the latest revisions to the Technical Specifications, please visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 2

TECHNICAL SPECIFICATIONS

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SECTION 011000

SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description of Work

B. CONTRACTOR's Use of Site

C. Work Sequence

D. COUNTY Occupancy

1.2 DESCRIPTION OF WORK

A. General: The Work to be done under this Contract is shown on the drawings and specified in Contract Documents.

B. The Work includes:

1. Furnishing of all labor, material, superintendence, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies, services and other means of construction necessary or proper for performing and completing the Work.

2. Sole responsibility for adequacy of plant and equipment.

3. Maintaining the Work area and site in a clean and acceptable manner.

4. Maintaining existing facilities in service at all times.

5. Protection of finished and unfinished Work.

6. Repair and restoration of Work or existing facilities damaged during construction.

7. Furnishing as necessary proper equipment and machinery, of a sufficient capacity, to facilitate the Work and to handle all emergencies normally encountered in Work of this character.

8. Furnishing, installing, and protecting all necessary guides, track rails, bearing plates, anchor and attachment bolts, and all other appurtenances needed for the installation of the devices included in the equipment specified. Make anchor bolts of appropriate size, strength and material for the purpose intended. Furnish substantial templates and shop drawings for installation.

C. Implied and Normally Required Work: It is the intent of these Specifications to provide the COUNTY with complete operable systems, subsystems and other items of Work. Any part or item of Work, which is reasonably implied or normally required to make each installation satisfactorily and completely operable, is deemed to be included in the Work and the Contract Amount. All miscellaneous appurtenances and other items of Work incidental to meeting the intent of these Specifications are included in the Work and the Contract Amount even though these appurtenances may not be specifically called for in these Specifications.

D. Quality of Work: Regard the apparent silence of the Contract Documents as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished as meaning that only the best general practice is to prevail and that only materials and workmanship of the best quality are to be used. Interpretation of these specifications will be made upon this basis.

1.3 CONTRACTOR'S USE OF SITE

A. In addition to the requirements of the Supplemental Terms and Conditions, limit use of site and premises for work and storage to allow for the following:

1. Coordination of the Work under this CONTRACT with the work of the other contractors where Work under this CONTRACT encroaches on the Work of other contractors.

2. COUNTY occupancy and access to operate existing facilities.

3. Coordination of site use with ENGINEER.

4. Responsibility for protection and safekeeping of products under this CONTRACT.

5. Providing additional off site storage at no additional cost to the COUNTY as needed.

1.4 WORK SEQUENCE

A. Construct Work in stages to accommodate the COUNTY’s use of premises during construction period and in accordance with the limitations on the sequence of construction specified. Coordinate construction schedules and operations with ENGINEER.

B. Coordinate Work of all subcontractors.

1.5 COUNTY OCCUPANCY

A. The COUNTY will occupy premises during entire period of construction in order to maintain normal operations. Cooperate with the COUNTY's Manager or designee in all construction operations to minimize conflict, and to facilitate COUNTY usage.

B. Conduct operations with the least inconvenience to the general public.

1.6 PROTECTION OF EXISTING UTILITIES

A. In case of damage to existing utilities caused by construction activities, contact the owner of the utility or appropriate COUNTY department (Water or Wastewater) immediately. Repair any damage to existing utilities caused by construction activities in coordination with or as directed by the owner of the utility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

A. Starting Work: Start Work within 10 days following the date stated in the Notice to Proceed and execute with such progress as may be required to prevent delay to other contractors or to the general completion of the project. Execute Work at such items and in or on such parts of the project, and with such forces, material and equipment, as to complete the Work in the time established by the Contract. At all times, schedule and direct the Work so that it provides an orderly progression to completion within the specified time for completion.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 014127

NPDES REQUIREMENTS

FOR CONSTRUCTION ACTIVITIES IMPACTING MORE THAN ONE ACRE

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section describes the required documentation to be prepared and signed by the CONTRACTOR before conducting construction operations, in accordance with the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) Stormwater Permit, as required by Florida Administrative Code (F.A.C.) Chapter 62-621.

B. The CONTRACTOR shall be for responsible for implementation, maintenance and inspection of stormwater pollution prevention control measures in accordance with F.A.C. Chapter 62-621 including, but not limited to, erosion and sediment control, stormwater management plans, waste collection and disposal, off-site vehicle tracking, and other practices shown on the Drawings and/or specified elsewhere in this or other specifications. The stormwater pollution prevention control measures shall include protection of offsite public and private stormsewer facilities potentially impacted during construction. Stormwater facilities include streets, inlets, pipes, ditches, swales, canals, culverts, control structures, and detention/retention areas.

C. The CONTRACTOR shall prepare and review implementation of the Stormwater Pollution Prevention Plan (SWPPP) in a meeting with the County Manager or designee prior to start of construction.

1.2 UNIT PRICES

A. Unless indicated in the Unit Price Schedule as a pay item, no separate payment will be made for work performed under this Section. Include cost of work to be performed under this Section in pay items of which this work is a component.

1.3 REFERENCE DOCUMENTS

A. ASTM D3786 – Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Nonwoven Fabrics

B. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 NOTICE OF INTENT (NOI)

A. Fill out, sign and date a Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, (FDEP Form 62-621.300(4)(b)). Submit the signed copy of the NOI to the County Manager or designee. The County Manager or designee will submit the completed form to the FDEP along with the required permit fee.

3.2 CERTIFICATION REQUIREMENTS

A. On the attached OPERATOR'S INFORMATION form, fill out the name, address and telephone number for the CONTRACTOR, persons or firms responsible for maintenance and inspection of erosion and sediment control measures, and all Subcontractors.

B. The CONTRACTOR and Subcontractors named in the Operator's Information form shall read, sign and date the attached CONTRACTOR'S/SUBCONTRACTOR'S CERTIFICATION form.

C. The persons or firms responsible for maintenance and inspection of erosion and sediment control measures shall read, sign and date the attached EROSION CONTROL CONTRACTOR'S INSPECTION AND MAINTENANCE CERTIFICATION form.

D. Submit all forms to the County Manager or designee before beginning construction.

3.3 RETENTION OF RECORDS

A. Retain a copy of the SWPPP at the construction site and at the Contractor's office from the date that it became effective to the date of project completion.

B. At project closeout, submit to the County Manager or designee all NPDES forms and certifications, as well as a copy of the SWPPP. Stormwater pollution prevention records will be retained by the County Manager or designee for a period of three (3) years from the date of project completion.

3.4 REQUIRED NOTICES

A. The following notices shall be posted from the date that the SWPPP goes into effect until the date of final site stabilization:

1. A copy of the submitted NOI and a brief project description, as given in the SWPPP, shall be posted at the construction site and at the CONTRACTOR's office in a prominent place for public viewing.

2. Notice to drivers of equipment and vehicles, instructing them to stop, check and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.

3. Post a notice of waste disposal procedures in an easily visible location on site.

4. Notice of hazardous material handling and emergency procedures shall be posted with the NOI on site. Keep copies of Material Safety Data Sheets at a location on site that is know to all personnel.

5. Keep a copy of each signed certification at the construction site and at the CONTRACTOR's office.

REQUIRED FORMS FOLLOW

OPERATOR'S INFORMATION

Owner's Name and Address: Collier County Public Utilities Planning and Project Management Department

3301 East Tamiami Trail
Naples, Florida 34112
(239) 252-4285

Contractors' Names and Addresses:

General Contractor: _____

Telephone: _____

Site Superintendent: _____

Telephone: _____

Erosion Control and:
Maintenance Inspection _____

Telephone: _____

Subcontractors' Names and Addresses:

_____ _____

_____ _____

_____ _____

_____ _____

Phone: _____ Phone: _____

CONTRACTOR'S / SUBCONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of Florida's National Pollutant Discharge Elimination System (NPDES) Construction General Permit that authorizes storm water discharges associated with activity from the construction site identified as part of this certification, and that I have received a copy of the SWPPP.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

EROSION CONTROL CONTRACTOR'S
INSPECTION AND MAINTENANCE CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of Florida's National Pollutant Discharge Elimination System (NPDES) Construction General Permit that authorizes storm water discharges associated with activity from the construction site identified as part of this certification, and that I have received a copy of the SWPPP.
.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

_____

Date: _____

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

Project: _____

Contractor: _____

Inspector: _____

Date: _____

CONTROLS	LOCATION	SEDIMENT HEIGHT	PROBLEM DESCRIPTION	MAINTENANCE REQUIRED	REPAIRED BY / DATE

END OF SECTION

SECTION 014200

REFERENCES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reference Abbreviations

B. Abbreviations

C. Reference Standards

D. Definitions

1.2 RELATED SECTIONS

A. Information provided in this section is used where applicable in individual Specification Sections.

1.3 REFERENCE ABBREVIATIONS

A. Reference to a technical society, trade association or standards setting organization, may be made in the Specifications by abbreviations in accordance with the following list:

AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ADC	Air Diffusion Council
AFBMA	Anti-friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	Association of Home Appliance Manufacturers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of American
CABO	Council of American Building Officials
CAGI	Compressed Air and Gas Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CRD	U.S. Corps of Engineers Specifications
CRSI	Concrete Reinforcing Steel Institute
CTI	Cooling Tower Institute
DHI	Door and Hardware Institute
DOH	Department of Health
DOT	Department of Transportation
Fed. Spec.	Federal Specifications
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
HMI	Hoist Manufacturing Institute
HPMA	See HPVA
HPVA	Hardwood Plywood Veneer Association
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
MIL	Military Specifications
MSS	Manufacturer's Standardization Society
NAAMM	National Association of Architectural Metal Manufacturers
NACM	National Association of Chain Manufacturers
NBS	National Bureau of Standards, See NIST
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NFPA	National Fluid Power Association
NIST	National Institute of Standards and Technology
NLMA	National Lumber Manufacturers Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Act
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association

SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
STI	Steel Tank Institute
TCA	Tile Council of American
TIMA	Thermal Insulation Manufacturers' Association
UL	Underwriters' Laboratories, Inc.
USBR	U. S. Bureau of Reclamation
USBS	U. S. Bureau of Standards, See NIST

1.4 ABBREVIATIONS

A. Abbreviations which may be used in individual Specification Sections are as follows:

alternating current ..... ac
American wire gauge ..... AWG
ampere(s) ..... amp
ampere-hour(s) ..... AH
annual ..... ann
Ampere Interrupting Capacity ..... AIC
atmosphere(s) ..... atm
average ..... avg

biochemical oxygen demand ..... BOD
Board Foot ..... FBM
brake horsepower ..... bhp
Brinell Hardness ..... BH
British thermal unit(s) ..... Btu

calorie(s) ..... cal
carbonaceous biochemical oxygen demand ..... CBOD
Celsius (centigrade) C
Center to Center ..... C to C
centimeter(s) ..... cm
chemical oxygen demand ..... COD
coefficient, valve flow ..... C_v
condensate return ..... CR
cubic ..... cu
cubic centimeter(s) cc
cubic feet per day ..... cfd
cubic feet per hour ..... cfh
cubic feet per minute ..... cfm
cubic feet per minute, standard conditions ..... scfm
cubic feet per second ..... cfs
cubic foot (feet) ..... cu ft
cubic inch(es) ..... cu in
cubic yard(s) ..... cu yd

decibels ..... dB
decibels (A scale) ..... dBa
degree(s) ..... deg
dewpoint temperature ..... dpt
diameter ..... dia
direct current ..... dc
dissolved oxygen ..... DO
dissolved solids ..... DS
dry-bulb temperature ..... dbt

efficiency ..... eff
elevation ..... el
entering water temperature ..... ewt
entering air temperature ..... eat
equivalent direct radiation ..... edr

face area ..... fa
face to face ..... f to f
Fahrenheit ..... F
feet per day ..... fpd
feet per hour ..... fph
feet per minute ..... fpm
feet per second ..... fps
foot (feet) ..... ft
foot-candle ..... fc
foot-pound ..... ft-lb
foot-pounds per minute ..... ft-lb/min
foot-pounds per second ..... ft-lb/sec
formazin turbidity unit(s) ..... FTU

frequency ..... freq
fuel oil ..... FO
fuel oil supply ..... FOS
fuel oil return ..... FOR

gallon(s) ..... gal
gallons per day ..... gpd
gallons per day per cubic foot ..... gpd/cu ft
gallons per day per square foot ..... gpd/sq ft
gallons per hour ..... gph
gallons per minute ..... gpm
gallons per second ..... gps
gas chromatography and mass spectrometry ..... GC-MS
gauge ..... ga
grain(s) ..... gr
gram(s) ..... g
grams per cubic centimeter ..... gm/cc
Heat Transfer Coefficient ..... U
height ..... hgt
Hertz ..... Hz
horsepower ..... hp
horsepower-hour ..... hp-hr
hour(s) ..... hr
humidity, relative ..... rh
hydrogen ion concentration ..... pH

inch(es) ..... in
inches per second ..... ips
inside diameter ..... ID

Jackson turbidity unit(s) ..... JTU

kelvin ..... K
kiloamperes ..... kA
kilogram(s) ..... kg
kilometer(s) ..... km
kilovar (kilovolt-amperes reactive) ..... kvar
kilovolt(s) ..... kV
kilovolt-ampere(s) ..... kVA
kilowatt(s) ..... kW
kilowatt-hour(s) ..... kWh

linear foot (feet) ..... lin ft
liter(s) L

megavolt-ampere(s) ..... MVA
meter(s) ..... m
micrograms per liter ..... ug/L
miles per hour ..... mph
milliampere(s) ..... mA
milligram(s) ..... mg
milligrams per liter ..... mg/L
milliliter(s) ..... mL
millimeter(s) ..... mm
million gallons ..... MG
million gallons per day ..... mgd
millisecond(s) ..... ms
millivolt(s) ..... mV
minute(s) ..... min
mixed liquor suspended solids ..... MLSS
nephelometric turbidity unit ..... NTU
net positive suction head ..... NPSH
noise criteria ..... nc
noise reduction coefficient ..... NRC
number ..... no

ounce(s) ..... oz
outside air ..... oa
outside diameter ..... OD

parts per billion ..... ppb
parts per million ..... ppm
percent ..... pct
phase (electrical) .... ph
pound(s) ..... lb
pounds per cubic foot ..... pcf
pounds per cubic foot per hour ..... pcf/hr
pounds per day ..... lbs/day
pounds per day per cubic foot ..... lbs/day/cu ft
pounds per day per square foot ..... lbs/day/sq ft
pounds per square foot ..... psf
pounds per square foot per hour ..... psf/hr
pounds per square inch ..... psi

pounds per square inch absolute ..... psia

pounds per square inch gauge ..... psig
power factor ..... PF
pressure drop or difference ..... dp
pressure, dynamic (velocity) ..... vp
pressure, vapor ..... vap pr

quart(s) ..... qt

Rankine ..... R
relative humidity ..... rh
resistance ..... res
return air ..... ra
revolution(s) ..... rev
revolutions per minute ..... rpm
revolutions per second ..... rps
root mean squared ..... rms

safety factor ..... sf
second(s) ..... sec
shading coefficient ..... SC
sludge density index ..... SDI

Sound Transmission Coefficient ..... STC
specific gravity ..... sp gr
specific volume ..... Sp Vol
sp ht at constant pressure ..... Cp
square ..... sq
square centimeter(s) ..... sq cm
square foot (feet) ..... sq ft
square inch (es) ..... sq in
square meter(s) ..... sq m
square yard(s) ..... sq yd
standard ..... std
static pressure ..... st pr
supply air .... sa
suspended solids ..... SS

temperature ..... temp
temperature difference ..... TD
temperature entering ..... TE
temperature leaving ..... TL
thousand Btu per hour ..... Mbh
thousand circular mils ..... kcmil
thousand cubic feet ..... Mcf
threshold limit value ..... TLV
tons of refrigeration ..... tons
torque ..... TRQ
total dissolved solids ..... TDS
total dynamic head ..... TDH
total kjeldahl nitrogen ..... TKN
total oxygen demand ..... TOD
total pressure ..... TP
total solids ..... TS
total suspended solids ..... TSS
total volatile solids ..... TVS
vacuum ..... vac
viscosity ..... visc
volatile organic chemical ..... VOC
volatile solids ..... VS
volatile suspended solids ..... VSS
volt(s) V
volts-ampere(s) ..... VA
volume ..... vol
watt(s) ..... W
watthour(s) ..... Wh
watt-hour demand ..... WHD
watt-hour demand meter ..... WHDM
week(s) ..... wk
weight ..... wt
wet-bulb ..... WB
wet bulb temperature ..... WBT

yard(s) ..... yd
year(s) ..... yr

1.5 REFERENCE PUBLICATIONS

The following publications are incorporated into this Manual and are made a part of this Manual as is set out verbatim in this Manual. Violations of any provision of every such publication, as updated from time-to-time by Resolution(s) of the Board of County

Commissioners, shall be a violation of the Collier County Utilities Standards and Procedures Ordinance, as then amended.

A. Water Environment Federation, Manual of Practice No. 8, Wastewater Treatment Plant Design, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

B. Water Environment Federation, Manual of Practice No. 9, Design and Construction of Sanitary and Storm Sewers, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

C. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Sewage Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York, 12224.

D. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Water Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York, 12224.

E. Rules of the Florida Department of Environmental Protection for Water, Wastewater, and Reclaimed Water Systems, latest revisions of F.A.C. Chapters 62-550, 62-555, 62-600, 62-604, 62-610, 64E-6, and 64E-8, 3900 Commonwealth Boulevard M.S. 49, Tallahassee, Florida, 32399.

F. American Water Works Association, Inc., Water Treatment Plant Design, 6666 West Quincy Avenue, Denver, Colorado, 80235.

G. American Water Works Association, Inc., Water Treatment Plant Design, AWWA Standards and Applicable Manuals, 6666 West Quincy Avenue, Denver, Colorado, 80235.

H. Ductile Iron Pipe Research Association, Handbook, Ductile Iron Pipe/Cast Iron Pipe, Ductile Iron Pipe Research Association, 245 Riverchase Parkway East, Birmingham, Alabama, 35244.

I. Uni-Bell Plastic Pipe Association, Handbook of PVC Pipe, Uni-Bell Plastic Pipe Association, 2655 Villa Creek Drive, Suite 164, Dallas, Texas, 75234.

J. American National Standards Institute, latest revisions of applicable standards, 1819 L Street NW, Suite 600, Washington, D.C., 20036.

K. American Society for Testing and Materials, latest revisions of applicable standards, ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, 19428-2959.

L. National Water Research Institute, Treatment Technologies for Removal of MTBE. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.

M. National Water Research Institute, Valuing Ground Water: Economic Concepts/Approaches. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.7.3.14.

N. U.S. Environmental Protection Agency, Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability, Supplement to the Federal Guidelines for Design, Operation, and Maintenance of Wastewater Treatment Facilities, Technical Bulletin EPA-430-99-74-001, U.S. EPA, Office of Water Program Operations.

O. Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Maps & Publications Sales, Mail Station 12, 605 Suwannee Street, Tallahassee, Florida 32399-0450.

P. Plastics Pipe Institute, Handbook of Polyethylene Pipe, 1825 Connecticut Ave., NW, Suite 680, Washington, DC 20009.

Q. National Fire Protection Association, 1995 Edition of NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 1 Batterymarch Park, Quincy, MA 02169.

R. Collier County Water-Sewer District Utilities Standards Manual.

S. National Electrical Code, latest revisions of applicable requirements.

T. Metcalf and Eddy, Wastewater Engineering Treatment and Reuse, 4th Edition, McGraw-Hill, 2002.

U. Water Environment Federation, Manual of Practice No. 11, Operation of Municipal Wastewater Treatment Plants, 601 Wythe Street, Alexandria, VA 22314-1994.

1.6 REFERENCE STANDARDS

A. Latest Edition: Construe references to furnishing materials or testing, which conform to the standards of a particular technical society, organization, or body, to mean the latest standard, code, or specification of that body, adopted and published as of the date of bidding this Contract. Standards referred to herein are made a part of these Specifications to the extent that is indicated or intended.

B. Precedence: The duties and responsibilities of the COUNTY, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees are set forth in the Contract Documents, and are not changed or altered by any provision of any referenced standard specifications, manuals or code, whether such standard manual or code is or is not specifically incorporated by reference in the Contract Documents. Any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority, to undertake responsibility contrary to the powers of the ENGINEER as set forth in the Contract Documents cannot be assigned to the ENGINEER or any of the ENGINEER's consultants, agents or employees.

1.7 DEFINITIONS

A. In these Contract Documents the words furnish, install and provide are defined as follows:

1. Furnish (Materials): to supply and deliver to the project ready for installation and in operable condition.

2. Install (services or labor): to place in final position, complete, anchored, connected in operable condition.

3. Provide: to furnish and install complete. Includes the supply of specified services. When neither furnish, install or provide is stated, provided is implied.

4. COUNTY: Collier County Board of Commissioners, County Government Center, 3301 East Tamiami Trail, Naples, Florida 34112, or authorized staff or representatives.

5. ENGINEER: The terms Design Professional, Design Engineer, and Engineer are interchangeably used throughout the Contract Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 014500

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittals

B. Inspection Services

C. Inspection of Materials

D. Quality Control

E. Costs of Inspection

F. Acceptance Tests

G. Failure to Comply with Contract

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in the individual material sections.

B. Certificate Submittals: Furnish the ENGINEER authoritative evidence in the form of Certificates of Manufacture that the materials and equipment to be used in the Work have been manufactured and tested in conformity with the Contract Documents. Include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

1.3 INSPECTION SERVICES

A. COUNTY's Access: At all times during the progress of the Work, and until the date of final completion, afford the County Manager or designee and ENGINEER every reasonable, safe, and proper facility for inspecting the Work at the site. The observation and inspection of any work will not relieve the CONTRACTOR of any obligations to perform proper and satisfactory work as specified. Replace work rejected due to faulty design, inferior, or defective materials, poor workmanship, improper installation, excessive wear, or nonconformity with the requirements of the Contract Documents, with satisfactory work at no additional cost to the COUNTY. Replace as directed, finished or unfinished work found not

to be in strict accordance with the Contract, even though such work may have been previously approved and payment made therefor.

B. Rejection: The County's Manager or designee has the right to reject materials and workmanship which are defective or require correction. Promptly remove rejected work and materials from the site.

C. Inferior Work Discoveries: Failure or neglect on the part of the County Manager or designee to condemn or reject bad or inferior work or materials does not imply an acceptance of such work or materials. Neither is it to be construed as barring the County Manager or designee at any subsequent time from recovering damages or a sum of money needed to build anew all portions of the Work in which inferior work or improper materials were used.

D. Removal for Examination: Should it be considered necessary or advisable by the County Manager or designee, at any time before final acceptance of the Work, to make examinations of portions of the Work already completed, by removing or tearing out such portions, promptly furnish all necessary facilities, labor, and material, to make such an examination. If such Work is found to be defective in any respect, defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the cost of examination and restoration of the Work will be considered a change in the Work to be paid for in accordance with applicable provisions of the Contract.

E. Operation Responsibility: Assume full responsibility for the proper operation of equipment during tests and instruction periods. Make no claim, other than provided in the Contract Documents, for damage that may occur to equipment prior to the time when the County Manager or designee accepts the Work.

F. Rejection Prior to Warranty Expiration: If at anytime prior to the expiration of any applicable warranties or guarantees, defective equipment is rejected by the County Manager or designee, repay to the COUNTY all sums of money received for the rejected equipment on progress certificates or otherwise on account of the Contract lump sum prices, and upon the receipt of the sum of money, County Manager or designee will execute and deliver a bill of sale of all its rights, title, and interest in and to the rejected equipment. Do not remove the equipment from the premises of the COUNTY until the County Manager or designee obtains from other sources, equipment to take the place of that rejected. The County Manager or designee hereby agrees to obtain other equipment within a reasonable time and the CONTRACTOR agrees that the COUNTY may use the equipment furnished by the CONTRACTOR without rental or other charge until the other new equipment is obtained.

1.4 INSPECTION OF MATERIALS

A. Premanufacture Notification: Give notice in writing to the ENGINEER sufficiently in advance of the commencement of manufacture or preparation of materials

especially manufactured or prepared for use in or as part of the permanent construction. When required, notice to include a request for inspection, the date of commencement, and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, ENGINEER will arrange to have a representative present at such times during the manufacture or testing as may be necessary to inspect the materials, or will notify CONTRACTOR that the inspection will be made at a point other than the point of manufacture or testing, or that the inspection will be waived. Comply with these provisions before shipping any materials. Such inspection will not constitute a release from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

B. Testing Standards: Conduct tests of electrical and mechanical equipment and appliances in accordance with recognized, applicable test codes.

1.5 QUALITY CONTROL

A. Testing

1. Field and Laboratory

a. Provide personnel to assist the ENGINEER in performing the following periodic observation and associated services.

(1) Soils: Observe and test excavations, placement and compaction of soils. Determine suitability of excavated material. Observe subgrade soils and foundations.

(2) Concrete: Observe forms and reinforcement; observe concrete placement; witness air entrainment tests, facilitate concrete cylinder preparation and assist with other tests performed by ENGINEER.

(3) Masonry: Sample and test mortar, bricks, blocks and grout; inspect brick and block samples and sample panels; inspect placement of reinforcement and grouting.

(4) Structural Steel: Verify that all welders are certified; visually inspect all structural steel welds; mechanically test high-tensile bolted connections.

b. When specified in the Contract Documents, provide an independent laboratory testing facility to perform required testing. Qualify the laboratory as having performed previous satisfactory work. Prior to use, submit to the ENGINEER for approval.

c. Cooperate with the ENGINEER and laboratory testing representatives. Provide at least 24 hours notice prior to when specified testing is

required. Provide labor and materials, and necessary facilities at the site as required by the ENGINEER and the testing laboratory.

d. When an independent electrical testing agency is specified in the Contract Documents, provide a member of the National Electrical Testing Association to perform inspections and tests.

2. Equipment: Coordinate and demonstrate test procedures as specified in the Contract Documents and as required during the formal tests.

3. Pipeline and Other Testing: Conform to test procedures and requirements specified in the appropriate Specification Section.

4. Testing of Gravity Sanitary Sewer Lines

a. Watertight Construction: It is imperative that all sewers and force mains, manholes, and service connections be built watertight and that the CONTRACTOR adhere rigidly to the specifications for material and workmanship. Since all of the water and sewage in the lines will be treated at the treatment plant, special care and attention must be given to securing watertight construction. After completion, the sewers or sections thereof will be tested and gauged. If infiltration or exfiltration is above the limits specified, the sewer construction work will be rejected.

b. Cleaning: Exercise care during construction of the manhole to see that materials do not enter the sewer line. Keep the invert and shelf of the manhole clean of all mortar, broken brick, sand, or any other materials falling into the manhole. Immediately remove such material. Maintain this condition until final acceptance of the work. Prior to testing of gravity sanitary sewer lines, clean the lines using appropriate tools.

c. Gravity Sewers - Visual Inspections: On completion of each block or section of sewer, or at such other times as the County Manger or designee may direct, the block or section of sewer is to be cleaned, tested and inspected. Each section of the sewer is to show, on examination from either end, a full circle of light between manholes. Each manhole, or other appurtenance to the system, shall be of the specified size and form, be watertight, neatly and substantially constructed, with the rim set permanently to design position and grade. All repairs shown necessary by the inspection are to be made; broken or cracked pipe replaced, all deposits removed and the sewers left true to line and grade, entirely clean and ready for use.

d. Infiltration Limits: Provide the equipment necessary to check the lines for infiltration or exfiltration as directed by the County Manager or designee, before they are put in service. Infiltration in excess of fifty (50) gallons per day inch-mile of sewer will result in having the CONTRACTOR go over the lines, ascertain where the leakage exists, and repair the lines to the extent necessary to bring the infiltration down within acceptable limits. Observable inflow is not permitted.

e. Exfiltration Limits: The length of sewer subject to an exfiltration test shall be the distance between two (2) adjacent manholes. Close the inlets of the upstream and downstream manholes with watertight plugs and the test section filled with water until the elevation of the water in the upstream manhole is two (2) feet above the crown of the pipe in the line being tested, or two (2) feet above the existing groundwater in the trench, whichever is higher. A standpipe may be used instead of the upstream manhole for providing the pressure head when approved by the County Manager or designee. Measure exfiltration by determining the amount of water required to maintain the initial water elevation for one (1) hour period from the start of the test. The maximum allowable leakage, including manholes, shall be 50 gallon per inch for diameter per mile of pipe per day.

f. Air Testing: Air testing shall be required if, in the opinion of the County Manager or designee, conditions are such that infiltration measurements may be inconclusive. Conduct the test in the presence of the County Manager or designee and conform to the following requirements:

   (a) Test pressure shall be 3.5 psi increased by the groundwater pressure above the top of the sewer.

   (b) Pressure loss from shall not exceed 0.5 psi during the required testing time.

   (c) Testing time in minutes shall be calculated as 0.625 x nominal pipe size (inches).

g. Deformation Test

   (a) Deformation tests shall be performed on all gravity sewer lines. The test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.

   (b) No pipe shall exceed a deformation of five percent (5%). If deformation exceeds 5%, mechanical methods to correct deformation may be used. If mechanical methods are unsuccessful, the pipe shall be excavated. Replacement

or correction shall be accomplished in accordance with requirements in the approved specifications.

(c) The rigid ball or mandrel used for the deflection test shall have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specification, including the appendix, to which the pipe is manufactured. The test shall be performed without mechanical pulling devices.

B. Reports

1. Certified Test Reports: Where transcripts or certified test reports are required by the Contract Documents, meet the following requirements:

a. Before delivery of materials or equipment submit and obtain approval of the ENGINEER for all required transcripts, certified test reports, certified copies of the reports of all tests required in referenced specifications or specified in the Contract Documents. Perform all testing in an approved independent laboratory or the manufacturer's laboratory. Submit for approval reports of shop equipment tests within thirty days of testing. Transcripts or test reports are to be accompanied by a notarized certificate in the form of a letter from the manufacturer or supplier certifying that tested material or equipment meets the specified requirements and the same type, quality, manufacture and make as specified. The certificate shall be signed by an officer of the manufacturer or the manufacturer's plant manager.

2. Certificate of Compliance: At the option of the ENGINEER, submit for approval a notarized Certificate of Compliance. The Certificates may be in the form of a letter stating the following:

a. Manufacturer has performed all required tests

b. Materials to be supplied meet all test requirements

c. Tests were performed not more than one year prior to submittal of the certificate

d. Materials and equipment subjected to the tests are of the same quality, manufacture and make as those specified

e. Identification of the materials

1.6 COSTS OF INSPECTION

A. COUNTY's Obligation: Initial inspection and testing of materials furnished under this Contract will be performed by the County Manager or designee, or inspection bureaus without cost to the CONTRACTOR, unless otherwise expressly specified. If subsequent testing is necessary due to failure of the initial tests or because of rejection for noncompliance, reimburse the COUNTY for expenditures incurred in making such tests.

B. CONTRACTOR's Obligation: Include in the Contract Price, the cost of all shop and field tests of equipment and other tests specifically called for in the Contract Documents, except those tests described above under “COUNTY’s Obligation”. The County Manager or designee may perform tests on any material or equipment furnished under this Contract at any time during the Contract. If tests performed by the County Manager or designee result in failure or rejection for noncompliance, reimburse the COUNTY for expenditures incurred in making such tests. Tests performed by the County Manager or designee shall prevail in determining compliance with Contract requirements.

C. Reimbursements to the COUNTY:

1. Materials and equipment submitted by the CONTRACTOR as the equivalent to those specifically named in the Contract may be tested by the County Manager or designee for compliance. Reimburse the COUNTY for expenditures incurred in making such tests on materials and equipment that are rejected for noncompliance.

2. Reimburse the COUNTY for all costs associated with Witness Tests that exceed 5 Calendar Days per kind of equipment.

1.7 ACCEPTANCE TESTS

A. Preliminary Field Tests: As soon as conditions permit, furnish all labor and materials and services to perform preliminary field tests of all equipment provided under this Contract. If the preliminary field tests disclose that any equipment furnished and installed under this Contract does not meet the requirements of the Contract Documents, make all changes, adjustments and replacements required prior to the acceptance tests.

B. Final Field Tests: Upon completion of the Work and prior to final payment, subject all equipment, piping and appliances installed under this Contract to specified acceptance tests to demonstrate compliance with the Contract Documents.

1. Furnish all labor, fuel, energy, water and other materials, equipment, instruments and services necessary for all acceptance tests.

2. Conduct field tests in the presence of the ENGINEER. Perform the field tests to demonstrate that under all conditions of operation each equipment item:

   a. Has not been damaged by transportation or installation

   b. Has been properly installed

   c. Has been properly lubricated

   d. Has no electrical or mechanical defects

   e. Is in proper alignment

   f. Has been properly connected

   g. Is free of overheating of any parts

   h. Is free of all objectionable vibration

   i. Is free of overloading of any parts

   j. Operates as intended

3. Operate work or portions of work for a minimum of 100 hours or 14 days continuous service, whichever comes first. For those items of equipment that would normally operate on wastewater or sludge, plant effluent may be used if available when authorized by ENGINEER. If water cannot properly exercise equipment, conduct 100-hour test after plant startup. Conduct test on those systems that require load produced by weather (heating or cooling) exercise only when weather will produce proper load.

C. Failure of Tests: If the acceptance tests reveal defects in material or equipment, or if the material or equipment in any way fails to comply with the requirements of the Contract Documents, then promptly correct such deficiencies. Failure or refusal to correct the deficiencies, or if the improved materials or equipment, when tested again, fail to meet the guarantees or specified requirements, the County Manager or designee, notwithstanding its partial payment for work and materials or equipment, may reject said materials or equipment and may order the CONTRACTOR to remove the defective work from the site at no addition to the Contract Price, and replace it with material or equipment which meets the Contract Documents.

1.8 FAILURE TO COMPLY WITH CONTRACT

A. Unacceptable Materials: If it is ascertained by testing or inspection that the material or equipment does not comply with the Contract, do not deliver said material or equipment, or if delivered remove it promptly from the site or from the

Work and replace it with acceptable material without additional cost to the COUNTY. Fulfill all obligations under the terms and conditions of the Contract even though the County Manager or designee fail to ascertain noncompliance or notify the CONTRACTOR of noncompliance.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 015000

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Related Sections

C. Temporary Utilities

D. Temporary Construction

E. Barricades and Enclosures

F. Fences

G. Security

H. Temporary Controls

I. Traffic Regulation

J. Field Offices and Sheds

1.2 RELATED SECTIONS

A. Section 011000 - Summary of Work

B. Section 015526 – Traffic Regulations and Public Safety

C. Section 020500 – Connection to Existing Systems

D. Section 312319 – Groundwater Control for Open Cut Excavation

E. Section 320117 - Pavement Repair and Restoration

F. Section 330518 –Laying and Jointing Buried Pipelines

1.3 GENERAL REQUIREMENTS

A. Plant and Facilities: Furnish, install, maintain and remove all false work, scaffolding, ladders, hoistways, braces, pumping plants, shields, trestles,

roadways, sheeting, centering forms, barricades, drains, flumes, and the like, any of which may be needed in the construction of any part of the Work and which are not herein described or specified in detail. Accept responsibility for the safety and efficiency of such works and for any damage that may result from their failure or from their improper construction, maintenance or operation.

B. First Aid: Maintain a readily accessible, completely equipped first aid kit at each location where work is in progress.

C. Safety Responsibility: Accept sole responsibility for safety and security at the site. Indemnify and hold harmless the COUNTY and the County's Manager or designee, including the ENGINEER, for any safety violation, or noncompliance with governing bodies and their regulations, and for accidents, deaths, injuries, or damage at the site during occupancy or partial occupancy of the site by CONTRACTOR's forces while performing any part of the Work.

D. Hazard Communication: Furnish two copies of the CONTRACTOR's Hazard Communication Program required under OSHA regulations before beginning on site activities. Furnish two copies of amendments to Hazard Communications Program as they are prepared.

1.4 TEMPORARY UTILITIES

A. Water: Provide all necessary and required water without additional cost, unless otherwise specified. If necessary, provide and lay water lines to the place of use; secure all necessary permits; pay for all taps to water mains and hydrants and for all water used at the established rates.

B. Light and Power: Provide without additional cost to the COUNTY temporary lighting and power facilities required for the proper construction and inspection of the Work. If, in the ENGINEER's opinion, these facilities are inadequate, do NOT proceed with any portion of the Work affected thereby. Maintain temporary lighting and power until the Work is accepted.

C. Heat: Provide temporary heat, whenever required, for work being performed during cold weather to prevent freezing of concrete, water pipes, and other damage to the Work or existing facilities.

D. Sanitary Facilities: Provide sufficient sanitary facilities for construction personnel. Prohibit and prevent nuisances on the site of the Work or on adjoining property. Discharge any employee who violates this rule. Abide by all environmental regulations or laws applicable to the Work.

1.5 TEMPORARY CONSTRUCTION

A. Bridges: Design and place suitable temporary bridges where necessary for the maintenance of vehicular and pedestrian traffic. Assume responsibility for the

sufficiency and safety of all such temporary work or bridges and for any damage that may result from their failure or their improper construction, maintenance, or operation. Indemnify and save harmless the COUNTY and the COUNTY's representatives from all claims, suits or actions, and damages or costs of every description arising by reason of failure to comply with the above provisions.

1.6 BARRICADES, LIGHTS AND ENCLOSURES

A. Protection of Workmen and Public: Effect and maintain at all times during the prosecution of the Work, barriers, lights and enclosures necessary for the protection of workmen and the public. Perform all work within the County right-of-way in strict accordance with the COUNTY Maintenance of Traffic Policy and other applicable statutory requirements.

B. Provide suitable barricades, lights, signs and watchmen at excavation sites and all other places where the Work causes obstructions to normal traffic or constitutes in any way a hazard to the public.

1.7 FENCES

A. Existing Fences: Obtain written permission from property owner(s) prior to relocating or dismantling fences that interfere with construction operations. Reach agreements with the fence owner as to the period the fence may be left relocated or dismantled. Install adequate gates where fencing must be maintained. Keep gates closed and locked at all times when not in use.

B. Restoration: Restore all fences to their original or better condition and to their original location on completion of the Work.

1.8 SECURITY

A. Preservation of Property:

1. Preserve from damage, all property along the line of the Work, in the vicinity of or in any way affected by the Work, the removal or destruction of which is not called for by the Drawings. Preserve from damage, public utilities, trees, lawn areas, building monuments, fences, pipe and underground structures, and public streets. Note: Normal wear and tear of streets resulting from legitimate use by the CONTRACTOR are not considered as damage. Whenever damages occur to such property, immediately restore to its original condition. Costs for such repairs are incidental to the Contract.

2. In case of failure on the part of the CONTRACTOR to restore property or make good on damage or injury, the County Manager or designee may, upon 24 hours written notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any moneys due or which may become due the

CONTRACTOR under this Contract. If removal, repair or replacement of public or private property is made necessary by alteration of grade or alignment authorized by the County Manager or designee and not contemplated by the Contract Documents, the CONTRACTOR will be compensated, in accordance with the General Conditions, provided that such property has not been damaged through fault of the CONTRACTOR or the CONTRACTOR's employees.

B. Public Utility Installations and Structures:

1. Public utility installations and structures include all poles, tracks, pipes, wires, conduits, vaults, valves, hydrants, manholes, and other appurtenances and facilities, whether owned or controlled by public bodies or privately owned individuals, firms or corporations, used to serve the public with transportation, gas, electricity, telephone, storm and sanitary sewers, water, or other public or private utility services. Facilities appurtenant to public or private property that may be affected by the Work are deemed included hereunder.

2. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. Existing public utility installations and structures are indicated on the Drawings only to the extent such information was made available to, or found by, the ENGINEER in preparing the Drawings. These data are not guaranteed for completeness or accuracy, and the CONTRACTOR is responsible for making necessary investigations to become fully informed as to the character, condition, and extent of all public utility installations and structures that may be encountered and that may affect the construction operations.

3. Before starting construction, identify and mark all existing valves and maintain access to the valves at all times during construction.

4. Contact utility locating service sufficiently in advance of the start of construction to avoid damage to the utilities and delays to the completion date.

5. If existing utilities are damaged during the Work, immediately notify the owner of the affected utility. In coordination with or as directed by the owner, remove, replace, relocate, repair, rebuild, and secure any public utility installations and structures damaged as a direct or indirect result of the Work under this Contract. Costs for such work are incidental to the Contract. Be responsible and liable for any consequential damages done to or suffered by any public utility installations or structures. Assume and accept responsibility for any injury, damage, or loss that may result from or be consequent to interference with, or interruption or discontinuance of, any public utility service.

6. At all times in the performance of Work, employ proven methods and exercise reasonable care and skill to avoid unnecessary delay, injury, damage, or destruction to public utility installations and structures. Avoid unnecessary interference with, or interruption of, public utility services. Cooperate fully with the owners thereof to that end.

7. Provide notice to the County Manager or designee of any proposed connections to existing utilities, interruptions of service or shutdowns in accordance with Section 020500. Give written notice to the owners of all public utility installations and structures affected by proposed construction operations sufficiently in advance of breaking ground in any area or on any unit of the Work, to obtain their permission before disrupting the lines and to allow them to take measures necessary to protect their interests. Advise the Transportation Operations Department, Fire and Rescue Services of any excavation in public streets or the temporary shut-off of any water main. Provide at least 48 hours notice to all affected property owners whenever service connections are taken out of service.

C. Work on Private Property: Work on this project will require operations on private property, rights of way or easements. The County Manager or designee has secured the appropriate easements or rights of entry from the affected property owners. Comply with all easement or rights of entry provisions. Conduct operations along rights-of-way and easements through private property to avoid damage to the property and to minimize interference with its ordinary use. Upon completion of the Work through such property, restore the surface and all fences or other structures disturbed by the construction as nearly as possible to the preconstruction conditions. Do not remove any material from private property without the consent of the property owner or responsible party in charge of such property. Hold the COUNTY harmless from any claim or damage arising out of or in connection with the performance of work across and through private property.

D. Miscellaneous Structures: Assume and accept responsibility for all injuries or damage to culverts, building foundations and walls, retaining walls, or other structures of any kind met with during the prosecution of the Work. Assume and accept liability for damages to public or private property resulting therefrom. Adequately protect against freezing all pipes carrying liquid.

E. Protection of Trees and Lawn Areas:

1. Protect with boxes, trees and shrubs, except those ordered to be removed. Do not place excavated material so as to cause injury to such trees or shrubs. Replace trees or shrubs destroyed by accident or negligence of the CONTRACTOR or CONTRACTOR's employees with new stock of similar size and age, at the proper season, at no additional cost to the COUNTY. If required by Contract Documents, provide preconstruction audio-video recording of project in accordance with the Technical Specifications.

2. Leave lawn areas in as good condition as before the start of the Work. Restore areas where sod has been removed by seeding or sodding.

1.9 TEMPORARY CONTROLS

A. During Construction:

1. Keep the site of the Work and adjacent premises free from construction materials, debris, and rubbish. Remove this material from any portion of the site if such material, debris, or rubbish constitutes a nuisance or is objectionable.

2. Remove from the site all surplus materials and temporary structures when they are no longer needed.

3. Neatly stack construction materials such as concrete forms and scaffolding when not in use. Store pipe to be incorporated into the Work in accordance with AWWA standards. Promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.

4. Properly store volatile wastes in covered metal containers and remove from the site daily.

5. Do not bury or burn on the site or dispose of into storm drains, sanitary sewers, streams, or waterways, any waste material. Remove all wastes from the site and dispose of in a manner complying with applicable ordinances and laws.

B. Smoke Prevention:

1. Strictly observe all air pollution control regulations.

2. Open fires will be allowed only if permitted under current ordinances.

C. Noises:

1. In accordance with the COUNTY's Noise Ordinance, maintain acceptable noise levels in the vicinity of the Work. Limit noise production to acceptable levels by using special mufflers, barriers, enclosures, equipment positioning, and other approved methods.

2. Supply written notification to the County Manager or designee sufficiently in advance of the start of any work that violates this provision. Proceed only when all applicable authorizations and variances have been obtained in writing.

D. Hours of Operation:

1. Operation of construction equipment is only permitted Monday through Saturday, 7:00 AM to 7:00 PM. Obtain written consent from the County Manager or designee for operation of construction equipment during any other period.

2. Do not carry out non-emergency work, including equipment moves, on Sundays without prior written authorization by the County Manager or designee.

E. Dust Control:

1. Take measures to prevent unnecessary dust. Keep earth surfaces exposed to dusting moist with water or a chemical dust suppressant. Cover materials in piles or while in transit to prevent blowing or spreading dust.

2. Adequately protect buildings or operating facilities that may be affected adversely by dust. Protect machinery, motors, instrument panels, or similar equipment by suitable dust screens. Include proper ventilation with dust screens.

F. Temporary Drainage Provisions:

1. Provide for the drainage of stormwater and any water applied or discharged on the site in performance of the Work. Provide adequate drainage facilities to prevent damage to the Work, the site, and adjacent property.

2. Supplement existing drainage channels and conduits as necessary to carry all increased runoff from construction operations. Construct dikes as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect the COUNTY's facilities and the Work, and to direct water to drainage channels or conduits. Provide ponding as necessary to prevent downstream flooding.

3. Maintain excavations free of water. Provide, operate, and maintain pumping equipment. Dewater trenches in accordance with Sections 312319 and 330518.

G. Pollution: Prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. Do not permit sanitary wastes to enter any drain or watercourse other than sanitary sewers. Do not permit sediment, debris, or other substances to enter sanitary sewers. Take reasonable measures to prevent such materials from entering any drain or watercourse.

1.10 TRAFFIC REGULATION

A. Parking: Provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with the Contract, to avoid any need for parking personal vehicles where they may interfere with public traffic or construction activities.

B. Access: Conduct Work to interfere as little as possible with public travel, whether vehicular or pedestrian. Provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, give reasonable notice to owners of private drives before interfering with them. Such maintenance of traffic will not be required when the CONTRACTOR has obtained permission from the owner or tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at the designated point.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 015526

TRAFFIC REGULATION AND PUBLIC SAFETY

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. General Requirements

B. Traffic Control

C. Public Safety

1.2 RELATED SECTIONS

A. Section 015000 – Construction Facilities and Temporary Controls

B. Section 320117 – Pavement Repair and Restoration

C. Section 330201 – Roadway Crossings by Open Cut

1.3 GENERAL REQUIREMENTS

A. Perform all work within COUNTY rights-of-way in strict accordance with the County's Maintenance of Traffic Policy and other applicable statutory requirements to protect the public safety.

B. Be responsible for providing safe and expeditious movement of traffic through construction zones. A construction zone is defined as the immediate areas of actual construction and all abutting areas which are used by the CONTRACTOR and which interfere with the driving or walking public.

C. Remove temporary equipment and facilities when no longer required. Restore grounds to original or specified conditions.

D. The requirements specified herein are in addition to the plan for Maintenance of Traffic as specified in Section 330201.

1.4 TRAFFIC CONTROL

A. Include as necessary precautions, not to be limited to, such items as proper construction warning signs, signals, lighting devices, marking, barricades, channelization, and hand signaling devices. Be responsible for installation and maintenance of all devices and requirements for the duration of the Construction period.

B. Provide notice, at least five (5) working days prior to construction, to the State or County Department of Transportation of the necessity to close any portion of a roadway carrying vehicles or pedestrians so that the final approval of such closings can be obtained at least 48 hours in advance. At no time will more than one (1) lane of roadway be closed to vehicles and pedestrians. With any such closings make adequate provision for the safe expeditious movement of each.

C. Be responsible for notifying Transportation Operations Department, Police, Fire, and other Emergency Departments whenever construction is within roadways and of the alternate routes.

D. Be responsible for removal, relocation, or replacement of any traffic control device in the construction area that exists as part of the normal pre-construction traffic control scheme.

E. Immediately notify the County Manager or designee of any vehicular or pedestrian safety or efficiency problems incurred as a result of the construction of the project.

F. Be responsible for notifying all residents of any road construction and limited access at least 72 hours in advance.

1.5 PUBLIC SAFETY (DURING CONSTRUCTION, ALTERATION OR REPAIR)

A. In areas of high vehicular traffic, provide a safe walkway around the work area.

B. Use barricades or other barriers to prevent any possibility of injury to the public caused by the CONTRACTOR's work.

C. Keep walk areas around the work areas clean of sand, stones, and any other material that could cause a pedestrian accident.

D. Barricade work areas left overnight. Install flashing warning lights in areas required by the COUNTY.

E. Unless an approved detour is provided at any open cut crossings, a minimum of one-way traffic will be maintained during the daylight hours and two-way traffic at night. All traffic detours will be restricted to limits of the Right-of-Way with necessary flagmen and/or marking devices. These detours shall be approved by the COUNTY. Detour of traffic outside of the Right-of-Way will be considered with the approval of local governmental agencies and private concerns involved.

F. Crossing and Intersections: Do not isolate residences and places of business. Provide access to all residences and places of business whenever construction interferes with existing means of access. Maintain access at all times. If pavement is disturbed, a cold mix must be applied at the end of the day.

G. Detours

1. Construct and maintain detour facilities wherever it becomes necessary to divert traffic from any existing roadway or bridge, or wherever construction operations block the flow of traffic. The location of all detours will require prior approval of the COUNTY.

2. Furnishing of Devices and Barriers: Furnish all traffic control devices (including signs), warning devices and barriers. Costs of such devices shall be incidental to construction and included in unit prices bid.

3. Maintenance of Devices and Barriers: Keep traffic control devices, warning devices and barriers in the correct position, properly directed, clearly visible and clean, at all times. Immediately repair replace or clean damaged, defaced or dirty devices or barriers as necessary.

H. Flagmen: Provide certified flagmen (flaggers) to direct traffic where one-way operation in a single lane is in effect and in other situations as may be required. Radios may be required if flagmen cannot maintain contact with each other.

I. Utilize all necessary signs, flagmen, and other safety devices during construction.

J. Perform all work with the requirements set forth by the Occupational Safety Health Administration.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 015713

TEMPORARY EROSION AND SEDIMENTATION CONTROL

FOR CONSTRUCTION ACTIVITIES IMPACTING LESS THAN ONE ACRE,

INCLUDING CONSTRUCTION REQUIRING DEWATERING

PART 1 GENERAL

1.1 DESCRIPTION

A. The work specified in this Section consists of designing, providing, maintaining and removing temporary erosion and sedimentation controls as necessary.

B. Temporary erosion controls include, but are not limited to rip rap channels, road stabilization, grassing, mulching, setting, watering, and reseeding onsite surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the COUNTY.

C. Temporary sedimentation controls include, but are not limited to; silt dams, traps, barriers, public and private on- and off-site storm sewer inlets protectors, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the COUNTY.

D. If required by regulation or COUNTY, CONTRACTOR is responsible for providing an approved Erosion Control Plan for effective temporary erosion and sediment control measures during construction or until final controls become effective.

1.2 REFERENCE DOCUMENTS

A. South Florida Building Code and Standard Building Code.

PART 2 PRODUCTS

2.1 EROSION CONTROL

A. Sodding and Seeding is specified in Section 329200.

B. Rip Rap Channel.

C. Road Stabilization.

D. Netting - fabricated of material acceptable to the County Manager or designee.

2.2 SEDIMENTATION CONTROL

A. Temporary Sediment Trap.

B. Sediment Fence.

C. Bales - clean, seed free pine needle or cereal hay type.

D. Netting - fabricated of material acceptable to the County Manager or designee.

E. Filter Stone - crushed stone conforming to Florida Department of Transportation specifications.

F. Concrete Block - hollow, non-load-bearing type.

G. Concrete - exterior grade not less than one inch thick.

PART 3 EXECUTION

3.1 EROSION CONTROL

A. Minimum procedures for grassing are:

1. Scarify slopes to a depth of not less than six inches and remove large clods, rock, stumps, roots larger than 1/2 inch in diameter and debris.

2. Sow seed within twenty-four (24) hours after the ground is scarified with either mechanical seed drills or rotary hand seeders.

3. Apply mulch loosely and to a thickness of between 3/4 inch and 1-1/2 inches.

4. Apply netting over mulched areas on sloped surfaces.

5. Roll and water seeded areas in a manner which will encourage sprouting of seeds and growing of grass. Reseed areas that exhibit unsatisfactory growth (less than 70 percent coverage). Backfill and seed eroded areas, removing eroded material from effected drainage facilities.

B. Minimum procedures for rip rap channel are:

1. Clear the foundation of all trees, stumps, and roots.

2. Excavate the bottom and sides of the channel 30 inches below grade at all points to allow for the placement of riprap as shown in the typical cross-section in the Standard Details.

3. Install extra strength filter fabric on the bottom and sides of the channel foundation, placing the upstream fabric over the downstream fabric with at least a 1 foot overlap on all joints. The fabric is to be securely held in place with metal pins.

4. Place riprap evenly to the lines and grades shown on the drawings and staked in the field. Place riprap immediately following the installation of the filter fabric.

5. Riprap shall meet the specification for F.D.O.T. Class 2 Riprap.

6. Restore all disturbed areas in accordance with a vegetation plan submitted in advance and approved by the County Manager or designee.

C. Minimum Procedures for road stabilization are:

1. Clear roadbed and parking areas of all vegetation, roots and other objectionable material.

2. Provide surface drainage.

3. Spread 6 inch course of lime rock evenly over the full width of road and parking area and smooth to avoid depressions.

4. After grading, seed or resod all disturbed areas adjoining roads and parking areas conforming to existing conditions prior to construction.

3.2 SEDIMENTATION CONTROL

A. Install and maintain silt dams, traps, barriers, and appurtenances as required. Replace deteriorated hay bales and dislodged filter stone.

B. Minimum requirements for sediment trap:

1. Clear, grub and strip the area under the embankment of all vegetation and root mat.

2. Clear retention area to elevation as approved by the County Manager or designee.

3. Use fill material free of roots, woody vegetation and organic matter. Place fill in lifts not to exceed 9 inches and machine compact.

4. Construct dam and stone spillway to dimensions, slopes and elevations shown.

5. Ensure that the spillway crest is level and at least 18 inches below the top of the dam at all points.

6. Stone used for spillway section - Class "B" erosion control stone.

7. Stone used on inside spillway face to control drainage - #67 washed stone.

8. Extend stone outlet section to vegetated road ditch on zero grade with top elevation of stone level with bottom of drain.

9. Ensure that the top of the dam at all points is 6 inches above natural surrounding ground.

10. Stabilize the embankment and all disturbed area above the sediment pools as shown in the vegetation plan.

C. Minimum requirements for sediment fence:

1. Construct sediment fence on low side of topsoil stockpile to prevent sediment from being washed into the drainage system. Fence to extend around approximately 70 percent of the perimeter of the stockpile. Fence must be unobstructed so as to maintain a minimum of 75 percent of its design flow rate.

2. Locate posts down slope of fabric to help support fencing.

3. Bury toe of fence approximately 8 inches deep to prevent undercutting.

4. When joints are necessary, securely fasten the fabric at a support post with overlap to the next post.

5. Filter fabric shall be of nylon, polyester, propylene or ethylene yarn with extra strength – 50 pounds per linear inch (minimum) - and with a flow rate of at least 0.30 gallons per foot per minute. Fabric should contain ultraviolet ray inhibitors and stabilizers.

6. Post to be 4-inch diameter pine with a minimum length of 4 feet.

D. Minimum Requirement for stormwater facilities protection:

1. Public and private stormsewer facilities, both on and offsite, shall be protected at all inlets affected by construction. Stormsewer facilities include streets, inlets, pipes, ditches, swales, canals, culverts, control structures, and detention/retention areas.

2. Grated drop inlets shall be rapped with filter fabric in a manner that allows removal of accumulated sediment from the fabric before removing the grate.

3. Curb inlets shall be protected from sediment, turbid water from stormwater or dewatering activities; also construction debris, concrete mix and rinsate, and any other pollution.

4. Stormwater runoff entering such stormsewer inlets and stormwater detention/retention facilities with a turbidity greater than 50 NTU shall be considered to be in non-compliance with these regulations.

3.3 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed fail to produce results which comply with the requirements of the State of Florida, immediately take steps necessary to correct the deficiency at no expense to the COUNTY. Sedimentation or turbid water violations to stormwater facilities on or offsite shall require the contractor to remove all sediment from the affected facilities.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 016100

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description

B. Substitutions

C. Manufacturer's Written Instructions

D. Transportation and Handling

E. Storage, Protection and Maintenance

F. Manufacturer's Field Quality Control Services

G. Post Startup Services

H. Special Tools and Lubricating Equipment

I. Lubrication

1.2 DESCRIPTION

A. Proposed Manufacturers List: Within 15 calendar days of the date of the Notice to Proceed, submit to the ENGINEER a list of the names of proposed manufacturers, material men, suppliers and subcontractors, obtain approval of this list by the County Manager or designee prior to submission of any working drawings. Upon request submit evidence to ENGINEER that each proposed manufacturer has manufactured a similar product to the one specified and that it has previously been used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

B. All material and equipment designed or used in connection with a potable (drinking) water system shall conform to the requirements of the National Sanitation Foundation (NSF) Standard 61, “Drinking Water System Components – Health Effects.”

C. Furnish and install Material and Equipment which meets the following:

1. Conforms to applicable specifications and standards.

2. Complies with size, make, type, and quality specified or as specifically approved, in writing, by ENGINEER.

3. Will fit into the space provided with sufficient room for operation and maintenance access and for properly connecting piping, ducts and services, as applicable. Make the clear spaces that will be available for operation and maintenance access and connections equal to or greater than those shown and meeting all the manufacturers' requirements. If adequate space is not available, the CONTRACTOR shall advise the ENGINEER for resolution.

4. Manufactured and fabricated in accordance with the following:

   a. Design, fabricate, and assemble in accordance with best engineering and shop practices.

   b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

   c. Provide two or more items of same kind identical, by same manufacturer.

   d. Provide materials and equipment suitable for service conditions.

   e. Adhere to equipment capabilities, sizes, and dimensions shown or specified unless variations are specifically approved, in writing, in accordance with the Contract Documents.

   f. Adapt equipment to best economy in power consumption and maintenance. Proportion parts and components for stresses that may occur during continuous or intermittent operation, and for any additional stresses that may occur during fabrication or installation.

   g. Working parts are readily accessible for inspection and repair, easily duplicated and replaced.

5. Use material or equipment only for the purpose for which it is designed or specified.

1.3 SUBSTITUTIONS

A. Substitutions:

1. Make any CONTRACTOR's requests for changes in equipment and materials from those required by the Contract Documents in writing, for approval by the COUNTY. Such requests are considered requests for substitutions and are subject to CONTRACTOR's representations and review provisions of the Contract Documents when one of following conditions are satisfied:

a. Where request is directly related to an "or County approved equal" clause or other language of same effect in Specifications.

b. Where required equipment or material cannot be provided within Contract Time, but not as result of CONTRACTOR's failure to pursue Work promptly or to coordinate various activities properly.

c. Where required equipment or material cannot be provided in manner compatible with other materials of Work, or cannot be properly coordinated therewith.

2. CONTRACTOR'S Options:

a. Where more than one choice is available as options for CONTRACTOR's selection of equipment or material, select option compatible with other equipment and materials already selected (which may have been from among options for other equipment and materials).

b. Where compliance with specified standard, code or regulation is required, select from among products that comply with requirements of those standards, codes, and regulations.

c. Or County approved Equal: For equipment or materials specified by naming one or more equipment manufacturer(s) and "or County approved equal", submit request for substitution for any equipment or manufacturer not specifically named.

B. Conditions Which are Not Substitution:

1. Requirements for substitutions do not apply to CONTRACTOR options on materials and equipment provided for in the Specifications.

2. Revisions to Contract Documents, where requested by the County Manager or designee or ENGINEER, are "changes" not "substitutions".

3. CONTRACTOR's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute substitutions and do not constitute basis for a Change Order, except as provided for in Contract Documents.

1.4 MANUFACTURER'S WRITTEN INSTRUCTIONS

A. Instruction Distribution: When the Contract Documents require that installation, storage, maintenance and handling of equipment and materials comply with manufacturer's written instructions, obtain and distribute printed copies of such instructions to parties involved in installation, including six copies to ENGINEER.

1. Maintain one set of complete instructions at jobsite during storage and installation, and until completion of work.

B. Manufacturer's Requirements: Store, maintain, handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's written instructions and in conformity with Specifications.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult ENGINEER for further instructions.

2. Do not proceed with work without written instructions.

C. Performance Procedures: Perform work in accordance with manufacturer's written instructions. Do not omit preparatory steps or installation procedures, unless specifically modified or exempted by Contract Documents.

1.5 TRANSPORTATION AND HANDLING

A. Coordination with Schedule: Arrange deliveries of materials and equipment in accordance with Construction Progress Schedules. Coordinate to avoid conflict with work and conditions at site.

1. Deliver materials and equipment in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Protect bright machined surfaces, such as shafts and valve faces, with a heavy coat of grease prior to shipment.

3. Immediately upon delivery, inspect shipments to determine compliance with requirements of Contract Documents and approved submittals and that material and equipment are protected and undamaged.

B. Handling: Provide equipment and personnel to handle material and equipment by methods recommended by manufacturer to prevent soiling or damage to materials and equipment or packaging.

1.6 STORAGE, PROTECTION, AND MAINTENANCE

A. On-site storage areas and buildings:

1. Conform storage buildings to requirements of Section 015000.

2. Coordinate location of storage areas with ENGINEER and the COUNTY.

3. Arrange on site storage areas for proper protection and segregation of stored materials and equipment with proper drainage. Provide for safe

travel around storage areas and safe access to stored materials and equipment.

4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

5. Store materials such as pipe, reinforcing and structural steel, and equipment on pallets, blocks or racks, off ground.

6. PVC Pipe may be damaged by prolonged exposure to direct sunlight, take necessary precautions during storage and installation to avoid this damage. Store pipe under cover, and install with sufficient backfill to shield it from the sun.

7. Store fabricated materials and equipment above ground, on blocking or skids, to prevent soiling or staining. Cover materials and equipment that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

B. Interior Storage:

1. Store materials and equipment in accordance with manufacturer's instructions, with seals and labels intact and legible.

2. Store materials and equipment, subject to damage by elements, in weathertight enclosures.

3. Maintain temperature and humidity within ranges required by manufacturer's instructions.

C. Accessible Storage: Arrange storage in a manner to provide easy access for inspection and inventory. Make periodic inspections of stored materials or equipment to assure that materials or equipment are maintained under specified conditions and free from damage or deterioration.

1. Perform maintenance on stored materials of equipment in accordance with manufacturer's instructions, in presence of the County Manager or designee or ENGINEER.

2. Submit a report of completed maintenance to ENGINEER with each Application for Payment.

3. Failure to perform maintenance, to notify ENGINEER of intent to perform maintenance or to submit maintenance report may result in rejection of material or equipment.

D. COUNTY's Responsibility: The COUNTY assumes no responsibility for materials or equipment stored in buildings or on-site. CONTRACTOR assumes full responsibility for damage due to storage of materials or equipment.

E. CONTRACTOR's Responsibility: For COUNTY Capital Improvement Projects, the CONTRACTOR assumes full responsibility for protection of completed construction until facilities (or portions of facilities) are accepted for operation and placed in service. Repair and restore damage to completed Work equal to its original condition.

F. Special Equipment: Use only rubber tired wheelbarrows, buggies, trucks, or dollies to wheel loads over finished floors, regardless if the floor has been protected or not. This applies to finished floors and to exposed concrete floors as well as those covered with composition tile or other applied surfacing.

G. Surface Damage: Where structural concrete is also the finished surface, take care to avoid marking or damaging surface.

1.7 MANUFACTURER'S FIELD QUALITY CONTROL SERVICES

A. General:

1. Provide manufacturer's field services in accordance with this subsection for those tasks specified in other sections.

2. Include and pay all costs for suppliers' and manufacturers' services, including, but not limited to, those specified.

B. Installation Instruction: Provide instruction by competent and experienced technical representatives of equipment manufacturers or system suppliers as necessary to resolve assembly or installation procedures that are attributable to, or associated with, the equipment furnished.

C. Installation Inspection, Adjustments and Startup Participation:

1. Provide competent and experienced technical representatives of equipment manufacturers or system suppliers to inspect the completed installation as follows.

a. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions that may cause damage.

b. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

c. Verify that wiring and support components for equipment are complete.

d. Verify that equipment or system is installed in accordance with the manufacturer's recommendations, approved shop drawings and the Contract Documents.

e. Verify that nothing in the installation voids any warranty.

2. Provide manufacturer's representatives to perform initial equipment and system adjustment and calibration conforming to the manufacturer's recommendations and instructions, approved shop drawings and the Contract Documents.

3. Start-up of Equipment: Provide prior written notice of proposed start-up to the County Manager or designee and ENGINEER. Obtain ENGINEER's approval before start-up of equipment. COUNTY's departmental representative must be on-site during start-up. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.

4. Furnish ENGINEER with three copies of the following. When training is specified, furnish the copies at least 48 hours prior to training.

   a. "Certificate of Installation, Inspection and Start-up Services" by manufacturers' representatives for each piece of equipment and each system specified, certifying:

      (1) That equipment is installed in accordance with the manufacturers' recommendations, approved shop drawings, and the Contract Documents.

      (2) That nothing in the installation voids any warranty.

      (3) That equipment has been operated in the presence of the manufacturer's representative.

      (4) That equipment, as installed, is ready to be operated by others.

   b. Detailed report by manufacturers' representatives, for review by ENGINEER of the installation, inspection and start-up services performed, including:

      (1) Description of calibration and adjustments if made; if not in Operation and Maintenance Manuals, attach copy.

      (2) Description of any parts replaced and why replaced.

(3) Type, brand name, and quantity of lubrication used, if any.

(4) General condition of equipment.

(5) Description of problems encountered, and corrective action taken.

(6) Any special instructions left with CONTRACTOR or ENGINEER.

D. Field Test Participation: Provide competent and experienced technical representatives of all equipment manufacturers and system suppliers as necessary to participate in field testing of the equipment specified in Section 014500.

E. Trouble-Free Operation: Provide competent and experienced technical representatives of all equipment manufacturers and system suppliers as necessary to place the equipment in trouble-free operation after completion of start-up and field tests.

1.8 SPECIAL TOOLS AND LUBRICATING EQUIPMENT

A. General: Furnish, per manufacturer's recommendations, special tools required for checking, testing, parts replacement, and maintenance. (Special tools are those which have been specially designed or adapted for use on parts of the equipment, and which are not customarily and routinely carried by maintenance mechanics.)

B. Time of Delivery: Deliver special tools and lubricating equipment to the COUNTY when unit is placed into operation and after operating personnel have been properly instructed in operation, repair, and maintenance of equipment.

C. Quality: Provide tools and lubricating equipment of a quality meeting equipment manufacturer's requirements.

1.9 LUBRICATION

A. General: Where lubrication is required for proper operation of equipment, incorporate in the equipment the necessary and proper provisions in accordance with manufacturer's requirements. Where possible, make lubrication automated and positive.

B. Oil Reservoirs: Where oil is used, supply reservoir of sufficient capacity to lubricate unit for a 24-hour period.

1.10 WARRANTY

A. Provide copies of any warranties of materials or equipment to the County Manager or designee with documentation showing compliance with warranty requirements.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

CERTIFICATE OF INSTALLATION, INSPECTION AND START-UP SERVICES

Project

_____

Equipment

_____

Specification Section

_____

Contract

_____

I hereby certify that the named equipment has been inspected, adjusted and operated by the Manufacturers' Representative and further certify:

1. That the equipment is installed in accordance with the manufacturer's recommendations, approved shop drawings, and the Contract Documents.
2. That nothing in the installation voids any warranty.
3. That equipment has been operated in the presence of the manufacturer's representative.
4. That equipment, as installed, is ready to be operated by others.

MANUFACTURERS' REPRESENTATIVE

Signature _____ Date _____

Name (print) _____

Title _____

Representing _____

CONTRACTOR

Signature _____ Date _____

Name (print) _____

Title _____

Attach the detailed report called for by Specification Section 016100.

Complete and submit three copies of this form with the detailed report to ENGINEER as specified.

CERTIFICATE OF POST START-UP SERVICES

Project _____

Equipment

_____

Specification Section

_____

Contract _____

I hereby certify the Manufacturers' Representative has inspected this equipment, made adjustments and calibrations, and that it is operating in conformance with the design, specifications, and manufacturer's requirements. Detailed notation of improper operation with corresponding recommendations, if any, are made and attached to this form.

MANUFACTURERS' REPRESENTATIVE

Signature _____ Date _____

Name (print) _____

Title_____

Representing_____

CONTRACTOR

Signature _____ Date _____

Name (print) _____

Title_____

ENGINEER

Signature _____ Date _____

Name (print) _____

Title_____

Complete and submit three copies of this form to the County Manager or designee upon completion of 6 to 11 months reinspection as required by Specification Section 016100.

END OF SECTION

SECTION 017300

MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.1 SCOPE OF WORK

A. This Section includes operations that cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved. Furnish all labor, materials, equipment and incidentals to complete the work under this Section.

B. The work of this Section includes, but is not limited to, the following:

1. Restoring of sidewalks, driveways, curbing and gutters.

2. Crossing utilities.

3. Relocation of existing water lines, low pressure, gas lines, telephone lines, electric lines, cable TV lines and storm drains as necessary, all as shown on the drawings.

4. Restoring easements and rights-of-ways.

5. Cleaning up.

6. Incidental work.

1.2 WORK SPECIFIED UNDER OTHER SECTIONS

A. Complete all work in a workmanlike manner by competent workmen in full compliance with all applicable sections of these Specifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials required for this Section shall be of at least the same type and quality as materials that are to be restored. Where possible, reuse existing materials that are removed and then replaced, with the exception of paving.

PART 3 EXECUTION

3.1 RESTORING OF CURBING, FENCES, AND GUARD RAILS

A. Protect existing curbing. If necessary, remove curbing from joint to joint and replace after backfilling. Replace curbing that is damaged during construction with curbing of equal quality and dimension.

3.2 CROSSING UTILITIES

A. This item shall include any extra work required in crossing culverts, water courses, drains, water mains, and other utilities, including all sheeting and bracing, extra excavation and backfill, or any other work required for the crossing, whether or not shown on the drawings.

3.3 RELOCATIONS OR REPLACEMENT OF EXISTING GAS LINES, TELEPHONE LINES, ELECTRIC LINES, CABLE TV LINES AND DRAINAGE CULVERT

A. Notify the proper authority of the utility involved when relocation or replacement of these lines is required. Coordinate all work by the utility so that the progress of construction will not be hampered.

B. Reference all side drains, side ditches, swales, and storm sewers as to grade and location prior to construction, maintain them during construction, and repair them as necessary after construction. Where drainage structures are disturbed and must be replaced, the minimum size replacement shall be twelve inches (12"). All drainage culverts installed shall have mitered ends in conformance with the Collier County Standard Details. Place the culvert to the specified elevations and regrade or reshape the swale and road shoulders that have been disturbed or damaged during construction.

3.4 PROTECTION AND RESTORATION OF PROPERTY

A. Protection and Restoration of Property: During the course of construction, take special care and provide adequate protection in order to minimize damage to vegetation, surfaced areas, and structures within the construction right-of-way, easement or site, and take full responsibility for the replacement or repair thereof. Immediately repair any damage to private property created by encroachment thereon. Should the removal or trimming of valuable trees, shrubs, or grass be required to facilitate the installation within the designated construction area, this work shall be done in cooperation with the County and/or local communities which the work takes place. Said valuable vegetation, removed or damaged, shall be replanted, if possible, or replaced by items of equal quality, and maintained until growth is re-established. Topsoil damaged in the course of work shall be replaced in kind with suitable material, graded to match existing grade. Following construction completion, the work area along the route of the installation shall be finish grade to elevations compatible with the adjacent surface, with grassing or hand raking required within developed areas.

B. Existing lawn surfaces damaged by construction shall be re-graded and re-sodded or re-seeded. These areas shall be maintained until all work under this Contract has been completed and accepted.

3.5 CLEANING UP

A. Remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall render the site of the work in a neat and orderly condition.

B. Work site clean-up shall follow construction operations without delay and in accordance with Section 017423.

3.6 INCIDENTAL WORK

A. Do all incidental work not otherwise specified, but obviously necessary for the proper completion of the Contract as specified and as shown on the drawings.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 017416

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for clearing of all areas within the Contract limits and other areas shown, including work designated in permits and other agreements, in accordance with the requirements of Division 1.

B. Related Work Specified in Other Sections Includes:

1. Section 024100 – Demolition

2. Section 312316 - Excavation - Earth and Rock

3. Section 312323 – Backfilling

4. Section 329200 – Restoration by Sodding or Seeding

1.2 DEFINITIONS

A. Clearing: Clearing is the removal from the ground surface and disposal, within the designated areas, of trees, brush, shrubs, down timber, decayed wood, other vegetation, rubbish and debris as well as the removal of fences.

B. Grubbing: Grubbing is the removal and disposal of all stumps, buried logs, roots larger than 1-1/2 inches, matted roots and organic materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF EXISTING UTILITIES

A. Prior to site clearing, locate and mark all existing utilities in coordination with the COUNTY and other affected owners. Protect all existing utilities and markings from damage. In case of damage to existing utilities caused by construction activities, contact the owner of the utility or appropriate COUNTY department (Water or Wastewater) immediately. Repair any damage to existing utilities or markings caused by construction activities in coordination with or as directed by the owner of the utility.

3.2 TREE REMOVAL

A. Tree Removal Within Right-of-Way Limits: Remove trees and shrubs within the right-of-way unless otherwise indicated.

1. Remove trees and shrubs to avoid damage to trees and shrubs designated to remain.

2. Grub and remove tree stumps and shrubs felled within the right-of-way to an authorized disposal site. Fill depressions created by such removal with material suitable for backfill as specified in Section 312323.

B. Tree Removal Outside Right-of-Way Limits: Do not cut or damage trees outside the right-of-way unless plans show trees to be removed or unless written permission has been obtained from the property owner. Furnish three copies of the written permission before removal operations commence.

C. If the landowner desires the timber or small trees, cut and neatly pile it in 4 foot lengths for removal by the owner; otherwise, dispose of it by hauling it away from the project site. If hauled timber is of merchantable quality, credit shall accrue to the CONTRACTOR.

3.3 TREES AND SHRUBS TO BE SAVED

A. Protection: Protect trees and shrubs within the work limits that are so delineated or are marked in the field to be saved from defacement, injury and destruction.

1. Work within the limits of the tree drip line with extreme care using either hand tools or equipment that will not cause damage to trees.

a. Do not disturb or cut roots unnecessarily. Do not cut roots 1-1/2 inches and larger unless approved.

b. Immediately backfill around tree roots after completion of construction in the vicinity of trees.

c. Do not operate any wheeled or tracked equipment within drip line.

2. Protect vegetation from damage caused by emissions from engine-powered equipment.

3. During working operations, protect the trunk, foliage and root system of all trees to be saved with boards or other guards placed as shown and as required to prevent damage, injury and defacement.

a. Do not pile excavated materials within the drip line or adjacent to the trunk of trees.

b. Do not allow runoff to accumulate around trunk of trees.

c. Do not fasten or attach ropes, cables, or guy wires to trees without permission. When such permission is granted, protect the tree before making fastening or attachments by providing burlap wrapping and softwood cleats.

d. The use of axes or climbing spurs for trimming will not be permitted.

e. Provide climbing ropes during trimming.

4. Remove shrubs to be saved, taking a sufficient earth ball with the roots to maintain the shrub.

a. Temporarily replant if required, and replace at the completion of construction in a condition equaling that which existed prior to removal.

b. Replace in kind if the transplant fails.

5. Have any tree and shrub repair performed by a tree surgeon properly licensed by the State of Florida and within 24 hours after damage occurred.

3.4 CLEARING AND GRUBBING

A. Clearing: Clear all items specified to the limits shown and remove cleared and grubbed materials from the site.

1. Do not start earthwork operations in areas where clearing and grubbing is not complete, except that stumps and large roots may be removed concurrent with excavation.

2. Comply with erosion, sediment control and storm management measures as specified in Division 1.

B. Grubbing: Clear and grub areas to be excavated, areas receiving less than 3 feet of fill and areas upon which structures are to be constructed.

1. Remove stumps and root mats in these areas to a depth of not less than 18 inches below the subgrade of sloped surfaces.

2. Fill all depressions made by the removal of stumps or roots with material suitable for backfill as specified in Section 312323.

C. Limited Clearing: Clear areas receiving more than 3 feet of fill by cutting trees and shrubs as close as practical to the existing ground. Grubbing will not be required.

D. Dispose of all material and debris from the clearing and grubbing operation by hauling such material and debris away to an approved dump. The cost of disposal (including hauling) of cleared and grubbed material and debris shall be considered a subsidiary obligation of the CONTRACTOR; include the cost in the bid for the various classes of work.

3.5 TOPSOIL

A. Stripping: Strip existing topsoil from areas that will be excavated or graded prior to commencement of excavating or grading and place in well-drained stockpiles in approved locations.

END OF SECTION

SECTION 017423

CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. General Requirements

B. Disposal Requirements

1.2 GENERAL REQUIREMENTS

A. Execute cleaning during progress of the work and at completion of the work.

1.3 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 DURING CONSTRUCTION

A. Execute daily cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris, resulting from construction operations.

B. Provide onsite containers for the collection of waste materials, debris and rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in onsite containers.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.2 FINAL CLEANING

A. Requirements: At the completion of work and immediately prior to final inspection, clean the entire project as follows:

1. Thoroughly clean, sweep, wash, and polish all work and equipment provided under the Contract, including finishes. Leave the structures and site in a complete and finished condition to the satisfaction of the ENGINEER.

2. Direct all subcontractors to similarly perform, at the same time, an equivalent thorough cleaning of all work and equipment provided under their contracts.

3. Remove all temporary structures and all debris, including dirt, sand, gravel, rubbish and waste material.

4. Should the CONTRACTOR not remove rubbish or debris or not clean the buildings and site as specified above, the OWNER reserves the right to have the cleaning done at the expense of the CONTRACTOR.

B. Employ experienced workers, or professional cleaners, for final cleaning.

C. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

D. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.

E. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces. Polish surfaces so designated to shine finish.

F. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.

G. Replace air-handling filters if units were operated during construction.

H. Clean ducts, blowers, and coils, if air-handling units were operated without filters during construction.

I. Vacuum clean all interior spaces, including inside cabinets.

J. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

K. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly-painted surfaces.

L. Clean interior of all panel cabinets, pull boxes, and other equipment enclosures.

M. Wash and wipe clean all lighting fixtures, lamps, and other electrical equipment that may have become soiled during installation.

N. Perform touch-up painting.

O. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

P. Remove erection plant, tools, temporary structures and other materials.

Q. Remove and dispose of all water, dirt, rubbish or any other foreign substances.

3.3 FINAL INSPECTION

A. After cleaning is complete the final inspection may be scheduled. The inspection will be done with the OWNER and ENGINEER.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 017823

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description

B. Quality Assurance

C. Format and Contents

1.2 DESCRIPTION

A. Scope: Furnish to the ENGINEER three (3) printed copies and one (1) electronic copy of an Operation and Maintenance Manual for all equipment and associated control systems furnished and installed.

1.3 QUALITY ASSURANCE

A. Reference Codes and Specifications: No current government or commercial specifications or documents apply.

1.4 FORMAT AND CONTENTS

A. Prepare and arrange each copy of the manual as follows:

1. One copy of an equipment data summary (see sample form) for each item of equipment.

2. One copy of an equipment preventive maintenance data summary (see sample form) for each item of equipment.

3. One copy of the manufacturer's operating and maintenance instructions. Operating instructions include equipment start-up, normal operation, shutdown, emergency operation and troubleshooting. Maintenance instructions include equipment installation, calibration and adjustment, preventive and repair maintenance, lubrication, troubleshooting, parts list and recommended spare parts. Include Manufacturer’s telephone numbers for Technical Support.

4. List of electrical relay settings and control and alarm contact settings.

5. Electrical interconnection wiring diagram for equipment furnished including all control and lighting systems.

6. One valve schedule giving valve number, location, fluid, and fluid destination for each valve installed. Group all valves in same piping systems together in the schedule. Obtain a sample of the valve numbering system from the ENGINEER.

7. Furnish all O&M Manual material on 8-1/2 by 11 commercially printed or typed forms or an acceptable alternative format.

B. Organize each manual into sections paralleling the equipment specifications. Identify each section using heavy section dividers with reinforced holes and numbered plastic index tabs. Use 3-ring, hard-back binders. Punch all loose data for binding. Arrange composition and printing so that punching does not obliterate any data. Print on the cover and binding edge of each manual the project title, and manual title, as furnished and approved by the ENGINEER.

C. Leave all operating and maintenance material that comes bound by the equipment manufacturer in its original bound state. Cross-reference the appropriate sections of the CONTRACTOR's O&M manual to the manufacturers' bound manuals.

D. Label binders Volume 1, 2, and so on, where more than one binder is required. Include the table of contents for the entire set, identified by volume number, in each binder.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

Collier County Utilities

_____

Equipment Data Summary

Equipment Name:		Specification Reference:
Manufacturer:		
	Name:	
	Address:	
	Telephone:	
Number Supplied:		Location/Service:
Model No:		Serial No:
Type:		
Size/Speed/Capacity/Range (as applicable):		
Power Requirement (Phase/Volts/Hertz):		
Local Representative:		
	Name:	
	Address:	
	Telephone:	
NOTES:		

Collier County Utilities

_____

Preventive Maintenance Summary

Equipment Name:	Location:
Manufacturer:	
Name:	
Address:	
Telephone:	
Model No:	Serial No:

Maintenance Task	Lubricant/Part	D W M Q SA A	O&M Manual Reference

NOTES:

*D-Daily W-Weekly M-Monthly Q-Quarterly SA-Semi-Annual A-Annual

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

Requirements for preparation, maintenance and submittal of project record documents. The Contractor's attention is specifically directed to Part 3.2.B. of this Section, which requires use of a Florida licensed surveyor to sign and seal all record drawings.

1.2 RELATED SECTIONS

A. Section 014500 – Quality Control

B. Section 022100 – Lines and Grades

1.3 SUBMITTALS

A. General: Provide all submittals as specified.

B. At Contract close out, three (3) sets of signed and sealed Record Drawings for the potable water OR non-potable irrigation water OR wastewater systems to be conveyed shall be submitted to the County or District. If potable water AND wastewater, AND/OR non-potable irrigation water systems or portion(s) thereof are being conveyed, five (5) sets of signed and sealed Record Drawings shall be submitted to the County.

C. Provide electronic submittal as specified in Part 3.2.B of this Section.

1.4 REQUIREMENTS (For County Capital Projects Only)

Contractor shall maintain at the site for the County one record copy of:

A. Drawings
B. Specifications
C. Addenda
D. Change orders and other modifications to the Contract
E. Design Engineer’s field orders or written instructions
F. Approved shop drawings, working drawings and samples
G. Field test records

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Project record documents shall be stored in Contractor's field office or other location approved by the County apart from documents used for construction

B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Make documents and samples available at all times for inspection by the County.

3.2 RECORDING

A. General

1. Record Drawings shall accurately depict the constructed configuration of all potable water, non-potable irrigation water and/or wastewater systems or portion(s) thereof. All revisions to County staff approved construction drawings shall be precisely identified and illustrated on the Record Drawings. All Record Drawings of utility systems or portion(s) thereof that are not being conveyed to the Board shall bear, on the cover sheet, a prominently displayed DISCLAIMER, in bold lettering at least one-quarter (1/4) inch high, stating: "All on-site potable water, non-potable irrigation and/or wastewater systems shall be owned, operated and maintained by the private owner(s) and/or the master condominium/homeowners' association, successors or assigns" (or other comparable private ownership).
2. Label each document "PROJECT RECORD" or similar text in neat, large printed letters.
3. Survey information can be obtained as needed by the use of 2-inch PVC labeled pipes installed over underground improvements by the contractor during construction. This method is an adequate process for obtaining record information.
4. Record information in red ink.

B. Record Drawings

1. The Record Drawings require signed and sealed as-built information, including above and below ground improvements including underground piping, valves and ductbanks, by a Florida Licensed Land Surveyor.
2. The Record Drawings shall identify the entity that provided the record data.
3. Drawings shall be referenced to and tie-in with the state plane coordinate system, with a Florida East Projection, and a North American Datum 1983/1990 (NAD 83/90 datum), and with United States Survey Feet (USFEET) units, and North American Vertical Datum 1988 (NAVD 88), as established by a registered Florida surveyor and mapper.

4. Files shall be also submitted in two digital file formats, specifically Drawing File (DWG) format in AutoCAD Release 2004 or later version as well as PDF format (latest version).
5. Record drawings shall be submitted to the County staff within 60 days of the final construction completion date.
6. The following items shall be accurately depicted in vertical and horizontal directions on the Record Drawings:

    a) All associated rights-of-way and utility easements whether shown on the Contract Drawings, found during construction or added during the Work.

    b) Sewer system inverts, pipe slopes, manhole rims and run lengths.

    c) Sewer lateral locations stationed from the nearest downstream manhole.

    d) Sewer main stub extension inverts at both ends, pipe slope, run length and location.

    e) Tie-ins to all valves, air release assemblies, fire hydrants, manholes, blowoffs, etc.

    f) Top elevations of treatment plant structures and tanks.

    g) Manhole center for sanitary sewers and storm sewers as related to utility improvements.

    h) Pipe changes in direction or slope.

    i) Buried valves, tees and fittings.

    j) Pipe invert, or centerline, elevations at crossing with other pipe.

    k) Invert, or centerline, elevations and coordinates of existing exposed pipe at crossing with underground pipe installed under this project.

    l) Other horizontal and vertical record data pertinent to completed Work.

    m) Water meter box locations.

    n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables shall be depicted from source to County asset found in associated rights-of-way and utility easements.
7. Each pipe elevation shall be clearly identified as to whether it is top of pipe, centerline of pipe or invert of pipe.
8. For County Capital Projects only, Record Drawings shall indicate all deviations from Contract Drawings including:

    a) Field changes.

    b) Changes made by Change Order.

    c) Details, utilities, piping or structures not on original Contract Drawings.

    d) Equipment and piping relocations.

C. Specifications and Addenda (For County Capital Projects Only)

Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or Change Order.

D. Shop Drawings (For County Capital Projects Only)

1. Keep one copy of the final, approved shop drawing with the Record Documents.
2. Record documents should include all shop drawing information submitted. Additional information submitted during the review process should be filed with the appropriate submittal.

END OF SECTION

SECTION 020500

CONNECTIONS TO EXISTING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Submittals

C. Scheduling of Shutdown

1.2 RELATED SECTIONS

A. Section 011000 – Summary of Work

B. Section 015000 – Construction Facilities and Temporary Controls

C. Section 015526 – Traffic Regulations and Public Safety

D. Section 320117 – Pavement Repair and Restoration

1.3 GENERAL REQUIREMENTS

A. Be responsible for all connection to existing systems, cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

B. Coordination: Before connection is performed, verify and provide for any pipe restraint that may be required for the new connection. Perform all cutting, fitting or patching of the Work that may be required to make the several parts thereof join in accordance with the Contract Documents. Perform restoration with competent workmen skilled in the trade.

C. If changes to a “looped” water distribution system occurring during construction result in dead ends to any new or relocated water mains, connect such dead

ends to the nearest water main. In cases where no nearby water main is available, provide a flushing device in coordination with the COUNTY at no additional cost to the COUNTY.

D. Improperly Timed Work: Perform all cutting and patching required to install improperly timed work, to remove samples of installed materials for testing, and to provide for alteration of existing facilities or for the installation of new Work in the existing construction.

E. Limitations: Except when the cutting or removal of existing construction is specified or indicated, do not undertake any cutting or demolition, which may affect the structural stability of the Work or existing facilities without the ENGINEER's concurrence.

F. Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities (in accordance with pipe separation criteria located in the Design Criteria section). Any and all variations from this order must be approved by the Water or Wastewater Department.

2. **Before commencement of any excavation, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call, in accordance with State Statute Chapter 556 "Underground Facility Damage Prevention and Safety", after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.**

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits.

1.4 SUBMITTALS

A. Submit a written request to the ENGINEER well in advance of executing any cutting or alteration which affects:

1. Work of the COUNTY or any separate contractor.

2. Structural value or integrity of any element of the project or work.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Include in request:

1. Identification of the work.

2. Description of affected work.

3. The necessity for cutting, alteration or excavation.

4. Effect on work of the COUNTY or any separate contract, or on structural or weatherproof integrity of work.

5. Description of proposed work:

a. Scope of cutting, patching, alteration, or excavation.

b. Trades who will execute the work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate contractor whose work will be affected.

C. SUBMIT WRITTEN NOTICE TO THE ENGINEER DESIGNATING THE DATE AND THE TIME THE WORK WILL BE UNCOVERED.

1.5 SCHEDULING OF SHUTDOWN

A. Connections to Existing Facilities: If any connections, replacement, or other work

requiring the shutdown of an existing facility is necessary, schedule such work at times when the impact on the COUNTY's normal operation is minimal. If shutdown involves the water distribution or transmission system, provide notice to the COUNTY Water Department at least two (2) weeks prior to the proposed shutdown, including date, time and anticipated length of interruption of service. Overtime, night and weekend work without additional compensation from the COUNTY, may be required to make these connections, especially if the connections are made at times other than those specified. The connection of new or existing pipelines is prohibited from starting until CONTRACTOR assures that the system can receive the new flow.

B. Interruptions of Service: Perform cut-ins into lines at a time approved in writing by the County Manager or designee. Whenever it is required to turn off valves which may interrupt the water supply of residents or businesses, notify all concerned parties or agencies with personal contact, door hangers or written notice at least forty-eight (48) hours in advance of such cut-off, after having obtained the approval of the County Manager or designee. Provide a copy of the written notice to the Water Distribution Section by fax. ONLY COUNTY PERSONNEL MAY OPERATE COUNTY-OWNED VALVES. Maintain water service to existing connections during construction, under any and all conditions and at no additional cost to the COUNTY. Thoroughly clean and swab all pipe and fittings for cut-ins with a concentrated solution of calcium hypochlorite.

C. Request for Water System Shutdowns: When plans call for connection to existing water distribution facilities or the CONTRACTOR plans to shut down existing utilities or where damage to such facilities is likely in order to complete construction of items under this contract, furnish the County Manager or designee with a written request for connection. The COUNTY Water Distribution Section will identify the locations of all water valves needed to isolate the point of connection in the event that the existing facilities are damaged while making the connection. Identify in the request means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

D. Request for Wastewater Diversion: Submit a request for each diversion necessary during construction to the County Manager or designee and the ENGINEER sufficiently in advance of any required diversion. Identify in the request the valves, bypass piping, portable pumper trucks or any other means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of projects, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of the work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with work until the ENGINEER has provided further instructions.

3.2 PREPARATION

A. In cases where service to utility customers is interrupted, provide adequate equipment with backup onsite to assure prompt restoration of service.

B. Provide adequate temporary support as necessary to assure structural value or integrity or affected portion of work.

C. Provide devices and methods to protect other portions of project from damage.

D. Provide protection from elements for that portion of the project that may be exposed by cutting and patching work, and maintain excavations free from water.

E. Material Removal: Cut and remove all materials to the extent shown or as required to complete the work. Remove materials in a careful manner with no damage to adjacent facilities. Remove materials that are not salvageable from the site.

3.3 PERFORMANCE

A. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. Restore work, which has been cut or removed; install new products to provide completed work in accord with requirements of contract documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

3.4 PAVEMENT RESTORATION

A. Restore all pavement or roadway surfaces in accordance with Section 320117 – Pavement Repair and Restoration.

B. Restore, replace or rebuild existing street paving, including underdrains, if any are encountered, where damaged, using the same type of construction as was in the original. Be responsible for restoring all such work, including subgrade, base courses, curb and gutter or other appurtenances where present. The County Manager or designee will obtain the permits listed in the Contract Documents. Obtain and pay for at CONTRACTOR’s expense any additional local or other governmental permits as may be required for the opening of streets and be satisfied as to any requirements other than those herein set forth which may affect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

C. This section does not describe the construction of new road surfaces or the complete resurfacing of existing pavements.

D. In all cases, the CONTRACTOR will be required to maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract for a period of 12 months after the acceptance of the Contract, including the removal and replacement of such work wherever surface depressions or underlying cavities result from settlement of trench backfill.

E. Perform all the final resurfacing or repaving of streets or roads, over the excavations made and be responsible for relaying paving surfaces of roads that have failed or been damaged at any time before the termination of the maintenance period on account of work done by him. Resurface or repave over any tunnel jacking, or boring excavation that settles or breaks the surface, repave to the satisfaction of the County Manager or designee and at the CONTRACTOR's expense. Conform backfilling of trenches and the preparation of subgrades to the requirements of excavation and backfilling of pipeline trenches.

F. Where pipeline construction crosses paved streets, driveways or sidewalks, the CONTRACTOR may elect, at no additional cost to the COUNTY, to place the pipe by the jacking and boring, horizontal direction drilling, or tunneling method in lieu of cutting and patching of the paved surfaces. Such work shall be accomplished in accordance with all applicable sections of the Contract Documents.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 022100

LINES AND GRADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General

B. Surveys

C. Datum Plane

D. Protection of Survey Data

1.2 GENERAL

A. Construct all work in accordance with the lines and grades shown on the Drawings. Assume full responsibility for keeping all alignment and grade.

1.3 SURVEYS

A. Reference Points: The COUNTY will provide reference points for the work as described in the General Conditions. Base horizontal and vertical control points will be designated by the ENGINEER and used as datum for the Work. Perform all additional survey, layout, and measurement work.

1. Keep ENGINEER informed, sufficiently in advance, of the times and places at which work is to be performed so that base horizontal and vertical control points may be established and any checking deemed necessary by ENGINEER may be done, with minimum inconvenience to the ENGINEER and at no delay to CONTRACTOR. It is the intention not to impede the Work for the establishment of control points and the checking of lines and grades set by the CONTRACTOR. When necessary, however, suspend working operations for such reasonable time as the ENGINEER may require for this purpose. Costs associated with such suspension are deemed to be included in the Contract Price, and no time extension or additional costs will be allowed.

2. Provide an experienced survey crew including an instrument operator, competent assistants, and any instruments, tools, stakes, and other materials required to complete the survey, layout, and measurement of work performed by the CONTRACTOR.

1.4 DATUM PLANE

A. All elevations indicated or specified refer to the North American Vertical Datum 1988 (NAVD 88), of the United States Coast and Geodetic Survey and are expressed in feet and decimal parts thereof, or in feet and inches.

1.5 PROTECTION OF SURVEY DATA

A. General: Safeguard all points, stakes, grade marks, known property corners, monuments, and benchmarks made or established for the Work. Reestablish them if disturbed, and bear the entire expense of checking reestablished marks and rectifying work improperly installed.

B. Records: Keep neat and legible notes of measurements and calculations made in connection with the layout of the Work. Furnish copies of such data to the ENGINEER for use in checking the CONTRACTOR's layout. Data considered of value to the County Manager or designee will be transmitted to the County Manager or designee by the ENGINEER with other records on completion of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 022200

PRE-CONSTRUCTION AUDIO-VIDEO RECORDING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work specified in this section includes the requirements for pre-construction audio-video recordings necessary to document existing conditions on public and private property.

PART 2 PRODUCTS

2.1 CONTRACTOR REQUIREMENTS

A. The Contractor shall provide color videos showing pre-construction site conditions of all public and private property within the scope of construction. The videos shall be on DVD and electronic format indicating on the beginning and front of each DVD, the date, job title and location where the video was taken. The videos shall be clear and shall thoroughly document all existing structures and landscaping.

B. Two copies of the DVD and one electronic copy (on a USB flash drive or other appropriate device) shall be delivered to the County Manager or designee for review.

PART 3 EXECUTION

3.1 INSPECTION

A. Construction on private property shall not commence until the County Manager or designee has reviewed and approved the audio-video recording.

3.2 PERFORMANCE

A. The Contractor may be required to restore private properties to conditions better than existing, at no additional cost to the COUNTY, if the Contractor fails to sufficiently document existing conditions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 022501

LEAKAGE TESTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Testing for any signs of leakage in all pipelines and structures required to be watertight.

1. Test gravity sewers and drain lines by infiltration/exfiltration testing.

2. Test all other pipelines with water under the specified pressures.

B. Operation of Existing Facilities: Conduct all tests in a manner to minimize as much as possible any interference with the day-to-day operations of existing facilities or other contractors working on the site.

1.2 PERFORMANCE REQUIREMENTS

A. Written Notification of Testing: Provide written notice when the work is ready for testing, and make the tests as soon thereafter as possible.

1. Personnel for reading meters, gauges, or other measuring devices, will be furnished.

2. Furnish all other labor, equipment, air, water and materials, including meters, gauges, smoke producers, blower, pumps, compressors, fuel, water, bulkheads and accessory equipment.

1.3 REFERENCES

A. Codes and standards referred to in this Section are:

1. AWWA C 600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

1.4 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Testing Report: Prior to placing the sewer system in service submit for review and approval a detailed report summarizing the leakage test data, describing the test procedure and showing the calculations on which the leakage test data is based.

1. Reference Sewer Line Data

a. For Low Pressure Testing

(1) The length and diameter of the section of line tested (MH to MH), including any laterals.

(2) A complete description of the test procedure, including:

(a) Trench backfilling and sewer cleaning status

(b) Type of plugs used and where

(c) Depth of sewer, and ground water pressure over sewer pipe

(d) Stabilization time period and air pressure

(e) Actual air test pressures used if ground water is present

(f) The time allowed by specifications

(g) The actual test time

(h) The air pressure at beginning and end of test

(3) The name of the inspector/tester and the date(s) and time(s) of all testing performed, including any retesting.

(4) A description of any repairs made.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 LEAKAGE TESTING

A. All new sewer and water pipelines installed shall be tested for leakage. The test used will be Hydrostatic Testing for pressure lines and Infiltration/Exfiltration Testing for gravity lines. Tests to be performed will be indicated by the ENGINEER and witnessed by the ENGINEER and the County Manager or designee.

1. Flushing

a. Full-bore flush all mains to remove all sand and other foreign matter. Flushing shall be terminated at the direction of the ENGINEER. Dispose of the flushing water without causing nuisance or property damage. Full bore flushes on force mains shall only be required where sufficiently sized water mains are present.

b. Install temporary flush out connections on all dead end water mains at the locations shown on plans and in accordance with the Collier County Standard Details.

2. Hydrostatic Testing for DIP and PVC Pipelines:

Perform hydrostatic testing of the system as set forth in the following, and conduct said tests in the presence of the County Manager or designee and other authorized agencies, with 48 hours advance notice provided.

Piping and appurtenances to be tested shall be within sections between valves unless alternate methods have received prior approval from the County Manager or designee. Testing shall not proceed until concrete thrust blocks are in place and cured, or other restraining devices installed. Thoroughly clean and flush all piping prior to testing to clear the lines of all foreign matter. While the piping is being filled with water care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required.

Perform hydrostatic testing with a sustained minimum pressure of 150 psi for a period of not less than two (2) hours. If sustained pressure goes 5 psi above or below 150 psi during the first two (2) hours, the test fails (AWWA regulation). After two (2) hours, use the AWWA formula if less than 5 psi to determine whether test fails. Testing shall be in accordance with the applicable provisions as set forth in the most recent edition of AWWA Standards C600 for Ductile Iron Pipe and C605 for PVC Pipe. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formula:

$$L = \frac{SD\,(P)^{1/2}}{133{,}200}$$

Where,

L = Allowable leakage in gallons per hour;
S = Length of pipe tested in feet;
D = Nominal diameter of pipe in inches;
P = Average test pressure maintained during the leakage test in pounds per square inch

For 150 psi, $L = (9.195 \times 10^{-5})\,SD$

The testing procedure shall include the continued application of the specified pressure to the test system, for the one-hour period, by way of a pump taking supply from a container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced for the said container.

Should the test fail, repair the fault and repeat the test until results are within the established limits. Furnish the necessary labor, water, pumps, and gauges at specified location(s) and all other items required to conduct the required testing and perform necessary repairs.

General - All sanitary sewers and associated service lines shall be constructed watertight to prevent infiltration and/or exfiltration.

3. Hydrostatic Testing for HDPE Pipelines:

Perform hydrostatic testing of all HDPE pipelines as set forth in the following, and conduct said tests in the presence of the County Manager or designee and other authorized agencies, with 48 hours advance notice provided.

Provide all labor, equipment and material required for testing the pipeline upon completion of installation, pipe laying and backfilling operations, and placement of any required temporary roadway surfacing.

Disinfect all HDPE potable water mains prior to testing in accordance with the requirements of Section 025400 – Disinfection.

Test pipelines at 150 psi.

Field test all HDPE pipelines for leakage in accordance with manufacturer's recommendations for the size and class of pipeline installed. Unless other procedures recommended by the manufacturer are approved by the County Manager or designee, pressure test the pipeline as follows:

a. Fill pipeline slowly with water. Maintain flow velocity less than two (2) feet per second.

b. Expel air completely from the line during filling and again before applying test pressure. Expel air by means of taps at points of highest elevation.

c. Apply initial test pressure and allow to stand without makeup pressure for two (2) to three (3) hours, to allow for diametric expansion or pipe stretching to stabilize.

d. After this equilibrium period, apply the specified test pressure and turn the pump off. The final test pressure shall be held for not less than two (2) hours.

e. Upon completion of the test, the pressure shall be bled off from the location other than the point where the pressure is monitored. The pressure drop shall be witnessed by the County Manager or designee at the point where the pressure is being monitored.

Allowable amount of makeup water for expansion of the pipeline during the pressure test shall conform to Table III, Test Phase Make-up Amount, contained in the manual "Inspections, Test and Safety Considerations" published by the Plastics Pipe Institute, Inc.

If any test of pipeline installed exceeds the amount of makeup water as allowed above, locate and repair the cause of leakage and retest the pipeline, without additional cost to the COUNTY. Repair all visible leaks regardless of the amount of leakage.

4. Force Main Pressure Testing: All force mains shall be subject to pressure testing at 150 PSI.

Allowable leakage on force mains shall be computed utilizing the standards for water loss in conformance with AWWA C600, the latest revision thereof.

5. Infiltration/Exfiltration Testing for Gravity Lines

The allowable limits of infiltration or exfiltration for the entire system, or any portion thereof, shall not exceed a rate of 50 gallons per inch of inside pipe diameter per mile of pipe per 24 hours. No additional allowance shall be made for house service lines. Any part of or all of the system shall be tested for infiltration or exfiltration, as directed by the ENGINEER or as required by the County Manager or designee. The procedures and limitations for conducting infiltration/exfiltration tests shall be established at the pre-construction conference on a project-by-project basis. Air testing of gravity sewer mains may be required. All testing shall be run continuously for 24 hours, unless the County Inspector can visually verify that this test duration is not required due to the observed infiltration/exfiltration rate. The amounts of infiltration or exfiltration shall be determined by pumping water into or out of calibrated drums, or by other methods approved by the Public Utilities Division, such as in-line V-notch weirs. Where infiltration or exfiltration exceeds the allowable limits specified herein, locate and repair the defective pipe, joints or other faulty construction at no additional cost to the COUNTY. If the defective portions cannot be located, remove and reconstruct as much of the work as is necessary in order to conform to the specified allowable limits. All visible leaks shall be repaired regardless of the amount of leakage. Provide all labor, equipment and materials required and conduct all testing required under the direction of the ENGINEER.

a. Infiltration: Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of testing. The cumulative results of the entire collection system results shall not be a satisfactory method for gauging infiltration compliance. Each sewer section between manholes must permit infiltration no greater than the maximum allowable, as specified above.

b. Exfiltration: The exfiltration test, when required due to groundwater levels, will be conducted by filling the portion of the system being tested with water to a level 2 feet above the uppermost manhole invert in the section being tested. The cumulative results of the entire collection system results shall not be a satisfactory method for gauging exfiltration compliance. Each sewer section between manholes must permit exfiltration no greater than the maximum allowable, as specified above.

6. Low Pressure Air Testing

Contractor shall conduct air testing in accordance with ASTM specifications:

a. ASTM C-828 – for clay pipes.

b. ASTM C-924 – for concrete pipes.

c. ASTM F-1417 – for plastic pipes.

When low pressure air testing of gravity sewer mains is specifically required, all testing shall be run continuously for 24 hours, unless the County Inspector can visually verify that this test duration is not required due to the observed infiltration/exfiltration rate.

When air testing is specifically required, after completing backfill of a section of gravity sewer line, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the below stated equipment, according to state procedures and under the supervision of the ENGINEER and in the presence of the County Manager or designee, with 48 hours advanced notice.

d. Equipment:

(1) Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

(2) Pneumatic plugs shall resist internal bracing or blocking.

(3) All air used shall pass through a single control panel.

(4) Three individual hoses shall be used for the following connections:

(a) From control panel to pneumatic plugs for inflation.

(b) From control panel to sealed line for introducing the low-pressure air.

(c) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

e. Procedure:

All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psi. The sealed pipe shall be pressurized to 5 psi. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

After a manhole-to-manhole reach of pipe has been backfilled and cleaned and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psi. Low-pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psi greater than the average back pressure of any ground water that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psi minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of the line being tested shall be termed “Acceptable”, if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psi (greater than the average back pressure of any ground water that may be over the pipe) is greater than the time shown for the given diameters in the following table:

Pipe Diameter In Inches	Minutes
8	4.0
10	5.0
12	5.5
16	7.5
18	8.5
24	11.5

Time in Minutes = 0.472 D
D = Diameter of pipe in inches

In areas where ground water is known to exist, install capped pipe adjacent to the top of the sewer lines. This shall be done at the time of the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, and a measurement of the height in feet of water over the invert of the pipe shall be taken. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psi. This increases the 3.5 psi to 8.5 psi, and the 2.5 psi to 7.5 psi. The allowable drop of one pound and the timing remain the same).

If the installation fails to meet this requirement, determine the source of the leakage and repair or replace all defective materials and/or workmanship, all at no additional cost to the COUNTY.

B. DEP approval is required to use reclaimed (IQ) water for flushing and pressure testing of irrigation mains and potable water mains. The requirements for submitting a request to DEP are available from the County PUED.

3.2 LEAKAGE TESTS FOR STRUCTURES

A. Structure Leakage Testing: Perform leakage tests of manholes, wet wells, tanks, vaults and similar purpose structures before backfilling, by filling the structure with water to the overflow water level and observing the water surface level for the following 24 hours.

1. Make an inspection for leakage of the exterior surface of the structure, especially in areas around construction joints.

2. If visible leaks appear, repair the structure by removing and replacing the leaking portions of the structure, waterproofing the inside, or by other methods approved.

3. Water for testing will be provided by the COUNTY at the CONTRACTOR's expense.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 024100

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: All work necessary for the removal and disposal of structures, foundations, piping, equipment and roadways, or any part thereof including masonry, steel, reinforced concrete, plain concrete, electrical facilities, and any other material or equipment shown or specified to be removed.

B. Basic Procedures and Schedule: Carry out demolition so that adjacent structures, which are to remain, are not endangered. Schedule the work so as not to interfere with the day-to-day operation of the existing facilities. Do not block doorways or passageways in existing facilities.

C. Additional Requirements: Provide dust control and make provisions for safety.

D. Related Work Specified in Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 020500 – Connection to Existing Systems

1.2 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

B. Site Inspection: Visit the site and inspect all existing structures. Observe and record any defects that may exist in buildings or structures adjacent to but not directly affected by the demolition work. Provide the County Manager or designee with a copy of this inspection record and obtain the ENGINEER's and the County's Manager or designee approval prior to commencing the demolition.

1.3 QUALITY ASSURANCE

A. Limits: Exercise care to break concrete well for removal in reasonably small masses. Where only parts of a structure are to be removed, cut the concrete along limiting lines with a suitable saw so that damage to the remaining structure is held to a minimum.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXAMINATION OF EXISTING DRAWINGS

A. Available drawings of existing structures and equipment will be available for inspection at the office of the ENGINEER.

3.2 PROTECTION

A. General Safety: Provide warning signs, protective barriers, and warning lights as necessary adjacent to the work as approved or required. Maintain these items during the demolition period.

B. Existing Services: Undertake no demolition work until all mechanical and electrical services affected by the work have been properly disconnected. Cap, reroute or reconnect interconnecting piping or electrical services that are to remain in service either permanently or temporarily in a manner that will not interfere with the operation of the remaining facilities.

C. Hazards: Perform testing and air purging where the presence of hazardous chemicals, gases, flammable materials or other dangerous substances is apparent or suspected, and eliminate the hazard before demolition is started.

3.3 DEMOLITION REQUIREMENTS

A. Explosives: The use of explosives will not be permitted.

B. Protection: Carefully protect all mechanical and electrical equipment against dust and debris.

C. Removal: Remove all debris from the structures during demolition and do not allow debris to accumulate in piles.

D. Abandoned Pipelines: Fill all abandoned pipelines using grout in accordance with Section 033100.

E. Access: Provide safe access to and egress from all working areas at all times with adequate protection from falling material.

F. Protection: Provide adequate scaffolding, shoring, bracing railings, toe boards and protective covering during demolition to protect personnel and equipment against injury or damage. Cover floor openings not used for material drops with material substantial enough to support any loads placed on it. Properly secure the covers to prevent accidental movement.

G. Lighting: Provide adequate lighting at all times during demolition.

H. Closed Areas: Close areas below demolition work to anyone while removal is in progress.

I. Material Drops: Do not drop any material to any point lying outside the exterior walls of the structure unless the area is effectively protected.

J. Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions or government regulations as applicable.

3.4 ASBESTOS-CONCRETE (AC) PIPE

A. If existing asbestos-cement pipe is encountered during the course of construction, remove the AC pipe and replace it with C900 PVC pipe having a pressure rating as required elsewhere in these specifications. Replace the AC pipe with PVC pipe for a distance of 10 feet each way from the centerline of the pipe under construction or 5 feet beyond the length of AC pipe exposed by trench excavation, whichever is greater. A change order will be issued for required replacement of AC pipe not shown on the drawings.

B. Coordinate the shutdown of the AC pipeline with the County Manager or designee in accordance with Section 020500, including proper notice to the County Manager or designee and any customers that may be affected by the shutdown as required by these specifications and/or current Water Department policy. In the event of an unanticipated encounter with AC pipe, immediately recover and protect the pipe and notify the COUNTY Water Department.

C. Perform cutting of AC pipe by means of cutting wheels mounted in a chain wrapped around the pipe barrel. Do not use power driven saws with abrasive discs or any other means that produce concentrations of airborne asbestos dust.

3.5 DISPOSAL OF MATERIALS

A. Final Removal: Dispose of AC pipe in accordance with COUNTY special handling requirements and coordination with Collier County Solid Waste Management Department. Remove all other debris, rubbish, scrap pieces, equipment, and materials resulting from the demolition. Take title to all demolished materials and remove such items from the site.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 025400

DISINFECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Disinfection of all pipelines, tanks, structures, conduits and equipment that are to store, handle or carry potable water. Furnish all labor, water, chemicals and equipment, including taps, corporation stops, temporary pumps and other items necessary to perform the Work, except as otherwise specified.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. AWWA C651 - Disinfecting Water Mains

2. AWWA C652 - Disinfection of Water-Storage Facilities

1.3 QUALITY ASSURANCE

A. Disinfection Standards: Disinfect in accordance with AWWA C651 for water mains and AWWA C652 for water storage facilities and equipment.

B. Chlorinated Water Disposal: Dispose of old highly chlorinated water in accordance with applicable regulations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 FLUSHING

A. After coordination with the COUNTY Water Distribution Section, perform all flushes, pigging or swabbing, disinfection and post flushes in the presence of Water department personnel. Fill all water lines with potable water, pig or swab and perform a line flushing. All lines larger than 12 inches in diameter shall be pigged to clear debris prior to flushing. Use a swab-type pig for HDPE pipe. Use a 5- to 7-lb. density poly-jacketed bullet style pig for all other pipe material. Under no circumstances is a pig or swab considered reusable. A section of pipe shall be

inserted in the gap specified in the jumper shown in the Standard Details to connect the new construction to the existing facilities for the purpose of accomplishing the full-bore flush. Immediately after completion of the flush, remove the connection. The facilities shall be capped and returned to the jumper connection shown in the Standard Details until final connection is permitted by County Manager or designee at the completion of construction and after finalization of all test procedures and bacterial clearance for new water facilities.

3.2 WATER MAIN DISINFECTION

A. Following acceptable pressure testing, disinfect all sections of the water distribution system and receive approval thereof from the appropriate agencies, prior to placing in service. Provide advance notice of 48 hours to the County Manager or designee before disinfecting procedures start. The disinfection shall be accomplished in accordance with the applicable provisions of AWWA Standard C651, "Disinfecting Water Mains" and all appropriate approval agencies.

B. The disinfecting agent shall be free chlorine in aqueous solution with sustained concentration for 48 hours of not less than 50 parts per million. After 48 hours, if chlorine solution contains at least 25 parts per million of chlorine, the line may then be flushed and samples taken at various points. Chlorine may be derived from Chlorine gas, or 70% (high test) calcium hypochlorite (HTH or Perchloron, or equal). Administration may be by any of the several methods described in AWWA Standard C651 as proposed by the CONTRACTOR and approved by the ENGINEER. Proposals as to method must be made prior to commencement of the disinfection process.

C. Following contact with chlorine solution, the system shall be thoroughly flushed out. Schedule water sampling in coordination with the COUNTY Water Distribution Section. The COUNTY Water Department will obtain all water samples for analysis.

D. If samples do not demonstrate satisfactory results, the line shall be flushed and a resample taken. If the samples fail on the second attempt, redisinfection per AWWA standards must be repeated until two satisfactory samples are obtained. The period between samples must be a minimum of 24 hours.

E. After approval of the samples, and before placing the system in service, perform another flushing of the water lines to remove any stagnant water.

3.3 WATER MAIN DISINFECTION (FOR FIRE LINE CONNECTIONS WITH NO TEMPORARY JUMPER)

A. In configurations where 20 feet or less of new pipe is installed between the existing COUNTY water main and the permanent above ground fire assembly, the temporary gap configuration assembly may be omitted if the following requirements are met:

1. The full interior of all new pipe between the existing COUNTY water main and the permanent above ground fire assembly shall be swabbed and disinfected using a chlorine solution with a concentration of not less than 200 parts per million.

2. The pipe must be flushed and bacteriological samples must be collected in accordance with this specification.

3. The tapping valve on the COUNTY water main shall remain closed until bacteriological clearance is achieved.

3.4 DISINFECTION PROCEDURES FOR TANKS

A. Disinfect potable water storage tanks and equipment in accordance with AWWA C652, Method 2 or 3, using sodium hypochlorite.

1. In Method 2, spray method, spray the entire interior surface of the tank with chlorinated water containing 200 mg/l of available chlorine. After spraying, allow the tank to stand at least two hours before filling with fresh water.

B. After disinfection, allow the tanks and equipment to overflow until the chlorine residual is approximately 2 mg/l.

3.5 BACTERIAL SAMPLE POINTS

A. For the purpose of new water main construction, bacterial sampling points shall be positioned at the beginning of each new system, at 1000-foot intervals and all dead ends unless otherwise directed. These sampling points will be utilized by Utilities personnel for water main bacterial clearance procedures. At the completion of the project, when authorization is given by the County Manager or designee, permanent sampling points shall remain every 3000 feet or one at 2/3 of the length from the point of connection to the COUNTY system if the line is less than 3000 feet long. All others shall be removed down to the main and properly capped by the CONTRACTOR. The permanent sampling points shall be constructed as shown in the Utility Detail Drawings. Collier County staff will review the permanent sampling point locations during final plans review.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 031100

CONCRETE FORMWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Provide concrete formwork for architectural concrete and structural concrete as specified to form concrete to profiles shown.

1. Provide concrete with smooth rubbed finish.

2. Structural concrete is defined as all concrete that is not architectural concrete.

B. Related Work Specified in Other Sections Includes:

1. Section 03200 - Concrete Reinforcement

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ACI 318 - Building Code Requirements for Reinforced Concrete

2. ACI SP-4 - Formwork for Concrete

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. CONTRACTORS Shop Drawings: Proposed form layout drawings and tie pattern layout drawings for Concrete. Review of these drawings does not relieve the CONTRACTOR of responsibility for adequately designing and constructing forms.

2. Samples: Pieces of each type of sheeting, chamfer strips, form ties, form liners and rustication strips

1.4 QUALITY ASSURANCE

A. Formwork Compliance: Use formwork complying with ACI SP-4, ACI 347 and ACI 303R.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. For acceptable manufacturers of concrete release agent, concrete form coating, concrete form liners, or concrete rustications see County Approved Product List, Appendix F.

2.2 MATERIALS

A. Structural Concrete: Provide structural concrete form materials as follows:

1. Obtain approval for form material before construction of the forms.

2. Use a barrier type form release agent.

3. Use form ties, hangers, and clamps of such type that, after removal of the forms, no metal will be closer than one inch from concrete surface. Wire ties will not be permitted.

4. Provide ties with swaged washers or other suitable devices to prevent seepage of moisture along the ties. Leave the ties in place.

5. Use lugs, cones, washers, or other devices that do not leave holes or depressions greater than 7/8-inch in diameter.

PART 3 EXECUTION

3.1 DESIGN

A. Design Responsibility: Be responsible for the design, engineering and construction of the architectural concrete formwork and the structural concrete formwork. Conform the work to the recommendations of ACI SP-4 and ACI 303R.

B. Setting Time and Slag Use: The presence of fly ash or ground granulated blast furnace slag in the concrete mix for architectural concrete and structural concrete will delay the setting time. Take this into consideration in the design and removal of the forms.

C. Responsibility During Placement: Assume and take sole responsibility for adequate design of all form elements for support of the wet concrete mixtures specified and delivered.

D. Consistency: Design forms to produce concrete members identical in shape, lines and dimensions to members shown.

3.2 CONSTRUCTION DETAILS FOR FORMWORK

A. Structural Concrete Details: Follow the following details for all structural concrete:

1. Provide forms that are substantial, properly braced, and tied together to maintain position and shape and to resist all pressures to which they may be subjected. Make forms sufficiently tight to prevent leakage of concrete.

2. Determine the size and spacing of studs and wales by the nature of the work and the height to which concrete is placed. Make forms adequate to produce true, smooth surfaces with not more than 1/8-inch variation in either direction from a geometrical plane. Provide horizontal joints that are level, and vertical joints, which are plumb.

3. Supply forms for repeated use in sufficient number to ensure the required rate of progress.

4. Thoroughly clean all forms before reuse and inspect forms immediately before concrete is placed. Remove deformed, broken, or defective forms from the work.

5. Provide temporary openings in forms at convenient locations to facilitate cleaning and inspection.

6. Coat the entire inside surfaces of forms with a suitable form release agent just prior to placing concrete. Form release agent is not permitted on the reinforcing steel.

7. Assume and take responsibility for the adequacy of all forms and remedying any defects resulting from their use.

3.3 FORM REMOVAL

A. Structural Concrete Form Removal: Do not remove forms for structural concrete until the concrete has hardened sufficiently to support its own load safely, plus any superimposed load that might be placed thereon.

3.4 TOLERANCES

A. Tolerance Limits: Design, construct and maintain concrete form and place the concrete to provide completed concrete work within the tolerance limits set forth in ACI SP-4.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 032000

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing concrete reinforcement as shown and specified herein. Reinforcement includes all steel bars, wire and welded wire fabric as shown and specified.

B. Related Work Specified in Other Sections Includes:

1. Section 031100 - Concrete Formwork

2. Section 034100 - Precast Concrete Structures

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1.	ACI SP66	-	ACI Detailing Manual
2.	ACI 318	-	Latest edition "Building Code Requirements for Reinforced Concrete"
3.	ASTM A 185	-	Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
4.	ASTM A 615/A615M	-	Deformed and Plains Billet-Steel Bars for Concrete
5.	ASTM A 706/A706M	-	Low Alloy Steel Deformed Bars for Concrete Reinforcement
6.	ASTM A 775/A775M	-	Epoxy Coated Reinforcing Steel Bars
7.	AWS D1.4	-	Structural Welding Code - Reinforcing Steel

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. Product Data and Information: Submit manufacturers literature with product data, and material description of fusion bonded epoxy coating for reinforcement and reinforcement accessories, including manufacturer's

recommendations for field touch-up of mars and cut ends when epoxy coated reinforcement is specified to be used.

2. CONTRACTORS' Shop Drawings: Submit checked Working Drawings, including bar lists, schedules, bending details, placing details and placing plans and elevations for fabrication and placing reinforcing steel conforming to "ACI Detailing Manual SP-66".

   a. Do not bill wall and slab reinforcing in sections. Show complete elevations of all walls and complete plans of all slabs, except that, when more than one wall or slab are identical, only one such elevation or plan is required. These plans and elevations need not be true views of the walls or slabs shown. Bill every reinforcing bar in a slab on a plan. Bill every reinforcing bar in a wall on an elevation. Take sections to clarify the arrangement of the steel reinforcement. Identify all bars, but do not bill on such sections.

   b. For all reinforcing bars, unless the location of a bar is clear, give the location of such bar or bars by a dimension to some structural feature that will be readily distinguishable at the time bars are placed.

   c. Make the reinforcing steel placing drawings complete for placing reinforcement including the location of support bars and chairs, without reference to the design drawings.

   d. Submit Detailer certification that every reinforcing steel placing drawing and bar list is completely checked and corrected before submittal for approval.

   e. If, after reinforcing steel placing drawings and bar lists have been submitted for approval, a review reveals that the drawings and lists obviously have not been checked and corrected they will be returned for checking and correcting by the Detailer.

3. Samples: Submit the following samples when epoxy coated reinforcement is specified to be used.

   a. 12-inch long epoxy-coated steel reinforcing bar, of any size typical to this Project

   b. One of each type of epoxy-coated reinforcement accessory used on this Project

   c. 12-inch long, nylon coated tie wire

4. Certificates: Test certificates of the chemical and physical properties covering each shipment of reinforcing steel bars. Test for bars 3/4 inches in diameter and larger shall consist of the bar being bent cold to 90 degrees

around a pin 3 times the diameter of the test bar without evidence of cracking.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all products and materials as specified in Division 1 (and as follows:)

1. Delivery Requirements: Have reinforcing steel delivered to the work in strongly tied bundles. Identify each group of both bent and straight bars with a metal tag giving the identifying number corresponding to the reinforcing steel placing drawings and bar lists.

2. Storage: Properly store all bars in an orderly manner, with all bars completely off the ground. Keep bars clean after delivery to the site of the work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The brand of manufacturer shall be legibly rolled on all bars, and when loaded for mill shipment, all bars shall be properly separated and tagged with manufacturer's test identification number.

B. For acceptable manufacturers of mechanical connections see County Approved Product List, Appendix F.

2.2 MATERIALS

A. Steel Bars: Use new billet steel bars, deformed bars, meeting the requirements of ASTM A615/A625M Grade 60 for reinforcing steel bars.

1. Roll all reinforcing steel bars with special deformations or identifying marks indicating the ASTM Specification and Grade.

2. Use bars free from defects, kinks and from bends that cannot be readily and fully straightened in the field.

3. Supply reinforcing bars in lengths that will allow convenient placement in the work and provide the required length of at least 40 diameters of lap of joints as shown. Provide dowels of proper length, size and shape for tying walls, beams, floors, and the like together.

B. Epoxy Coating: Conform fusion bonded epoxy coated reinforcing steel bars to ASTM A775/A775M when used. Leave portions of the reinforcing steel bars uncoated where mechanical connections are shown.

C. Welded Wire Fabric: Use welded wire fabric of the electrically welded type, with wires arranged in rectangular patterns, of the sizes shown or specified and meeting the requirements of ASTM A185.

D. Supports and Accessories: Provide bar supports and other accessories and, if necessary, additional supports to hold bars in proper position while concrete is being placed.

1. Use side form spacers against vertical or sloping forms to maintain prescribed side cover and cross position of bars.

2. Use individual hi-chairs with welded cross ties or circular hoops to support top bars in slabs thicker than 8 inches.

3. Bolsters, chairs and other accessories:

a. Use hot-dipped galvanized or provide plastic coated legs when in contact with forms for surfaces of concrete other than architectural surfaces.

b. Use stainless steel when in contact with forms for architecturally exposed surfaces.

c. Use epoxy coated bolsters, chairs and accessories including wire ties for epoxy coated reinforcing bars.

d. Use chairs of an approved type and space them properly to support and hold reinforcing bars in position in all beams and slabs including slabs placed directly on the subgrade or work mat. Do not use continuous hi-chairs for supporting of top bars in slabs over 8 inches in thickness.

E. Mechanical Connections: Provide mechanical connections that develop at least 125 percent of the specified yield strength of the bar in tension.

F. Stirrups and Ties: Provide stirrups and ties as shown and specified and meeting the requirements of ASTM A185.

2.3 FABRICATION

A. Drawing Review Prior to Fabrication: Do not fabricate any material before final review and approval of shop drawings.

B. Bending and Cutting: Cut bars to required length and bend accurately before placing. Bend bars in the shop unless written approval for field bending is obtained. If field bending is permitted, do it only when the air temperature, where

the bending operation is performed, is above 30 degrees F. Do not field bend bars that have been partially embedded in concrete.

C. Splices: Use lapped splices for tension and compression splices unless otherwise noted.

D. Cleaning: Clean and bend reinforcement in accordance with ACI 315 and ACI 318.

PART 3 EXECUTION

3.1 INSTALLATION

A. Placement: Place all bars in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars".

B. Tolerances: Place bars used for top reinforcement in slabs to a vertical tolerance of plus or minus 1/4-inch. Place all other reinforcement to the tolerances given to ACI 318.

C. Cleaning: Have reinforcing steel delivered without rust other than that accumulated during transportation to the work. At all times, fully protect reinforcing steel from moisture, grease, dirt, mortar and concrete. Before being placed in position, thoroughly clean reinforcing steel of all loose mill scale and rust and of any dirt, oil, grease coatings, or other material that might reduce the bond. If there is a delay in depositing concrete, inspect and satisfactorily clean the steel immediately before the concrete is placed.

D. Bar Positioning: Place bars in the exact positions shown with the required spacing and cross wire bars securely in position at intersections to prevent displacement during the placing of the concrete. Fasten the bars with annealed wire of not less than 17 gauge or other approved devices.

E. Bar Extension Beyond Formwork: On any section of the work where horizontal bars extend beyond the length of the forms, perforate the form or head against which the work ends or at the proper places to allow the bars to project through a distance at least equal to the lap specified.

F. Unacceptable Materials: Do not place reinforcing steel with damaged, unsuitably bonded epoxy coating or rusting. If approved, mars, exposed threads of mechanical connections and cut ends may be field coated with approved epoxy coating material.

G. Review of Placement: Have reinforcing placement reviewed by the ENGINEER before concrete is placed.

H. Welding - Not Approved: Do not use reinforcing bar assemblies made by welding of any kind, or accessories of any kind which require field welding to reinforcing bars.

I. Welding - Approved: Where welding of reinforcing steel is shown, AWS D1.4 "Structural Welding Code - Reinforcing Steel" applies.

J. Tension and Compression Lap Splices: Conform tension and compression lap splices to ACI 318 with all supplements. Avoid splices at points of maximum tensile stress wherever possible. Provide temperature bars with the clear spacing shown. Stagger all bar splices in hoop tension bars in circular tanks with not more than 50 percent of the bars spliced in any one direction. Have welded splices made by certified welders in accordance with AWS D1.4.

K. Welded Wire Fabric: Place welded wire fabric in the positions shown, specified or required to fit the work. Furnish and place suitable spacing chairs or supports, as specified for bars, to maintain the fabric in the correct location. Where a flat surface of fabric is required, provide flat sheets, when available. Otherwise reverse roll the fabric or straighten to make a perfectly flat surface before placing. Obtain approval for the length of laps not indicated.

L. Concrete Cover: Place reinforcing steel and welded wire fabric and hold in position so that the concrete cover, as measured from the surface of the bar or wire to the surface of the concrete, is as shown or specified.

END OF SECTION

SECTION 033100

CONCRETE, MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Cement, sand, aggregate admixtures and water for use in concrete, masonry mortar and grout.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM C 91 – Masonry Cement

2. ASTM C 144 – Aggregate for Masonry Mortar

3. ASTM C 150 – Portland Cement

4. ASTM C 207 – Hydrated Lime for Masonry Purposes

5. ASTM C 270 – Mortar for Unit Masonry

6. ASTM C 231 – Air Content of Freshly Mixed Concrete

7. ASTM C 404 – Aggregate for Masonry Grout

8. ASTM C 476 – Grout for Masonry

9. ASTM C 780 – Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

10. ASTM C 1019 – Sampling and Testing Grout

11. CRD C-619 – Specification for Grout Fluidifier.

12. CRD C-621 – Specification for Non-Shrink Grout.

13. Brick Institute of America Research Report No. 15

14. ACI 530.1/ASCE 6-92 – Specifications for Masonry Structures

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

B. Product Data and Information: Submit the following:

1. Furnish notarized certificates of manufacture as evidence that the cement conforms to the specified requirements. Include mill-test reports on the cement.

2. Furnish notarized certificates to verify that the hydrated lime and aggregates meet the specified requirements.

3. Furnish laboratory tests as evidence that the air content and masonry mortar compressive strength meet the requirements of ASTM 270 Type N and that the efflorescence tendency meets the requirements of the wick test in Brick Institute of America Research Report No. 15.

4. Furnish laboratory tests as evidence that the masonry grout compressive strength is equal to or greater than 2,500 psi at 28 days.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all mortar and grout materials as recommended by the manufacturers and as specified in Division 1 (and as follows:)

B. Cement: Store cement in weathertight buildings that will exclude moisture and contaminants. Do not use cement that has deteriorated from storage.

C. Hydrated Lime: Store hydrated lime in weathertight buildings which will exclude moisture and contaminants.

D. Aggregates: Keep aggregates clean and free from all other materials during transportation and handling. Stockpile aggregate in a manner to prevent segregation.

PART 2 PRODUCTS

2.1 CEMENT

A. Portland Cement shall be of a standard brand and shall conform to the requirements of ASTM C150-latest edition, except as hereinafter stated. One bag of cement shall be considered as weighing 94 pounds. Type I shall be used unless higher cement is specified, in which event Type III shall be used. For Type I, the maximum amount of tricalcium silicate shall be 60 percent. Cement may be shipped either in paper or cloth sacks and the package shall have the brand and name of manufacturer plainly marked on the outside. All cement shall be stored in weatherproof buildings in such a manner as will prevent absorption of moisture by the lower layers. Shipment shall be segregated by lot for identification. Type I

cement which has been in storage more than 90 days shall be re-tested before use. Where carload shipments are used, a certificate from an approved testing laboratory shall be submitted prior to use of such cement on the job.

2.2 AGGREGATE

A. Fine Aggregate:

1. Composition: Fine aggregate shall consist of natural sand and shall be graded from coarse to fine within the following limits shown in the table below. Sand failing to meet the minimum requirement for material passing the Number 50 and/or Number 100 Sieve may be used, provided other satisfactory inorganic fine materials are added. If two sands are used, each must be mixed, after separate weighing, in proportions approved by the County Manager or designee.

U.S. Standard Square Opening Sieve	Percent of Total By Weight Passing	
	Minimum	Maximum
No. 4	97	100
No. 8	80	100
No. 30	25	75
No. 50	10	30
No. 100	2	10
No. 200 (By Washing)	0	4

2. Stockpiling: Fine aggregate shall be stored on a well-drained site, which has been cleared, grubbed and cleaned. Stockpiles shall be built up so as to prevent segregation of large and small particles.

3. Unsuitable Materials in Fine Aggregate: Not more than one percent (1%) by weight of clay lumps or soft, disintegrated or coated grains shall be present in the fine aggregate. It shall also be free from foreign material such as dirt, wood, paper, burlap, or other unsuitable material. When tested in accordance with AASHTO T-21-27, it shall show a color not darker than standard. When tested for mortar strength in accordance with AASHTO T-71-38, the fine aggregate shall have a tensile strength at three (3) days (Type III), or at seven (7) days, (Type I); not less than 95 percent of that developed by mortar having the same water-cement ratio and consistency, made of the same cement and graded Ottawa Sand having a fineness modulus of 2.40, plus or minus 0.05.

B. Coarse Aggregate:

1. Composition: Coarse aggregate shall consist of crushed stone. It shall be washed to remove clay, loam and dust. At his/her discretion, the County Manager or designee may waive the washing requirement for stone having a loss of not more than 30 percent when tested in accordance with the provisions of AASHTO T-96-38.

2. Unsuitable Material in Coarse Aggregate: The coarse aggregate shall not contain more than the following percentages of deleterious material:

Soft Fibrous, Disintegrated Particles (Weight)	3.0%
Clay Lump (Weight)	0.2%
Finer Than No. 200 Sieve (Weight)	0.5%
Flat or Elongated Particles (Count)	10.0%

When subjected to AASHTO Test T-96-38, the aggregate shall have a loss not greater than 65 percent. Aggregate shall be free from loam, wood, leaves, or other foreign material.

3. Gradation: For unreinforced foundations, for paving or for other unreinforced mass concrete, the gradation of coarse aggregate shall be as shown in Table 1. For reinforced footings, reinforced walls over 6" in thickness, ordinary floor slabs and similar structures, the gradation shall be as shown on Table 2. For handrails, reinforced walls, thin reinforced floor slabs electrical conduit encasement, and similar construction, the gradation shall be as shown on Table 3.

Table 1	
Percent Passing Square Opening Sieve	**Percent By Weight**
2-1/2 inch	100
2 inch	95 – 100
1 inch	35 – 70
½ inch	10 – 30
No. 4	0 – 5

Table 2	
Percent Passing Square Opening Sieve	**Percent By Weight**
1-1/2 inch	100
1 inch	90 – 100
½ inch	25 – 60
No. 4	0 – 10
No. 8	0 – 5

Table 3

Percent Passing Square Opening Sieve	Percent By Weight
1 inch	100
¾ inch	90 – 100
3/8 inch	20 – 55
No. 4	0 – 10
No. 8	0 – 5

4. Stockpiles: Stockpiles shall be constructed in layers not exceeding three feet (3') in height, and material shall be deposited in such manner as to prevent segregation of coarse and fine materials. Each type of aggregate shall be placed in a separate stockpile. Stockpile sites shall be cleared, grubbed and drained before using.

2.3 HYDRATED LIME

A. Provide hydrated lime meeting the requirements of ASTM C 207.

2.4 WATER

A. Water shall be clean and free from salt, oil or organic substances. Laboratory tests shall be made to determine suitability of any water for use in concrete unless it is secured from a public water supply.

PART 3 EXECUTION

3.1 CONCRETE PROPORTIONING

A. Concrete aggregate shall be proportioned by weight. When the sources of supply shall have been determined by the CONTRACTOR and approved by the County Manager or designee, the mix shall be set by an approved testing laboratory. Mix shall be designed for a "slump" suitable for the character of structure in which the concrete is to be incorporated. All concrete shall be as specified herein.

B. After a suitable design mix has been approved by the County Manager or designee, it shall not be changed so long as materials of the same characteristics are used in the mix. Within the limits of the various cement factors shown above, the mix shall be varied until the homogenous workable mixture, suitable for the class of structure intended, has been obtained.

3.2 CONCRETE MIXING

A. Concrete mixing shall be by means of a modern batch mixer equipped with accurately operating water measuring device and an automatic time locking device.

B. Where a central batching plant is not operated, each mixer must have available an approved portable weighing device for use in proportioning. Each batch shall be mixed for one and one-half (1½) minutes after charging has been completed, and during such mixing period, that drum shall operate with a peripheral speed of not less than one-hundred and fifty-three (153), nor more than two-hundred and twenty-five (225) feet per minute. The number of revolutions per minute shall be between fourteen (14) and twenty (20). Retempering concrete or use of concrete in which initial set has taken place will not be allowed. Transit mixed concrete from an approved batching plant and suitable truck mixer may be approved by the County Manager or designee.

3.3 PIPE GROUT

A. Mix lean grout for backfilling the space surrounding the pipe sections in tunnel or other areas as specified or directed in the proportion of 1 part Portland cement to 12 parts sand by volume.

B. Mix grout to a consistency that can be pumped into the pipe. Use a grout fluidifier to reduce water quantity and improve workability.

3.4 TESTING

A. Masonry Mortar: Make and test specimens for preconstruction and construction evaluation of masonry mortar in accordance with the requirements of ASTM C 780.

B. Masonry Grout: Make and test specimens for preconstruction and construction evaluation of masonry grout in accordance with the requirements of ASTM C 1019.

C. Concrete shall contain cement, coarse aggregate, and fine aggregate meeting the Specifications contained in previous paragraphs of this Part. Unless otherwise specified or shown in the plans, the design strength of the several elements included in the plans shall be:

1. Four thousand (4,000) pounds minimum compressive strength per square inch at 28 days for all piers, reinforced walls, floors, slabs, precast structures and other special sections where specifically shown on the plans or Standard Details.

2. Two thousand five hundred (2,500) pounds minimum compressive strength per square inch at 28 days for all blocking, reinforced footings, for retaining walls not subject to hydrostatic pressure, or where specifically shown on the plans or shown in the Standard Details.

END OF SECTION

SECTION 034100

PRECAST CONCRETE STRUCTURES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all materials, labor, and equipment and construct manholes, wet wells, valve pits, meter pits, and accessory items, consisting of precast sections as shown on the Drawings and as specified herein.

B. The forms, dimensions, concrete, and construction methods shall be approved by the ENGINEER in advance of construction.

C. These specifications are intended to give a general description of what is required, but do not purport to cover all of the structural design details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, shop testing, delivery, and complete installation of all precast structures whether specifically mentioned in these specifications or not.

D. The supplier of the precast manholes, wet wells, valve pits, meter pits, and accessory items shall coordinate his work with that of the CONTRACTOR to the end that the unit will be delivered and installed in the excavation provided by the CONTRACTOR, in accordance with the CONTRACTOR's construction schedule.

E. Coordinate the precast structures fabrication with the equipment supplied to achieve the proper structural top slab openings, spacings, and related dimensions for the selected equipment frames and covers. The top slabs, frames, covers, and subsurface structures shall be capable of supporting a live load of 150 pounds per square foot.

1.2 SUBMITTALS

A. Submit to the ENGINEER, as provided in the General Conditions, shop drawings showing details of construction, reinforcing and joints.

B. Shop Drawings

1. Content

a. Dimensions and finishes

b. Estimated camber

c. Reinforcing and connection details

d. Anchors

e. Lifting and erection inserts

f. Other items cast into members

2. Show location of unit by same identification mark placed on member.

3. Include design calculations.

C. Manufacturer's Literature: Manufacturer's recommended installation instructions.

D. Manufacturer's certificates of material conformance with specifications.

E. Test Reports: Reports of tests on concrete.

F. Testing

1. Manholes and Valve Vaults: Four (4) concrete test cylinders shall be taken for every 50 cubic yards (cu. yds) for each type of precast structure.

2. Pump Stations: Four (4) concrete test cylinders shall be taken for each pump station wet well. Four (4) concrete test cylinders shall be taken for each pump station's top and bottom slabs.

3. Certification: The supplier shall provide the certified results of testing (7 day, 28 day) for the test cylinders stated herein. Random test cylinders may be taken at any time by the ENGINEER at the COUNTY's expense.

1.3 INSPECTION

A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the ENGINEER, or the County Manager or designee. Such inspection may be made at the place of manufacture, or at the site after delivery, or at both places, and the sections shall be subject to rejection at any time on account of failure to meet any of the Specification requirements; even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All sections which have been damaged after delivery will be rejected, and if already installed, shall be repaired, if permitted and accepted by ENGINEER, or removed and replaced, entirely at the CONTRACTOR's expense.

B. At the time of inspection, the sections will be carefully examined for compliance with ASTM C478 designation and these Specifications, and with the approved

manufacturer's drawings. All sections shall be inspected for general appearance, dimension, "scratch-strength", blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.

C. Imperfections may be repaired, subject to the approval of the ENGINEER, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at the end of 7 days and 5,000 psi at the end of 28 days, Epoxy mortar may be utilized for repairs subject to the approval of the ENGINEER.

PART 2 PRODUCTS

2.1 PRECAST CONCRETE WET WELLS AND VALVE VAULTS

A. Precast submersible pump station wet wells shall consist of precast base, precast wet well sections, and top cover slab. Precast valve vaults shall consist of precast base, sidewalls and top slab. Concrete shall be air entrained at the time of delivery and shall have a minimum compressive strength of 4,000 psi at the end of 28 days.

B. Joints between precast concrete sections shall be set by plastic shims and fitted with non-metallic non-shrink grout as shown on the drawings.

C. The top slab sections shall be fitted with watertight hatches. The frames and covers will be sized for the openings shown on the drawings.

D. The various precast sections should have the inside dimensions and minimum thickness of concrete as indicated on the drawings. All precast and cast-in-place concrete members shall conform to the Building Code Requirements for Reinforced Concrete ACI 318.

E. A vent pipe shall be furnished and installed as shown on the drawings.

F. Fillets shall be provided and installed in the wet wells as shown on the drawings.

G. Precast structures shall be constructed to the dimensions as shown on the drawings and as specified in these Specifications.

H. Type II cement shall be used except as otherwise approved.

I. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section.

J. Sections shall be cured by an approved method and shall not be shipped until the minimum 7-day compressive strength has been attained.

K. Each pre-cast section manufactured in accordance with the drawings shall be clearly marked to indicate the intended pump station installation location. The CONTRACTOR shall be responsible for the installation of the correct pre-cast sections in their designated pump station locations.

L. Paint all exterior surfaces with two coats of coal tar bitumastic, each coat to be 9 mils each. All interior surfaces of valve vaults shall be coated with two coats of coal tar epoxy (9 mils each).

2.2 PRECAST CONCRETE SECTIONS FOR CIRCULAR WET WELLS

A. Wet wells shall meet the requirements of ASTM C478, Specification for Precast Reinforced Concrete Manhole Sections, with the exclusion of Section 10(a), except as modified herein. Cement shall meet the requirements of ASTM C150-74, Specification for Portland Cement, Type II. Concrete shall meet the minimum requirement for 4000 psi concrete. Minimum wall thickness shall be 8 inches or 1/8 the inside manhole diameter as shown, whichever is greater. The required minimum strength of concrete shall be confirmed by making and testing three standard cylinders at seven days. Rings shall be custom made with openings to meet indicated pipe alignment conditions and invert elevations. Submit shop drawings, consisting of manufacturers' standard details of various sections for approval prior to placing order for wet wells. Drawings of individual wet wells showing invert elevations, pipe sizes and similar details will not be required.

B. Joints

Form joint contact surfaces with machined castings. Surfaces shall be exactly parallel with nominal 1/16 inch clearing and the tongue equipped with a proper recess for the installation of an O-ring rubber gasket. Gaskets shall meet the requirements of Specification for Joint for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets. "RAM-NEK" sealing compound conforming to Federal Specification SSS-00210 (GSA-FSS), Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints may be used in lieu of O-ring rubber gaskets. If joints are sealed with "RAM-NEK" sealing compound the recess in the tongue for an O-ring gasket may be omitted.

C. Wet Well Liners and Coatings

Coat or line (see internal protection on County Approved Product List, Appendix F) the interior of all wet wells.

Furnish, install, test and inspect liners and coating in accordance with manufacturer’s recommendations, and in accordance with Section 099723 “Concrete Coatings”. Extend coating and liner and seal onto wet well hatch frame, around pipe openings and other protrusions to prevent contact of wet well surface

with corrosive sewer gases. Provide factory or field applied bituminous or epoxy sealer exterior coatings. If exterior coating is factory applied, CONTRACTOR shall provide field touch-up as required.

D. STEEL REINFORCED POLYMER CONCRETE STRUCTURES

As an alternative to the concrete coatings and linings described above, steel reinforced polymer concrete structures may be furnished and installed for pump station wet wells. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years' experience manufacturing polymer concrete. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

2.3 PIPE CONNECTIONS AT STRUCTURES

A. Where pipes are to extend into or through structures from the exterior, provide flexible connections (mechanical or push-on type joints) at the exterior wall face.

B. For pipes passing through structural walls, install wall pipes with water stops where the location is below the surface of the ground or at any point where fluid levels will exceed that elevation. Neoprene sleeves with watertight caulking and 316 Series SS stainless steel clamps will be suitable at other locations.

C. All of the following conditions apply to any proposed pipe penetration into an existing sanitary manhole:

1. The opening for the penetration must be core bored and fitted with a neoprene sleeve as specified above.

2. The core boring or penetration shall not affect a structural joint, and the boring edge must be no closer than six inches to an existing structural joint.

3. The proposed piping within the manhole must comply with all other provisions of these Utilities Standards.

4. Connections requiring drop pipes shall be constructed in accordance with these Utilities Standards and shall require two penetrations.

5. The existing manhole flume or invert must be modified as required to accept the discharge from the proposed pipe.

6. The interior lining of the existing structure including flume or invert shall be repaired by an approved applicator for the lining system.

7. Any damage to the exterior coating of the existing structure shall be repaired with two coats of coal tar epoxy (9 mils each) in accordance with the manufacturer's recommendations.

PART 3 EXECUTION

3.1 INSTALLATION

A. Control ground water to provide firm, dry subgrade for the structure, and prevent water rising on new poured in place concrete or grouted joint sections within 24 hours after placing. Guard against flotation or other damage resulting from ground water or flooding.

B. Place a 12-inch layer (minimum thickness) of crushed stone or shell as specified under Section 312323 as a foundation for the wet well base slabs, valve pits, and meter pits.

C. Provide backfill material around the wet well and above the pipe bedding as specified in Section 312323.

D. Precast bases, conforming to all requirements of ASTM C478 and above listed requirements for precast sections, may be used. Set the base in place on a thoroughly compacted crushed stone sub-base and adjust grade for the correct structure elevation.

E. Do not set the station into the excavation until the installation procedure and excavation have been approved by the County Manager or designee.

F. The base may be cast-in-place concrete as specified in Division 3, placed on a thoroughly compacted crushed stone sub-base. Shape the tops of the cast-in-place bases to mate with the precast barrel section, and adjust in grade so that the top slab section is at the approximately correct elevation.

G. Set the precast concrete structure sections so as to be vertical and with sections in true alignment with a 3 inch maximum tolerance to be allowed. Fill the outside and inside joint with a non-shrink grout and finish flush with the adjoining surfaces. Allow joints to set for 24 hours before backfilling. Backfill in a careful manner, bringing the fill up evenly on all sides. If leaks appear in the structures, caulk the inside joints with lead wool to the satisfaction of the ENGINEER. Install the precast sections in a manner that will result in a watertight joint.

H. Plug holes in the concrete sections required for handling or other purposes with a non-shrinking grout or by grout in combination with concrete plugs.

SECTION 055600

METAL CASTINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Miscellaneous ferrous and nonferrous castings.

1. This classification includes wheel guards, valve boxes, manhole frames and covers, manhole steps, stop plank grooves, brackets and supports for piping and gutter inlets, floor drains, cleanouts and special malleable iron castings and inserts.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM A 27/A27M - Specification for Steel Castings, Carbon for General Applications
2. ASTM A 47 - Specification for Ferric Malleable Iron Castings
3. ASTM A 48 - Specifications for Gray Cast Iron Castings
4. ASTM A 148/A148M - Specifications for Steel Castings
5. ASTM A 536 - Specifications for Ductile Iron Castings
6. ASTM B 26/B26M - Aluminum
7. ASTM B 148 - Aluminum Bronze Sand Castings
8. ASTM B 584 - Manganese Bronze

PART 2 PRODUCTS

2.1 WORKMANSHIP

A. Provide castings accurately made to the approved dimensions, and plane or grind castings where marked or where otherwise necessary to secure flat and true surfaces. Make allowance in the patterns so that the specified thickness is not reduced. Provide manhole covers which conform to the details shown and which are true and seat at all points. Supply castings showing the name of the manufacturer and the country of manufacture. No plugging or welding of defective castings will be permitted.

2.2 WEIGHTS

A. Reject castings with a weight which is less than the theoretical weight based on required dimensions by more than 5 percent. Provide facilities at the site for weighing castings in the presence of the ENGINEER, or furnish invoices showing true weights, certified by the supplier.

PART 3 EXECUTION

3.1 INSTALLATION

A. Erect all castings to accurate grades and alignment, and when placing in concrete carefully support castings to prevent movement during concreting.

3.2 PAINTING

A. Deliver all manhole castings to the job site unpainted. If painting is specified, clean metal castings thoroughly before painting. Give manhole frames and covers and valve boxes one coat of primer and two coats of an approved asphaltum varnish or other approved coating at the point of manufacture. Paint all other castings as specified in the Collier County Standard Details.

END OF SECTION

SECTION 099723

CONCRETE COATINGS

PART 1 SEWPERCOAT LINING SYSTEM / IET COATING SYSTEM / RAVEN 405 LINING SYSTEM

1.1 SCOPE OF WORK

A. This section provides details for furnishing and installing the SewperCoat lining system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the lining system to be used.

B. This section provides details for furnishing and installing the Integrated Environmental Technologies (IET) coating system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the coating to be used.

C. This section provides details for furnishing and installing the Raven 405 coating system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the coating system to be used.

D. For sanitary sewer wet wells and manholes, steel reinforced polymer concrete structures may be provided in lieu of concrete coatings and linings as described in this section. See Sections 034100 and 333913 for further details and requirements.

PART 2 PRODUCTS

2.1 SEWPERCOAT LINING SYSTEM

A. The SewperCoat (calcium aluminate) lining system shall be as manufactured by Lafarge Calcium Aluminates, Chesapeake, VA.

B. Pure-fused Calcium Aluminate Cement Lining: The cement lining material shall be a pure fused calcium aluminate mortar with pure fused calcium aluminate aggregate equal to SewperCoat as manufactured by Lafarge Calcium Aluminates, Inc. The material shall be spray applied in accordance with the manufacturer's specifications.

1. The material shall be packaged from the manufacturer so as not to require field mixing of mortar and aggregate to obtain recommended composition.

2. The material shall form a mechanical and chemical bond to the wetwell surface with zero shrinkage. The material shall have a minimum 28-day compressive strength of 9000 psi.

3. The material shall be suitable for use in a severe hydrogen sulfide (H_2S) environment.

4. Provide documentation that the material has a minimum 5-year history in the reconstruction of sanitary sewer structures.

2.2 IET COATING SYSTEM

A. The IET Coating System shall be as manufactured by Integrated Environmental Technologies, Santa Barbara, CA.

B. Polymorphic Resin shall be a 100% solids, two-component, highly modified polyester resin system, exhibiting no adhesion-interfering shrinkage upon curing. Resin shall cure rapidly within fifteen minutes to one hour without the use of heat or cooling at surface temperatures ranging from –30 degrees Fahrenheit to over +150 degrees. Excellent resistance to a broad range of corrosive chemicals, including sulfuric acid created by hydrogen sulfide gas as well as other chemicals typically found in sanitary sewers, and impact and abrasion attack shall be provided.

2.3 RAVEN 405 COATING SYSTEM

A. The RAVEN 405 coating system shall be as manufactured by Raven Lining Systems, Broken Arrow, OK.

B. Raven 405 coating shall be 100% solids, solvent-free ultra high-build epoxy system exhibiting the following characteristics:

1. Product Type: amine cured epoxy

2. VOC Content (ASTM D2584): 0%

3. Compressive Strength, (ASTM D695): 18,000 psi

4. Tensile Strength, (ASTM D638): 7,600 psi

5. Flexural Modulus, (ASTM D790): 700,000 psi

6. Adhesion to Concrete, (ASTM D4541/7234): >200 psi with substrate (concrete) failure

7. Chemical Resistance (ASTM D543/G20) immersion service for:

a. Municipal sanitary sewer environment

b. Sulfuric Acid, 30%

c. Sodium Hydroxide, 10%

d. Sodium Hypochlorite, 3%

8. Successful Pass: Sanitation District of L.A. County Coating Evaluation Study and SSPWC 210.2.3.3 (Greenbook “Pickle Jar” Chemical Resistance test)

2.4 STEEL REINFORCED POLYMER CONCRETE STRUCTURES

A. As an alternative to the concrete coatings and linings described above, steel reinforced polymer concrete structures may be furnished and installed. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years’ experience manufacturing polymer concrete.

B. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

C. Approved manufacturers: See County Approved Product List, Appendix F.

PART 3 EXECUTION

3.1 SEWPERCOAT LINING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for “Confined Space Entry” equipment and permitting.

C. Prepare surface in accordance with the requirements of SewperCoat Data Sheets on Concrete Preparation. Interior surfaces of wetwell shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Interior surface of structure must be abrasive-blasted to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Abrasive-blast “new” structures to remove all oils and patch mud, and to open pinholes and expose aggregate.

2. Abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete. The finished interior of the structure shall be gray. Coat the exposed invert/floor also. Where there is severe deterioration of the mortar, place new concrete to match the original interior dimensions after abrasive blasting and removal of all loose material and by-products of corrosion. Restore invert/floor to the original elevation.

3. Vacuum to remove all abrasives and debris.

4. Condition of the wetwell may require the use of a 10% solution of hydrochloric (muriatic) acid over all surfaces or the use of a detergent. If an acid or detergent solution is used, the surface shall be thoroughly rinsed and neutralized prior to the installation of the liner system.

E. Repair all leaks by injecting grout using Avanti Multi-grout AV-202 or equivalent. Hydraulic cement shall not be used to stop any water leaks.

F. Spray Application: Mix and apply the pure fused calcium aluminate cement liner system in strict accordance with the manufacturer's written instructions using only manufacturers approved equipment. This includes the preparation, installation, curing and finish operation required for the completion of the process.

1. Wet gun: Spray the material directly to the damp wetwell surface in a two-coat application. Trowel the material smooth after each coat, completely covering the interior surface of the wetwell from the frame to the invert with a minimum thickness of 1 inch. Apply a "brushed" finish to the second coat after troweling.

2. Dry Gun: Spray the material directly to the damp wetwell surface in a one-coat application. Trowel the material smooth after the application, completely covering the interior surface of the wetwell from the frame to the invert with a minimum thickness of 1 inch. Apply a "brushed" finish after troweling.

G. Curing: The material shall cure in strict accordance with the manufacturer's recommendations and instructions.

H. Inspect lining system for holidays (i.e., discontinuity), cracks and pinholes. Take particular care to check lining over brick, block, heavy spalled surfaces, and other very rough surfaces and locate holes in the lining caused by voids in bricks, block, concrete and structure joints. Fill voids and holidays in accordance with the lining system manufacturer's instructions.

I. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the SewperCoat lining system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

3.2 IET COATING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for "Confined Space Entry" equipment and permitting.

C. Prepare surface in accordance with the requirements of IET Systems Data Sheets on Concrete Preparation. Interior surfaces of manhole shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Dry abrasive-blast Interior surface of structure to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Dry abrasive-blast “new” structures to remove all oils and patch mud, and to open pin holes and expose aggregate.

2. Dry abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete. The finished interior of the structure shall be gray. Coat the exposed invert/floor also. Where there is severe deterioration of the mortar, place new concrete to match the original interior dimensions after abrasive blasting and removal of all loose material and by-products of corrosion. Restore invert/floor to the original elevation.

3. Vacuum to remove all abrasives and debris.

E. Repair all leaks by injecting grout using Avanti Multi-grout AV-202 or equivalent. Hydraulic cement shall not be used to stop any water leaks.

F. Clean and remove dust material with pressure washing for maximum adhesion. Blow dry concrete at 250 cfm with 120 psi.

G. Apply IET Systems Coating by the use of the IET Systems Spray Unit and IET Systems Spincaster. Apply IET coating at least three different intervals – prime coat, intermediate coat and finish coat, per IET Systems manufacturer instructions and specifications. The total thickness of the IET coating shall be at least 125 mils.

H. Inspect lining system for holidays, cracks and pinholes. Take particular care to check lining over brick, block, heavy spalled surfaces, and other very rough surfaces and locate holes in the lining caused by voids in bricks, block, concrete and structure joints. Fill voids and holidays in accordance with the lining system manufacturer’s instructions.

I. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the IET coating system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

3.3 RAVEN 405 COATING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for “Confined Space Entry” equipment and permitting.

C. Prepare surface in accordance with the requirements of Raven Data Sheets on Concrete Preparation. Interior surfaces of structure shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Dry abrasive-blast Interior surface of structure to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Dry abrasive-blast “new” structures to remove all oils and patch mud, and to open pin holes and expose aggregate.

2. Dry abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete.

3. Vacuum to remove all abrasives and debris.

E. New Portland concrete structures shall have a minimum of 28 days cure since manufacture prior to commencing coating installation.

F. Offset structural components, lids, covers, frames, etc. shall be repaired, replaced, or reset prior to the commencement of surface preparation.

G. Concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation shall be removed so that sound substrate remains.

H. In conditions where severe chemical/microbiological attack is present the prepared substrate shall exhibit a pH of 8-12. Additional cleaning and/or contaminated substrate removal may be required to achieve the specified pH level.

1. Prior to the application of the coating product repairs shall be completed to ensure the following:

2. All inflow and infiltration shall be eliminated by use of appropriate repair material(s), such as hydraulic cements and/or chemical grouts as described in Section 2.2.

3. All repairs to joints, pipe seals, steps, mechanical penetrations, benches, inverts, pipes or other appurtenances to be coated shall be completed and repaired surfaces prepared according to this section.

4. Benches or other horizontal surfaces shall have adequate slope (1” rise per lineal foot minimum) to minimize the retention of debris following surcharge.

5. Inverts or flow channels shall be smooth without lips, rough edges or other features which may cause debris to collect; contoured to minimize turbulent flow; and be sloped to promote adequate flow from the inlet(s) to the outlet pipe.

6. All joints, pipe seals, steps or other penetrations shall be sealed against inflow, infiltration and exfiltration and be adequately filled, smoothed and contoured to promote monolithic coating application.

I. Areas where reinforcing steel has been exposed shall be repaired in accordance with the Project Engineer's recommendations or at the minimum all exposed steel shall be prepared in accordance with Section 3.2 prior to coating with the coating product specified or other approved primer as specified by the coating product manufacturer.

J. Coating shall be applied to a minimum dry film thickness of 80 mils to surface profiles of CSP-4 to CSP-5 or 125 mils minimum DFT to surface profiles of CSP-6 or greater and in rehabilitated structures.

K. Subsequent top coating or additional coats of the coating product(s) shall occur within the products recoat window. Additional surface preparation procedures will be required if this recoat window is exceeded.

L. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the Raven 405t lining system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

END OF SECTION

SECTION 221336

DIESEL BACKUP PUMP

PART 1 GENERAL

1.1 SCOPE

A. Requirements for providing a permanently installed automatically starting pump station back-up pumpset.

B. Elevated platforms shall be provided where necessary to provide access to the diesel backup pump for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 GENERAL

A. The specifications herein state the minimum requirements of Collier County (the Owner). All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Owner may consider as “irregular” or “non-responsive”, any bid not prepared and submitted in accordance with the bid documents and specification, or any bid lacking sufficient technical literature to enable the Owner to make a reasonable determination of compliance to the specification. It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (exception yes or no) will cause the proposal to be rejected, without review, as “non-responsive”. All variances, exceptions, and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.

B. INTERPRETATIONS: In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specifications documents or any part thereof. Every request for each a consideration shall be made in writing to the Owner. Based upon such inquiry, the Owner may choose to issue an Addendum in accordance with local public contract laws.

C. GENERAL SPECIFICATIONS: Units described shall be new, unused, and of the current year’s production. The style of pump being bid must be in production for a minimum of 5 years (include users list). Unit shall be of the latest design and in current production completely serviced, ready for work and shall include all standard and optional equipment as specified herein. All bidders must have demonstrated the unit they are bidding, prior to bid date.

D. Bidders must have a fully stocked parts and service facility within 50 miles of the project site. The Owner shall have the right to inspect the office and shall be the sole judge of its adequacy to fulfill this requirement.

E. Bidders, on request of the Owner, must be prepared to review their specifications with the Owner and must, if requested, also be prepared to provide a unit for tangible evaluation purposes only. These services, if needed, are considered as part of the bidder's proposal and will be provided without cost or obligation to the Owner.

1.3 SYSTEM DESCRIPTION

A. The pumpset specified in this section will be used to pump wastewater from a Collier County pumping station (PS).

B. Pump shall be fitted with a fully automatic priming system capable of repeated priming from a completely dry pump casing.

C. The complete pump set shall be supplied by the pump manufacturer.

D. The pump offered shall be the manufacturer's standard production model. It shall have been in continuous use by municipal and industrial owners for a minimum of five years. A list of five user contacts including contact names and telephone numbers shall be provided with the bid submittal. Failure to supply a verifiable users list will be cause for rejection of the bid.

1.4 DESIGN REQUIREMENTS

1.4.1 All design requirements listed below must be clearly displayed on performance pump curves. These performance pump curves shall be based on testing standards established by the hydraulic institute.

DESIGN REQUIREMENTS	
OPERATING SPEED (MAXIMUM) (RPM)	
MAXIMUM SOLIDS HANDLING SIZE (INCHES)	
IMPELLER DIAMETER (INCHES)	
SUCTION SIZE (INCHES)	
DISCHARGE SIZE (INCHES)	
PRIMARY DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT PRIMARY DUTY POINT (FEET)	
MINUMUM EFFICENCY AT MAX DUTY POINT	
SECOND DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT SECOND DUTY POINT (FEET)	
MIMIMUM EFICENCY AT SECOND DUTY POINT	

1.5 REFERENCES

1. ANSI B16.1 - Standard for Cast Iron Pipe Flanges and Flanged Fittings.

PART 2 PRODUCTS

2.1 PRE-APPROVED ACCEPTABLE MANUFACTURERS:

1. GODWIN PUMPS OF AMERICA
2. THOMPSON PUMP & MANUFACTURING CO, INC.

A. All manufacturers shall be ISO 9001: 2008 certified. Certificates shall be made available to Collier County upon request. Bids will be accepted for consideration on any make and model that meets the requirements of the project specifications, as interpreted by the Owner. If a product proposed does not meet the requirements of this specification, the Contractor shall provide a unit which does, at no additional cost to the Owner. The Owner shall have the final decision on which products do and which products do not meet the project specifications.

2.2 EQUIPMENT

A. PUMPS: The pumps used in the diesel backup pump system shall be supplied directly by the manufacturer, not by a distributor. The pump itself and the diesel backup pump system as a whole shall come from a single manufacturer. “Packagers” of systems which incorporate pumps from a separate manufacturer to fabricate diesel backup pump systems shall not be allowed.

B. CASING, SUCTION COVER, SEPARATION TANK: Pump castings shall be cast iron or ductile iron with a minimum pressure rating of 100 psi. The pump casing shall be constructed so that the suction flow path is in axial alignment with the impeller eye. There shall be no turns, chambers, obstructions or straightening vanes between the suction line and the impeller. The pump casing shall be complete with a removable port for inspecting impeller/cut water area.

C. IMPELLERS: The pump impeller shall meet the criteria of one of the following:

1. An open, three-bladed, (or 2-bladed) non-clog type with pump-out vanes on the back shroud and fabricated from hardened cast- chromium steel construction (or other material to meet minimum Brinell Hardness 340 HB).

2. A high efficiency non-clog type, 2-vane, enclosed design with full front and rear shrouds, containing back pumpout vanes, constructed of high grade 65-45-12 ductile iron and capable of passing a 3” spherical solid.

D. WEARPLATES/WEAR RINGS: Shall be fully be replaceable, fabricated of cast iron. Wear plate/wear ring clearances shall have no relationship to the ability of the pump to achieve a prime.

E. BEARINGS AND SHAFTS: Pump shall be fitted with a bearing bracket to contain the shaft and bearings. Bearings shall be tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points. Minimum ISO L_{10} bearing life to be 100,000 hours. Impeller shafts shall be fabricated of high strength alloy steel, accurately machined, polished, and of sufficient size to transmit full driver output without excessive flexing or stress.

F. SEALS: Pump shall be capable of running dry, with no damage, for periods up to twenty-four hours. The pump seals shall be the requirements of one of the following:

1. Seal shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 87 psi. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. All metal parts shall be of stainless steel. Elastomers shall be Viton.

2. Pump seal shall be an inside-mounted, self-cleaning John Crane type 2 component style mechanical seal with tungsten carbide rotating and silicon carbide stationary faces with Viton elastomers and stainless steel spring and hardware.

G. PUMP SUCTION AND DISCHARGE FLANGES: Shall be cast iron ANSI (B16.1) Class 150, raised faced.

H. PUMP GASKETS: Shall be compressed fiber and/or Teflon.

I. PUMP O RINGS: Shall be Buna-N.

J. PRIMING SYSTEM: Pump shall be fitted with a fully automatic priming system incorporating a air compressor, venturi (with lifetime warranty), priming chamber, and discharge check valve assembly. The compressor shall be installed on the engine auxiliary drive and shall be gear driven, lubricated and cooled from the engine. Installed system design shall prevent any carryover of the pumping fluid onto the ground. Priming system may require additional drainage pipelines to be constructed to re-circulate pumping fluid back to sump area. The pump must be capable of running totally dry for periods up to 24 hours, then re-priming and returning to normal pumping volumes. Pump and priming system is capable of priming the pump from a completely dry pump casing. The pump shall be capable of static suction lifts to 28 vertical feet, at sea level. It shall also be capable of operation using extended suction lines, and pump shall be capable of priming and re-priming without any user intervention. Equipment acceptance shall be contingent upon the pump's ability to run continuously at full speed in a completely dry condition. The engineer may require a demonstration. Priming systems that incorporate the use of a positive displacement diaphragms OR oil-cooled vacuum pumps will not be accepted.

K. CHECK VALVE: The priming system shall include a discharge check valve to prevent pulling air through the discharge line during priming and prevent in-line return of flow when the pump is shut off. Non-return check valve shall be constructed of cast iron with Nitrile rubber and shall be field replaceable. Check valve shall be vacuum-tested by the factory, and test results shall be provided.

L. DRIVE UNIT: The drive unit shall be a diesel water-cooled engine. The engine shall drive the pump by use of direct-connected intermediate drive plate. Starter shall be twelve-volt electric. Low oil pressure safety shutdown, high temperature shutdown, tachometer, and hour-meter shall be integrated into engine control panel. Battery shall have 180-amp hour rating. A certified continuous-duty engine curve shall be supplied to the owner/engineer.

M. GOVERNOR: Governor shall be an electronic or mechanical type. Engine speed shall be adjustable to operate the pump between maximum and minimum design operation speeds in manual mode. See section 2.3 for Automatic mode.

N. FUEL SOURCE: Integral skid fuel tank capacity shall be sufficient to provide at least seventy-two (72) hours of continuous operation at full load. The minimum tank size shall be 150 gallons and the maximum tank size shall be 550 gallons. The engine shall be capable of operating satisfactorily on a commercial grade of distilled No. 2 fuel oil.

O. EXHAUST: Exhaust system shall include a hospital grade muffler housed in a separate chamber within the enclosure. All exhaust piping and manifolds shall be encased in fitted acoustic blankets. They shall be constructed of high-density fiberglass material with waterproof jacketing.

P. SOUND ATTENUATED ENCLOSURE: The entire unit including the pump and engine shall be completely enclosed in a lockable enclosure. The enclosure shall be constructed with a modular galvanized steel frame and galvaneel panels. Acoustical material shall be installed as required to reduce pump and engine noise. Maximum sound ratings for specific pump sizes are shown in the table below. These sounds rating shall be the maximum dBA rating measured at 7 meters @ both duty points specified.

Pump Outlet Size	Maximum Sound Rating Allowed
4”	68 dBA
6”	70 dBA
8”	72 dBA
10”	72 dBA
12”	72 dBA

Q. Units not meeting this requirement shall not be considered. The enclosure shall be removable for easy access to the engine / pump for maintenance and repair. The enclosure doors shall all be equipped with latches that are keyed alike. For maintenance and service needs, the enclosure sides shall have hinged doors for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters. The enclosure shall be coated in epoxy based primer and paint to a total dry film thickness of 5 mils.

R. UL LISTED SKID BASE

1. The pump base tank shall be a UL-142 approved double wall design constructed in accordance with Flammable and Combustible Liquids Code, NFPA 30; The Standard for Installation and use of Stationary Combustible Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110. Pumps installed within 25 feet of a building shall be equipped with UL-2085 fire resistant fuel tanks. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

2. The tank design shall be a Closed Top Dike Pump Base Tank. It shall be of double

wall construction having a primary tank to contain the diesel fuel, held within another tank or dike, which is intended to collect and contain any accidental leakage from the primary fuel tank. The completed base tank assembly is to incorporate pump mounting locations and must be able to support four times the rated load.

3. The primary tank shall be designed to withstand normal and emergency internal pressures and external loads. It shall be capable of withstanding internal air pressures of 3 to 5 psig without showing signs of excessive or permanent distortion and 25 psig hydrostatic pressures without evidence of rupture or leakage.

4. The primary and secondary tanks or dike shall have venting provisions to prevent the development of vacuum or pressure capable of distorting them as a result of the atmospheric temperature changes or while emptying or filling. The vent shall also permit the relief of internal pressures caused by exposure to fires. The vent size shall be determined by using the calculated wetted surface area in square feet (the top is excluded) in conjunction with venting capacity table 10.1of UL-142. The tank's vent shall also be equipped with a coupling device and shall be located to facilitate connection to a vent piping system. The dike's vent may be an opening for venting directly to the atmosphere and protection from the entrance of natural elements or debris shall be provided.

5. The primary and outer tanks are to be constructed of 304 stainless steel, 7 gauge minimum. Internal baffles or reinforcement plates shall be located on a maximum of 24 inch centers in tanks up to 60 inch width and on a maximum of 19.5 inch centers in tanks over 60 inch width. At least one baffle shall separate the fuel suction pipe from the fuel return line.

6. The outer tank is to be constructed in a manner to be able to support four times the wet load of the pump and housing. The entire load is to be carried by the outer tank so no load or vibration stress is placed on the primary tank. If the pump base tank is wider than the pump set to be supported, structural rails are to be incorporated to span the width of the base tank so that the load is transferred to the side rails of the tank. Vertical reinforcements shall be welded to the outer sides of the secondary tank or dike at a maximum of 45 inch centers on tanks up to 30 inches high and on 24 inch centers on tanks greater than 30 inches high. At least one vertical reinforcement shall be positioned adjacent to each mounting hole location. Provide level monitoring and interstitial space leak monitoring.

7. Both primary and secondary tanks shall be fitted with the proper welded pipe fittings to accommodate the requirements for the fill port and normal and emergency venting.

8. The completed assembly is to be cleaned with a heated pressure wash followed by a chromium free post treatment to ensure proper paint adhesion. The tank assembly is to be painted with an epoxy ester primer and high quality polyurethane enamel with a minimum dry film thickness of 3.5 mils.

9. All tanks shall be tested in accordance with **NFPA 30 TO INCLUDE ON SITE**

TIGHTNESS TESTING in accordance with NFPA 30 Section 21.5. This requirement shall not apply to portable trailer mounted diesel pumps.

10. Manufacturing and testing of this system shall be performed within the scope of Underwriters Laboratories, Inc. “Standard for Safety UL 142.”, or UL 2085, as applicable. A UL label shall be permanently attached to the tank system showing the following information:

    i. The registered UL mark and the name: Underwriters Laboratories, Inc.
    ii. A control number and the word “listed”
    iii. The product’s name as identified by Underwriters Laboratories Inc.
    iv. The serial number assigned by Underwriters Laboratories, Inc.
    v. Other manufacturer’s information may also be included.

S. PORTABLE TRAILER (FOR TRAILER MOUNTED UNITS ONLY):

1. The complete pump set shall be factory mounted on a highway trailer meeting NHTSA, DOT Part 571 standards 108, 119 and 120.

2. Trailers with loads of 5,000 pounds or less with fuel tank filled, shall have a flat bed, single axle, two 15-inch wheels with 6-ply tires. Axle ratings shall be a minimum of 5,000 pounds.

    i. Trailers with loads from 5,000 to 10,000 pounds with fuel tank filled, shall have a flat bed, 2-axle, four 15-inch or 16-inch wheels with 10-ply tires. Axle rating shall be a minimum of 10,000 pounds.
    ii. Trailers above shall have following accessories. Ring and pintal hitch including safety chain and fasteners, electric brakes shall be provided on all wheels, and all required ICC lights such as tail, brake, direction signals, license holder and light, etc., shall be provided; jacks and sand shoes for front and rear corners shall be provided so that unit can be completely supported.
    iii. The diesel backup pump engine shall be balanced mounted on trailer. All necessary service and checkout of diesel backup pump set shall be performed prior to delivery.

T. FACTORY PAINTING: Pump, engine, and base shall be shop primed and finish painted at the place of manufacturer.

2.3 AUTOMATIC STARTING CONTROL SYSTEM

A. The engine control panel shall be provided in a NEMA 3R enclosure mounted on rubber isolators to reduce vibration, equipped with a factory installed microprocessor-based controller designed to start/stop the engine at a signal supplied by high and low level floats or a 4-20 mA transducer.

B. The control system shall be able to start/stop the engine a via a signal supplied by a primary level transducer and back-up high and low level floats for redundant automatic operation.

C. ENGINE / PUMP CONTROL SPECIFICATIONS

1. The engine shall be started, stopped, and controlled by a digital controller. The controller shall be weather proof enclosed, and contain an external weatherproof 12-position keypad accessible without the need to remove or open any protective cover or enclosure. It shall be designed to start/stop the engine based on relay contact closure provided by others. The controller shall provide the following functions without modification, factory recalibration, or change of chips or boards, by simply accessing the keypad:

D. The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, and maintain complete weather-tight sealing of the controller.

E. In automatic mode, the unit shall conserve energy and go to "sleep".

F. The controller shall function interchangeably from remote contact closure, as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.

G. The start function can be programmed to provide two separate functions each day for seven days (i.e. a start, exercise cycle on two separate days at different times and for a varying length of time all via the keypad).

H. Manual-Automatic Button:

1. In Manual Mode, manual "Start" button starts engine and runs until "Stop" or "Off" button is depressed or an emergency shutdown occurs.

2. In Automatic Mode, start/stop sequencing is initiated by a signal from a digital input.

I. The controller shall integrate the engine safety shut-off for low and high oil temperature, and provide over-speed protection.

J. The controller shall include standard, field-adjustable parameters for engine cycle crank timer, and shutdown time delay.

K. The controller shall have only one circuit board with eight built-in relays. Three (3) of the relays shall be programmable to output desired parameter on display and to be used as dry-contacts for communication with Collier County's SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software. Relays will monitor the following:

1. Low Battery Charge
2. Low Fuel Level (Less than 25 gallons)
3. Diesel Pump Engine Start

L. Standard components shall consist of one of the following set ups:

1. (24) Digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form “C” relays, (1) RS232 port, (1) RS485 port, (1) RS232/RS485 port, (1) J1939 port, and (1) 64X128 pixel full graphic LCD display with backlight.

2. (8) Digital inputs, (5) analog inputs, (8) digital outputs, (1) RS232 port, (1) RS485 port, (1) J1939 port, (76) selectable features, (32) alarm event history.

M. The industrially-hardened Controller shall withstand vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature range of 4° to 176°F (-20° to 80°C) and an operating humidity range of 0-95% non-condensing.

2.4 OPTIONS

A. FULLY AUTOMATIC TRICKLE CHARGER: The unit shall include a fully automatic trickle charger powered by 6-amps, 115 VAC.

B. LIGHT: The unit shall include a single switch operated 12VDC light within the enclosure.

C. FLOATS: The unit shall be supplied with one (1) float assembly including two (2) N/O floats which shall integrate with the engine control panel via a single multi-pin plug.

D. LEVEL TRANSDUCER: The unit shall be supplied with (1) one Teflon diaphragm sewage compatible level transducer assembly including a single 4-20 mA level transducer with leveling guard (0-15 psig), which shall integrate with the engine control panel via a single multi-pin plug.

E. AUTO THROTTLE: The unit/s shall include one (1) automatic throttle controller integrated into (1) relays in the electronic engine control panel. The auto-throttle control panel combination shall allow the pump to ramp up to the target RPM given a start command and ramp down to idle given a stop command via the 4-20 mA level transducer

F. DC / AC INVERTOR: The unit/s shall include one (1) 12VDC to 110VAC volt single-phase inverter, 1750 watts, mounted inside enclosure, single 15-amp GFI outlet, and one (1) fusible link.

2.5 ACCESS PLATFORM

A. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

B. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.1 MANUFACTURERS SERVICES

A. The manufacturer shall furnish the services of a competent factory representative to do the following:

1. The complete pump set shall be factory tested according to ANSI/HI 1.6¬1994 by a certified quality technician. The pump shall be sound tested according to ISO 3744, ANSI/HI9.4 and CPB Sound Level Measurement Standard.

2. Instruct the Owner's operating personnel in the proper operation and maintenance of the system for a period of not less than one-half day.

3.2 TOOLS AND SPARE PARTS

A. The manufacturer shall furnish the following on delivery of the pumping system;

1. A recommended list of spare parts.

2. Two (2) replacement mechanical seals

3. An Operations and Maintenance manual for the pump and engine.

4. A fuel polishing system capable of below 1 micron filtration equipped with a fuel-water separator and 12V DC fuel pump rated at 40 GPH minimum. The system shall be a standard commercial or industrial off the shelf unit intended for portable use of diesel fuel polishing. The fuel polishing system shall include 6 spare filters and an operations and maintenance manuals.

3.3 WARRANTY

A. The manufacturer shall furnish the following to the owner:

1. A copy of the engine manufacturer's parts and labor warranty.

2. A 3-year Parts and Labor Warranty issued by the manufacturer on the Diesel Pump System. This warranty must cover all pump parts.

3. The venturi shall have a minimum five (5) year warranty to include parts and labor.

END OF SECTION

SECTION 263213.13

STANDBY DIESEL GENERATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Extent of diesel generator set work as indicated by Drawings and Schedules, and is hereby defined to include, but not by way of limitation:
   1. Diesel engine.
   2. Electrical generator.
   3. Engine starting system.
   4. Batteries.
   5. Instrument control panel.
   6. Sound Attenuating Enclosure.
   7. Sub-Base Fuel Tanks.
   8. Exhaust silencer.
   9. Wall thimble.
   10. Additional accessories.
   11. Automatic transfer switch (ATS).
   12. Access platform and stairs.

B. Types of generator sets required include:
   1. Permanent Diesel Engine-driven Generator.

1.02 SUBMITTALS

A. Shop Drawings: Submit in accordance with Section 013400, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
   1. Product Data: Submit manufacturer's data on diesel engine-driven generator sets and components.
      a. Generator dimensions.
      b. Generator weight.
      c. Generator rating.
      d. Alternator rating.
      e. Generator Starting System Data:
         1) Battery size and ratings.
         2) Charging system capacity.
         3) Battery heater data.
         4) Battery warranty.
      f. Generator Control Panel Data:
         1) Layout.
         2) Wiring diagrams.
         3) Control interconnection.
         4) Instrumentation.
      g. Exhaust System Data:
         1) Muffler size.
         2) Decibel reduction curve.

3) Fuel system data.

h. Cooling System Data:
   1) Radiator capacity.
   2) Cooling reduction capacity

i. Enclosure Data:
   1) Materials.
   2) Size.
   3) Assembly/disassembly instructions.
   4) Door locations.
   5) Noise reduction.
   6) Color.

j. Sub-Base Fuel Tank:
   1) Capacity.
   2) Fuel usage calculations.
   3) Coating.

k. ATS Data:
   1) Enclosure Material.
   2) Dimensions.
   3) Factory test report.

l. Warranty data.

m. Accessory and miscellaneous equipment.

2. Wiring Diagrams: Submit wiring diagrams for diesel engine-driven generator units showing connections to electrical power panels, feeders, and ancillary equipment. Differentiate between portions of wiring that are manufacturer installed and portions that are field installed.
3. Agreement to Maintain: Prior to time of final acceptance, Installer shall submit 4 copies of an agreement for continued service and maintenance of diesel engine-driven generator sets for OWNER's possible acceptance. Offer terms and conditions for furnishing parts and providing continued testing and servicing, including replacement of materials and equipment, for 1-year period with option for renewal of Agreement by OWNER.
4. Certifications: Provide diesel engine-driven generator sets certified test record of the following final production testing:
   a. Single-step load pickup.
   b. Transient and steady-state governing.
   c. Safety shutdown device testing.
   d. Voltage regulation.
   e. Rated power.
   f. Maximum power.
   g. Provide certified test record prior to engine-driven generator set being shipped from factory to Project location.
5. Spare Parts Data: Submit a list of spare parts for the equipment specified.
6. Operating and Maintenance Instruction Manuals:
   a. Operating instruction manuals outlining step-by-step procedures required for system startup and operation.
   b. Manufacturer's name, model number, service manual parts list.
   c. Brief description of equipment and basic operating features.
   d. Maintenance instruction manuals outlining maintenance procedures.

e. Troubleshooting guide listing possible breakdown and repairs.
f. Point-to-point connection wiring diagram for the system.
g. Performance Test Reports: Upon completion of installed system, submit in booklet form all shop and field tests performed to prove compliance with specified performance criteria.
h. Provide OWNER with two (2) electronic copies of O&M manuals on CD's.

1.03 QUALITY ASSURANCE

A. Codes and Standards:
1. NFPA Compliance: Comply with applicable requirements of NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 99, "Standard for Health Care Facilities," and NFPA 101, "Code for Safety to Life from Fire in Buildings and Structures."
2. UL Compliance: UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," UL 2200, "Standard for Safety for Stationary Engine Generator Assemblies," rated 600 volts or less. UL 1008, "Automatic Transfer Switches," and UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors." Provide transfer switches and components which are UL listed and labeled.
3. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NE MA MG1, "Motors and Generators," and MG2, "Safety and Use of Electric Motors and Generators." NEMA Standards Pub/Nos. ICS 2, "Industrial Control Devices, Controllers and Assemblies," ICS 6 and 250, pertaining to transfer switches.
4. IEEE Compliance: Comply with applicable portions of IEEE Standard 446, "IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications."

B. Submittal information shall be generated from a representative located within Collier County who has knowledge of Local and State code requirements.
C. Warranty: Submit in accordance with requirements of Section 01740, warranties covering the items included under this Section. Unit shall be provided with a full comprehensive warranty of 5 years or 1500 running hours from date of ENGINEER's acceptance. Response time shall be a maximum of 3 hours. Provide label on inside of generator with description of warranty period and contact information.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufactured material shall be adequately packed to prevent damage during shipping, handling, storage and erection. Material shipped to site shall have approval of OWNER prior to shipping. All shipped material shall be packed in a container properly marked for identification. Blocks and padding shall be used to prevent movement.
B. CONTRACTOR shall inspect the material prior to removing it from carrier. If damage is observed, CONTRACTOR shall immediately notify carrier so that a claim can be made. If no such notice is given, material shall be assumed to be in undamaged condition, any subsequent damage that occurs to the equipment shall be the responsibility of CONTRACTOR.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:
   1. Standby Diesel Generator Sets:
      a. Caterpillar.
      b. Cummins.
   2. Automatic Transfer Switches:
      a. Caterpillar.
      b. Cummins

2.02 GENERATOR SETS

A. Except as otherwise indicated, provide manufacturer's standard diesel engine-driven generator set and auxiliary equipment as indicated by published product information, and as required for a complete installation. Generator set shall be rated to continuously power the total accumulated load and starting load shown on Schedule at 100 degrees F ambient temperature and at altitude where installed.

B. Diesel Engine: Provide a 4-cycle, compression ignition type engine for operation on a commercial grade of petroleum fuel oil such as No. 2 fuel oil. Engine operating speed shall not exceed 1,800 rpm and shall be controlled by a governor to maintain alternator frequency within plus or minus 3 Hertz of 60 hertz from no load to full load. Frequency shall recover to steady-state tolerance within 5 seconds after application of 90 percent rated load.

C. Starting System: Provide engine-generator unit with 12- or 24-volt, negative ground, starting system including positive engagement solenoid shift-starting motor, batteries, and 35-ampere, or greater, automatic battery charging alternator with solid-state voltage regulator. Mount batteries in a plastic- or epoxy-coated metal platform near the starter but not on the generator and coat battery terminals with an anti-oxidant. Generator sets rated 150 kW or less shall have a battery rated 650 amperes cold cranking at 0 degree F and 170 minutes reserve capacity by SAE Standard J-537. Larger generators shall have a battery rated either 220 ampere-hours or 900 amperes cold cranking, and 430 minutes reserve capacity. Batteries shall have a 12-month full warranty and 60-month prorated warranty.

D. Battery Charger: Provide a solid-state, current limiting, float-type SENS model #NRG22-10-RC battery charger with 10-ampere minimum capacity. Charger shall operate from 120-volt AC single phase, 60 hertz power and shall automatically keep batteries at full charge. Equip charger with ammeter and voltmeter. Battery charger shall be located within the generator enclosure.

E. Alternator: Provide a single bearing brushless, self-excited alternator with inherently regulated rotating rectifier exciter system or a revolving field design with a temperature compensated solid-state voltage regulator. Connect the alternator housing directly to the

engine flywheel housing. Couple the alternator rotor directly to engine flywheel with a semi-flexible steel disk coupling.

1. Provide windings with Class F insulation with epoxy impregnation and fungus-resistant coating. Temperature rise shall be as defined in NEMA Standard MG1-22.40.
2. The alternator shall be capable of starting load given for site with 35 percent maximum instantaneous voltage dip. Instantaneous voltage dip shall only be 20 percent when there is a VFD. Recovery to stable equation within plus or minus 5 percent of rated voltage shall occur within 3 seconds.

F. Engine Cooling Radiator: Provide a complete engine cooling system equipped with a radiator and blower type fan sized to maintain safe operation, 190 degrees F engine outlet water temperature at 100 degrees F maximum ambient temperature. The engine cooling system shall be filled with a solution of 50 percent ethylene glycol.

G. Instrument Control Panel: Provide engine-generator unit with engine oil-pressure and water-temperature indicators, reset circuit breaker, static voltage regulator, voltage-adjusting rheostat, voltmeter, ammeter with phase selector switch with an OFF position, and with running time indicator and frequency meters. Select circuitry of plug-in design capable of quick replacement, and capable of accepting a plug-in device which allows maintenance to test control panel performance without operating the engine.

1. Provide a cranking limiter to open starting circuit in 45 to 90 seconds if engine has not started within that time or after a series of 3 or more cranking intervals separated by 2 or more rest periods.
2. Provide engine safety devices to shut unit down on high engine temperature, low oil pressure, overspeed, and overcrank. Provide, for each of these conditions, an alarm light and an unpowered, normally open contact for remote use. Provide an audible alarm with silence switch which is activated by any alarm condition. Provide additional unpowered, normally open contact for remote use that indicates general generator alarm. General alarm contact will be for any alarms associated with the generator and not pre-assigned to a specific alarm. Sacrificing a specific alarm in order to receive the general alarm contact is not acceptable.
3. Provide a relay with 2 normally open and 2 normally closed contacts rated 5A at 120 volts AC and which is energized when unit is running. Wire these contacts to terminal strips for remote use.
4. Provide a RUN-OFF-AUTO switch. In AUTO position unit shall start when a remote contact closes and stop when contact opens. In RUN position unit shall start and run until OFF position is selected.
5. Mount instrument control panel on unit such that it is isolated from generator set vibration.

2.03 PERMANENT ENGINE-GENERATOR SET ACCESSORIES

A. Enclosure Design: Generator set shall be provided with a skin tight outdoor enclosure. Enclosure roof and side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. Side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. The Side Walls shall be complete with necessary access doors and ventilating louvers. There shall be at least 2 access doors on each side of enclosure and

one at the generator control panel for access to the controls. Doors shall be capable of full-range of motion. CONTRACTOR shall coordinate final location of generator to accommodate door swings. Any changes due to generator clearances shall be at the expense of the CONTRACTOR. Doors shall be hung on full-length piano hinge assembly. All hinge hardware shall be stainless steel. Finish paint shall be powder-coated over epoxy primer. Doors shall be equipped with handles. Louvers shall be stationary type and shall be arranged to provide adequate protection against rainfall at 15 degrees from vertical. Air of intake louvers shall be sized so not to exceed .5 inches of water column while providing the required genset cooling and combustion air flow. Enclosure shall be of bolted formed panel type construction. Exhaust shall be provided within the enclosure unless otherwise directed by the ENGINEER. Roof shall have sufficient strength to support an exhaust silencer. Enclosure shall be large enough to fully enclose all components necessary to the system. All doors shall be capable of being locked or have provisions for padlocks. Door hardware shall be stainless steel.

1. All raceway and conduits within the enclosure shall be sealed-tight flexible conduit or rigid aluminum or galvanized steel with malleable iron boxes and compression type fittings as appropriate for the raceways used under NEC. EMT and flex or “Greenfield” conduits are not acceptable.
2. When this outdoor enclosure is specified, the temperature specifications for unit shall be 0 degrees F to 120 degrees F with ambient air at radiator intake being 100 degrees F maximum.
3. Modular enclosures shall comply with DCA, Florida Building Code and have a minimum sustained wind rating of 150 MPH.
4. The CONTRACTOR is responsible for verifying the impact rating requirements under Florida Building Code and shall provide a generator enclosure in compliance to these standards.
5. Consult the ENGINEER prior to bid when generator is located within any “Zone 4 impact area under FBC”.
6. Enclosure shall match footprint of sub base fuel tank.

B. Sound Attenuation: Enclosure shall be insulated to attenuate sound and include sound attenuating features that direct radiant cooling air in a route to minimize ambient noise when generator is running.

C. Operational noise shall not exceed 75 dBA at 23 feet (in Free Field Conditions). Additional sound attenuation references or limitations may be required. See drawings for additional details. If generator is located within 50 feet of a commercial or residential unit, then operational noise shall not exceed 55 dBA.

D. Source dBA and sound attenuation shall be as measured and defined under ANSI S12.34-1998 and SIO 3744 as applicable. Additional local codes and standards may apply for generator operational noise. The CONTRACTOR is responsible for compliance to all local standards without change order or additional payment.

E. Fuel System: Provide unit with a UL142 compliant double-wall skid base type integral fuel tank that is “skid” mounted, unless otherwise directed by the ENGINEER’s drawings or addenda. Tank capacity shall be a maximumum of 550 gross volume gallons. The

tank capacity shall be calculated assuming the tank is 90% full and based on the generator running at full load/speed continuously for three (3) days.

F. The ENGINEER has projected fuel use estimates using equipment listed as the basis of design. The CONTRACTOR is responsible for providing the manufacturer's fuel usage calculations with submittal documents for ENGINEER's review.

G. The fuel tank shall be furnished with UL142 and FDEP required accessories to include a fuel site gauge, normal and emergency vents and fuel cap having padlocking provisions. All necessary fuel supply and return line shall be furnished pre-assembled to unit. The Fuel Tank shall meet all applicable State and local standards for the volume of fuel the tank will hold.

H. Sub base fuel tank size shall be provided and sized as shown on the contract documents and within the specifications.

I. Sub base fuel tank shall not allow pooling or ponding of water on top once generator is mounted on top.

J. Tank shall be made by a manufacturer with minimum of (10) ten years' experience in the design and construction of UL Listed, FDEP and NFPA compliant sub base fuel tanks. Manufacturer of the fuel tank must be approved and registered with the State of Florida, and have their required "EQ" file number on the supplied fuel tank. The installing CONTRACTOR is responsible for supplying fuel for the field testing.

K. The fuel tank shall be mounted under the generator skid rails, consisting of a dual wall design constructed to UL142 and standards applicable to this application under FS-62-762, NFPA 30, NFPA 37 and NFPA 110. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

L. Sub base fuel tank shall be rectangular in shape and include reinforced steel box channel for generator support.

M. Both the inner and outer tanks shall be constructed of 304 stainless steel.

N. The outer wall shall be prepared before & after primer. Prime with one coat of epoxy primer to a thickness of 12-15 mils (DFT). Outer wall finish coat shall be a high gloss, black, UV blocking epoxy primer applied to a minimum thickness of 3.5 mils (DFT). All welds and fasteners connecting the generator skid base to the fuel tank shall be similarly primed and finished. Primers shall not be electrostatically or powder applied. Primers shall be hand applied & dried in a drying booth.

O. Fuel tank shall be equipped with a magnetic liquid level fuel gauge as manufactured by Rochester Gauges, Inc. Fuel tank level shall be output as a 4-20mA signal from the generator control panel.

P. Sub base fuel tank shall have a 4 point lifting system in place when shipped to the site. It shall be the responsibility of the Generator manufacturer to recommend a lifting system along with instructions for the CONTRACTOR on site.

Q. Sub base tank testing shall consist of primary and secondary tank containment basin and shall be pressurized at 3-5 psi and leak checked to ensure integrity of sub base weld seams per UL-142 standards. A copy of this report shall accompany close-out documents. Fuel containment basin shall be sized as a minimum of 110% of the tank capacity to prevent escape of fuel into the environment in the event of a tank rupture. Provide a fuel containment basin leak detector switch.

R. The sub base tank fittings shall include the following:
   1. Appropriately sized NPT fuel supply.
   2. Fuel return fitting
   3. 2” NPT for normal vent
   4. NPT for emergency vent, sized as appropriate
   5. 2” NPT for manual fill.
   6. NPT for level gauge, sized as appropriate.
   7. 3/8” NPT basin drain
   8. 2” NPT for level alarm.
   9. NPT fitting for leak detection alarm

S. Coolant Heater: Provide engine coolant heater that operates from 120-volt AC single phase, 60 hertz power with thermostatic controls to maintain engine coolant at proper temperature to fulfill start-up requirements of NFPA 99.

T. Inlet and Exhaust Systems: Silencers and exhaust ducting to silencers shall be self-supporting when assembled. Provide all necessary supporting members for ductwork between silencer and outlet. Provide all required cutting as shown on Drawings and noted herein. The unit shall be complete with raincap. All exhaust duct shall be Schedule 10 steel pipe, minimum. Inlet silencer and filter to be self-supporting. Provide necessary supports for all intake ductwork. All intake ducts shall be Schedule 10 steel pipe, minimum.
   1. Provide a silencer which meets sound standards of a critical area. Silencer shall provide attenuation (input to output) of 25 dB or greater at frequencies of 125 hertz to 8 kilohertz. A curve shall be submitted with Shop Drawings showing attenuation (input to output) in dB versus frequency. Curve shall be on manufacturer's standard data sheet or from an independent test lab. A spiral or bellows-type flexible section of pipe shall be installed in the exhaust line between the muffler and engine manifold connection. An insulated thimble section shall be provided where exhaust line passes through roof or wall. Exhaust lines shall be pitched and a condensation trap provided at non-draining low points in line.

U. Circuit Breaker: A generator power circuit breaker shall be installed as a manual load circuit interrupter and an automatic overload and short circuit protection device.
   1. The circuit breaker shall be a solid-state trip type for all sizes rated 200 amps continuous and larger. Solid-state trip shall include Long-time, Short-time, and Instantaneous. Ground fault trip required on breakers 1,000 amps and above.

2. 100% ratings under UL shall be required as noted on ENGINEER's drawings.
3. AIC rating for generator power circuit breaker shall meet or exceed that of the upstream service entrance rating.
4. Generator power circuit breaker shall be UL listed as short circuit, service entrance rated device under UL and NEC.
5. Trip settings for all breakers shall be selected for the rating of the generator power circuit as indicated on Drawings.
6. Provide breaker and alternator trip curves in the submittal. Show coordination of curves for equipment provided.

V. Provide protective relays to protect the generator system/alternator.

W. Alternator protection equipment as basis of design shall be equal to "Amp Sentry" protection by Cummins Power Generation with the following features: Over current and short-circuit shut down - Over current warning -Single and three phase fault regulation - Over and under voltage shut down - *Over and under frequency shut down - Overload warning with alarm contact - Reverse power and reverse* Var shut down - Excitation fault. Equipment other than basis of design is subject to ENGINEER's approval. Provide full submittal and comparison data for ENGINEER's review on equipment as provided.

X. Any pump station requiring a generator shall also have a generator receptacle located on the pump control panel for a portable generator, coordinate exact model with OWNER.

2.04 AUTOMATIC TRANSFER SWITCHES

A. Automatic Transfer Switch: UL listed and 600 volt-rated with amperage rating shown on Drawings and shall be the mechanically held, electrically operated type rated for continuous duty in an unventilated sheet metal enclosure.

B. Switch shall be double throw, with an off position, having electrical operated normal-emergency positions inherently interlocked mechanically, and with main contacts mechanically attached to a common shaft. Main contacts shall be silver alloy wiping-action type. They shall be protected by arcing contacts.

C. Heavy duty emergency pushbuttons shall be provided. Emergency pushbuttons shall reset when pulled out.

D. Switch and Relay Contacts, Coils, Springs, and Control Elements: Removable from front of transfer switch without removal of the switch panels from enclosure and without disconnection of drive linkages or power conductors. Sensing and control relays shall be continuous duty industrial control type with 600 volt, 10 amp rated contacts.

E. Transfer switch internal wiring shall be composed of pre-manufactured harnesses that are permanently marked for source and destination. Harnesses shall be connected to the control system by means of locking disconnect plug(s), to allow the control system

to be easily disconnected and serviced without disconnecting power from the transfer switch mechanism.

F. Power transfer switch shall be provided with flame retardant transparent covers to allow viewing of switch contact operation but prevent direct contact with components that could be operating at line voltage levels.

G. Transfer switches that are designated on the drawings as 3-pole shall be provided with a neutral bus and lugs. The neutral bus shall be sized to carry 100% of the current designated on the switch rating.

H. Field control connections shall be made on a common terminal block that is clearly and permanently labeled.

I. Upon drop in normal voltage of 83-85 percent of rated voltage, and after an override delay of 3 seconds nominal, switch shall start generator and transfer the load to emergency source, provided emergency source voltage and frequency are 90 percent of rated or higher.

J. Upon return of normal source voltage for 5 seconds nominal, to 92-95 percent of rated, switch shall retransfer load to normal source after a minimum transfer time or if emergency source fails. Provide a 5- to 60-second adjustable time delay to maintain transfer switch in the "Off" position during transfer to either source.

K. Sensing relays shall operate without contact chatter or false response when voltage is slowly varied to dropout and pickup levels.

L. Four auxiliary contacts shall be provided: Two for transfer switch position indicating use, and two auxiliary contacts, one N.O. and one N.C. to operate after completion of the 3-second override delay for starting generator. All auxiliary contacts shall be 600 volt, 10 amp continuous rating.

M. Operator Panel. Each transfer switch shall be provided with a control panel to allow the operator to view the status and control operation of the transfer switch. The operator panel shall be a sealed membrane panel rated NEMA 3R/IP53 or better (regardless of enclosure rating) that is permanently labeled for switch and control functions. The operator panel shall be provided with the following features and capabilities:
   1. High intensity LED lamps to indicate the source that the load is connected to (source 1 or source 2); and which source(s) are available. Source available LED indicators shall operate from the control microprocessor to indicate the true condition of the sources as sensed by the control
   2. High intensity LED lamps to indicate that the transfer switch is “not in auto” (due to control being disabled or due to bypass switch (when used) enabled or in operation) and “Test/Exercise Active” to indicate that the control system is testing or exercising the generator set.
   3. “OVERRIDE” pushbutton to cause the transfer switch to bypass any active time delays for start, transfer, and retransfer and immediately proceed with its next logical operation.

4. “TEST” pushbutton to initiate a preprogrammed test sequence for the generator set and transfer switch. The transfer switch shall be programmable for test with load or test without load.
5. “RESET/LAMP TEST” pushbutton that will clear any faults present in the control, or simultaneously test all lamps on the panel by lighting them.
6. The control system shall continuously log information on the number of hours each source has been connected to the load, the number of times transferred, and the total number of times each source has failed. This information shall be available via a PC-based service tool and an operator display panel.
7. Vacuum fluorescent alphanumeric display panel with push-button navigation switches. The display shall be clearly visible in both bright (sunlight) and no light conditions. It shall be visible over an angle of at least 120 degrees. The Alphanumeric display panel shall be capable of providing the following functions and capabilities:
    a. Display source condition information, including AC voltage for each phase of normal and emergency source, frequency of each source. Voltage for all three phases shall be displayed on a single screen for easy viewing of voltage balance. Line to neutral voltages shall be displayed for 4-wire systems.
    b. Display source status, to indicate source is connected or not connected.
    c. Display load data, including 3-phase AC voltage, 3-phase AC current, frequency, KW, KVA, and power factor. Voltage and current data for all phases shall be displayed on a single screen.
    d. The display panel shall allow the operator to view and make the following adjustments in the control system, after entering an access code:
        1) Set nominal voltage and frequency for the transfer switch.
        2) Adjust voltage and frequency sensor operation set points.
        3) Set up time clock functions.
        4) Set up load sequence functions.
        5) Enable or disable control functions in the transfer switch, including program transition.
        6) Set up exercise and load test operation conditions, as well as normal system time delays for transfer time, time delay start, stop, transfer, and retransfer.
    e. Display Real time Clock data, including date, and time in hours, minutes, and seconds. The real time clock shall incorporate provisions for automatic daylight savings time and leap year adjustments. The control shall also log total operating hours for the control system.
    f. Display service history for the transfer switch. Display source connected hours, to indicate the total number of hours connected to each source. Display number of times transferred, and total number of times each source has failed.
    g. Display fault history on the transfer switch, including condition, and date and time of fault. Faults to include controller checksum error, low controller DC voltage, ATS fail to close on transfer, ATS fail to close on retransfer, battery charger malfunction, network battery voltage low, and network communications error.

N. The transfer switch control system shall be configurable in the field for any operating voltage level up to 600VAC. Provide RMS voltage sensing and metering that is accurate to within plus or minus 1% of nominal voltage level. Frequency sensing shall be accurate to within plus or minus 0.2%. Voltage sensing shall be monitored based on the normal

voltage at the site. Systems that utilize voltage monitoring based on standard voltage conditions that are not field configurable are not acceptable.

O. Transfer switch voltage sensors shall be close differential type, providing source availability information to the control system based on the following functions:
   1. Monitoring all phases of the normal service (source 1) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of normal voltage level).
   2. Monitoring all phases of the emergency service (source 2) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of pickup voltage level).
   3. Monitoring all phases of the normal service (source 1) and emergency service (source 2) for loss of a single phase.

P. The transfer switch shall be configurable to control the operation time from source to source (program transition operation). The control system shall be capable of enabling or disabling this feature, and adjusting the time period to a specific value. The transfer switch shall incorporate adjustable time delays for generator set start (adjustable in a range from 0-15 seconds); transfer (adjustable in a range from 0-120 seconds); retransfer (adjustable in a range from 0-30 minutes); and generator stop (cooldown) (adjustable in a range of 0-30 minutes).

Q. The transfer switch shall be configurable to accept a relay contact signal and a network signal from an external device to prevent transfer to the generator service.

R. The control system shall be designed and prototype tested for operation in ambient temperatures from -40C to +70C. It shall be designed and tested to comply with the requirements of the noted voltage and RFI/EMI standards.

S. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs, and relays on all outputs, to provide optimum protection from line voltage surges, RFI and EMI.

T. Enclosures shall be UL listed. The enclosure shall provide wire bend space in compliance to the latest version of NFPA70. The cabinet door shall include permanently mounted key type latches.

U. Transfer switch equipment shall be provided in a NEMA 4X enclosure.

V. The enclosure shall provide code-required wire bend space at point of entry as shown on the drawings. Manual operating handles and all control switches (other than key-operated switches) shall be accessible to authorized personnel only by opening the key-locking cabinet door. Transfer switches with manual operating handles and/or non key-operated control switches located on outside of cabinet do not meet this specification and are not acceptable.

W. Transfer switch normally connects an energized utility power source (source 1) to loads and a generator set (source 2) to the loads when normal source fails. The normal

position of the transfer switch is source 1 (connected to the utility), and no start signal is supplied to the genset.

X. Generator Set Exercise (Test) With Load Mode. The control system shall be configurable to test the generator set under load. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate to connect the loads to the generator set by opening the normal source contacts, and closing the alternate source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   5. The generator set shall operate connected to the load for the duration of the exercise period. If the generator set fails during this period, the transfer switch shall automatically reconnect the generator set to the normal service.
   6. On completion of the exercise period, the transfer switch shall operate to connect the loads to the normal source by opening the alternate source contacts, and closing the normal source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   7. The transfer switch shall operate the generator set unloaded for a cooldown period, and then remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Y. Generator Set Exercise (Test) Without Load Mode. The control system shall be configurable to test the generator set without transfer switch load connected. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate the generator set unloaded for the duration of the exercise period.
   5. At the completion of the exercise period, the transfer switch shall remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Z. Factory Testing. The transfer switch manufacturer shall perform a complete operational test on the transfer switch prior to shipping from the factory. A certified test report shall be provided to OWNER & ENGINEER upon delivery of generator. Test process shall include calibration of voltage sensors.

AA. The manufacturer of the transfer switch and generator set shall maintain service parts inventory at a central location (within 50 miles of the city) which is accessible to the service location 24 hours per day, 365 days.

BB. The transfer switch shall be serviced by a local service organization that is trained and factory certified in both generator set and transfer switch service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

CC. The manufacturer shall maintain model and serial number records of each transfer switch provided for at least 20 years.

DD. Accessory devices shall be provided as follows:

1. Time delay to override harmless power dips and outages. (Inverse time characteristic with voltage.)
2. Test switch.
3. Auxiliary contacts (as specified herein).
4. Selector relay (as specified herein).
5. Lockout relay (sensitive to voltage and frequency).
6. Full phase protection with nominal 75-80 percent dropout and 92-95 percent pickup on phase relay.
7. Adjustable time delay on retransfer to normal source. Minimum retransfer of 2 minutes and maximum of 25 minutes. Built-in circuitry to nullify the retransfer time delay if the emergency source fails and the normal source is available.
8. Adjustable (10-20 minutes) time delay for running generator unloaded after transfer for cool down.
9. Adjustable time delay or delays (5 to 60 seconds) for holding transfer switch in the "Off" position when switching from standby source to normal and normal source to standby.
10. Engine starting contact.
11. A selector switch shall permit generator to be exercised with or without load.

2.05 ACCESS PLATFORM

A. Elevated platforms shall be provided where necessary to provide access to the generator for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

B. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered

Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

C. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.01 INSTALLATION OF DIESEL ENGINE-DRIVEN GENERATOR SETS

A. Install diesel engine-driven generator units as indicated, in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that engine-generator units fulfill requirements. Comply with NFPA and NEMA standards pertaining to installation of engine-generator sets and accessories.

B. Coordinate with other work, including raceways, electrical boxes and fittings, fuel tanks, piping, and accessories, as necessary to interface installation of engine generator equipment work with other work.

C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B, and the National Electrical Code.

D. Install units on steel spring type vibration isolators fastened to an inertia base in accordance with manufacturer's instructions.

E. Connect fuel piping to generator equipment as indicated, and comply with manufacturer's installation instructions.

3.02 GROUNDING

A. Provide equipment grounding connections for diesel engine-driven generator unit and automatic transfer switch as indicated. Connect generator equipment ground to ground ring around generator pad. Ground ring shall have a minimum of four (4) 5/8" x 20' copper-clad ground rods. Connect ground ring to sites counterpoise. Connections to ground ring, counterpoise and ground rods shall be exothermically welded. Add additional ground rings as required to meet five (5) ohm (or less) specified resistance. Tighten connections to comply with tightening torques specified in UL Standard 486A to ensure permanent and effective grounding.

3.03 FIELD QUALITY CONTROL

A. Start-up Testing:
   1. Engage local equipment manufacturer's representative to perform start-up and building load tests upon completion of installation, with ENGINEER in attendance; provide certified test record. Tests are to include the following:
      a. Check fuel, lubricating oil, and antifreeze in liquid-cooled models for conformity to manufacturer's recommendations under environmental conditions present.
      b. Test prior to cranking engine for proper operation, accessories that normally function while the set is in a standby mode. Accessories include: alternator strip heater, engine coolant heater, and battery charger.
      c. Check, during start-up test mode, for exhaust leaks, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage, and phase rotation.
      d. Test, by means of simulated power outage, automatic start-up by remote-automatic starting, transfer of load, and automatic shutdown. Prior to this test, adjust for proper system coordination, transfer switch timers. After installation inspection and fine adjustments have been completed, the Generator set shall be connected to resistive type load banks, matching the full rated output of this installed generator set.

         1) A four (4) hour 100% resistive load bank test, matching the full rated output of this installed generator set, is to be performed after installation in the presence of the ENGINEER, OWNER, and any required Authority. Coordinate with ENGINEER, OWNER, and any required Authority for appropriate test date and time. During this load bank test, monitor the engine temperature, oil pressure, battery charge level, generator voltage, amperes, and frequency. Voltage dip will be observed with a recording oscilloscope furnished by supplier for this test only. Voltage dip is defined as the peak-to-peak voltage minimum, at starting compared to the average peak-to-peak voltage with the starting load running. The difference shall be less than 25 percent of the running P-P voltage.
         2) Provide a test of safeties and transfer under NFPA-110 criteria.
         3) Provide all tests in the presence of an OWNER representative.
            Upon completion of installation and testing, demonstrate capability and compliance of system with requirements. Where possible, correct malfunctioning units at Site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting. Initial testing and retesting to be at no cost to OWNER.

3.04 QUALITY ASSURANCE

A. Commissioning and Qualifications shall be performed by Manufacturer's authorized and factory certified trained for installation of units personnel.

B. Maintenance Proximity: The commissioning and selling manufacturer office location shall not be more than two hours' normal travel time from the project site.

C. Access to Service & Parts: Manufacturer for the Generator shall maintain a full

operational facility, with service, parts and distribution center within 50 miles of the Project Site. A 'sales office' will not qualify as a service & parts facility. A "dealer" that buys product from a Factory Distributor does not qualify.

D. Manufacturer's Qualifications: The manufacturer shall be in the business of manufacturing power generation systems under ISO-9001 certification process for over 10 years. The manufacturer shall employ service, engineering, and parts staff within a factory-owned or authorized service center, within 50 miles of Project site.

E. When an "upfitter" is used for a fuel tank or generator enclosure, the manufacturer shall be located in the same state as the Project Site.

F. Upfitters shall provide their UL Listing number on all documentation of compliance. UL as an "assembly" under the generator manufacturer's main UL Listing is not acceptable.

G. cUL (or other) listing or compliance shall not be accepted in lieu of UL listing and label.

H. Manufacturer Service Qualifications: The generator manufacturer shall have a service center within a 2-hour driving distance from the project site. This service center shall have engineering, application support, on-site rental, start-up, commissioning, and replacement parts and labor for the maintenance and repair of the same brand of power generation system equipment as supplied on the Project.

I. Source Limitations: Obtain all equipment under this section through one source as practical and possible under the limitations of the manufacturer's ability to provide equipment.

J. The equipment under this Section must be sold to the installer or the OWNER by an entity operating from within the project State.

K. The equipment under this Section must be installed by a CONTRACTOR operating from offices located within the Project state.

L. Equipment under this section shall be provided by a single manufacturer, so as to provide only one source of warranty and responsibility whenever possible.

M. Generator engine, alternator, and generator controller shall be provided by a single manufacturer exceptions must be noted in submittal. The ENGINEER reserves the right to reject exceptions based on the equipment used as the basis of design in comparison.

3.05 PERSONNEL TRAINING

A. Building Operating Personnel Training: Train OWNER's building personnel in procedures for starting-up, testing, and operating diesel engine-driven generator sets. In addition, train OWNER's personnel in periodic maintenance of batteries.

END OF SECTION

SECTION 312316

EXCAVATION - EARTH AND ROCK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for performing opencut excavations to the widths and depths necessary for constructing structures and pipelines, including excavation of any material necessary for any purpose pertinent to the construction of the Work.

B. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 033100 – Concrete, Masonry, Mortar and Grout

3. Section 312319 – Groundwater Control for Open Cut Excavation

4. Section 312323 – Backfilling

5. Section 314000 – Shoring, Sheeting and Bracing

1.2 DEFINITIONS

A. Earth: "Earth" includes all materials which, in the opinion of the ENGINEER, do not require blasting, barring, wedging or special impact tools for their removal from their original beds, and removal of which can be completed using standard excavating equipment. Specifically excluded are all ledge and bedrock and boulders or pieces of masonry larger than one cubic yard in volume.

B. Rock: "Rock" includes all materials which, in the opinion of the ENGINEER, require blasting, barring, wedging and/or special impact tools such as jack hammers, sledges, chisels, or similar devices specifically designed for use in cutting or breaking rock for removal from their original beds and which have compressive strengths in their natural undisturbed state in excess of 300 psi. Boulders or masonry larger than one cubic yard in volume are classed as rock excavation.

1.3 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Engage the services of a Professional Engineer who is registered in the State of Florida to design all cofferdam and sheeting and bracing systems which the CONTRACTOR feels necessary for the execution of his work. Submit to the ENGINEER a signed statement that he has been employed by the CONTRACTOR to design all sheeting and bracing systems. After the systems have been installed, furnish to the ENGINEER an additional signed statement that the cofferdams and sheeting and bracing systems have been installed in accordance with his design.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.4 SITE CONDITIONS

A. Geotechnical Investigation: A geotechnical investigation may have been prepared by the COUNTY and ENGINEER in preparing the Contract Documents.

1. The geotechnical investigation report may be examined for what ever value it may be considered to be worth. However, this information is not guaranteed as to its accuracy or completeness.

2. The geotechnical investigation report is not part of the Contract Documents.

B. Actual Conditions: Make any geotechnical investigations deemed necessary to determine actual site conditions.

C. Underground Utilities and Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities. Any and all variations from this order must be the Water or Wastewater Department.

2. Before commencement of any excavation at road crossings or any boring or any drilling, the contractor shall mark the proposed run alignment with white paint or flags. Subsequent to placement of the white markings, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any

other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits.

4. The contractor must comply with all provisions of Florida Statute 556, the Underground Facility Damage Prevention and Safety Act.

D. Quality and Quantity: Make any other investigations and determinations necessary to determine the quality and quantities of earth and rock and the methods to be used to excavate these materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

A. Clearing: Clear opencut excavation sites of obstructions preparatory to excavation. Clearing in accordance with Section 017416, includes removal and disposal of vegetation, trees, stumps, roots and bushes, except those specified to be protected during trench excavation.

B. Banks: Shore or slope banks to the angle of repose to prevent slides or cave-ins in accordance with Section 314000.

C. Safety: Whenever an excavation site or trench is left unattended by the CONTRACTOR or when an area is not within 100 feet of observation by the CONTRACTOR, the excavation site or trench shall be filled and/or, at the County's Manager or designee discretion, protected by other means to prevent accidental or unauthorized entry. Include barricades and other protection devices requested by the ENGINEER or County Manager or designee, including temporary fencing, snow fencing, or temporary "structure" tape. Such safety items shall not relieve the CONTRACTOR of any site safety requirements or liabilities established by Federal, State and local laws and agencies, including OSHA, but is intended as additional safety measures to protect the general public.

D. Hazardous Materials: If encountered, take care of hazardous materials not specifically shown or noted in accordance with Section 015000.

E. During excavation and any site work, take storm water pollution prevention measures to ensure that water quality criteria are not violated in the receiving water body and all state and local regulatory requirements are met.

3.2 STRUCTURE EXCAVATION

A. Excavation Size: Provide excavations of sufficient size and only of sufficient size to permit the Work to be economically and properly constructed in the manner and of the size specified.

B. Excavation Shape: Shape and dimension the bottom of the excavation in earth or rock to the shape and dimensions of the underside of the structure or drainage blanket wherever the nature of the excavated material permits.

C. Compaction: Before placing foundation slabs, footings or backfill, proof roll the bottom of the excavations to detect soft spots.

1. For accessible areas, proof roll with a ten wheel tandem axle dump truck loaded to at least 15 tons or similarly loaded construction equipment.

2. For small areas, proof roll with a smooth-faced steel roller filled with water or sand, or compact with a mechanical tamper.

3. Make one complete coverage, with overlap, of the area.

4. Overexcavate soft zones and replace with compacted select fill.

3.3 TRENCH EXCAVATION

A. Preparation: Properly brace and protect trees, shrubs, poles and other structures which are to be preserved. Unless shown or specified otherwise, preserve all trees and large shrubs. Hold damage to the root structure to a minimum. Small shrubs may be preserved or replaced with equivalent specimens.

B. Adequate Space: Keep the width of trenches to a minimum, however provide adequate space for workers to place, joint and backfill the pipe properly.

1. The minimum width of the trench shall be equal to at least 3.5 feet or the outside diameter of the pipe at the joint plus 8-inches for unsheeted trench or 12 inches for sheeted trench, whichever is greater. Conform the trench walls to OSHA Regulations.

2. In sheeted trenches, measure the clear width of the trench at the level of the top of the pipe to the inside of the sheeting.

C. Depth:

1. Excavate trenches to a minimum depth of 8 inches, but not more than 12 inches, below the bottom of the pipe so that bedding material can be placed in the bottom of the trench and shaped to provide a continuous, firm bearing for pipe barrels and bells.

2. Standard trench grade shall be defined as the bottom surface of the utility to be constructed or placed within the trench. Trench grade for utilities in rock or other non-cushioning material shall be defined as additional undercuts backfilled with crushed stone compacted in 6-inch lifts, below the standard 8-inches minimum trench undercut. Backfill excavation below trench grade not ordered in writing by the ENGINEER with acceptable Class I, II or III embedment material to trench grade and compact to density equal to native soil.

D. Unstable or Unsuitable Materials: If unstable or unsuitable material is exposed at the level of the bottom of the trench excavation, excavate the material in accordance with the subsection headed "Authorized Additional Excavation".

1. Remove material for the full width of the trench and to the depth required to reach suitable foundation material.

2. When in the judgment of the ENGINEER the unstable or unsuitable material extends to an excessive depth, the ENGINEER may advise, in writing, the need for stabilization of the trench bottom with additional select fill material, crushed stone, washed shell, gravel mat or the need to provide firm support for the pipe or electrical duct by other suitable methods.

3. Crushed stone, washed shell and gravel shall be as specified in Section 312323.

4. Payment for such trench stabilization will be made under the appropriate Contract Items or where no such items exist, as a change in the Work.

E. Length of Excavation: Keep the open excavated trench preceding the pipe laying operation and the unfilled trench, with pipe in place, to a minimum length which causes the least disturbance. Provide ladders for a means of exit from the trench as required by applicable safety and health regulations.

F. Excavated Material: Neatly deposit excavated material to be used for backfill at the sides of the trenches where space is available. Where stockpiling of excavated material is required, obtain the sites to be used and maintain operations to provide for natural drainage and not present an unsightly appearance.

G. Water: Allow no water to rise in the trench excavation until sufficient backfill has been placed to prevent pipe flotation. Provide trench dewatering in accordance with Section 312319.

3.4 EXCAVATION FOR JACKING AND AUGERING

A. Jacking and Augering Requirements: Allow adequate length in jacking pits to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Provide sufficient pit width to allow ample working space on each side of the jacking frame. Allow sufficient pit depth such that the invert of the pipe, when placed on the guide frame, will be at the elevation desired for the completed line. Tightly sheet the pit and keep it dry at all times.

3.5 ROCK EXCAVATION

A. Rock Excavation: Excavate rock within the boundary lines and grades as shown, specified or required.

1. Rock removed from the excavation becomes the property of the CONTRACTOR. Transport and dispose of excavated rock at an off site disposal location. Obtain the off site disposal location.

2. Remove all shattered rock and loose pieces.

B. Structure Depths: For cast-in-place structures, excavate the rock only to the bottom of the structure, foundation slab, or drainage blanket.

C. Trench Width: Maintain a minimum clear width of the trench at the level of the top of the pipe of the outside diameter of the pipe barrel plus 2 feet, unless otherwise approved.

D. Trench Depth: For trench excavation, in which pipelines are to be placed, excavate the rock to a minimum depth of 8 inches below the bottom of the pipe or duct encasement. Provide a cushion of sand or suitable crushed rock. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material in the appropriate Contract Items.

E. Manhole Depths: For manhole excavation, excavate the rock to a minimum depth of 8 inches below the bottom of the manhole base for pipelines 24 inches in diameter and larger and 6 inches below the bottom manhole base for pipelines less than 24 inches in diameter. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material for manhole bases in the appropriate Contract Items.

F. Over-excavated Space: Refill the excavated space in rock below structures, pipelines, conduits and manholes, which exceeds the specified depths with 2,500 psi concrete, crushed stone, washed shell, or other material as directed. Include refilling of over-excavated space in rock as part of the rock excavation.

G. Other Requirements: Follow, where applicable, the requirements of the subsections on "Trench Excavation" and "Structure Excavation".

H. Payment: No additional payment will be made for rock excavation.

3.6 FINISHED EXCAVATION

A. Finish: Provide a reasonably smooth finished surface for all excavations, which is uniformly compacted and free from irregular surface changes.

B. Finish Methods: Provide a degree of finish that is ordinarily obtainable from blade-grade operations and in accordance with Section 312323.

3.7 PROTECTION

A. Traffic and Erosion: Protect newly graded areas from traffic and from erosion.

B. Repair: Repair any settlement or washing away that may occur from any cause, prior to acceptance. Re-establish grades to the required elevations and slopes.

C. It shall be the CONTRACTOR’s responsibility to acquaint himself with all existing conditions and to locate all structures and utilities along the proposed utility alignment in order to avoid conflicts. Where actual conflicts are unavoidable, coordinate work with the facility owner and perform work so as to cause as little interference as possible with the service rendered by the facility disturbed in accordance with Section 020500. Repair and/or replace facilities or structures damaged in the prosecution of the work immediately, in conformance with current standard practices of the industry, or according to the direction of the owner of such facility, at the CONTRACTOR’s expense.

D. Other Requirements: Conduct all Work in accordance with the environmental protection requirements specified in Division 1.

3.8 AUTHORIZED ADDITIONAL EXCAVATION

A. Additional Excavation: Carry the excavation to such additional depth and width as authorized in writing, for the following reasons:

1. In case the materials encountered at the elevations shown are not suitable.

2. In case it is found desirable or necessary to go to an additional depth, or to an additional depth and width.

B. Refill Materials: Refill such excavated space with either authorized 2500 psi concrete or compacted select fill material, in compliance with the applicable provisions of Section 312323.

C. Compaction: Compact fill materials to avoid future settlement. As a minimum, backfill layers shall not exceed 6-inches in thickness for the full trench width and compaction shall equal 95% of maximum density, or 98% if under paved area of roadway, as determined by using ASTM D 1557. Perform compaction density tests at all such backfill areas with spacing not to exceed 100 feet apart and on each 6-inch compacted layer.

D. Payment: Additional earth excavations so authorized and concrete or select fill materials authorized for filling such additional excavation and compaction of select fill materials will be paid for under the appropriate Contract Items or where no such items exist, as a change in the Work.

3.9 UNAUTHORIZED EXCAVATION

A. Stability: Refill any excavation carried beyond or below the lines and grades shown, except as specified in the subsection headed "Authorized Additional Excavation", with such material and in such manner as may be approved in order to provide for the stability of the various structures.

B. Refill Materials: Refill spaces beneath all manholes, structures, pipelines, or conduits excavated without authority with 2500 psi concrete or compacted select fill material, as approved.

C. Payment: Refill for unauthorized excavation will not be measured and no payment will be made therefor.

3.10 SEGREGATION STORAGE AND DISPOSAL OF MATERIAL

A. Stockpiling Suitable Materials: Stockpile topsoil suitable for final grading and landscaping and excavated material suitable for backfilling or embankments separately on the site in approved locations.

B. Stockpile Locations: Store excavated and other material a sufficient distance away from the edge of any excavation to prevent its falling or sliding back into the excavation and to prevent collapse of the wall of the excavation. Provide not less than 2 feet clear space between the top of any stockpile and other material and the edge of any excavation.

C. Excess Materials: Be responsible for transport and disposal of surplus excavated material and excavated material unsuitable for backfilling or embankments at an off site disposal location secured by the CONTRACTOR.

3.11 REMOVAL OF WATER

A. Water Removal: At all times during the excavation period and until completion and acceptance of the WORK at final inspection, provide ample means and equipment with which to remove promptly and dispose of properly all water entering any excavation or other parts of the WORK.

B. Dry Excavations: Keep the excavation dry, in accordance with Section 312319.

C. Water Contact: Allow no water to rise over or come in contact with masonry and concrete until the concrete and mortar have attained a set and, in any event, not sooner than 12 hours after placing the masonry or concrete.

D. Discharge of Water: Dispose of water pumped or drained from the Work in a safe and suitable manner without damage to adjacent property or streets or to other work under construction.

E. Protection: Provide adequate protection for water discharged onto streets. Protect the street surface at the point of discharge.

F. Sanitary Sewers: Discharge no water into sanitary sewers.

G. Storm Sewers: Discharge no water containing settleable solids into storm sewers.

H. Repair: Promptly repair any and all damage caused by dewatering the Work.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 312319

GROUNDWATER CONTROL FOR OPEN CUT EXCAVATION

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. This section provides for furnishing all permits, labor, materials, equipment, power and incidentals for performing all operations necessary to dewater, depressurize, drain and maintain excavations as described herein and as necessary for installation of pipeline and appurtenances. Included are installing, maintaining, operating and removing dewatering systems and other approved devices for the control of surface and groundwater during the construction of pipelines and appurtenances, open cut excavations, directional drilling. Included also are protecting work against rising waters and repair of any resulting damage.

1.2 CONTRACTOR'S RESPONSIBILITY

A. It is the sole responsibility of the CONTRACTOR to identify groundwater conditions and to provide any and all labor, material, equipment, techniques and methods to lower, control and handle the groundwater as necessary for his construction methods and to monitor the effectiveness of this installed system and its effect on adjacent facilities.

B. Operate, maintain and modify the system(s) as required to conform to these Specifications. Upon completion of the Construction, remove the system(s). The development, drilling and abandonment of all wells used in the dewatering system shall comply with regulations of the Florida Department of Environmental Protection and the governing Water Management District.

C. Assume sole responsibility for dewatering systems and for all loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the dewatering operation.

1.3 PLANS AND OTHER DATA TO BE SUBMITTED

A. Prior to commencement of work, submit complete drawings, details and layouts showing the proposed dewatering plans in sufficient detail (i.e., general arrangements, procedures to be used, etc.) so as to allow the ENGINEER to evaluate the proposed dewatering systems. Include the following, as required by the CONTRACTOR's proposed operation:

1. Names of equipment suppliers.

2. Names of installation subcontractors.

3. Plan for dewatering at access shafts and control of surface drainage.

4. Plan for dewatering for cut-and-cover excavations, or otherwise controlling groundwater.

5. Eductor system layout and details.

6. Deep well locations and details.

7. Well point system layout and details.

8. Installation reports for eductors, deep wells and well points.

9. Water level readings from piezometers or observation wells, and method of maintenance.

10. As part of his request for approval of a dewatering system, demonstrate the adequacy of the proposed system and well point filler sand by means of a test installation.

PART 2 PRODUCTS

A. Select equipment including but not limited to pumps, eductors, well points and piping and other material desired.

PART 3 EXECUTION

3.1 DEWATERING EXCAVATIONS

A. Obtain all permits necessary for dewatering operations and file a copy of all such permits with the County Manager or designee and ENGINEER.

B. Furnish, install, operate and maintain all necessary equipment for dewatering the various parts of the Work and for maintaining free of water the excavations and such other parts of the Work as required for Construction operations. Dewatering system should provide for continuous operation including nights, weekends, holidays, etc. Provide appropriate backup if electrical power is primary energy source for dewatering system.

C. Continue dewatering in all required areas, until the involved work is completed, including the placing and compaction of backfill materials.

D. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove the pipe drain when it has served its purpose. If removal of the pipe is impractical, provide grout connections at 50-foot intervals, and fill the pipe with clay grout or cement and sand grout when the pipe has served its purpose.

3.2 DEWATERING TRENCH

A. Dewatering Excavation Plan: Develop an excavation dewatering plan that considers site ground and groundwater conditions, the type and arrangement of the equipment to be used and the proper method of groundwater disposal. Prepare the dewatering plan before beginning excavations below groundwater. Maintain one copy of the dewatering plan at the project site to be available for inspection while all dewatering operations are underway.

B. Do not lay any pipeline in a trench in the presence of water. Remove all water from the trench sufficiently ahead of the pipeline placing operation. The ENGINEER shall have full and final authority to require dewatering of the trench to ensure a dry, firm bed on which to place the pipeline. As a minimum, maintain water levels at least 6 inches below the bottom of the trench. Continue to dewater trench until trench backfilling operations have been completed.

1. If a dry trench bottom has not been obtained with usual methods of trench dewatering, then the order to excavate below grade and place sufficient select fill material, crushed stone, or 2500 psi concrete over the trench bottom may be given.

2. If all efforts fail to obtain a stable dry trench bottom, and it is determined that the trench bottom is unsuitable for pipe foundation, present an alternate system for stabilization to the Engineer of Record for approval by the County Manager or designee on a case-by-case basis.

C. Removal of water may be accomplished by pumping in connection with well point installation as the particular situation may warrant.

D. If the soils encountered at the trench grade are suitable for the passage of water, without destroying the sides or utility foundation of the trench, sumps may be provided at intervals at the side of the main trench excavation. Use pumps to lower the water level by taking their suction from said sumps.

3.3 REQUIREMENTS FOR EDUCTOR, WELL POINTS OR DEEP WELLS

A. Eductor, well points or deep wells, where used, must be furnished, installed and operated by a reputable CONTRACTOR regularly engaged in this business, and approved.

3.4 DURATION OF DRAINAGE

A. In areas where concrete is to be placed, carry out the foundation drainage so that the required lowering of the water table will be effected prior to placing reinforcing steel. Keep foundation beds free from water to the same levels for 3 days after placing concrete.

3.5 PROTECTION OF STRUCTURES

A. Provide adequate protection for all structures to avoid damage to concrete.

B. Operate construction equipment over completed concrete slabs or structures only with approval. Rubber tire equipment heavier than 5 tons and crawlers heavier than 7 tons will require adequate load spreading by sand fill or other means.

3.6 DISCHARGE OF WATER

A. Do not discharge pumped drainage water into the sanitary sewer system or inhibit pedestrian or vehicular traffic with the groundwater control system.

B. Discharge pumped drainage water into the storm sewer system or drainage ditch by direct means (i.e., discharge hose to inlet, burying header, etc.). Monitor the discharged water to determine that soil particles are not being removed.

C. Conform all discharge to current South Florida Water Management District and Collier County Department of Stormwater Management rules, regulations, procedures and regulatory permits and if discharged into receiving waters, shall not exceed 29 N.T.U.'s above background.

3.7 REPAIR OF DAMAGE

A. Assume full responsibility for all loss and damage due to flooding, rising water or seepage resulting from dewatering operations in any part of the work. Repair any damage to partially completed work from these or other causes, including the removal of slides, repair of foundation beds and performance of any other work necessitated by lack of adequate dewatering or drainage facilities.

END OF SECTION

SECTION 312323

BACKFILLING

PART 1 GENERAL

1.1 SUMMARY

A. General Requirements: Backfill all excavation to the original surface of the ground or to such other grades as may be shown or required. For areas to be covered by topsoil, leave or stop backfill (12) inches below the finished grade. Obtain approval for the time elapsing before backfilling against masonry structures. Remove from all backfill, any compressible, putrescible, or destructible rubbish and refuse and all lumber and braces from the excavated space before backfilling is started. Leave sheeting and bracing in place or remove as the work progresses.

B. Equipment Limitations: Do not permit construction equipment used to backfill to travel against and over cast-in-place concrete structures until the specified concrete strength has been obtained, as verified by concrete test cylinders. In special cases where conditions warrant, the above restriction may be modified providing the concrete has gained sufficient strength, as determined from test cylinders, to satisfy design requirements for the removal of forms and the application of load.

C. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 312316 – Excavation – Earth and Rock

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 1557 - Standard Test Methods for Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 in Drop

PART 2 PRODUCTS

2.1 BACKFILL MATERIAL - GENERAL

A. General: Refer to Utilities Standards and Procedures Ordinance Section 9.1.2 for laying and backfilling requirements. Backfill with sound materials, free from waste, organic matter, rubbish, boggy or other unsuitable materials. Acceptable backfill shall not contain rocks or stones larger than 2 inches in size.

B. General Materials Requirements: Conform materials used for backfilling to the requirements specified. Follow common fill requirements whenever drainage or select fill is not specified. Determine and obtain the approval of the appropriate test method where more than one compaction test method is specified.

C. Classification of Approved Embedment Materials: Embedment materials listed here include a number of processed materials plus the soil types defined according to the Unified Soil Classification System (USCS) in ASTM D2487. These materials are grouped into 5 broad categories according to their suitability for this application.

1. Class I: Angular, 0.25 inch to 1.5 inch (6 to 40 mm) graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed shells and crushed stone. (Note: The size range and resulting high void ratio of Class I material makes it suitable for use to dewater trenches during pipe installation. This permeable characteristic dictates that its use be limited to locations where pipe support will not be lost by migration of fine grained natural material from the trench walls and bottom or migration of other embedment materials into the Class I material. When such migration is possible, the material's minimum size range should be reduced to finer than 0.25 inch (6 mm) and the gradation properly designed to limit the size of the voids. An alternative to modifying the gradation is to use a geotextile fabric as a barrier to migration to fines.)

2. Class II: Coarse sands and gravels with maximum particle size of 1.5 inches (40 mm), including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW and SP are included in this class. (Note: Sands and gravels, which are clean or borderline between clean and with fines, should be included. Coarse-grained soils with less than 12 percent, but more than 5 percent fines are neglected in ASTM D2487 and the USCS, but should be included. The gradation of Class II material influences its density and pipe support strength when loosely placed. The gradation of Class II material may be critical to the pipe support and stability of the foundation and embedment, if the material is imported and is not native to the trench excavation. A gradation other than well graded, such as uniformly graded or gap graded, may permit loss of support by migration into void spaces of a finer grained natural material from the trench wall and bottom. An alternative to modifying the gradation is to use a geotextile fabric as a barrier to migration of fines.)

3. Class III: Fine sand and clayey (clay filled) gravels, including fine sands, sand-clay mixtures and gravel-clay mixtures. Soil Types GM, GC, SM and SC are included in this class.

4. Class IV: Silt, silty clays and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this class. (Note: Use caution in the design and selection of the degree and method of compaction for Class IV soils because of the difficulty in properly controlling the moisture content under field conditions. Some Class IV soils with medium to high plasticity and with liquid limits greater than 50 percent (CH, MH, CH-MH) exhibit reduced strength when wet and should only be used for bedding, haunching and initial backfill in arid locations where the pipe embedment will not be saturated by groundwater, rainfall or exfiltration from the pipe. Class IV soils with low to medium plasticity and with liquid limits lower than 50 percent (CL, ML, CL-ML) also require careful consideration in design and installation to control moisture content, but need not be restricted in use to arid locations.)

5. Class V: This class includes the organic soils OL, OH and PT as well as soils containing frozen earth, debris, rocks larger than 1.5 inches (40 mm) in diameter and other foreign materials. Do not use these materials for bedding, haunching or backfill.

2.2 SELECT FILL

A. Materials for Select Fill: Use clean gravel, crushed stone, washed shell, or other granular or similar material as approved which can be readily and thoroughly compacted to 95 percent of the maximum dry density obtainable by ASTM D 1557.

1. Allowed Materials: Grade select fill between the following limits:

U.S. Standard Sieve	Percent Passing By Weight
2 inch	100
1-1/2 inch	90-100
1 inch	75-95
1/2 inch	45-70
#4	25-50
#10	15-40
#200	5-15

2. Unallowed Materials: Very fine sand, uniformly graded sands and gravels, sand and silt, soft earth, or other materials that have a tendency to flow under pressure when wet are unacceptable as select fill.

2.3 COMMON FILL

A. Materials for Common Fill: Material from on-site excavation may be used as common fill provided that it can be readily compacted to 90 percent of the maximum dry density obtainable by ASTM D 1557, and does not contain unsuitable material. Select fill may be used as common fill at no change in the Contract Price.

B. Granular Materials On-Site: Granular on-site material, which is fairly well graded between the following limits may be used as granular common fill:

U.S. Standard Sieve	Percent Passing by Weight
2 inch	100
#10	50-100
#60	20-90
#200	0-20

C. Cohesive Materials On-Site: Cohesive site material may be used as common fill.

1. The gradation requirements do not apply to cohesive common fill.

2. Use material having a liquid limit less than or equal to 40 and a plasticity index less than or equal to 20.

D. Material Approval: All material used as common fill is subject to approval. If there is insufficient on-site material, import whatever additional off-site material is required which conforms to the specifications and at no additional cost.

2.4 UTILITY PIPE BEDDING

A. Gradation for Small Piping: For pipe 18 inches or less in diameter, use pipe bedding of material 90 percent of which will be retained on a No. 8 sieve and 100 percent of which will pass a 1/2-inch sieve and be well graded between those limits.

B. Gradation for Large Piping: For pipe larger than 18 inches in diameter, use the same pipe bedding material as specified for smaller pipe or use a similar well graded material 90 percent of which will be retained on a No. 8 sieve and 100 percent of which will pass a 1-inch sieve.

C. Provide a minimum of six (6) inches bedding material under all gravity sewer piping. In areas where poor soil conditions or rock exist, provide a minimum of six (6) inches of pipe bedding material under water or force main pressure pipe.

PART 3 EXECUTION

3.1 PRECAST MANHOLE BEDDING

A. Bedding Compaction: Bed all precast manholes in well graded, compacted 12-inch layer of crushed stone. Compact bedding thickness no less than 6 inches for precast concrete manhole bases.

B. Concrete Work Mats: Cast cast-in-place manhole bases and other foundations for structures against a 2500 psi concrete work mat in clean and dry excavations.

C. Bedding Placement: Place select fill used for bedding beneath precast manhole bases, in uniform layers not greater than 9 inches in loose thickness. Thoroughly compact in place with suitable mechanical or pneumatic tools to not less than 95 percent of the maximum dry density as determined by ASTM D 1557.

D. Use of Select Fill: Bed existing underground structures, tunnels, conduits and pipes crossing the excavation with compacted select fill material. Place bedding material under and around each existing underground structure, tunnel, conduit or pipe and extend underneath and on each side to a distance equal to the depth of the trench below the structure, tunnel, conduit or pipe.

3.2 PIPE BEDDING AND INITIAL BACKFILL

A. Placement: Place backfill for initial pipe backfill from top of bedding to 1 foot over top of pipes in uniform layers not greater than 8 inches in loose thickness. Tamp under pipe haunches and thoroughly compact in place the backfill with suitable mechanical or pneumatic tools to not less than 98 percent of the maximum dry density as determined by ASTM D 1557.

B. Foundation Bedding: Place bedding, to a depth specified by the County Manager or designee, as a foundation in wet, yielding or mucky locations. Construct foundation bedding by removal of the wet, yielding or mucky material and replacement with sufficient Class I material to correct soil instability.

C. Stone Placement: Do not place large stone fragments in the pipe bedding or backfill within 2 feet over or around pipelines, or nearer than 2 feet at any point from any casing pipe, conduit or concrete wall.

D. Machine Compaction: Machine Compaction of initial backfill is prohibited unless adequate cover as deemed by the County Manager or designee is provided. In no case shall adequate cover be less than 12 inches.

E. Unallowed Materials: Pipe bedding containing very fine sand, uniformly graded sands and gravels, sand and silt, soft earth, or other materials that have a tendency to flow under pressure when wet is unacceptable.

3.3 TRENCH BACKFILL

A. General: Backfill trenches from 1 foot over the top of the pipe, from the top of electrical duct bedding or as shown to the bottom of pavement base course, subgrade for lawns or lawn replacement, to the top of the existing ground surface or to such other grades as may be shown or required.

B. Materials: All backfill material shall be acceptable dry materials, and shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks, or stones, or other deleterious material which in the opinion of the County Manager or designee is unsuitable.

C. Depth of Placement - Place trench backfill in uniform layers not greater than 12 inches in loose thickness and that can be thoroughly compacted in place using suitable mechanical or pneumatic equipment to not less than 98 percent of the maximum dry density as determined by ASTM D 1557.

D. Depth of Placement - Undeveloped Areas: In nondeveloped areas and where select fill material or hand-placed backfill are not specified or required, place suitable job-excavated material or other approved backfill in lifts not exceeding 12 inches in loose thickness. Lifts of greater thickness may be permitted by the County Manager or designee if the CONTRACTOR demonstrates compliance with required densities. When the trench is full, consolidate the backfill by jetting, spading, or tamping to ensure complete filling of the excavation. Mound the top of the trench approximately 12 inches to allow for consolidation of backfill.

E. Compaction: Compact backfill as a percentage of the maximum density at optimum moisture content as determined by the standard proctor test, ASTM D698 as demonstrated in the following table:

Area	(Mod.) ASTM D1557
Around and 1’ (Min) above top of pipe	98
Remaining Trench	98
Pavement Sub-Grade and Shoulders (Last 3’ of Fill)	98
Base Material and Pavement	98
Adjacent to Structures (Areas not Paved)	98
Under Structures	98
Sub-Base	98

F. Density Tests: Density tests will be made at the request of the County Manager or designee. Deficiencies will be corrected at the expense of the CONTRACTOR.

G. Dropping of Material on Work: Do trench backfilling work in such a way as to prevent dropping material directly on top of any conduit or pipe through any great vertical distance.

H. Distribution of Large Materials: Break lumps up and distribute any stones, pieces of crushed rock or lumps which cannot be readily broken up, throughout the mass so that all interstices are solidly filled with fine material.

3.4 STRUCTURE BACKFILL

A. Use crushed stone underneath all structures, and adjacent to structures where pipes, connections and structural foundations are to be located within this fill. Use crushed stone beneath all pavements, walkways, and railroad tracks, and extend to the bottom of pavement base course or ballast.

1. Place backfill in uniform layers not greater than 8 inches in loose thickness and thoroughly compact in place with suitable approved mechanical or pneumatic equipment.

2. Compact backfill to not less than 95 percent of the maximum dry density as determined by ASTM D 1557.

B. Use of Common Fill: Use common granular fill adjacent to structures in all areas not specified above. Select fill may be used in place of common granular fill at no additional cost.

1. Extend such backfill from the bottom of the excavation or top of bedding to the bottom of subgrade for lawns or lawn replacement, the top of previously existing ground surface or to such other grades as may be shown or required.

2. Place backfill in uniform layers not greater than 8 inches in loose thickness and thoroughly compact in place with suitable equipment, as specified above.

3. Compact backfill to not less than 90 percent of the maximum dry density as determined by ASTM D 1557.

3.5 COMPACTION EQUIPMENT

A. Equipment and Methods: Carry out all compaction with suitable approved equipment and methods.

1. Compact clay and other cohesive material with sheep's-foot rollers or similar equipment where practicable. Use hand held pneumatic tampers elsewhere for compaction of cohesive fill material.

2. Compact low cohesive soils with pneumatic-tire rollers or large vibratory equipment where practicable. Use small vibratory equipment elsewhere for compaction of cohesionless fill material.

3. Do not use heavy compaction equipment over pipelines or other structures, unless the depth of fill is sufficient to adequately distribute the load.

3.6 FINISH GRADING

A. Final Contours: Perform finish grading in accordance with the completed contour elevations and grades shown and blend into conformation with remaining natural ground surfaces.

1. Leave all finished grading surfaces smooth and firm to drain.

2. Bring finish grades to elevations within plus or minus 0.10 foot of elevations or contours shown.

B. Surface Drainage: Perform grading outside of building or structure lines in a manner to prevent accumulation of water within the area. Where necessary or where shown, extend finish grading to ensure that water will be carried to drainage ditches, and the site area left smooth and free from depressions holding water.

3.7 RESPONSIBILITY FOR AFTERSETTLEMENT

A. Aftersettlement Responsibility: Take responsibility for correcting any depression which may develop in backfilled areas from settlement within one year after the work is fully completed. Provide, as needed, backfill material, pavement base replacement, permanent pavement, sidewalk, curb and driveway repair or replacement, and lawn replacement, and perform the necessary reconditioning and restoration work to bring such depressed areas to proper grade as approved.

3.8 INSPECTION AND TESTING OF BACKFILLING

A. Sampling and Testing: Provide sampling, testing, and laboratory methods in accordance with the appropriate ASTM Standard Specification. Subject all backfill to these tests.

B. Correction of Work: Correct any areas of unsatisfactory compaction by removal and replacement, or by scarifying, aerating or sprinkling as needed and recompaction in place prior to placement of a new lift.

C. Testing Schedule:

1. Compaction Schedule

2. Optimum Moisture Content (Proctor Test)

END OF SECTION

SECTION 314000

SHORING, SHEETING AND BRACING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Work required for protection of an excavation or structure through shoring, sheeting, and bracing.

B. Related Work Specified In Other Sections Includes:

1. Section 312316 – Excavation – Earth and Rock

2. Section 312323 – Backfilling

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. CONTRACTOR's Submittals: All sheeting and bracing shall be the responsibility of the CONTRACTOR to retain qualified design services for these systems, and to be completed with strict adherence to OSHA Regulations. Submit complete design calculations and working drawings of proposed shoring, sheeting and bracing which have been prepared, signed and sealed by a Licensed Professional Engineer experienced in Structural Engineering and registered in the State of Florida, before starting excavation for jacking pits and structures. Use the soil pressure diagram shown for shoring, sheeting and bracing design. ENGINEER's review of calculations and working drawings will be limited to confirming that the design was prepared by a licensed professional engineer and that the soil pressure diagram shown was used.

1.3 REFERENCES

A. Design: Comply with all Federal and State laws and regulations applying to the design and construction of shoring, sheeting and bracing.

B. N.B.S. Building Science Series 127 "Recommended Technical Provisions for Construction Practice in Shoring and Sloping Trenches and Excavations."

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Do work in accordance with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54), and the Florida

Trench Safety Act. Observe 29 CFR 1910.46 OSHA regulations for Confined Space Entry.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND MATERIALS

A. Material Recommendations: Use manufacturers and materials for shoring, sheeting and bracing as recommended by the Licensed Professional Engineer who designed the shoring, sheeting, and bracing.

1. Wood Materials: Oak, or treated fir or pine for wood lagging.

PART 3 EXECUTION

3.1 SHORING, SHEETING AND BRACING INSTALLATION

A. General: Provide safe working conditions, to prevent shifting of material, to prevent damage to structures or other work, to avoid delay to the work, all in accordance with applicable safety and health regulations. Properly shore, sheet, and brace all excavations which are not cut back to the proper slope and where shown. Meet the general trenching requirements of the applicable safety and health regulations for the minimum shoring, sheeting and bracing for trench excavations.

1. CONTRACTOR's Responsibility: Sole responsibility for the design, methods of installation, and adequacy of the shoring, sheeting and bracing.

B. Arrange shoring, sheeting and bracing so as not to place any strain on portions of completed work until the general construction has proceeded far enough to provide ample strength.

C. If ENGINEER is of the opinion that at any point the shoring, sheeting or bracing are inadequate or unsuited for the purpose, resubmission of design calculations and working drawings for that point may be ordered, taking into consideration the observed field conditions. If the new calculations show the need for additional shoring, sheeting and bracing, it should be installed immediately.

D. Monitoring: Periodically monitor horizontal and vertical deflections of sheeting. Submit these measurements for review.

E. Accurately locate all underground utilities and take the required measures necessary to protect them from damage. Keep all underground utilities in service at all times as specified in Division 1.

F. Driven Sheeting: Drive tight sheet piling in that portion of any excavation in paved or surface streets City collector and arterial streets and in State and County highways below the intersection of a one-on-one slope line from the nearest face of the excavation to the edge of the existing pavement or surface.

G. Sheeting Depth: In general drive or place sheeting for pipelines to a depth at elevation equal to the top of the pipe as approved.

1. If it is necessary to drive sheeting below that elevation in order to obtain a dry trench or satisfactory working conditions, cut the sheeting off at the top of the pipe and leave in place sheeting below the top of the pipe.

2. Do not cut the sheeting until backfill has been placed and compacted to the top of the pipe.

H. Sheeting Removal: In general, remove sheeting and bracing above the top of the pipe as the excavation is refilled in a manner to avoid the caving in of the bank or disturbance to adjacent areas or structures. Remove sheeting as backfilling progresses so that the sides are always supported or when removal would not endanger the construction of adjacent structures. When required to eliminate excessive trench width or other damages, shoring or bracing shall be left in place and the top cut off at an elevation 2.5 feet below finished grade, unless otherwise directed.

1. Carefully fill voids left by the withdrawal of the sheeting by jetting, ramming or otherwise.

2. No separate payment will be made for filling of such voids.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 320117

PAVEMENT REPAIR AND RESTORATION

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and remove and replace pavements over trenches excavated for installation of pipelines as shown on the drawings and/or specified herein.

1.2 GENERAL

A. Repair all damage, as a result of work under this project, done to existing pavement, driveways, paved areas, curbs and gutters, sidewalks, shrubbery, grass, trees, utility poles, utility pipe lines, conduits, drains, catch basins, or stabilized areas or driveways and including all obstructions not specifically named herein, in a manner satisfactory to the ENGINEER. Include in the bid price, the furnishing of all labor, materials, equipment, and incidentals necessary for the cutting, repair, and restoration of the damaged areas unless pay items for specific types of repair are included in the Bid Form.

B. Keep the surface of the backfilled area of excavation in a safe condition and level with the remaining pavement until the pavement is restored in the manner specified herein. All surface irregularities that are dangerous or obstructive to traffic are to be removed. Conform the repair to applicable COUNTY or State requirements for pavement repair and as described herein.

C. The COUNTY reserves the right to require soil bearing or loading tests or materials tests, should the adequacy of the foundation or the quality of materials used be questionable. Costs of these tests shall be the responsibility of the COUNTY, if found acceptable; the costs of all failed tests shall be the responsibility of the CONTRACTOR.

D. Make all street and road repair in accordance with the details indicated on the drawings and in accordance with the applicable requirements of these Specifications and meeting the permit requirements and approval of the governing Department of Transportation agencies.

E. Replace pavement or roadway surfaces cut or damaged in equal or better condition than the original, including stabilization, base course, surface course, curb and gutter or other appurtenances. Obtain the necessary permits prior to any roadway work. Provide advance notice to the appropriate authority, as required, prior to construction operations.

1. Roadway Restoration (within Collier County Department of Transportation & Engineering jurisdiction): Perform restoration in accordance with the requirements set forth in the “Right-of-Way Utility Construction Activities Policy” and these Standards. Obtain prior approval from Collier County DOT for the materials of construction and method of installation, along with the proposed restoration design for items not referred or specified herein.

    a. Where existing pavement is to be removed, mechanical saw cut the surface prior to trench excavation, leaving a uniform and straight edge parallel or perpendicular to the roadway centerline with minimum disturbance to the remaining adjacent surfacing. Provide minimal width of cut for this phase of existing pavement removal.

    b. Immediately following the specified backfilling and compaction, apply a temporary sand seal coat surface to the cut areas. For this temporary surfacing, provide a smooth traffic surface with the existing roadway and maintain until final restoration. Ensure that surfacing remains for a minimum of ten (10) days in order to assure the stability of the backfill under normal traffic conditions. Thirty (30) days following this period and prior to sixty (60) days after application: remove the temporary surfacing and perform final roadway surface restoration.

    c. In advance of final restoration, remove the temporary surfacing and mechanically saw the existing pavement straight and clean to the stipulated dimensions, if needed. Following the above operation, proceed immediately with final pavement restoration in accordance with the requirements set forth by Collier County Department of Transportation.

    d. No layer shall be greater than two inches (2") when compacted. Where a surface course is constructed to a thickness greater than two inches (2"), construct it in approximately equal layers, each not exceeding two inches (2").

    e. Where necessitated by traffic conditions, lay mixture in strips in such manner as to provide for the passage of traffic. Where the road is closed to traffic, mixture may be laid to the full width, by machines traveling in parallel.

2. Roadway Restoration (outside Collier County Department of Transportation jurisdiction) – Conform work within the rights-of-way of public thoroughfares which are not under jurisdiction of Collier County to the requirements of the Governmental agency having jurisdiction or the Florida Department of Transportation, if no governmental agencies have jurisdiction. Work within State Highway right-of-way shall be in full compliance with all requirements of the permit drawings, and to the satisfaction of the Florida Department of Transportation.

1.3 QUALITY ASSURANCE

A. Applicable provisions of the latest version of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", and Supplemental Specifications hereunder govern the work under this Section. The Florida Department of Transportation will hereafter be referred to as FDOT.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials for flexible base pavement and base course as specified in the latest version of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction".

PART 3 EXECUTION

3.1 CUTTING PAVEMENT

A. Cut and remove pavement to straight edges, 6 inches outside each edge of proposed trench to avoid pavement damage during installation of the new pipelines and appurtenances and for making connections to existing pipelines.

B. Before removing pavement, mark the pavement for cuts nearly paralleling pipelines and existing street lines. Cut asphalt pavement along the markings with a jackhammer, rotary saw, or other suitable tool.

C. No pavement shall be machine pulled until completely broken and separated along the marked cuts.

D. The pavement adjacent to pipeline trenches shall neither be disturbed nor damaged. If the adjacent pavement is disturbed or damaged, irrespective of cause, remove the damaged pavement replace it at CONTRACTOR’s expense.

3.2 GENERAL RESTORATION

A. Restore, replace or rebuild existing street paving, driveways, etc., using the same type of construction as was in the original. Be responsible for restoring all such work, including sub-grade and base courses where present. Obtain and pay for such local or other governmental permits as may be necessary for the opening of streets. Meet any requirements other than those herein set forth which may affect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

B. In all cases, maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract until accepted by the County Manager or designee, including the removal and replacement of such

work wherever surface depressions or underlying cavities result from settlement of trench backfill.

C. Complete all the final resurfacing or re-paving of streets or roads, over the excavations and relay paving surfaces of roadbed that have failed or been damaged prior to acceptance by the County Manager or designee. Conform backfilling of trenches and the preparation of sub-grades to the requirements of Section 312323.

D. Do all re-paving or resurfacing in accordance with Florida Department of Transportation Specifications, to which the following requirement of trench backfill will be added: Where pipeline construction crosses paved areas such as streets, backfill the top 24 inches of trench below the road bases or concrete slabs with compacted A-4 or better material that will provide a bearing value of not less than 75 when tested by the Florida Department of Transportation Soil Bearing Test Methods.

3.3 PRIME AND TACK COATS

A. Apply bituminous prime and tack coats on the previously prepared base course in accordance with Section 300 of the FDOT Specifications.

3.4 WEARING COURSE

A. Use plant-mixed hot bituminous pavement to the thickness indicated in the drawings conforming to Type III asphaltic concrete in accordance with Section 333 of the FDOT Specifications. The requirements for plant and equipment are specified in Section 320 and the general construction requirements for asphaltic concrete pavement are contained in Section 330 of the FDOT specifications.

3.5 TESTING

A. Perform all field-testing at an independent laboratory employed by the COUNTY. Test and certify all materials by the producer. Repeat tests of sub-grade or base not meeting specified compaction at the CONTRACTOR's expense.

3.6 MISCELLANEOUS RESTORATION

A. Restore sidewalks, cut or damaged by construction, in full sections or blocks to a minimum thickness of four inches. Restore concrete curb or curb gutter to the existing height and cross section in full sections or lengths between joints. Concrete shall be as specified on the drawings. Restore grassed yards, shoulders and parkways to match the existing sections with grass seed or sod of a type matching the existing grass.

3.7 CLEANUP

A. After all repair and restoration or paving has been completed, remove all excess asphalt, dirt, and other debris from the roadways. Check and clean all existing storm sewers and inlets of any construction debris.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 321300

SIDEWALKS, DRIVEWAYS AND CURBS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Sidewalks, sidewalk ramps, driveways, curbs and drive approaches complete with concrete materials, concrete curing compounds, joint materials, field quality control and appurtenances.

1.2 REFERENCES

A. Reference Standards: Conform the work for this Section to the applicable portions of the following standard Specifications.

1. ASTM - American Society of Testing and Materials

2. AASHTO - American Association of State Highway and Transportation Officials

3. FDOT - Florida Department of Transportation - Standard Specifications for Road and Bridge Construction.

4. FAC - Florida Accessibility Code.

5. ADAAG - American with Disabilities Act Accessibility Guidelines

6. UFAS - Uniform Federal Accessibility Standards

1.3 SUBMITTALS

A. Reports: Written permission for the use of all local disposal sites Furnish copies to the ENGINEER.

B. Test Reports:

1. Thickness and Compressive Strength: Provide the ENGINEER with two (2) certified copies of the test results. Perform the tests by a laboratory approved by the ENGINEER.

1.4 JOB CONDITIONS

A. Environmental Requirements:

1. Temperature: Comply with the requirements for concrete installation due to outside ambient air temperatures as specified under Article 3.3.I of this Section.

B. Protection:

1. Protection Against Rain: Comply with the requirements for protecting new work against damage from Rain, as specified under Article 3.3.I of this Section.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete: Use 2,500-psi concrete except as modified herein.

B. Ready-Mixed Concrete: Use ready-mixed concrete that conforms to ASTM C94, Alternate 2.

C. Water: Use water for mixing and curing concrete reasonably clean and free from oil, salt, acid, alkali, chlorides, sugar, vegetable, or other substances injurious to the finished product. Waters from sources approved by the local Health Department as potable may be used without test. Test water requiring testing in accordance with the current Method of Test for Quality of Water to be Used in Concrete, AASHTO T-26.

D. Concrete Curing Compounds: Use white membrane curing compound for curing concrete that conforms to AASHTO M148, Type 1 clear, or Type 2 while per FDOT Section 925.

E. Premolded Joint Filler: Use fiber joint filler that conforms to ASTM D1751. Use filler of the thickness, as specified herein, or as directed by the ENGINEER.

F. Steel Hook Bolts: Use hook bolts that conform to ASTM A706, or for Grade 60 of ASTM A615, A616, or A617. Use 5/8-inch diameter hook bolts self-tapping.

G. Joint Sealant: Use hot-poured type joint sealant that conforms to ASTM D1190.

PART 3 EXECUTION

3.1 CONTRACTOR'S VERIFICATION

A. Excavation and Forming: Prior to the installation of any concrete, examine the excavation and forms for the proper grades, lines, and levels required to receive the new work. Ascertain that all excavation and compacted subgrades are adequate to receive the concrete to be installed.

1. Correct all defects and deficiencies before proceeding with the work.

B. Existing Improvements: Investigate and verify location of existing improvements to which the new work is to be connected.

1. Making necessary adjustment in line and grade to align the new work with the existing improvements must be approved by the ENGINEER prior to any change.

3.2 PREPARATION

A. Forms: Use wood or metal forms, straight and free from warp, clean, and sufficient strength to resist springing during the process of depositing concrete against them.

1. Use full depth of the concrete forms.

3.3 INSTALLATION

A. Sidewalks, Sidewalk Ramps, Driveways and Driveway Approaches: Construct all sidewalks and sidewalk ramps four (4) inches thick except at driveways and alleys. Construct thickness of the sidewalks six (6) inches at driveways and alleys. Construct sidewalks five (5) feet wide unless otherwise noted on the Plans, and slope 1/4-inch per foot towards the center of the road. Normally, sidewalks will be located within the right-of-way, parallel the property lines, at a distance of 1-foot from the property line.

1. Construct alleys, driveways and approaches six (6) inches thick. Construct the width of the driveways and driveway approaches as shown on the Plans or as directed by the ENGINEER.

B. Removal of Existing Curb for Sidewalk Ramps and Driveway Approaches: Conform construction of sidewalk ramps within street intersections where curbed pavement existing to the current FDOT Roadway and Traffic Design Standards.

1. Saw cut, to full depth of pavement, and remove a minimum of an 18-inch wide curb and gutter section where there is no proper curb drop for the sidewalk ramp or driveway approach. When mountable curbs are present, remove a 24-inch wide curb and gutter section for the construction of sidewalk ramps, as specified above.

2. Remove curb and gutter as determined by the ENGINEER in the field but remove curb and gutter at least as wide as the proposed sidewalk ramp plus 1-foot on each side.

3. Replace the removed curb and gutter section with materials, equal to what was removed and seal joint with hot poured rubber asphalt.

C. Install 5/8-inch diameter self-tapping hook bolts, in the existing concrete pavement as indicated on the Plans prior to placing concrete for the removed curb and gutter section.

D. Placement of Forms: Use wood forms, straight and free from warp, of nominal depth for sidewalk sections less than 25 feet in length.

1. Stake forms to line and grade in a manner that will prevent deflection and settlement.

2. When unit slab areas are to be poured, place slab division forms such that the slab division joints will be straight and continuous.

3. Set forms for sidewalk ramps to provide a grade toward the centerline of the right-of-way in accordance with current standards. Use a uniform grade, except as may be necessary to eliminate short grade changes.

4. Oil forms before placing concrete. Leave forms in place at least 12 hours after the concrete is placed. Place forms ahead of the pouring operations to maintain uninterrupted placement of concrete.

5. The use of slip form pavers can be allowed when approved by the ENGINEER in lieu of the construction system described above.

E. Joints: Construct transverse and longitudinal expansion and plane-of-weakness joints at the locations specified herein, or as indicated on the Plans or as directed by the ENGINEER.

1. Place the transverse expansion joints for the full width and depth of the new work. Use transverse expansion joints placed against an existing pavement a minimum of six (6) inches deep but no less than the thickness of the concrete being placed.

2. Conform longitudinal expansion joints to the requirements as transverse expansion joints.

3. Construct joints true to line with their faces perpendicular to the surface of the sidewalk. Install the top slightly below the finished surface of the sidewalk. Construct transverse joints at right angles to the centerline of the sidewalk and construct longitudinal joints parallel to the centerline or as directed by the ENGINEER.

4. Place transverse expansion joints, 1/2-inch thick, through the sidewalk at uniform intervals of not more than 50 feet and elsewhere as shown on the Plans, or as directed by the ENGINEER.

5. Place expansion joints, 1/2-inch thick, between the sidewalk and back of abutting parallel curb, buildings or other rigid structures, concrete driveways and driveway approaches. When directed by the ENGINEER, place the expansion joint between sidewalks and buildings 1-foot from the property line and parallel to it.

6. Form plane-of-weakness joints every five (5) feet. Form joints by use of slab divisions forms extending to the full depth of the concrete or by cutting joints in the concrete, after floating, to a depth equal to 1/4 the thickness on the sidewalk. Construct cut joints not less than 1/8-inch or more than 1/4-inch in width and finish smooth and at right angles to the centerline on the sidewalk.

F. Placing and Finishing Concrete: Place all concrete on a prepared unfrozen, smooth, leveled, rolled and properly compacted base. Place concrete on a moist surface with no visible water present.

1. Deposit the concrete, in a single layer to the depth specified. Spade or vibrate and compact the concrete to fill in all voids along the forms and joints. Strike off the concrete with a strike board until all voids are removed and the surface has the required grade and cross section as indicated on the Plans, or as directed by the ENGINEER.

2. Float the surface of the concrete just enough to produce a smooth surface free from irregularities. Round all edges and joints with an edger having a 1/4-inch radius.

3. Broom the surface of sidewalks, driveways and approaches to slightly roughen the surface.

4. Texture the surface of the sidewalk ramps with a coarse broom transversely to the ramp slope, and coarser roughen than the remainder of the sidewalk. Contract the ramp slope in color (using a brick-red dye or approved equal) from the remainder of the sidewalk. Comply with minimum color contract and slope requirements from FAC, UFAS, ADAAG, Local Government Standards, or as directed by the ENGINEER.

G. Curing: After finishing operations have been completed and immediately after the free water has left the surface, completely coat and seal the surface of the concrete (and sides if slip-forming is used) with a uniform layer of white membrane curing compound. Do not thin the curing compound. Apply the curing compound at the rate of one gallon per 200 square feet of surface.

H. Barricades: Place suitable barricades and lights around all newly poured sidewalks, sidewalk ramps, driveways, driveway approaches and curb and gutter sections in order to protect the new work from damage from pedestrians, vehicles and others until the concrete has hardened.

1. Leave barricades in place for a minimum of two (2) days, except for driveway approaches and curb and gutter sections. Leave barricades in place for a minimum of three (3) days.

2. Remove and replace any concrete that suffers surface or structural damage at no additional cost.

I. Protection:

1. Against Rain: Protect new concrete from the effects of rain before the concrete has sufficiently hardened. Have available on the job site at all times enough burlap or 6-mil thick polyurethane film to cover and protect one day's work. Stop work and cover completed work when rain appears eminent. As soon as the rain ceases, uncover the concrete and burlap drag the surface where necessary. Apply curing compound to any areas where the compound has been disturbed or washed away.

2. Against Cold Weather: If concrete is placed between December 15 and February 15, have available on the site sufficient amount of clean, dry straw or hay to cover one (1) day's production. If the temperature reaches 40 degrees F and is falling, place the hay or straw 12 inches thick, immediately after the curing compound is applied.

3. Concrete Temperature Limitations: Do not place concrete when the temperature of the concrete at the point of placement is above 90 degrees F.

J. Cleanup: After the concrete has gained sufficient strength, but no sooner than within 12 hours, remove the fixed forms and backfill the spaces on both sides with sound earth of topsoil quality. Compact, level and leave backfill in a neat condition.

K. Gutters and Curbs: Construct gutters and curbs in accordance with Section 520 FDOT Standard Specifications for Road and Bridge Construction, latest edition, including supplements.

3.4 FIELD QUALITY CONTROL

A. Concrete Delivery Ticket: Use a ticket system for recording the transportation of concrete from the batching plant to point of delivery. Issue this ticket to the truck operator at the point of loading and give to the ENGINEER upon delivery.

B. Concrete Delivery Rejection: Remove concrete not permitted for inclusion in the work by the ENGINEER from the site. Rejection of concrete will be determined through Field Quality Control and elapsed time from mixer charging to delivery.

C. Concrete Testing at Placement: Perform tests of each batch of concrete delivered, each 50 cubic yards, or whenever consistency appears to vary. The

sampling and testing of slump, air content and strength will be performed at no cost to the CITY.

1. Sampling: Secure composite samples in accordance with the Method of Sampling Fresh Concrete, ASTM C172.

2. Slump Test: Test in accordance with ASTM C143. Use the least slump possible consistent with workability for proper placing of the various classifications of concrete.

    a. Place structural concrete for walls and slabs, by means of vibratory equipment, with a slump of four (4) inches.

    b. A tolerance of up to 1-inch above the indicated maximum will be allowed for individual batches provided the average for all batches or the most recent ten (10) batches tested, whichever is fewer, does not exceed the maximum limit.

3. Air Content: Determine air content of normal weight concrete in accordance with Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method, ASTM C23 1, or by the volumetric method, ASTM C 173, for each strength test.

4. Compressive Strength: Make two (2) strength tests of three (3) samples each for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any one (1) day.

    a. Handling Samples: Mold and cure three (3) specimens from each sample in accordance with Method of Making and Curing Concrete Test Specimens in the Field, ASTM C31. Record any deviations from the requirements of this Standard in the test report.

    b. Testing: Test specimens in accordance with Method of Test for Compressive Strength of Cylindrical Concrete Specimens, ASTM C39. Test one (1) specimen at seven (7) days for information and test two (2) at 28 days for acceptance. Use the average of the strengths of the two (2) specimens tested at 28 days. Discard results if one (1) specimen in a test manifests evidence of improper sampling, molding or testing, and use the strength of the remaining cylinder. Should both specimens in test show any of the above defects, discard the entire test.

    c. Acceptance of Concrete: The strength level of the concrete will be considered satisfactory so long as the averages of all sets of three consecutive strength test results equal or exceed the specified 28-day strength and no individual strength test results falls below the specified 28-day strength by more than 500 psi. If the strength test is not acceptable, perform further testing to qualify the concrete.

d. Concrete Temperature: Determine the temperature of concrete sample for each strength test.

D. Reductions due to deficiencies in thickness or compressive strength are additive, that is, if an area is deficient by 3/8 inch and under strength by 200 psi, the total reduction is 20% plus .02% or .40% reduction.

END OF SECTION

SECTION 323113

CHAIN LINK FENCING AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing vinyl coated galvanized steel chain link fencing and gates.

B. Related Work Specified in Other Sections Includes:

1. Section 033100 – Concrete, Masonry, Mortar and Grout

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM 1043 - Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework

2. ASME B36.10M - Welded and seamless wrought steel pipe

3. FS RR-F-191 - Fencing, Wire and Post, Metal

1.3 DESIGN

A. General: Provide fencing of the chain-link type and six (6) feet high with six (6) feet of diamond mesh woven wire fabric. Locate the fence as shown.

B. Fabric, Supports and Fittings: Provide steel fabric, supports and fittings except as specified.

C. Fabric, Supports and Fittings: Provide green or black color coated steel fabric, supports and fittings. Coat the framework, posts and hardware except hinges and latches to match the fabric with thermoplastic or thermoset resins and provide oven-baked materials to a minimum dry coating of seven mils. Color coat all accessories except hinges and latches to match the fence. Provide aluminum hinges and latches.

D. Pipe Sizes and Weights: Provide pipe sizes and weights meeting the requirements of ASME B 36.10, Table 2 and ASTM A 53, Table 1. All pipe sizes listed are nominal, unless otherwise indicated.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers are listed in the County Approved Product List, Appendix F. Other manufacturers of equivalent products may be submitted.

2.2 FABRIC

A. Provide fabric that is a one piece woven 2-inch mesh chain link of 6-gauge steel wire with a minimum breakload of 1800 lbs/ft. and which is interwoven to form a continuous fabric with no splices and is coated after weaving. Provide the top selvage knuckled for fabric 60 inches high and under, and the bottom selvage twisted and barbed for fabric over 60 inches high. Clean the fabric of all grease and foreign matter before coating and shipping. Stretch the fabric tightly approximately three inches above grade level and attach the fabric to the terminal or gateposts using beveled tension bands and tension bars.

1. Provide galvanized fabric that is fusion coated with a minimum seven-mil coating of polyvinyl chloride (PVC) applied over a thermoset plastic bonding agent. Conform the PVC to Federal Specification RR-F-191.

2. Vinyl coat all cut ends.

3. Conform aluminum fabric to Fed. Spec. RR-F-191.

2.3 TENSION WIRE

A. For the tension wire for the fence bottom use minimum 6-gauge galvanized coil spring steel fusion color coated as specified for the fabric.

2.4 TOP AND BRACE RAILS

A. General: Furnish the top rail in approximately 20-foot lengths with couplings approximately 6 inches long for each joint. Provide one coupling in each 5 with an expansion spring. Provide the rail continuous from end-to-end for each run of fence. Provide brace rails at all terminal posts, locate the rails midway between the top and bottom of the fabric and extend from the terminal post to the first adjacent line post. Securely fasten rails at both ends. Provide top and brace rails that are galvanized steel fusion color coated as specified for framework in Subsection 1.03 C.

B. Pipe Type: 1-1/4-inch, Schedule 40 pipe or a 1.625- by 1.25-inch roll-formed section with minimum bending strength of 192 pounds on 10-foot span.

2.5 POSTS

A. General: Provide all posts that are coated as specified for vinyl-coated framework, posts and hardware in Subsection 1.03 C.

B. Pipe Posts: Provide pipe posts as follows:

1. For end, corner and pull posts use 2-1/2-inch, Schedule 40 pipe

2. For line posts use 2-inch, Schedule 40 pipe

3. For gate posts use the following pipes for different leaves:

   a. For leaves up to 6 feet wide, use 2-1/2-inch Schedule 40 pipe

   b. For leaves over 6 feet to 12 feet wide, use 3-1/2-inch Schedule 40 pipe

   c. For leaves over 12 feet to 18 feet wide, use 6-inch Schedule 40 pipe

C. Bending Strength: Provide materials with the minimum bending strength based on a 6-foot cantilever for rolled formed or tube posts as follows:

		Galvanized Steel
1. End, Corner and Pull Posts:		
	2.875" O.D. roll formed or	444
	2-1/2-inch square tube	547
	2-1/2-inch square, heavy wall extrusion	
2. Line Posts:		
	For fences 8 feet maximum height 1.875- by 1.625-inch C-Section	245
	For fences over 8 feet high 2.25- by 1.703-inch C-Section	347
3. Gate Posts:		
	For leaves up to 6 feet wide (2.875-inch O.D. roll formed or	444
	2-1/2-inch square tube	645

2.6 GATES

A. General: For the perimeter construction of gates with leaves up to 6 feet wide, use 1-1/2-inch Schedule 40 pipe or 1-1/2-inch square steel tube, and for gates with leaves greater than 6 feet wide, use 2-inch Schedule 40 pipe or 2-inch square steel tube.

B. Braces: Provide the gates with sufficient horizontal and vertical members and bracing to ensure structural stability to prevent sagging and to provide for the attachment of fabric, hardware and accessories. Provide gates with diagonal cross bracing consisting of 3/8-inch diameter adjustable length truss rods where necessary to provide frame rigidity without sag or twist.

C. Cantilever Sliding Gates: Furnish cantilever overhang as follows:

Gate Leaf Size	Overhang
6'-0" to 10'-0"	6'-6"
11'-0" to 14'-0"	7'-6"
15'-0" to 22'-0"	10'-0"
12'-0" to 30'-0"	12'-0"

1. For gates leaf sizes 23'-0" to 30'-0", add one additional 2-inch square lateral support rail welded adjacent to the top horizontal rail. Make the bottom rail of 2" x 4" tubing weighing 1.71 pounds per foot.

2. Provide all cantilever overhang frames having 3/8-inch (galvanized steel) (aluminum) brace rods.

3. Provide the enclosed track made of a combined track and rail aluminum extrusion having a total weight of 3.72 pounds per foot and designed to withstand a reaction load of 2,000 pounds.

4. Provide each gate leaf with two swivel type zinc die cast trucks having four sealed lubricant ball-bearing wheels, 2-inch in diameter by 9/16-inch in width, with two side rolling wheels to insure alignment of the truck in the track. Hold trucks to post brackets by 7/8-inch diameter ball bolts with 1/2-inch shank. Design truck assemblies to take the same reaction load as the track.

5. Install gates on 8.625-inch OD Schedule 40 (galvanized)) posts. Use three posts for single slide gate and four posts for double slide gate.

6. Provide guide wheel assemblies for each supporting post. Provide each assembly consisting of two rubber wheels 4 inches in diameter attached to a post so that the bottom horizontal member will roll between the wheels which can be adjusted to maintain gate frames plumb and in proper alignment.

D. Gate Accessories: Equip gates with hinges, latches, center stops, hasps, holdbacks, and padlocks. Provide hinges, latches, center stops, hasps, and holdbacks that are aluminum. Provide double gates with a center drop bar and gate holdbacks.

E. Latches: Provide gate latches that are positive locking, pivoting type with the padlocking arrangement accessible from either side of the gate.

F. Hinges: Hang all gates on offset hinges to permit swinging the gate through a 180-degree arc to lie, when not obstructed, along and parallel to the line of the fence.

2.7 ATTACHMENTS

A. General: Provide all attachments fabricated of coated to match the fabric as specified for framework, posts and hardware in Subsection 1.03, except provide aluminum hinges and latches.

B. Tension Bars: Provide 3/16-inch by 3/4-inch galvanized carbon steel tension bars attached to the terminal posts by means of beveled edge bands.

C. Truss Rods: Provide 3/8-inch diameter galvanized carbon steel truss rods. Securely mount truss rods between the line post end of the brace rail and the base of the terminal post.

D. Post Tops: Provide post tops of galvanized pressed steel or malleable iron to form weathertight caps for post or tube posts. Make provisions for installation or passage of the top rail.

E. Brace and Tension Bands: Provide galvanized steel brace bands and tension bands, of the "unclimbable" beveled edge type with 3/8-inch diameter square shouldered aluminum carriage bolts, nonremovable from outside of the fence.

F. Rail Couplings: Provide rail couplings of the outside sleeve type, not less than six inches long, self-centering, which allows for expansion and contraction. Provide aluminum galvanized steel rail couplings.

G. Fabric Ties: Provide 9-gauge galvanized steel fabric ties.

H. Hog Rings: Provide 9-gauge wire, aluminum alloy, Type 6061-T6 hog rings.

I. Extension Arms: Provide galvanized pressed steel extension arms for supporting the barbed wire where used. Design the arms with an adequate cross section to withstand without failure or permanent deflection a perpendicular force of 250 pounds applied at the end of the arm when the arm is securely attached to the post. Construct extension arms to be slanted out.

PART 3 EXECUTION

3.1 INSTALLATION

A. General: Install all fencing and accessories according to the manufacturer's recommendations. Do not begin installation and erection before final grading is completed, unless otherwise approved.

B. Excavation: Drill or hand excavate (using post hole digger) holes for posts to the diameter and spacing indicated, in firm, undisturbed or compacted soil.

1. If not indicated, excavate holes for each post to the minimum diameter recommended by the fence manufacturer, but not less than four times the largest cross-section of the post.

2. Unless otherwise indicated excavate the hole depths approximately 3 inches lower than the post bottom, with the bottom of posts set not less than 36 inches below the finished grade surface.

C. Tension Wire: Attach the tension wire to the bottom of the fabric by hog rings spaced at 24-inch intervals and to terminal posts by brace bands.

D. Posts: Set posts plumb in concrete encasement at not more than 10-foot centers in the line of the fence with the tops properly aligned. Extend concrete encasement for line posts a minimum of three feet below finish grade with a minimum diameter of ten inches. Extend concrete encasement for terminal, corner and gate posts 40 inches below finished grade, except gate posts for leaves greater than 6 feet, for which extend the encasement 54 inches below grade. Provide the minimum diameter of encasement for terminal, corner and gateposts to be sufficient to provide not less than four inches between any part of the post and the face of the concrete and in no case provide the diameter to be less than 12 inches. Set line posts 32 inches into the concrete and set all other posts 36 inches, except gate posts for leaves greater than 6 feet wide, which are to be set 48 inches into the concrete. Slope the top exposed surface of the concrete to shed water and provide a neat appearance.

1. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold posts in position during placement and finishing operations.

a. Unless otherwise indicated, extend the concrete footing 2 inches above grade and trowel to a crown to shed water.

2. Where aluminum is in contact with concrete, coat the aluminum.

E. Fabric Ties: Space fabric ties approximately 12 inches apart on the line posts and 12 inches apart on the rails. (For clips used with C-section posts, use galvanized 11-gauge steel wire.)

F. Fabric: Leave approximately 3 inches between finished grade and the bottom selvage, unless otherwise indicated. Pull the fabric taut and tie to posts, rails, and tension wires. Install the fabric on the security side of the fence, and anchor the fabric to the framework so that the fabric remains in tension after the pulling force is released.

G. Fasteners: Install nuts for tensions bands and hardware bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent nut removal.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 329200

RESTORATION BY SODDING OR SEEDING

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The work in this section consists of furnishing all labor, material and equipment to restore all areas disturbed during construction to match preconstruction conditions. Establish a stand of grass within the areas disturbed by furnishing and placing grass sod where required, or by seeding and mulching areas not requiring sod.

1.2 REFERENCE DOCUMENTS

A. Use materials conforming to the requirements of Florida Department of Transportation Standard Specifications for Road and Bridge Construction as follows:

1. Section 570 – Grassing (by Seeding)

2. Section 575 – Sodding

3. Section 981 – Grassing and Sodding Materials

4. Section 982 – Commercial Fertilizer

5. Section 983 – Water for Grassing

1.3 SUBMITTALS

A. Submit certifications and identification labels for all sodding supplied in accordance with General Conditions.

PART 2 PRODUCTS

2.1 SODDING

A. Types: Sod may be of either St. Augustine or Argentine Bahia grass or as that disturbed, as established prior to construction. Use well matted sod with roots. When replacing sod in areas that are already sodded, use sod of the same type as the existing sod.

B. Provide sod as required in accordance with Florida Department of Transportation Specifications 575 and 981. Furnish sod equal to and similar in type as that disturbed. Place and water in accordance with FDOT Specifications Section 575.

C. Use sod in commercial-size rectangles, preferably 12-inch by 24-inch or larger, except where 6-inch strip sodding is called for.

D. Use sod that is sufficiently thick to secure a dense stand of live grass. Use sod that is live, fresh and uninjured at the time of planting, having a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be reasonably free of weeds and other grasses. Plant sod as soon as possible after being dug, and shade and keep moist from the time it is dug until it is planted.

E. Handle sod in a manner to prevent breaking or other damage. Do not handle by dumping from trucks or other vehicles. Use care at all times to retain the native soil on the roots of each sod roll during stripping and handling. Sod that has been damaged by handling during delivery, storage or installation will be rejected.

F. Swales: Place sod to the proper grade and cross section in all flow areas to ensure the design flow of water in the ditch. In excavating for the placement of sod, provide a minimum of 3 inches of undercut.

2.2 FERTILIZER

A. Supply chemical fertilizer in suitable bags with the net weight certification of the shipment. Fertilizer shall be 12-8-8 and comply with Section 982 of the FDOT Standard Specification for Road and Bridge Construction.

B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid and (3) water soluble potash, contained in the fertilizer.

C. The chemical designation of the fertilizer shall be 12-8-8, with at least 50 percent of the nitrogen from a nonwater-soluble organic source. The nitrogen source may be a unreaformaldehyde source provided it is not derived from a waste product of the plastic industry.

2.3 EQUIPMENT

A. Spread fertilizer uniformly at the specified rate.

2.4 NETTING

A. See County Approved Product List, Appendix F.

2.5 SEEDING

A. Seed all unpaved areas disturbed during construction that do not require sod. Complete all seeding in conformance with FDOT Specifications Sections 570 and 981. Mulch and fertilize the grassed areas shall be mulched and fertilized in accordance with FDOT Specifications.

B. Provide mulch material free of weeds. Mulch shall be oat straw or rye, Pangola, peanut, Coastal Bermuda, or Bahia grass hay.

C. All seeds must have been tested within 6 months of planting. Submit a seed bag tag with final payment requests from each type or mixture of seed used.

2.6 TOPSOIL

A. Topsoil stockpiled during excavation may be used. If additional topsoil is required to replace topsoil removed during construction, it shall be obtained off site at no additional cost to the COUNTY. Topsoil shall be fertile, natural surface soil, capable of producing all trees, plants, and grassing specified herein.

2.7 MULCH

A. Furnish small grain straw mulch. Apply mulch at a rate of 1.5 tons per acre, corresponding to a depth not less than 1-inch or more than 3-inches according to texture and moisture content of mulch material. Apply asphalt emulsion at a rate of 150 gallons per ton of straw to anchor the straw applied.

2.8 WATER

A. It is the CONTRACTOR'S responsibility to supply all water to the site, as required during seeding and sodding operations and through the maintenance period and until the work is accepted. Make whatever arrangements may be necessary to ensure an adequate supply of water to meet the needs for the work. Furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required. Water shall be suitable for irrigation and free from ingredients harmful to plant life.

2.9 SOIL IMPROVEMENTS

A. Apply lime at the rate of 1 to 1.5 tons per acre. Apply 10-10-10 commercial fertilizer at the rate of 800 pounds per acre and work well into the top inch of topsoil.

PART 3 EXECUTION

3.1 SOD BED PREPARATION

A. Clear areas to be sodded and/or seeded of all rough grass, weeds, and debris, and bring soil to an even grade.

B. Thoroughly till soil to a minimum 4-inch depth.

C. Bring area to proper grade, free of sticks, stones, or other foreign matter over 1-inch in diameter or dimension. The surface shall conform to finish grade, less the thickness of sod, free of water-retaining depressions, the soil friable and of uniformly firm texture.

3.2 INSPECTION

A. Verify that soil preparation and related preceding work has been completed.

B. Do not start work until conditions are satisfactory.

3.3 SOD HANDLING AND INSTALLATION

A. During delivery, prior to planting, and during the planting of sod areas, protect the sod panels at all times from excessive drying and unnecessary exposure of the roots to the sun. Stack sod during construction and planting so as not to be damaged by sweating or excessive heat and moisture.

B. After completion of soil conditioning as specified above, lay sod panels tightly together so as to make a solid sodded lawn area. On mounds and other slopes, the long dimension of the sod shall be laid perpendicular to the slope. Immediately following sod laying, roll the lawn areas with a lawn roller customarily used for such purposes, and then thoroughly water.

C. Place sod at all areas where sod existed prior to construction, on slopes of 3 horizontal to 1 vertical (3:1) or greater, in areas where erosion of soils will occur, and as directed by the ENGINEER. On areas where the sod may slide, due to height and slope, the ENGINEER may direct that the sod be pegged, with pegs driven through the sod blocks into firm earth, at suitable intervals.

3.4 USE OF SOD ON ROADWAY PROJECTS

A. In accordance with the FDOT District One Standard Practice, establish permanent green grass at the completion of roadway construction and maintenance work. The following shall apply to all restoration involving State or County roadways:

1. Use sod in lieu of seed and mulch on all roadways with urban (raised curb) typical sections.

2. One inch water per week shall be required for a minimum of four (4) consecutive weeks for the purpose of establishing sod. This can be waived during construction, if and only if there is a minimum of one inch of rain per week on all sod on the project.

3. Placed sod on slopes 1:3 or greater. Stake sod on slopes 1:2 or greater.

4. On all curves with superelevation, place sod from the edge of pavement to the toe of slope on the downhill side(s) for the entire length of the superelevated roadway. On multi-lane divided rural facilities, place sod in the median and on the inside of the curve in the superelevated areas. This does not apply to reverse crowns.

5. Use sod for all projects with less than 10,000 square yards grass area.

6. On tangent sections and on outside of curves, use sod between the edge of pavement and a point 4 feet beyond the shoulder break point.

7. The entire width of sod should not exceed 15 feet from the edge of pavement.

8. Sod is to be used to eliminate narrow seed and mulch areas. Sod areas less than 6 feet in width.

9. Place sod around drainage structures as per the standard Indexes and extend to the edge of pavement.

3.5 SOD MAINTENANCE

A. The sod shall produce a dense, well-established growth. Repair and re-sod all eroded or bare spots until project acceptance. Repair to sodding shall be accomplished as in the original work.

B. Perform sufficient watering to maintain adequate moisture for optimum development of the seeded and sodded areas, and no less than 1.5 inches of water per week for at least 2 weeks. Thereafter, apply water for a minimum of 60 days as needed until the sod takes root and starts to grow or until final acceptance, whichever is latest.

3.6 GUARANTEE

A. Guarantee a live and vigorous stand of permanent grass at the time of acceptance of the work consisting of 80 percent minimum coverage for seeded grass areas with no bare spots greater than 5 square feet.

3.7 CLEANING

A. Remove debris and excess materials from the project site.

END OF SECTION

SECTION 330130.16

TELEVISING AND INSPECTION OF GRAVITY SEWER SYSTEMS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. Work specified herein:

1. Furnish all labor, tools, test equipment and materials, including any and all permits required to televise, inspect, video tape, still photograph and document the gravity wastewater collection systems.

1.2 QUALITY ASSURANCE

A. Utilize services of competent personnel in the field of TV/video inspection of wastewater collection systems.

B. Schedule all work with ENGINEER.

C. Equipment used shall be in good working order and provide continuous operation during TV/video tape inspection.

D. VHS videotapes or DVD recording media shall be of good visual quality capable of slow motion and pausing without significant reduction of visual quality.

1.3 SUBMITTALS

A. Submit to the County Manager or designee a list of equipment and materials to be used on the project, including all permits obtained prior to commencing with the Work.

B. Submit to the County Manager or designee a copy of all television inspection log sheets and VHS videotapes or DVD recording media completed.

PART 2 MATERIALS

2.1 GENERAL

A. Equipment used shall be designed for use in gravity wastewater collection systems. CONTRACTOR has the option of a County approved equal device or other material than that which is specified. Submittals are required prior to commencement of work.

2.2 TELEVISION CAMERA

A. Camera used shall be 360 degree COLOR RVC camera. Camera shall be operative in 100% relative humidity and be specifically designed for the environment. Camera shall have an integral lighting system capable of producing clearly focused, well-defined images of the entire periphery of the pipe. Camera shall have an integral depth measurement device capable of clearly showing the depth of vertical dips. The quality of video picture and definition provided shall be to the satisfaction of the ENGINEER and, if unsatisfactory, equipment shall be removed and replaced with satisfactory equipment.

2.3 MONITOR

A. A high resolution TV monitor screen shall be used. Quality of monitor shall be to the satisfaction of the County Manager or designee.

2.4 VIDEO TAPE EQUIPMENT

A. Furnish videotape equipment to provide a visual and audio recording of all areas in the pipe. Videotape system at the site shall be capable of rewind, play back, slow motion and stop motion. The videotape shall be 1/2-inch color VHS, with an audio channel for clearly recording the camera locations and operator observations (cracks, leaks, service connections, etc.). The system shall continuously indicate distance, in feet, from manhole to manhole and the manhole-to-manhole run numbers on the video recording.

2.5 WINCHES

A. Furnish variable speed powered remote controlled winches for upstream and downstream manhole locations to control two-way movement of the camera. If a self-propelled camera is used, winches are not necessary.

2.6 POWER SUPPLY

A. Power supply shall be continuous. If night operations occur, supply all labor, power and lighting equipment for operations, traffic safety, permits, etc.

PART 3 EXECUTION

3.1 GENERAL

A. All sanitary sewer gravity lines shall be televiewed at the CONTRACTOR's expense; and a videotape of the subject mains provided prior to preliminary acceptance and at the 1-year warranty inspection by Collier County Utilities. Televiewing may only occur after the stabilized subgrade has been installed and satisfactory density tests have been submitted to Collier County Utilities. The sewer video inspection shall include rotating the camera lens to inspect the interior of each sewer lateral.

B. Demonstrate the ability of the TV/video equipment (camera/light/video tape/audio/ photograph system) to the satisfaction of the County Manager or designee. Distance meter shall be furnished on the video tape recording. Meter shall be checked using distances between manholes. Meter distances and actual distances shall be consistent. Depth measurement device shall be visible in the video recording during movement of the camera in the pipe.

3.2 TELEVISING/INSPECTION

A. Inspection shall be done one manhole section at a time. Stop flow into the section being inspected prior to video inspection, unless otherwise approved in writing by the County Manager or designee.

B. Locate video vehicle on upstream side of manhole. Video tape in the downstream direction such that camera movement is with the flow.

C. Insert the camera in the upstream manhole after flow restrictions required have been accomplished. Flow into the system being inspected shall be stopped, with the exception of service laterals into the system being inspected. Move camera through the pipe lines at a moderate speed not exceeding 30 feet per minute. Stop camera at locations where one or more of the following conditions is observed:

1. Infiltration/inflow sources.

2. Service Laterals.

3. Structural defects including broken pipe; collapsed or collapsing pipe, cracks, deterioration, punctures, etc.

4. Abnormal joint conditions such as misalignments, open joints and joints not sealed.

5. Unusual conditions such as root intrusion, protruding pipes, in-line pipe size changes, mineral deposits, grease and obstructions.

D. Stop camera long enough for a thorough visual inspection of the conditions. All such conditions as specified above shall be audio recorded on videotape and the inspection log sheet. Move the camera and rotate to obtain optimum view of the conditions. If requested by the County Manager or designee, view problem areas in the opposite direction by pulling the TV camera from the opposite direction at no additional cost to the COUNTY.

E. While the camera is stopped at each service connection, rotate the camera so as to be able to view the service connection for a length of time that enables a good visual inspection of the service connection for damage and infiltration. Be responsible for measurements such as service lateral locations, if used for subsequent rehabilitation work.

F. When, during the inspection operation, the television camera will not pass through the entire manhole-to-manhole section, set up equipment so that the inspection can be performed from the opposite manhole at no additional cost to the COUNTY.

G. Prior to the end of the one-year warranty period, all manholes will be televised and inspected. The complete interior of each manhole shall be inspected and video recorded after interior coating has been completed. Manhole identification number shall be displayed on the video recording, and the recording shall accompany the submittal of the gravity lines inspection. Any deficiencies shall be corrected prior to acceptance by the County.

3.3 DOCUMENTATION

A. Furnish a detailed report and videotapes of the system inspected. The minimum information supplied shall be the following:

1. Name and address of CONTRACTOR and the ENGINEER.

2. Name of OWNER, system(s) inspected, and OWNER's representative involved.

3. Log reports:

a. Log sheet for each section of pipe

b. Separate line for each deficiency and location

c. Corresponding videotapes and location of each section of pipe and deficiencies on tape.

4. Video tapes shall be labeled with the following information:

a. System that is video taped (street name and manhole to manhole numbers) and log report number corresponding to video tape

b. Date video was taped

c. CONTRACTOR's name and representative

d. OWNER's name

B. All tapes shall be rendered unable to be taped over after they are completed.

3.4 MAINTENANCE OF TRAFFIC

A. Be responsible for all maintenance of traffic around work site. CONTRACTOR shall maintain traffic in accordance to all federal, state and local regulations. At no additional cost to the COUNTY, submit a Maintenance of Traffic Plan, for review and approval by Collier County DOT as necessary, prior to commencing work. Obtain all necessary permits prior to commencing work, at no additional cost to the COUNTY.

B. MOT shall also include construction and maintenance of any necessary detour facilities, furnishings, installing and maintaining of traffic control and safety devices during construction, control of dust, and any other special requirements for safe and expeditious movement of traffic around or through the work site.

C. Be responsible for coordination with all affected agencies when roadways will be closed or traffic will be detoured. No detours or roadway closings shall be permitted unless specifically approved in writing by the County Manager or designee or ENGINEER.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330201

ROADWAY CROSSINGS BY OPEN CUT

PART 1 GENERAL

1.1 SCOPE OF WORK

Provide all labor, materials, equipment, supervision and incidentals required to install the pipeline as shown on the Drawings in Collier County Streets by method of open cut.

Note: Open cutting of existing pavement will generally not be allowed, but may be considered under one or more of the following conditions:

1. Subsurface obstructions including rock;

2. Extreme high water table;

3. Limited space for jack and bore pits;

4. Condition of roadway surface - including imminent resurfacing and rebuilding, provided inspection and approval beforehand is made by the affected Transportation Department; or

5. Extreme economic hardship is proven with adequate supportive data.

1.2 SUBMITTAL

A. Submit shop drawings to the ENGINEER for review.

B. Before starting work, submit to the Collier County Department of Transportation, with copy to the ENGINEER, a detailed schedule of his operations a minimum of fourteen (14) days prior to beginning work for approval. This shall include, but not be limited to, type and extent of temporary paving, and drawings and lists describing materials and traffic control methods to be used. Approval shall not relieve the CONTRACTOR of his obligation to provide a safe and proper crossing.

C. If a detour is required, submit a traffic control plan for approval to Collier County and/or the Florida Department of Transportation.

D. Submit a plan for maintenance of traffic in accordance with Index 600 through 650 of the Florida Department of Transportation Specifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials specified in other applicable portions of this Specification.

PART 3 EXECUTION

3.1 GENERAL

A. Trench dimensions for open cutting of road crossings are shown on the Standard Details.

B. Where possible, limit the completion of the open-cut road crossing to a 24-hour period. Perform all work in accordance with the approved traffic control plan.

C. Notify Collier County DOT forty-eight (48) hours in advance of starting construction.

3.2 INSTALLATION

A. Temporary Roadways

1. For temporary roadways required for traffic relocation use materials meeting the requirements of the FDOT. Use temporary roadways when crossing a state highway right-of-way or at the direction of the ENGINEER.

2. Maintain temporary roadways in good condition throughout their use.

3. Maintain drainage through all existing ditches by the use of culvert pipe as necessary.

4. Submit drawings indicating the type and location of temporary roadways for approval prior to beginning work.

5. Provide all necessary barricades and signs where detours are permitted as required to divert the flow of traffic. Notify Collier County DOT and ENGINEER in advance of planned detours. While traffic is detoured, expedite construction operations to minimize the period of detour.

6. Perform and complete all work at the roadway crossing in a manner fully satisfactory to Collier County DOT.

B. Maintenance of Traffic

1. The requirements specified herein are in addition to the plan for Maintenance of Traffic as specified in Section 015526.

2. Furnish during construction and any subsequent maintenance within State secondary road right-of-ways and Collier County streets, proper signs, signal lights, flagmen, and other warning devices for the protection of traffic all in conformance with the latest Manual on Uniform Traffic Control and Safe Streets and Highways, and the Florida Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations. Information as to the above may be obtained from FDOT Division engineers. The ENGINEER, County Engineer, or FDOT Manager of the right-of-way of their representatives reserves the right to stop any work for non-compliance.

3. Take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. Be fully responsible for damage or injuries whether or not police protection has been provided.

4. Unless permission to close a County street is received in writing from the proper authority, place all excavated material so that vehicular and pedestrian traffic may be maintained at all times. Repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the ENGINEER if the CONTRACTOR's operations cause traffic hazards.

5. Be fully responsible for the installation of adequate safety precautions, for maintenance of the channelization devices, and for the protection of the traveling public.

6. Maintain at all open cut crossings, a minimum of one-way traffic during the daylight hours, and two-way traffic at night.

C. Installation of Pipeline

1. Meet the requirements of the applicable portions of this specification for pavement removal, sheeting, shoring and bracing, excavation and backfill, and dewatering.

2. Install the pipe in accordance with Division 2 of these Specifications.

3. Backfill the trench in accordance with the requirements of Section 312323.

4. Replace pavement in accordance with the requirements of Section 320117.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330502

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to install High Density Polyethylene (HDPE) pressure pipe, fittings, and appurtenances as shown on the Drawings and specified in the Contract Documents.

B. High Density Polyethylene (HDPE) – Collier County Utilities has the option of approving the use of HDPE for pipeline crossings of roadways, ditches, canals, and environmentally sensitive lands. HDPE mains shall have the same equivalent internal diameter and equivalent pressure class rating as the corresponding PVC pipe, unless otherwise approved by the County Manager or designee. For all roadway crossings requiring casing pipe, a steel or DR 11 HDPE casing pipe must be provided. The Department of Transportation having jurisdiction of said road and right-of-way must grant specific approval.

1.2 REFERENCED STANDARDS

A. All standard specifications, i.e., Federal, ANSI, ASTM, etc., made a portion of these Specifications by reference, shall be the latest edition and revision thereof.

1.3 QUALIFICATIONS

A. Furnish all HDPE pipe, fittings, and appurtenances by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the items to be furnished.

1.4 SUBMITTALS

A. Submit to the ENGINEER, a list of materials to be furnished, the names of the suppliers, and the appropriate shop drawings for all HDPE pipe and fittings.

B. Submit the pipe manufacturer's certification of compliance with the applicable sections of the Specifications.

C. Submit shop drawings showing installation method and the proposed method and specialized equipment to be used.

1.5 INSPECTIONS AND TESTS

A. All work shall be inspected by the County Manager or designee who shall have the authority to halt construction if, in his opinion, these specifications or standard construction practices are not being followed. Whenever any portion of these specifications is violated, the County Manager or designee, may order further construction to cease until all deficiencies are corrected.

1.6 WARRANTY AND ACCEPTANCE

A. Warrant all work to be free from defects in workmanship and materials for a period of one year from the date of completion of all construction. If work meets these specifications, a letter of acceptance, subject to the one year warranty period, shall be given at the time of completion. A final acceptance letter shall be given upon final inspection at the end of the one year warranty period, provided the work still complies with these specifications. In the event deficiencies are discovered during the warranty period, the CONTRACTOR shall correct them without additional charge to the COUNTY before final acceptance. During the warranty period, the ENGINEER will determine if warranty repairs or replacement work shall be performed by the CONTRACTOR. The decision of the ENGINEER shall be binding upon the CONTRACTOR.

B. Installer Certification for The CONTRACTOR installing thermal butt fused HDPE pipe.

PART 2 PRODUCTS

2.1 POLYETHYLENE PIPE AND FITTINGS

A. Provide polyethylene pressure pipe manufactured from PE4710 polyethylene meeting AWWA C906 standards. When specified by the ENGINEER on the construction drawings, as an alternate to PVC, HDPE (ductile iron pipe sized) piping can be used for buried applications. Iron pipe sized (IPS) HDPE piping can be used for below-ground applications as determined by the ENGINEER.

B. The diameter of DR 11 HDPE casing pipe provided for roadway crossings or other purposes shall conform to the following.

For HDPE pressure carrier pipes, casing spacers are not required when HDPE DR11 (or DR17 for 42” to 54” or DR21 for 63”) casing is used. The casing inside diameter shall be a minimum of two inches larger than the carrier pipe’s outside diameter.

C. HDPE to HDPE pipe connections shall be by thermal butt fusion. Thermal fusion shall be accomplished in accordance with the pipe manufacturer and fusion equipment supplier specifications. The CONTRACTOR installing thermal butt

fused HDPE pipe shall be certified in this type of work and have a minimum of five years experience performing this type of work. The CONTRACTOR shall provide certification to the Engineer of Record, who will provide the Engineering Review Services Department with the certification.

D. Qualification of Manufacturer: The Manufacturer shall have manufacturing and quality control facilities capable of producing and assuring the quality of the pipe and fittings required by these specifications. The Manufacturer's production facilities shall be open for inspection by the County Manager or designee. Qualified manufacturers shall be approved by the County Manager or designee.

E. See the County Approved Product List, Appendix F, for manufacturers that are qualified. Products from other manufacturers proposed for the work must receive approval from the County Manager or designee prior to ordering.

F. Materials: Materials used for the manufacture of polyethylene pipe and fittings shall be PE4710 high density polyethylene meeting cell classification 445574C or 445574E per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting manufacturer in PPI (Plastics Pipe Institute) TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

G. Polyethylene Pipe: Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter or ASTM D3035, Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, (from pipe) dimensions and either quick burst or ring tensile strength (equipment permitting).

H. Color Identification: HDPE must have at least three equally spaced horizontal colored marking stripes. Permanent identification of piping service shall be provided by adhering to the following colors.

Blue – potable water (Underground HDPE pipe shall be one of the following:

a. Solid-wall blue pipe;
b. Co-extruded blue external skin; or
c. White or black pipe with blue stripes incorporated into, or applied to, the pipe wall.

White – raw water
Green – wastewater, sewage
Pantone Purple – non-potable irrigation, reclaimed or reuse water

I. Polyethylene Fittings and Custom Fabrications: Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Pressure de-rated fabricated fittings are prohibited.

J. Molded Fittings: Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the tests required under ASTM D3261.

K. X-Ray Inspection: The Manufacturer shall submit samples from each molded fittings production lot to x-ray inspection for voids, and shall certify that voids were not found.

L. Fabricated Fittings: Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16" IPS and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets. Part drawings shall be submitted for the approval of the ENGINEER.

M. Polyethylene Flange Adapters: Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasketless sealing, or to restrain the gasket against blow-out.

N. Back-up Rings and Flange Bolts: Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. The lap joint flange bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

2.2 MANUFACTURER'S QUALITY CONTROL

A. The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rate, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer's Quality Control. Incoming materials shall be approved by Quality Control before processing into finished goods. Outgoing materials shall be checked for:

1. Outside diameter, wall thickness, and eccentricity as per ASTM D2122 at a frequency of at least once/hour or once/coil, whichever is less frequent.

2. Out of Roundness at frequency of at least once/hour or once/coil, whichever is less frequent.

3. Straightness, inside and outside surface finish, markings and end cuts shall be visually inspected as per ASTM F714 on every length of pipe.

B. Quality Control shall verify production checks and test for:

1. Density as per ASTM D1505 at a frequency of at least once per extrusion lot.

2. Melt Index as per ASTM D1238 at a frequency of at least once per extrusion lot.

3. Carbon content as per ASTM D1603 at a frequency of at least once per day per extrusion line.

4. Quick burst pressure (sizes thru 4-inch) as per ASTM D1599 at a frequency of at least once per day per line.

5. Ring Tensile Strength (sizes above 4-inch equipment permitting) as per ASTM D2290 at a frequency of at least once per day per line.

6. ESCR (size permitting) as per ASTM F1248 at a frequency of at least once per extrusion lot.

C. X-ray inspection shall be used to inspect molded fittings for voids, and knit line strength shall be tested. All fabricated fittings shall be inspected for joint quality and alignment.

2.3 COMPLIANCE TESTS

A. In case of conflict with Manufacturer's certifications, the CONTRACTOR, ENGINEER, or County Manager or designee may request re-testing by the manufacturer or have re-tests performed by an outside testing service. All re-testing shall be at the requestor's expense, and shall be performed in accordance with the Specifications.

B. Installation shall be in accordance with Manufacturer's recommendations and this specification. All necessary precautions shall be taken to ensure a safe working environment in accordance with the applicable codes and standards.

PART 3 EXECUTION

3.1 INSTALLATION OF HIGH DENSITY POLYETHYLENE PRESSURE PIPE AND FITTINGS

A. Install all high density polyethylene (HDPE) pressure pipe by direct bury, directional bore, or a method approved by the COUNTY or ENGINEER prior to construction. If directional bore is used, or if directed by the County Manager or designee or ENGINEER, surround the entire area of construction by silt barriers.

Install all high density polyethylene pressure pipe and fittings in accordance with Manufacturer's recommendations, and this specification. Take all necessary precautions to ensure a safe working environment in accordance with the applicable codes and standards.

3.2 HEAT FUSION JOINING

A. Make joints between plain end pipes and fittings by butt fusion, and joints between the main and saddle branch fittings by using saddle fusion using only procedures that are recommended by the pipe and fitting Manufacturer. Ensure that persons making heat fusion joints have received training and certification for heat fusion in the Manufacturer's recommended procedure. Maintain records of trained personnel, and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

3.3 MECHANICAL JOINING

A. HDPE pipe and fittings shall be fused together by heat welding when possible. HDPE pipe and fittings may be joined together or to other materials by means of flanged connections with back-up rings, by mechanical joint adapter with glands, or mechanical couplings designed for joining HDPE pipe or for joining HDPE pipe to another material. A stainless steel sleeve insert shall be used with a mechanical coupling. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins.

3.4 BRANCH CONNECTIONS

A. Make branch connections to the main with saddle fittings or tees. Saddle fuse polyethylene saddle fittings to the main pipe.

3.5 EXCAVATION

A. Excavate trenches in conformance to this specification, the plans and drawings, or as authorized in writing by the County Manager or designee, and in accordance

with all applicable codes. Remove excess groundwater. Where necessary, shore or reinforce trench walls.

3.6 LARGE DIAMETER FABRICATED FITTINGS

A. Butt fuse fabricated directional fittings 16" IPS and larger to the end of a pipe. Make up the flanged directional outlet connections in the trench.

3.7 MECHANCIAL JOINT AND FLANGE INSTALLATION

A. Install mechanical joints and flange connections in accordance with the Manufacturer's recommended procedure. Center and align flange faces to each other before assembling and tightening bolts. Do not use the flange bolts to draw the flanges into alignment. Lubricate bolt threads, and fit flat washers under the flange nuts. Tighten bolts evenly according to the tightening pattern and torque step recommendations of the Manufacturer. At least one hour after initial assembly, re-tighten flange connections following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be 100 ft-lbs or less as recommended by the Manufacturer.

3.8 FOUNDATION AND BEDDING

A. Lay pipe on grade and on a stable foundation. Remove unstable or mucky trench bottom soils, and install a 6-inch foundation or bedding of compacted Class I material to pipe bottom grade. Remove excess groundwater from the trench before laying the foundation or bedding and the pipe. A trench cut in rock or stony soil shall be excavated to 6 inches below pipe bottom grade, and brought back to grade with compacted Class I bedding. Remove all ledge rock, boulders, and large stones.

3.9 PIPE HANDLING

A. When lifting with slings, use only wide fabric choker slings to lift, move, or lower pipe and fittings. Do not use wire rope or chain. Slings shall be of sufficient capacity for the load, and shall be inspected before use. Do not use worn or defective equipment.

3.10 TESTING

A. Hydrostatic Pressure Testing: Pressure test and flush HDPE pipes after swabbing in accordance with Section 022501 and 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330503

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing buried PVC pipe, fittings and appurtenances.

1. Provide PVC pipe and fittings complete with all necessary jointing facilities and materials, specials, adapters and other appurtenances required for installation in and completion of the pipelines to be constructed.

2. Provide plain end or rubber gaskets (push-on or mechanical joint) of the types, sizes and classes shown or specified.

B. Related Work Specified In Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 330504 – Ductile Iron Pipe and Fittings

4. Section 330518 – Laying and Jointing Buried Pipelines

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D3034 - Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings

2. ASTM F679 - Polyvinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings

3. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. through 60 In., for Water Distribution

4. AWWA C907 - Polyvinyl Chloride (PVC) Pressure Fittings for Water - 4 In. through 8 In.

5. ASTM D2321 - Underground Installation of Flexible Thermoplastic Sewer Pipe

6. ASTM F477 - Elastomeric Seals (Gaskets) For Joining Plastic Pipe

7. ANSI A21.10 - Ductile-Iron and Gray-Iron Fittings 3 inches through 48 inches, for Water and Other Liquids

8. ANSI A21.11 - Rubber-Gasket Joints for Ductile-Iron and Gray Iron Pressure Pipe and Fittings

9. Uni-Bell B-11

1.3 SYSTEM DESCRIPTION

A. Gravity Sewer Pipe - PVC pipe shall be of the integral wall bell and spigot joint type, which meets or exceeds all requirements set forth in ASTM D3034, latest revision. Minimum wall thickness shall conform to ASTM SDR 26. PVC pipes used for gravity sewers shall be green in color. Fittings shall be made of PVC plastic as defined by ASTM SDR 26 1784, latest revision. Flexible gasketed joints shall be compression type conforming to ASTM D3201, latest revision. Elastomeric joint gaskets shall conform to ASTM F477, latest revision. At all conflict crossings using 4"-12" substitute C900 PVC, Class 305, DR 14 and for PVC pipe 14" and larger use C900 PVC, Class 235, DR 18.

B. Force Main Pipe – PVC pipe meeting the latest revision of AWWA C900 shall be provided. For installation of 4" – 12" pipe, the pressure class shall be 235 with a DR of 18. For installation of 14" – 24" pipe, use pressure class 165, DR 25, meeting or exceeding the requirements of Uni-Bell B-11. PVC pipes used for force mains shall be green in color. Outside diameters shall be equivalent to ductile iron pipe of the same nominal size. Joints between successive lengths of straight PVC pipe shall be compression type using a single elastomeric gasket, per ASTM C-3139 and F477. Fittings for C900 pipe shall be C900 rated PVC. Joint restraint devices shall be provided for horizontal or vertical alignment changes using uni-flange type collars, epoxy coated, with high strength, and low alloy hardware (see County Approved Product List, Appendix F). PVC pipe direct buried beneath roadways, parking lots or parking lot entrances shall meet AWWA Specification C900, latest revision. All 4" to 12" pipe in such locations shall be a minimum of Class 305, DR 14, and all 14" to 24" pipe shall be a minimum of Class 235, DR 18. Pressure Class 250 ductile iron pipe may be used instead of PVC in these locations if approved by the County Manager or designee.

C. Potable, Raw and Non-Potable Irrigation Water Main Pipe - PVC shall conform to AWWA Specification C900, latest revision. All 4" to 12" pipe shall be a minimum of Class 235, DR 18 and all 14" to 24" pipe shall be a minimum of Class 165, DR 25 and shall meet or exceed Uni-Bell B-11. All potable water pipe shall bear the seal of the National Sanitation Foundation (NSF) for potable water pipe. All pipe shall be marked with the manufacturer's name, nominal size, type of plastic and pressure rating. All PVC pipe used for potable water lines shall be predominately

blue in color. Underground PVC pipes used for potable water lines shall be solid-wall blue pipe, will have a co-extruded blue external skin, or will be white or black pipe with blue stripes incorporated into, or applied to, the pipe wall. PVC pipes used for raw water shall be white in color. PVC pipes used for non-potable irrigation, reclaimed or reuse water shall be purple in color. Pipe O.D. shall be equivalent to cast iron pipe of the same nominal size. PVC pipe direct buried beneath roadways, parking lots or parking lot entrances shall meet AWWA Specification C900, latest revision. All 4" to 12" pipe in such locations shall be a minimum of Class 305, DR 14, and all 14" to 24" pipe shall be a minimum of Class 235, DR 18. Pressure Class 250 ductile iron pipe may be used instead of PVC in these locations if approved by the County Manager or designee.

D. Provide pipe of the various sizes and classes as specified in the schedule or shown. Restrain all pressure pipe joints.

E. Construct concrete encasements only with written permission from the Water Director.

1.4 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Submit the following shop drawings:

1. Pipe joints, fittings, sleeves and cleanouts. Where special designs or fittings are required, show the work in large detail and completely describe and dimension all items.

2. Fully dimensioned drawings of piping layouts, including fittings, couplings, sleeves, cleanouts, valves, supports and anchors. Label pipe size, materials, type, and class on drawings and include the limits of each reach of restrained joints. Provide cross sections showing elevations of cleanouts, pipes, fittings, sleeves, and valves.

3. Catalog data for pipe, joints, fittings, sleeves, harnessing and cleanouts.

C. Quality Control: Submit certificate of compliance for pipe, fittings, gaskets, coatings, specials, sleeves and cleanouts in accordance with this Section.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all pipe, fittings and appurtenances as specified in Division 1 and Section 330518.

PART 2 PRODUCTS

2.1 MATERIALS

A. PVC Pipes and Fabricated Fittings: PVC pipe and fabricated fittings shall be made from virgin PVC resin that has been compounded to provide physical and chemical properties that equal or exceed cell class 12454-B as defined in ASTM D1784, and shall qualify for a hydrostatic design basis of 4,000 psi (27.58 MPa) at 73.4°F (23°C) per the requirements of PPI TR-3.

B. Fittings for Pressure Pipe: Provide all fittings meeting the requirements of Sections 330504.

C. Joints and Fittings for Gravity Sewer Pipe: Provide all fittings meeting the requirements of ASTM D 3034 and ASTM F 679. Provide joints that are a molded integral part of the pipe section. Do not use joints or couplings furnished loose. Provide joints with elastomeric gasket joints.

D. Joints for Pressure Pipe: Provide pipe with bell ends in accordance with AWWA C900. Provide joints with elastomeric gasket joints.

E. Elastomeric Gasket Joints: Provide elastomeric gasket joints in accordance with ASTM F 477.

F. Rubber Gasket Joints: Provide mechanical joints meeting the requirements of ANSI A21.11.

G. Color: Provide pipe made of 100 percent of the color specified. Provide green sewer or force main pipe. Provide blue potable water pipe. Provide white raw water pipe. Provide purple non-potable irrigation, reclaimed or reuse water pipe.

H. Pipe Marking: Provide mark on each pipe at internals of 5 feet or less to designate compliance with applicable ASTM or AWWA specification.

I. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed and are not ready to connect.

1. Remove all temporary bulkheads when they are no longer needed.

J. Date of Manufacturer: Provide pipe and fitting manufactured no earlier than 12 month period proceeding the date of the Agreement.

K. Wall Thickness for Pressure Pipe:

1. 4 through 12 inches diameter – provide AWWA-C900 DR 14, Class 305 for pressure pipe installed under pavement.

2. 14 through 24 inches diameter – provide AWWA-C905 DR 18, Class 235 for pressure pipe installed under pavement.

L. Restraining Devices: Joint restraining devices (see County Approved Product List, Appendix F) shall be placed at all bends, tees, plugs, reducers, and other fittings to provide lateral support, and shall conform to the Collier County Standard Details. Concrete thrust blocks shall only be utilized if approved by Collier County Utilities.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all buried PVC pipe and fittings in accordance with the manufacturer's recommendations, approved shop drawings, as specified in Division 1, and Section 330518. For horizontal directional drilling of Fusible PVC, see Section 330502 for casing and execution requirements.

3.2 LEAKAGE TESTING

A. Cleaning: Flush clean and test all pipes after installation.

B. Testing: Test pipes for leaks and repair or tighten as required.

C. Procedures: Conduct tests in accordance with Section 022501.

3.3 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water before they are placed in service as specified in Section 025400.

3.4 SCHEDULES

A. Refer to the Schedules contained in Section 330518 Laying and Jointing Buried Pipelines for information on the piping that is to be constructed using the pipe materials and methods specified herein.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330504

DUCTILE IRON PIPE (DIP) AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required, and install ductile iron pipe, fittings and appurtenances as shown on the Drawings and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 330518 - Laying and Jointing Buried Pipe

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards: (Latest Revision)

1.	ANSI/AWWA C104/A21.4	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
2.	ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
3.	ANSI/AWWA C110/A21.10	Ductile-Iron Fittings, 3 in. Through 48 Inches, for Water and Other Liquids. (C110 2-48 inches).
4.	ANSI/AWWA C111/A21.11	Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5.	ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Threaded Flanges.
6.	ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe.
7.	ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast for Water or Other Liquids.
8.	ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings
9.	AWWA C600	Installation of Ductile Iron Water Mains and Their Appurtenances.
10.	Collier County	Utilities Standards and Procedures Ordinance

1.4 CONTRACTOR SUBMITTALS

A. Shop Drawings: Submit shop drawings of pipe and fittings in accordance with the requirements in the General Conditions, the requirements of the referenced standards and the following supplemental requirements as applicable:

1. Certified dimensional drawings of all valves, fittings, and appurtenances.

2. In all cases, a line layout to indicate the limits of each reach of restrained joints or of concrete encasement shall be supplied. (NOTE: Obtain COUNTY Water Director's approval of all proposed concrete encasement of ductile iron pipe.)

B. Certifications: Furnish a certified affidavit of compliance for all pipe and other products or materials furnished under this Section of the Specifications, which indicates that all tests have been made and that all results comply with the requirements of AWWA C151, including but not necessarily limited to the following:

1. Acceptance Tests.

2. Hydrostatic Tests.

3. Impact Tests.

C. Additional Documentation: Upon request, furnish foundry records in the form of written transcripts.

D. All expenses incurred for certification, testing, and data submittal shall be borne by the CONTRACTOR or the Supplier.

1.5 QUALITY ASSURANCE

A. Inspection: All pipe shall be available for inspection at the place of manufacture prior to shipping in accordance with the provisions of the referenced standards. Notify the ENGINEER in writing not less than 10 calendar days prior to the shipping of the pipe.

B. The ENGINEER shall be given access to all areas where manufacturing and testing is performed and shall be permitted to make all inspections necessary to confirm manufacturer compliance with these Specifications.

C. Tests: Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the referenced standards as applicable.

D. Provide data on material tests at no additional cost to the COUNTY.

E. In addition to those tests specifically required, the ENGINEER may request additional samples of any material including lining and coating samples for testing by the COUNTY. Furnish the additional samples at no additional cost to the COUNTY.

1.6 CORROSION PROTECTION

A. If specifically approved by Collier County Utilities for use, provide exterior protection for underground ductile iron pipe and fittings within areas of severe corrosive conditions. This shall be accomplished by the installation of polyethylene encasement through the area of concern. The soil test evaluation to determine the necessity for extra protection in suspect areas shall be those set forth in ANSI Standard A21.5. Additionally, where other existing utilities are known to be cathodically protected, ductile iron pipe crossing said utility shall be protected for a distance of 20 feet to each side. If ductile iron pipe is to be installed parallel to and within 10 feet of cathodically protected pipe, then protection shall be provided for the entire length. Do not install steel pipe in severe corrosion areas.

PART 2 PRODUCTS

2.1 GENERAL

A. Protective Lining for Water Mains: Cement mortar lined ductile iron pipe shall conform to ANSI/AWWA C151 and C104, subject to the following supplemental requirements. The pipe shall be of the diameter and class shown, shall be furnished complete with rubber gaskets as indicated in the Contract Documents, and all specials and fittings shall be provided as required under the Contract Documents.

B. Protective Lining for Force Mains and Sewers: Where lining is shown, specified or required, for the protection of pipelines carrying sewage from corrosive gases, line the pipe using protective ceramic epoxy coating (see County Approved Product List, Appendix F) in accordance with the manufacturer's written instructions. For ceramic epoxy lining, abrasive blast clean pipe and fittings to a near white surface to SSPC SP-10 and provide 40 mils minimum of dry film thickness of ceramic epoxy lining.

C. Handling and Storage: Handle the pipe by using wide slings, padded cradles, or other devices designed and constructed to prevent damage to the pipe and its lining. The use of equipment or handling, which might injure the pipe and its lining, will not be permitted. Stockpiled pipe shall be suitably supported and shall be secured to prevent accidental rolling. Assure that all other pipe handling equipment and methods is acceptable to the ENGINEER.

D. Laying lengths: Maximum pipe laying lengths shall be 20 feet.

E. Finish: The pipe shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing and roughness, in accordance with ANSI/AWWA C104.

F. Closures and Correction Pieces: Provide closures and correction pieces as required so that closures may be made due to different headings in the pipe laying operation and so that correction may be made to adjust the pipe laying to conform to pipe stationing shown on the Drawings or line layouts where applicable.

2.2 PIPE DESIGN CRITERIA

A. General: Ductile Iron pipe shall be designed in accordance with the requirements of ANSI/AWWA C150 as applicable and as modified in this Section.

B. Pipe Wall Thickness for Internal Pressure: The pipe shall be designed with a net thickness to withstand the design internal pressure in accordance with the hoop stress formula. In addition to the requirements of the Section, the minimum wall thickness shall be in accordance with the minimum thickness wall depicted in table 50.5 of ANSI/AWWA C150.

C. Potable, Raw and Non-Potable Irrigation Water Mains:

1. Ductile Iron Pipe shall be a minimum pressure Class 250 and will be accepted in any diameter for use within the water distribution system.

2. All aboveground potable water main pipe shall be painted Federal Safety Blue. All aboveground raw water main pipe shall be painted white. All aboveground non-potable irrigation, reclaimed or reuse water main pipe shall be painted Pantone Purple 522C. The pipe wall thickness shall not be less than that required by a working pressure of 250 psi in laying condition Type 4 “B” with 5-foot cover in conformance with ANSI Standard A21.50.

D. Force Mains and Gravity Sewers:

1. Ductile Iron Pipe shall be a minimum pressure Class150 and will be accepted in any diameter for use within the wastewater collection system.

2. Ductile iron pipe for Gravity Sewer applications in not permitted unless the ENGINEER can demonstrate that C900 PVC pipe, Class 150 or 200, cannot be utilized from a structural standpoint.

3. All aboveground force main pipe shall be painted Safety Green. The pipe wall thickness shall not be less than that required by a working pressure of 150 psi.

2.3 MATERIALS

A. Ductile Iron Pipe: Pipe materials shall conform to the requirements of ANSI/AWWA C151.

B. Adapters to connect ductile iron pipe or fittings to pipe or fittings of dissimilar materials shall be supplied by the CONTRACTOR in accordance with ASTM specifications and the pipe manufacturer recommendations, and as approved by the ENGINEER.

C. Water Mains:

1. All water mains shall contain cement for mortar lining conforming to the requirements of ANSI/AWWA C104. Cement for mortar lining shall be Type II or V. A fly ash or pozzolan shall not be used.

2. All Ductile Iron buried water main pipelines shall have blue stripes applied to the pipe wall. Stripe width shall comply with AWWA standards. The stripes shall be applied during installation and shall incorporate blue tape or blue paint. The tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and be located along the top of the pipe.

3. All pipe with an internal diameter of 24” or greater, tape or paint shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe.

D. Force Mains and Gravity Sewer:

1. All Ductile iron pipe used within the wastewater system shall be lined with a ceramic epoxy, (see County Approved Product List, Appendix F). Pipe and fittings shall be lined as specified herein. Each piece of pipe shall bear a marking denoting the class to which it belongs.

2.4 SPECIALS AND FITTINGS

A. Fittings for Potable, Raw, Non-Potable Irrigation, Reclaimed and Reuse Water Systems:

1. Fittings for ductile iron pipe shall conform to the requirements of ANSI/AWWA C153/A21.53 or ANSI/AWWA C110/A21.10 for diameters 3 inches through 48 inches and shall have a minimum pressure rating of 350 psi for pipe sizes 6 inches through 24 inches and 250 psi for sizes larger than 24 inches. Ductile iron fittings shall be double cement lined, seal coated and outside coated with an asphaltic material in accordance with AWWA C104 as specified.

B. Fittings for Wastewater System:

1. All pipe and fittings in direct contact with wastewater shall be interior coated with a 40 mil thickness of ceramic epoxy coating (see County Approved Product List, Appendix F). Pipe and fittings shall have an outside asphaltic coating as specified in AWWA Standard C151. Each piece of pipe shall bear a marking denoting the class to which it belongs.

2.5 DESIGN OF PIPE

A. General: The pipe furnished shall be ductile iron pipe, lined as specified, with rubber gasketed joints.

B. The pipe shall be designed, manufactured, tested, inspected, and marked according to applicable requirements previously stated and except as hereinafter modified, shall conform to ANSI/AWWA C150 and ANSI/AWWA C151.

C. Pipe Dimensions: The pipe shall be of the diameter and class shown. The minimum wall thickness for each pipe size shall be as specified herein or shown on the Drawings.

D. Fitting Dimensions: The fittings shall be of the diameter shown and class specified.

E. Joint Design: Ductile Iron pipe and fittings shall be furnished with mechanical joints, push-on joints and flanged joints as follows:

1. For buried pipe applications, unless otherwise indicated, mechanical and push-on joints shall conform to ANSI/AWWA C111/A21.11, with the minimum pressure rating of 350 psi.

2. For above-ground or buried vault applications, unless otherwise indicated, flanged joints shall conform to ANSI/AWWA C115/A21.15, with the minimum pressure rating of 250 psi. All above-ground fittings shall be painted blue.

3. Use manufactured, labeled gasket lubricant for push on joints with trade name and pipe manufacturer name, other lubricants are prohibited.

4. Nuts and bolts for flanged joints shall be 304 stainless, as specified by the COUNTY, and conform to ANSI/AWWA C111.

F. Restraining Devices: Joint restraining devices (see County Approved Product List, Appendix F) shall be placed at all bends, tees, plugs, reducers, and other fittings to provide lateral support, and shall conform to the Collier County Standard Details. Concrete thrust blocks shall only be utilized if approved by Collier County Utilities.

G. For bell-and-spigot ends with rubber gaskets, the clearance between the bells and spigots shall be such that when combined with the gasket groove configuration and the gasket itself will provide watertight joints under all operating conditions

when properly installed. Require the pipe manufacturer to submit details complete with significant dimensions and tolerances and also to submit performance data indicating that the proposed joint has performed satisfactorily under similar conditions. In the absence of a history of field performance, the results of a test program shall be submitted.

H. Gaskets shall be a Buna N, Neoprene, or a Nitryl-based rubber product. Gaskets shall have clean tips unless otherwise specified. Elastomeric gaskets conforming to ASTM F-477 shall also be acceptable.

I. Shop-applied interior linings and exterior coatings shall be applied evenly to the nominal thickness specified. Exterior coatings: asphalt coating for buried pipe or primed pipe cannot be furnished holiday free.

2.6 CEMENT-MORTAR LINING

A. Cement-Mortar Lining For Shop Application: Except as otherwise provided herein, interior surfaces of all ductile iron pipe shall be cleaned and lined in the shop with cement-mortar lining applied centrifugally in conformity with ANSI/AWWA C104. Ductile-Iron pipefittings need not have the cement-mortar lining applied centrifugally. The lining machines shall be of a type that has been used successfully for similar work. Every precaution shall be taken to prevent damage to the lining. If lining is damaged or found faulty at delivery site, the damaged or unsatisfactory portions shall be repaired in the filed in accordance with ANSI/AWWA C104.

B. The nominal wet lining thickness shall be as follows:

Nominal Factory Nominal Replacement		
Nominal Pipe Diameter (in.)	Applied Lining Thickness (in.)	Lining Thickness (in.)
3-12	1/8	1/8
14-24	3/16	3/16
30-64	1/4	1/4

C. Protection of Pipe Lining/Interior: All shop-applied cement mortar lining shall be given a seal coat of asphaltic material in conformance with ANSI/AWWA C104.

2.7 EXTERIOR COATING OF PIPE

A. Exterior Coating of Buried Piping: The exterior coating shall be an asphaltic coating approximately 1 mil thick, conforming to ANSI/AWWA C151.

2.8 CORROSION PROTECTION

A. If specifically approved by Collier County Utilities for use, exterior protection shall be provided for underground ductile iron pipe and fittings within areas of severe

corrosive conditions. This shall be accomplished by the installation of polyethylene encasement through the area of concern. The soil test evaluation to determine the necessity for extra protection in suspect areas shall be those set forth in ANSI Standard A21.5. Additionally, where other existing utilities are known to be cathodically protected, ductile iron pipe crossing said utility shall be protected for a distance of 20 feet to each side. If ductile iron pipe is to be installed parallel to and within 10 feet of cathodically protected pipe, then protection shall be provided for the entire length. Steel pipe shall not be installed in severe corrosion areas.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPE

A. Handling and Storage: Carefully handle and protect all pipe, fittings, etc., against damage, impact shocks, and free fall and in accordance with ANSI/AWWA C600. Do not place pipe directly on rough rocky ground, but in such instances support the pipe in a manner that will protect the pipe against injury whenever stored at such trench site or elsewhere. Do not install any pipe where the lining or coating show defects that may be harmful as determined by the ENGINEER. Repair such damaged lining or coating, or furnish and install a new undamaged pipe.

B. Repair or replace all pipe damaged prior to Substantial Completion or during warrantee period.

C. Inspect each pipe and fitting prior to installation to insure that no damaged portions of pipe are installed.

D. Before placement of pipe in the trench, thoroughly clean each pipe or fitting of any foreign substance that may have collected therein, and keep the pipe clean at all times thereafter. For this purpose, close the openings of all pipes and fittings in the trench during any interruption to the work.

E. Pipe Laying: Install the pipe in accordance with ANSI/AWWA C600.

F. Lay pipe directly on the bedding material. Refer to the Utilities Standards and Procedures Ordinance Section 9.1.2 for laying and backfilling requirements. No blocking will be permitted, and the bedding shall be such that it forms a continuous, solid bearing for the full length of the pipe. Make excavations as needed to facilitate removal of handling devices after the pipe is laid. Form bell holes at the ends of the pipe to prevent point loading at the bells or couplings. Make excavations as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coating on field joints.

G. Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the ENGINEER may change the alignment and/or the grades. Such

change may be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed 70 percent of the maximum deflection recommended by the pipe manufacturer. No joint shall be misaligned any amount which will be detrimental to the strength and water tightness of the finished joint.

H. Pipe and Specials Protection: Protect the openings of all pipe and specials with suitable bulkheads to prevent unauthorized access by persons, animals, water, or any undesirable substance. At all times, provide means to prevent the pipe from floating.

I. Pipe Cleanup: As pipe laying progresses, keep the pipe interior free of all debris. Completely clean the interior of the pipe of all sand, dirt, mortar splatter and any other debris following completion of pipe laying, pointing of joints, and any necessary interior repairs per ANSI/AWWA C600 and C602 prior to testing and disinfecting the completed pipeline. For pipe larger than 12" diameter, utilize a polyurethane foam plug "Poly Pig" to remove all debris from main.

3.2 RUBBER GASKETED JOINTS

A. Rubber Gasketed Joints: Immediately before jointing pipe, thoroughly clean the bell end of the pipe, and place a clean rubber gasket in the bell groove. Carefully clean the bell and spigot end of push-on joint pipe, and lubricate with a vegetable-based lubricant or per manufacturer's recommendation. Insert the spigot end of the pipe section into the bell of the previously laid joint and telescope into the proper position. Do not tilt the pipe to insert the spigot into the bell.

3.3 INSTALLATION OF PIPE APPURTENANCES

A. Installation of Valves: Handle all valves in a manner to prevent any injury or damage to any part of the valve. Thoroughly clean and prepare all joints prior to installation. Adjust all stem packing and operate each valve prior to installation to insure proper operation.

B. Install all valves so that the valve stems are plumb and in the location shown on the Drawings.

C. Mechanical joints consisting of bell, socket, gland, gasket, bolts, and nuts shall conform to ANSI Standard A21.11. Bolts and nuts shall be high strength, low alloy, Cor-Ten, T-Head Type having hexagonal nuts. Bolts and nuts shall be machined through and nuts shall be tapped at right angles to a smooth bearing surface. Single sealed gasket push-on type joints (see County Approved Product List, Appendix F) shall conform to the requirements of ANSI A21.11.

D. Mechanical joint retainer glands may be used to restrain mechanical joint pipe and fittings to the plain end of ductile iron pipe and fittings when used in conjunction with thrust blocks of reduced size. The Utilities ENGINEER must approve thrust block size. Maintain joint flexibility.

3.4 TESTING AND DISINFECTION

A. Test completed water or force main pipeline in accordance with Section 022501. Disinfect completed water pipeline in accordance with Section 025400.

END OF SECTION

SECTION 330518

LAYING AND JOINTING BURIED PIPELINES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Installation of all underground pipelines. Provide pipeline materials, coatings and linings as specified and pipe of the types, sizes and classes shown or specified.

1. Use proper and suitable tools and appliances for the safe and convenient cutting, handling, and laying of the pipe and fittings.

2. Use suitable fittings where shown and at connections or where grade or alignment changes require offsets greater than those recommended and approved.

3. Lay all underground pipelines not supported on piles or concrete cradle in select fill bedding material.

4. Close off all lines with bulkheads when pipe laying is not in progress.

B. Related Work Specified in Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 312316 – Excavation - Earth and Rock

4. Section 312319 – Groundwater Control for Open Excavation

5. Section 312323 – Backfilling

6. Section 330502 – High Density Polyethylene (HDPE) Pipe and Fittings

7. Section 330503 - Polyvinyl Chloride (PVC) Pipe and Fittings

8. Section 330504 - Ductile Iron Pipe (DIP) and Fittings

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 2774 - Practice for Underground Installation of Thermoplastic Pressure Piping

2. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

3. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60000 psi Tensile

4. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, C25, 125, 250, 800

5. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges

6. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

7. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe With Threaded Flanges

8. Uni-Bell - Handbook of PVC Pipe

9. Collier County - Utilities Standards and Procedures Ordinance

1.3 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all products and materials as specified in Division 1 and as follows:

B. Transportation and Delivery: Take every precaution to prevent injury to the pipe during transportation and delivery to the site.

C. Loading and Unloading: Take extreme care in loading and unloading the pipe and fittings.

1. Work slowly with skids or suitable power equipment, and keep pipe under perfect control at all times.

2. Under no condition is the pipe to be dropped, bumped, dragged, pushed, or moved in any way that will cause damage to the pipe or coating.

D. Sling: When handling the pipe with a crane, use a suitable sling around the pipe.

1. Under no condition pass the sling through the pipe. Interior of pipe is to be kept free of dirt and foreign matter at all times.

2. Use a nylon canvas type sling or other material designed to prevent damage to the pipe and coating.

3. When handling reinforced concrete pipe or uncoated steel or ductile iron pipe, steel cables, chain or like slings are acceptable.

E. Damaged Piping: If in the process of transportation, handling, or laying, any pipe or fitting is damaged, replace or repair such pipe or pipes.

F. Blocking and Stakes: Provide suitable blocking and stakes installed to prevent pipe from rolling.

1. Obtain approval for the type of blocking and stakes, and the method of installation.

G. Storage for Gaskets: Store gaskets for pipe joints in a cool place and protect gaskets from light, sunlight, heat, oil, or grease until installed. Store gaskets in a sealed container (such as a vented drum). When long-term storage with exposure to direct sunlight is unavoidable, PVC pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excessive heat accumulation (Uni-Bell PVC Handbook).

1. Do not use any gaskets showing signs of cracking, weathering or other deterioration.

2. Do not use gasket material stored in excess of six months without approval.

1.4 FIELD CONDITIONS

A. Repair of Sanitary Sewers and Services: Rebed, in compacted select fill material, sanitary sewers which cross over the new pipe or which cross under the new pipe with less than 12 inches clear vertical separation. Compact the bedding to densities required for new pipeline construction and extend bedding below the sewer to undisturbed earth. Reconstruct sewers damaged by pipeline construction.

1. Furnish and install all materials and do all work necessary for the reconstruction or repairs of sanitary sewers and services.

2. Provide pipe for reconstruction of sanitary sewers and services meeting the appropriate specification requirements.

3. Provide pipe of the same size as the existing sewer or when the same size is not available, use the next larger size of pipe. Obtain approval of joints made between new pipe and existing pipe.

PART 2 PRODUCTS

A. The materials allowed for buried sewer pipes are PVC, HDPE or Ductile Iron Pipe.

PART 3 EXECUTION

3.1 PREPARATION

A. Dry Trench Bottoms: Lay pipe only in dry trenches having a stable bottom.

1. Where groundwater is encountered, make every effort to obtain a dry trench bottom in accordance with Section 312319.

2. Perform trench excavation and backfill in accordance with Sections 312316 and 312323.

3.2 INSTALLATION

A. General: Install all piping in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1. Where pipe joint deflections are used, do not exceed 80 percent of the maximum deflection limits shown in AWWA C600. Gravity systems shall contain no joint deflection.

1. Arrange miscellaneous pipelines, which are shown in diagram form on the Plans, clear of other pipelines and equipment.

2. Gravity systems shall not contain vertical dips greater than one inch (1.0”).

B. Code Requirements: Provide pipeline installations complying with AWWA C600 for iron pipe, AWWA Manual M11 for steel pipe, ASTM D 2774 for thermoplastic pressure piping, and as modified or supplemented by the Specifications.

C. Pipe Laying - General:

1. Thoroughly inspect all pipe for damage and cleanliness. If found to be defective, tag, remove and replace pipe with satisfactory pipe or fittings at no additional charge to COUNTY.

2. Generally, lay all pipe with bells pointing ahead.

3. Carefully place all pipe, pipe fittings, valves and hydrants into trench by means of a derrick, ropes or other suitable tools or equipment in such a manner as to prevent damage and check for alignment and grade.

4. Make adjustments to bring pipe to line and grade by scraping away or filling in select fill material under the body of the pipe.

5. Wedging or blocking up the pipe barrel is not permitted.

6. Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely shove the pipe home.

7. As the work progresses, clean the interior of pipelines of all dirt and superfluous materials of every description.

8. Keep all lines absolutely clean during construction.

9. Lay pipelines accurately to line and grade.

10. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other material from entering the pipe.

D. Pipe Laying - Trenches:

1. Carefully lay all pipelines in trench excavations piece by piece using suitable tools or equipment on select fill bedding (refer to Utilities Standards and Procedures Ordinance, Section 9.1.2), concrete cradle or other foundations as shown, specified or ordered in writing. Prevent damage to materials, protective coatings and linings.

2. Do not dump or drop pipe or pipe materials into trench.

3. Properly secure the pipe against movement and make the pipe joints in the excavation as required.

4. Carefully grade and compact pipe bedding.

5. Bell Holes:

a. Cut out bell holes for each joint as required to permit the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length.

b. Thoroughly tamp bell holes full of select fill material following the making of each joint to provide adequate support to the pipe throughout its entire length.

E. Other Foundations: Install pipelines laid on other types of foundations as specified for such other foundations or as ordered in writing.

F. Field Cuts of Pipelines: For shorter than standard pipe lengths, make field cuts in a manner producing a cut square and perpendicular to the pipe axis. Remove any sharp, rough edges which otherwise might injure the gasket.

G. Procedure for sealing cut ends and repairing field damaged areas of polyethylene lined pipe and fittings is as follows:

1. Remove burrs caused by field cutting of ends or handling damage and smooth out edge of polyethylene lining if made rough by field cutting or handling damage.

2. Remove oil or lubricant used during field cutting operations.

3. Areas of loose lining associated with field cutting operation must be removed and exposed metal cleaned by sanding or scraping. For larger areas, remove loose lining and dirt, then roughen bare pipe surface by scratching or gouging with a small chisel to provide an anchor pattern for the epoxy. It is recommended that the polyethylene lining be stripped back by chiseling, cutting, or scraping about 1 inch to 2 inches into well adhered lined area before patching. This ensures that all areas of undercutting have been removed. Be sure to roughen an overlap of 1 inch to 2 inches of polyethylene lining in area to be epoxy coated. This roughening should be done with a rough grade emery paper (40 grit), rasp, or small chisel. Avoid honing, buffing, or wire brushing since these tend to make surface to be repaired too smooth for good adhesion.

4. With area to be sealed or repaired clean and suitably roughened, apply a thick coat of a two-part coal tar epoxy (see County Approved Product List, Appendix F). The heavy coat of epoxy must be worked into the scratched surface by brushing. Mixing and application procedure for the epoxy must follow the epoxy manufacturer's instructions.

5. It is important that the entire freshly cut, exposed metal surface of the cut pipe be coated. To ensure proper sealing, overlap at least 1 inch of the roughened polyethylene lining with this two-part epoxy system.

H. Ductile Iron Pipe Mechanical Joints:

1. Assembly: In making up mechanical joints, center the spigot in the bell.

   a. With a wire brush just prior to assembly of the joint thoroughly brush 8 inches outside of spigot and inside of bell with which the rubber gasket comes in contact. Remove all oil, grit, tar (other than standard coating) and other foreign matter from joint.

   b. Brush lubricant over the gasket just prior to installation. (Note: There is only one rubber gasket size for each diameter of pipe.)

   c. Press the gasket into place within the bell and move the gland into position, bolts inserted, and the nuts tightened finger tight.

   d. Tighten the nuts with a torque wrench so that the gland is brought up toward the pipe evenly. Torque wrenches shall be set as specified in AWWA C111. Spanner type wrenches not longer than specified in

AWWA C111 may be used with the permission of County Manager or designee.

e. Tighten all nuts 180 degrees apart alternately in order to produce equal pressure on all parts of the gland.

2. Torques: Apply the following range of bolt torques:

Size Inches	Range of Torque - ft. lbs
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

3. Remaking of Joints: If effective sealing is not obtained at the maximum torque listed above, disassemble and reassemble the joint after thorough cleaning.

I. Ductile Iron Pipe Rubber Gasket Joints:

1. Assembly: In making up the rubber gasket joint, brush the gasket seat in the socket thoroughly with a wire brush and wipe the gasket with a cloth.

a. Place the gasket in the socket with the large round end entering first so that the groove fits over the bead in the seat.

b. Apply a thin film of lubricant (AWWA C600) to the inside surface of the gasket that will come in contact with the entering pipe.

c. Brush the plain end of the pipe to be entered thoroughly with a wire brush and place it in alignment with the bell of the pipe to which it is to be joined.

d. Exert sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket to make the joint.

2. Positioning: Before proceeding with backfilling, feel completely around the joint using a feeler gauge to confirm that the gasket is in its proper position.

a. If the gasket can be felt out of position, withdraw the pipe and examine the gasket for cuts or breaks.

b. If the gasket has been damaged, replace it with a new one before re-installing the pipe.

3. Optional Mechanical Joints: Use mechanical joint fittings that meet the requirements of Section 330504 with the rubber gasket joint pipe when specified or when rubber gasket fittings are not available.

J. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed, and in connections built into pipelines where adjoining pipelines or structures have not been completed and are not ready to be connected.

1. Remove bulkheads encountered in connecting sewers or structures included in this Contract, or in pipelines or structures previously built, when they are no longer needed or when ordered.

K. Temporary Blow-Off Assembly: Dead-end water lines shall be temporarily ended with a blow-off as shown in Collier County Standard Details. After full bore flush replace with a fire hydrant meeting the requirements of Section 331619.

L. Sleeve Type Couplings: For sleeve type couplings, equally tighten diametrically opposite bolts on the connection so that the gaskets will be brought up evenly all around the pipe.

1. Torque Wrenches: Do the final tightening with torque wrenches set for the torque recommended by the coupling manufacturer.

M. Concrete Encasement: Concrete encasement shall be constructed in accordance with Collier County Standard Details when:

1. A potable water main crosses at a depth that provides less than 18 inches clear distance from sewer lines in which case a Deviation Form request should be completed. Encase the sewer main unless specifically approved by Collier County Utilities. Encasement shall extend a minimum 10 feet on each side of the point of crossing. Pressure test both pipelines to 150 psi after the concrete has properly cured.

2. A water main running parallel to a sewer line provides less than 10 feet separation from sewer lines, in which case a Deviation Form Request needs to be completed. Encase the sewer main unless specifically approved by Collier County Utilities.

3. The ENGINEER has ordered the line encased. NO POTABLE WATER MAIN SHALL BE ENCASED IN CONCRETE UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY MANAGER OR DESIGNEE.

The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

N. Valve Box Setting: Install valve boxes vertical and concentric with the valve stem.

1. Adjust valve-box to final grade at the time designated by the County Manager or designee.

2. Build a collar, as shown in the standard details, 18 inches by 18 inches by 6 inches or 24 inch diameter round by 6 inches flush to grade of top of box. Similar collar shall be poured flush with grade and top of unpaved areas.

3. Satisfactorily reset any valve box that is moved from its original position, preventing the operation of the valve.

4. Replace any valve box that has been damaged.

O. Identification:

1. Metallized Warning Tape: For DIP and PVC pipe (other than gravity sewer pipe and laterals) to be installed, 3-inch detectable marking tape, of appropriate color and appropriate warning statement, shall be placed along the entire pipe length. In all cases, marking tape shall be installed two feet (2') below grade or one-half the pipe's bury, whichever is less, during backfill operations (refer to Utilities Standards Manual Section 1 – 1.1 and 2.2.1). All PVC pipe, PVC fittings, and identification tape shall be color-coded per Collier County Standards. HDPE pipe installed by horizontal directional drilling will not be required to be marked with metalized warning tape.

2. Electronic Markers (see County Approved Product List, Appendix F): Install electronic markers twenty-four inches (24") below final grade, above pipe, at all bends or changes in alignment and every two hundred and fifty feet (250') along the pipe between bends.

P. Separation From Other Pipe Systems:

1. Parallel Water and Sewer or Non-Potable Lines: Sanitary sewer lines, storm sewers or force mains shall be separated from water mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. Non-potable, reclaimed or reuse water mains shall be separated from water mains, gravity sewers or force mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 5 feet center to center or 3 feet outside to outside. When this standard cannot be maintained, the sewer line shall be concrete encased for a distance of 10 feet each way from the water line and any other conduit, with a minimum vertical clearance of 12 inches being provided at all times. See Section 1 - Design Criteria, Subsection 1.2.3.

2. Crossing Water and Sewer or Non-Potable Lines: Water mains crossing over a sewer or non-potable water line shall be (bottom of water main to top of sewer) separated by at least 18 inches unless local conditions or barriers

prevent an 18 inch vertical separation. All crossings with vertical clearance less than 18 inches shall be made using sewer pipe thickness Class 200 AWWA C900 PVC pipe, and water pipe of Class 51 Ductile iron pipe, for a distance of 10 feet on each side of the crossing. The gravity sewer pipe in these locations shall be backfilled with USCS Class I bedding stone to a height of 6 inches above the crown of the pipe. When water mains cross under a sewer, both mains shall be constructed of C900 Class 200 PVC pipe with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing with no intermediate joints. Additionally, a section of water main pipe shall be centered at the point of crossing. See Section 1 – Design Criteria, Subsection 1.3.

Q. Aerial Crossings:

1. Pipes spanning elevated pier crossings shall be flanged ductile iron Pressure Class 350 pipe conforming to AWWA C115, C150 & C151. Pipe spanning on piers spaced further apart than normal pipe length of 18 or 20 ft. shall be multiple length pipe with interior flanged joints with a rubber gasket pipe (see County Approved Product List, Appendix F). The pipe wall thickness and flanged joints shall be designed to safely span the elevated piers under working pressure without exceeding the allowable stresses and conform to AWWA C150. Limit pipe deflection at center of span with pipe full of water to 1/720 of span length. Provide expansion joints for between above ground and below ground wastewater lines.

2. Flanges shall conform to AWWA C150 and C115. All bolts and nuts used in aerial crossings shall be 304 stainless steel. Gaskets shall be full faced or recessed "O-Ring" type to prevent leaks in pipe under stress in the aerial crossing.

3. Outside surface of all pipe, flanges or spool pieces shall be shop coated with zinc primer, High Build Epoxy protective coat and a finish coat of polyurethane high gloss. Color shall be Federal Safety Blue for potable water mains and Pantone Purple 522 C for non-potable irrigation water mains.

4. Install operating valves or other flow regulating devices on each shoreline or at a safe distance from each shoreline to prevent discharge in the event the line is damaged.

5. Install supports for all joints in pipes utilized for aerial crossings and to prevent overturning and settlement. Expansion jointing is specified between above ground and below ground sewers and force mains.

3.3 FIELD QUALITY CONTROL

A. Testing: Test pipelines in accordance with Section 022501.

1. Test valves in place, as far as practicable, and correct any defects in valves or connections.

2. Gravity Sewer Lines: Test in accordance with Section 022501

B. Inspection: Clean, inspect, and examine each piece of pipe and each fitting and special for defects before it is installed.

1. Cut away any lumps or projections on the face of the spigot end or the shoulder.

2. Do not use any cracked, broken, or defective pieces in the work.

3. If any defective piece should be discovered after having been installed, remove and replace this piece with a sound piece in a satisfactory manner at no increase in Contract Amount.

3.4 CLEANING

A. General: Thoroughly clean all pipe before it is laid and keep it clean until it is accepted in the completed work.

B. Removal of Materials: Exercise special care to avoid leaving bits of wood, dirt, and other foreign particles in the pipe. If any particles are discovered before the final acceptance of the work, remove and clean the pipe.

3.5 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water in accordance with Section 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330520

PIPE REMOVAL AND ABANDONMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Removal and abandonment of piping and appurtenances, wholly or in part, as required to complete Work as shown on the Drawings and specified in this Section.

B. Related Work Specified in other Sections Includes:

1. Section 020500 – Connection to Existing Systems

2. Section 033100 – Concrete, Masonry Mortar and Grout

3. Section 312316 – Excavation – Earth and Rock

4. Section 312323 – Backfilling

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Submit the following:

1. Proposed methods for pipe removal and abandonment;
2. Equipment proposed to be used to do pipe removal and abandonment work;
3. Resume of pipe grouting subcontractor;
4. Pipe removal and abandonment schedule/sequence.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.3 SITE CONDITIONS

A. General

1. Prior to any work, a proper and approved maintenance of traffic plan (MOT) shall be submitted to the engineer and the County.

2. Execute pipe removal and abandonment so that there is no injury to persons or damage to adjacent buildings, structures, equipment, materials, piping, wiring, pavement, fences, trees, guardrails, and other adjacent improvements. Execute demolition and abandonment so that access to facilities that are in operation and to residences and businesses is free and safe.

3. Execute pipe removal and abandonment so that interference to vehicular traffic and personnel traffic does not exceed scheduled interference. Do not place rubble,

excavation, piping, or other materials removed on roadways, drives, or sidewalks that are to remain in service.

PART 2 - PRODUCTS

2.1 TEMPORARY MATERIALS

A. Provide temporary fencing, barricades, barriers, piping, valves, pumps, power and controls, and water necessary to meet the requirements of this Section.

B. Temporary fencing, barricades, barriers, and enclosures shall be suitable to the purpose intended.

2.2 REPAIR AND REPLACEMENT MATERIALS

For repair or replacement of existing facilities or improvements to remain, use materials identical to, or equal to, materials used in existing work when new.

PART 3 – EXECUTION

3.1 GENERAL

A. Conduct pipe removal and abandonment as shown and specified in the Contract Documents.

B. Conduct pipe removal and abandonment so that existing equipment, piping, wiring, structures, and other improvements to remain are not damaged. Repair or replace equipment, piping, wiring, structures, and other improvements damaged at no additional cost to the County.

C. Do not remove equipment, piping, wiring, structures, or other improvements not shown or specified to be removed. If equipment, piping, wiring, structures, or other improvements not shown or specified to be removed is removed, replace equipment, piping, wiring, structures, or other improvements at no additional cost to the County.

3.2 DISCONNECTIONS

A. Prior to starting pipe removal or abandonment, check underground and exposed existing utilities, piping, and equipment within the limits of pipe removal or abandonment. Prior to starting, check underground and exposed existing utilities, piping connected to and associated with existing pipe to be removed or abandoned. Verify the following:

1. Piping is inactive (abandoned);
2. Other utilities which may be in conflict have been permanently or temporarily disconnected, if required:

B. Do not proceed with salvage or demolition if piping is active or utilities have not been disconnected.

3.3 ABANDONMENT

A. The Contractor shall, as described on the Drawings and as may be directed by the County, abandon in place the following existing utility improvements:

1. All water mains, reuse water mains and raw water mains that are designated to be abandoned shall be filled with grout. Refer to Section 033100 – Concrete, Masonry Mortar and Grout.

2. All sewer lines, force mains, laterals and services that are designated to be abandoned shall be flushed clean and filled with grout. Prior to grout fill, sewer lines, force mains, laterals and services to be abandoned shall be flushed clean to remove wastewater and solids. Contractor is responsible for securing and providing flushing water, collection of flush water/wastewater, and disposal. The cleaning of these piping systems shall comply with all local and DEP requirements.

3. Sewer manholes designated to be abandoned shall have the top two feet removed. The remainder of each manhole shall be abandoned and filled with grout or flowable fill. The excavation or pit shall be backfilled with select fill and compacted in accordance with Section 312323 – Backfilling and the trenching details on the Drawings.

B. Appurtenances: All water hydrants, ARV valves and other appurtenances on abandoned lines shall be removed to the main and the fitting at the main shall be capped or plugged. All valves shall have the valve box, pad and operator removed, with the valve left in the open position unless specifically noted otherwise.

C. Preparation:

1. The County shall be notified at least 72 hours in advance of grouting operations.

2. Bulkheads shall be spaced at intervals of not more than 1,000 feet. If the line to be abandoned is longer, bulkheads shall be inserted in the pipe to maintain the required maximum spacing between bulkheads.

3. Temporary vents shall be installed in the line to be filled at a maximum spacing of 150 ft. The vents shall be capable of being capped to allow further grouting operations.

D. Equipment:

1. The materials shall be mixed or delivered in equipment of sufficient size and capacity to provide the desired amount of grout material for each stage in a single operation. The equipment shall be capable of mixing the grout at densities required for the approved procedure and shall also be capable of changing density as dictated by field conditions any time during the grouting operation.

2. Mixers and Pumps - The grout shall be delivered to the injection point at a steady pressure with a non-pulsating centrifugal or triplex pump. Means shall be provided to increase or decrease the water-cement ratio. The system shall mix the grout to a homogeneous consistency. Means of accurately measuring grout component quantities, pumping pressures, and volumes pumped shall be provided.

3. Pressure Gauges - CONTRACTOR shall provide one pressure gauge at the point of injection and one pressure gauge at the grout pump. Grouting shall not proceed without appropriate calibrated gauges in place and in working order. Pressure gauges shall be equipped with diaphragm seals, have a working range between 1.5 to 2.0 times the design grout pressure, and have an accuracy within 0.5 percent of full range. Pressure gauges shall be instrument oil filled and attached to a saddle-type diaphragm seal to prevent clogging with grout.

E. Grouting:

Once grouting operations begin, grouting shall proceed uninterrupted from bulkhead to bulkhead. Grout placement shall not be terminated until both of the following conditions have been met, unless otherwise approved by the County: a) The estimated volume of grout to fill the line has been injected; and, b) grout has been expelled from the furthest vent or bulkhead. Bulkheads and temporary vents shall not be removed until the grout has set.

F. Testing and Sampling:

1. Take four test specimens for each 50 cubic yards of grout or for each four hours of placing.

2. Test in accordance with ASTM C109 except:

   a. The specimens shall be 3 inch by 6 inch cylinders covered after casting to prevent damage and loss of moisture. Moist cure specimens for a period up to 7 days prior to a 28-day compressive strength test.

   b. Do not oven dry specimens that are load tested. Specimens may be tested at any age to monitor compressive strength. The material may require special handling and testing techniques.

G. The CONTRACTOR may remove the pipe in accordance with the Paragraph 3.04 in lieu of abandonment if acceptable to the County. Such removal, however, will be paid at the same price for pipe abandonment.

H. All work under this Section shall comply with City, County, State and Federal regulations.

3.4 REMOVAL AND DISPOSAL

A. The Contractor shall, as described on the Drawings and as may be directed by the County, remove the following existing utility improvements:

1. All water mains, reuse water mains and raw water mains that are designated to be removed.

2. All sewer lines, sewer manholes, force mains, laterals and services that are designated to be removed shall be flushed clean with water prior to removal. Contractor is responsible for securing and providing flushing water, collection of flush water/wastewater, and disposal. The cleaning of these piping systems shall comply with all local and DEP requirements.

B. The pipe removal and disposal shall include all valves, fittings and appurtenances.

3.5 SALVAGE OF EQUIPMENT, PIPING, AND MATERIALS

A. Remove items identified on the drawings or specified to remain the property of the County. Do not damage equipment, piping, and materials to be salvaged.

B. Following removal or equipment, piping, and materials to be salvaged, place equipment, piping, and materials in a location within the County limits as designated by the County.

3.6 REPAIRS

Repair structural elements, equipment, piping, conduit, and other improvements to remain that are damaged during demolition. Use workers specifically qualified in trade, or trades, involved to repair damaged work.

3.7 DISPOSAL

A. Remove and dispose of all equipment, piping, and materials from the jobsite not specifically designated to be retained by the County.

B. Contractor shall not accumulate or store debris from demolition on the project site.

C. The disposal of the piping, manholes and appurtenances shall be in accordance with County, State and Federal laws.

3.8 BACKFILLING

A. Backfill excavations, trenches, and pits resulting from abandonment and removal according to Section 312323 – Backfilling.

B. Backfill of the pipe trenches shall be according to the County details for pipe trench backfill. Pipe trenches for removed pipes that were within 3 horizontal feet of the edge of pavement shall be backfilled according to the detail for the type of roadway.

3.9 CLEANUP AND CLOSURE

A. Following pipe abandonment or removal, clean-up areas where other work is to be done as specified in this Section, or Sections applicable to work to be done.

B. Following pipe abandonment or removal, clean-up areas where no other work is to be done under this Contract. Remove debris and rubbish, temporary facilities, and equipment. Level surface irregularities to eliminate depressions. Leave work in a neat and presentable condition.

C. In locations where a pipe to be abandoned or removed connects to a pipe that remains in service, the Contractor shall install a suitable cap or plug on the end of the active pipe.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330523.13

HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The requirements of this section are applicable to all horizontal directional drills where the carrier pipe is 3” in nominal diameter and larger.

B. Provide all necessary tools, materials, labor, supervision and equipment to successfully complete the installation of directionally drilled piping as specified herein and shown on the drawings. The CONTRACTOR shall be responsible for the final constructed product, and for furnishing the qualified labor and superintendence necessary for this method of construction.

C. Furnish all items necessary to perform the horizontal directional drilling operation and construct the pipe to the lines and grade shown on the drawings. Project work tasks include completion of the drilling, pulling operations, horizontal directional drilling installation pressure testing, and final connection of piping installed as part of the horizontal directional drilling to open-cut piping. Horizontal directional drilling shall include the following work elements:

1. Drilling of the pilot hole and the reaming of the hole sufficient to install the HDPE pipe.
2. Provide, assemble, and install HDPE pipe including:
    a. Thermal fusion welding the HDPE pipe sections for temporary staging.
    b. Pulling the HDPE fused pipe stringout, in a continuous pullback operation with one fuse pipe cartridge.
3. Following HDPE pipe pullback, cut the HDPE pipe stubouts and install a temporary thermal fusion welded HDPE cap on both ends of the HDPE pipe stubouts, and perform pressure testing with water to verify pipeline integrity in accordance with the requirements of Section 022501 for HDPE product pipe material.

D. Use techniques of creating or directing a borehole along a predetermined path to a specified target location. Use mechanical and hydraulic deviation equipment to change the boring course and use instrumentation to monitor the location and orientation of the boring head assembly along a predetermined course.

1. Develop, provide, and operate a Drill Fluid Loss Monitoring Program as follows:

   a. Drill Fluid Loss Monitoring Program shall insure the following:

      1) Site specific storm water control measures meet the requirements of the FDEP Best Management Practices guidelines. Storm water control measures shall include, as a minimum, onsite silt fence and sandbags or other mechanical means located between the construction operations and any adjacent water body. Storm water control measures shall provide positive containment of uncontrolled fluids on the site resulting from spills or overtopping of drill pits from heavy rainfall and prevent the fluids from reaching adjacent water body, or bodies.

      2) Positive containment of uncontrolled fluids on the site resulting from spills or overtopping of drill pits from heavy rainfall.

      3) Fluids are prevented from reaching the adjacent water bodies, per FDEP ERP permit requirements.

   b. Drill Fluid Loss Monitoring Program shall include the following:

      1) Observations along the drill path during drilling and reaming operations;

      2) Equipment for spill control remediation including, but not necessarily limited to, vac trucks, sand bags, and pumps; emergency spill and leakage control materials and equipment including diapers, absorbent material and other fuel and oil spill containment and cleanup materials;

      3) Drill fluid loss monitoring and containment including downhole verification of annular drill fluid pressure with continual and immediate reading capability of the pressure monitor;

      4) Drill rig instrumentation, including remote-monitoring electronic data recording features, to monitor drill fluid pressures and rates at pits, tanks, pumps, and drill rig operations;

      5) Drill fluid properties measuring equipment; and

      6) Trained field personnel to monitor and maintain the instrumentation.

   c. Provide drill fluid Loss Circulation Materials (LCM's) on site ready for use if needed.

2. Equipment shall be in functional order during all drilling operations.

3. Data shall be provided to the OWNER's representative daily or on request and a complete package of the recorded data will be provided to the OWNER following completion of the drill.

E. Accomplish drilling with fluid-assist mechanical cutting. Use a mixture of bentonite and water or polymers and additives. Use bentonite sealants and water to lubricate and seal the mini-tunnel. Use minimum pressures and flow rates during drilling operation as not to fracture the sub-grade material around and or above the bore.

F. Utilize small diameter fluid jets to fracture and mechanical cutters to cut and excavate the soil as the head advances forward.

G. Install an offset section of drill stem that causes the cutter head to turn eccentrically about its centerline when it is rotating for steering. When steering adjustments are required, rotate the cutter head offset section toward the desired direction of travel and advance the drill stem forward without rotation. Control of tunnel line and grade shall meet the requirements of this section.

H. The mobile drilling system shall be capable of being launched from the surface at an inclined angle and drilling a pilot hole with a diameter appropriate to the size, length, and configuration of the directional drill. The pilot hole shall then be enlarged with reamers as required. Pilot holes are not required on drills 4" and smaller.

I. Develop and provide certified as-built plans, signed and sealed by a Professional Land Surveyor licensed in the State of Florida, in accordance with this Section

1.2 REFERENCE STANDARDS

A. See Section 330502 for casing and carrier pipe diameter requirements.

B. American Association of State Highway and Transportation Officials (AASHTO).

C. Occupational Safety and Health Administration (OSHA).

D. ASTM Standards:

1. ASTM D 3261 Standard Specification for Butt Heat Fusion Polyethylene (PE)Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

2. ASTM F 1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

1.3 DEFINITIONS

A. CONTRACTOR's Construction Drawings shall be defined as drawings by which the CONTRACTOR proposes to construct, operate, build, etc., the referenced item. Submit Construction Drawings for the sole purpose of providing the sufficient details to verify that the CONTRACTOR's work in progress is in accordance with the intent of the design.

1.4 SUBMITTALS

A. The ENGINEER will base the review of submitted details and data on the requirements of the completed work, safety of the work in regards to the public, potential for damage to public or private utilities and other existing structures and facilities, and the potential for unnecessary delay in the execution of the Work. Such review shall not be construed to relieve the CONTRACTOR in any way of his responsibilities under the contract. Do not commence work on any items requiring CONTRACTOR's Construction Drawings or other submittals until the drawings and submittals are reviewed and accepted by the ENGINEER.

B. The CONTRACTOR shall:

1. Submit for review complete construction drawings in plan and profile view identifying details of the proposed method of construction and the sequence of operations to be performed during construction only if deviations from the contract plans are proposed. The drawings shall be sufficiently detailed to demonstrate to the ENGINEER whether the proposed materials and procedures will meet the requirements of the Contract Documents.

2. Submit manufacturer's data for the HDPE pipeline, as outlined in Section 330502 for HDPE product pipe material.

3. Submit the directional boring locating equipment proposed for use, method of locating to be used, and the proposed sequence and method of construction, for approval by the ENGINEER in accordance with the plans and specifications. Include information on how the bore is to be steered, the information recorded, and the pipe location verified for record drawings. Include proposed pilot bore tunnel size, proposed drilling fluid composition and Material Safety Data Sheets (MSDS), proposed viscosities, proposed pre-ream procedures, and final tunnel size. Submit proposed Temporary Traffic Control (MOT) plans for FDOT right-of-way work and for Collier County DOT right-of-way work.

4. Submit a work sequence and schedule. Provide a list of key personnel for the project including superintendent, driller, and tracking specialists.

5. Prior to approval for directional boring, the CONTRACTOR shall submit the names of supervisory field personnel and historical information of directional boring experience.

6. Drill Method Submittal: Submit a minimum of 20 days before starting drilling for review and approval. This submittal shall include the following information:

    a. Drawings. Submit scaled plan showing the following: the work zone equipment configuration at each end of the drill; staging and storage areas; and the location of drill fluid, HDPE pipe, water supply for drilling, cuttings, pit spoil handling areas; and storm water containment measures, devices and locations.

    b. Drilling Procedure. It is recognized and accepted that the CONTRACTOR may need to adjust drilling procedures and equipment as new information is developed during the drill. The intent of this requirement is to provide the CONTRACTOR's initial approach to the project specific subsurface and permit conditions.

    c. Maximum Pipe Pull-back Forces: Submit anticipated maximum pipe pull-back forces based on proposed drill path plan and profile.

    d. Drill Fluid Loss Monitoring/Frac-Out Plan. Submit materials list including bentonite and bentonite additives for the project along with respective MSDS for all materials used on the site.

7. Tracking Coordination Submittal: Provide this submittal a minimum of 20 days prior to drilling. The intent of this submittal is to coordinate the contractor activities with the tracking specialist. Include manufacturer's data sheets and calibration on the tracking equipment and sample data recording log sheets.

8. The CONTRACTOR shall bring to the attention of the ENGINEER any known design issues based on CONTRACTOR's proposed drilling methods and/or procedures. This shall be stated in writing to the ENGINEER no later than the preconstruction meeting.

9. CONTRACTOR's construction drawings shall be submitted on the following items only if deviations from the Contract plans are proposed.

    a. Proposed contingency plans for critical phases and areas of directional drilling.

    b. Any proposed deviations from the Contract construction plans.

    c. Any proposed deviations from the Contract construction specifications.

10. Quality Control Methods. CONTRACTOR shall submit a description of his quality control methods he proposes to use in his operations to the ENGINEER. The submittal shall describe:

a. Procedures for controlling and checking line and grade.

b. Equipment specifications for checking line and grade.

c. Field forms for establishing and checking line and grade.

d. Actual product pipe pullback forces.

1.5 QUALITY CONTROL

A. Low Pressure Air Test. Before the OWNER accepts the installation of each HDD, the CONTRACTOR shall perform a low-pressure air test of each of the HDPE fused pipe string-out cartridges prior to pipe pullback. Low pressure testing of the above ground pipes to be 10 psig for 60 minutes duration, soap all joints to test for leaks, and test pressure to remain within 2 PSI of original applied pressure for acceptance.

B. Annular Pressure Monitoring. Annular pressure shall be monitored and recorded using equipment constructed for that purpose, and shall include a fully-instrumented remote-monitoring data recording package, such as PASON or equal. Annular pressures shall be monitored and recorded in the Annular Pressure Report. Annular pressure shall be recorded during active drilling of the pilot hole and during the first ream pass. The minimum and maximum annular pressure experienced during the joint shall also be recorded; the minimum and maximum pressures are not necessarily the pressures recorded at the start, middle and end of each joint, but shall be maximum values as measured throughout the whole joint. The time of each recorded measurement shall be recorded. The annular pressure measurements shall be indexed to the rod being drilled. The trends of the circulating pressure information will be assessed and corrective action shall be taken when appropriate. Drilling shall be stopped when required to prevent excess annular pressure. Drilling may resume once the cause of the excess down-hole pressure has been identified and corrected.

C. Pipe Pull-back Forces. Force applied to pipe during pull-back shall not exceed the values shown on the Drawings.

D. ENGINEER Authority for Directional Drilling. Directional drilling shall be performed in accordance with approved submittals. ENGINEER will have the authority to interpret and make decisions with respect to drilling activities should specification interpretation be required or unanticipated conditions occur.

1.6 JOB CONDITIONS

A. Safety Requirements

1. Perform work in a manner to maximize safety and reduce exposure of men and equipment to hazardous and potentially hazardous conditions, in accordance with applicable safety standards.

2. Whenever there is an emergency or stoppage of work which is likely to endanger the excavation or adjacent structures, operate a full work force for 24 hours a day, including weekends and holidays, without intermission until the emergency or hazardous conditions no longer jeopardize the stability and safety of the work.

B. Air Quality.

1. Conduct directional drilling operations by methods and with equipment, which will positively control dust, fumes, vapors, gases or other atmospheric impurities in accordance with applicable safety requirements.

C. Geotechnical Investigation

1. Make any geotechnical investigations deemed necessary to determine actual site conditions.

D. Unanticipated Conditions

1. Notify ENGINEER of unexpected subsurface conditions and discontinue work in affected area until notified by ENGINEER to resume work.

2. Take emergency measures as required to protect persons and improvements.

1.7 UTILITY PROTECTION

A. Utility lines and structures indicated on the drawings, which are to remain in service, shall be protected by the CONTRACTOR from any damage as a result of their operations. Where utility lines or structures not shown on the drawings are encountered, the CONTRACTOR shall report them to the ENGINEER before proceeding with the work. The CONTRACTOR shall bear the cost of repair or replacement of any utility lines or structures, which are broken or damaged by their operations.

B. All utilities that may be impacted by the HDD shall be exposed through a “pot-hole” or other opening, in accordance with state utility locate laws and regulations, to ensure, through visual inspection, that the drill, reamer, or product pipe will not cause damage to the utility.

1.8 PERMITS

A. Obtain any and all other permits required for prosecution of the work.

PART 2 PRODUCTS

2.1 GENERAL

A. Refer to Section 330502 for HDPE pipe material.

B. Use a high quality bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil based drilling fluids or fluids containing additives that can contaminate the soil or groundwater will not be considered acceptable substitutes. Composition of the fluid shall comply with all federal and local environmental regulations.

1. Disposal of drilling fluids shall be the responsibility of the CONTRACTOR and shall be conducted in compliance with all relative environmental regulations, right-of-way and workspace agreements and permit requirements.

2. Drilling fluid returns can be collected in the entrance pit, exit pit, or spoils recovery pit. The CONTRACTOR shall immediately clean up any drilling fluid spills or overflows from these pits.

PART 3 EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall be responsible for his means and methods of directional drilling construction and shall ensure the safety of the work, the CONTRACTOR's employees, the public, and adjacent property, whether public or private.

B. Obtain locations of all existing utilities within the horizontal directional drilling project area, whether shown on the plans or not, in coordination with the owners of such utilities. Be responsible for protection of such utilities from damage, and repair of any utilities damaged during or as a result of construction.

C. Anticipate that portions of the drilled excavation will be below the groundwater table.

D. Comply with all local, state and federal laws, rules and regulations at all times to prevent pollution of the air, ground and water.

E. A pilot hole shall be drilled such that the required vertical clearances from ditch, river, or wetland bottoms and utilities and horizontal clearances from jurisdictional or buffer lines and utilities are maintained. If the pilot hole exits in jurisdictional or buffer areas they shall be responsible to grout hole to satisfaction of the environmental regulators and the ENGINEER.

F. The boring hole shall then be reamed to be 120% to 150% oversized than the HDPE product pipe OD. Drilling mud, usually fluidized bentonite clay, shall be used to stabilize the hole and remove soil cuttings. The CONTRACTOR shall monitor and record the reamed hole location and depth at the same intervals as the bore hole.

G. The pull-back operations shall include pulling the entire pipe stringout, in one segment back through the reamed hole and drilling mud. The pull-back operations shall include filling the product pipe with water to reduce the buoyancy and to reduce the pull-back forces required to pull-back the product pipe in the borehole. Proper pipe handling, cradling, bending minimization, surface inspection, and fusion welding procedures (for HDPE) shall be followed in accordance with this specification and Section 330502. Note that anticipated pullback speed is typically 1 to 2 feet per minute. Pull-back operation shall be continuous with no stoppage. If conditions exist where the pull-back cannot be continuous, the Contractor shall submit an alternative plan to the Engineer for review and approval prior to commencing the drill.

H. Any soil borings required for the CONTRACTOR's detailed designs shall be included in the bid. The CONTRACTOR is fully responsible to obtain this information.

I. CONTRACTOR shall be responsible for design and construction of the drill entrance and exit pits. Supports may be required to maintain safe working conditions, ensure stability of the pit, minimize loosening, and minimize soil deterioration and disturbance of the surrounding ground.

J. CONTRACTOR shall be required to locate all utilities prior to start of excavation or drilling. All utilities crossed or approached within 48 inches in a lateral direction shall be exposed to verify location. In addition, visual verification shall be required that the drill, reamer, or product pipe has missed the utility as it passes. Damage to utilities shall be the responsibility of the CONTRACTOR.

K. Immediately upon completion of work, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean, and acceptable condition.

L. "Frac-outs" or "Blow holes" of drilling fluid to the surface shall be immediately reported to the ENGINEER and the OWNER's representative, and shall be cleaned up immediately and the surface area washed and returned to original condition. All drilling fluids, spoils, and separated material shall be disposed of in compliance with federal and local environmental regulations.

M. If, during boring, an obstruction is encountered which prevents completion of the bore in accordance with the design location and specification, and the product pipe is abandoned in place and taken out of service, the failed bore shall be filled with cement grout. The record drawings shall show the failed bore path along with the final bore path on the as-built plans. Should the HDD crossing be lost or damaged while the CONTRACTOR is engaged in the performance of the work, all such lost or damage to the hole shall be borne by the CONTRACTOR. Failure to complete the crossing or partially completed crossing by directional drilling or as approved by ENGINEER and OWNER will result in forfeiture of all payment.

3.2 EQUIPMENT

A. Diesel, electrical, or air-powered equipment will be acceptable, subject to applicable federal and state regulations.

B. Any method or equipment that the CONTRACTOR can demonstrate will produce the specified results will be considered.

C. Employ equipment that will be capable of handling the various anticipated ground conditions. In addition, the equipment shall:

1. Be capable of minimizing loss of ground ahead of and around the machine and providing satisfactory support of the excavated face at all times.

2. Provide a system to indicate whether the amount of earth material removed is equivalent to that displaced by the advance of the machine such that the advance rate may be controlled accordingly.

D. Provide adequate secondary containment for any and all portable storage tanks.

E. Provide down-hole annular pressure monitoring equipment, including remote monitored electronic data recording package, such as PASON, or equal.

3.3 DIRECTIONAL DRILLING DATA

A. Submit daily logs of construction location, progress and events, including observations on the following:

1. Drill thrust pressure.

2. Drill pullback pressure.

3. Annular pressure.

3.4 CONTROL OF THE TUNNEL LINE AND GRADE

A. Construction Control.

1. Establish and be fully responsible for the accuracy of control for the construction of the pipeline to be installed, including structures, tunnel line and grade.

2. Establish control points sufficiently far from the tunnel operation so as not to be affected by construction operations.

3. Maintain daily records of alignment and grade and submit three copies of these records to the ENGINEER. However, the CONTRACTOR remains fully responsible for the accuracy of his work and the correction of it, as required.

4. Check, monitor, and record control for the bore alignment against an above ground undisturbed reference at least once each hour and at least once for each drill rod length interval. CONTRACTOR shall immediately report bore alignment location to ENGINEER after each control check. The location shall be reported based on the approved bore alignment, i.e. horizontal distance and direction from approved bore alignment and vertical distance and direction from approved bore alignment length from the entry or exit point along the bore path, and horizontal distance from the entry of exit point.

5. The pilot hole shall be drilled on bore path with no deviations greater than 10 percent of depth of the bore path as shown on the Drawings or approved CONTRACTOR submittal drawings. In the event that pilot hole deviates from bore path more than 10 percent of depth, CONTRACTOR shall notify ENGINEER and ENGINEER may require CONTRACTOR to pull-back and re-drill from the location along bore path before the deviation. The depth of the bore path is the vertical distance from the drill head to the surface of the earth, i.e. ground, pavement, water surface. Any deviations greater than 10 percent shall be reviewed by the ENGINEER. Excessive deviation may be grounds for rejection of the bore. All minimum vertical separations and clearances must be maintained regardless of the allowable drill path deviations.

6. Pilot hole shall be drilled on bore path with no deviations greater than 10 feet horizontally along the path of the drill. Excessive deviation may be grounds for rejection of the bore. Regardless of the tolerance achieved, right-of-way and easement restrictions shall take precedence over the listed tolerances. Listing of tolerances does not relieve CONTRACTOR from responsibility for safe operations or damage to adjacent utilities and structures.

7. Record survey of the pilot hole shall be submitted in State Plane Coordinate system using NAVD 1988 datum.

3.5 INSTALLATION OF TRACKING/LOCATING WIRE

A. Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two (2) separate and continuous conductive tracking (tone wire) materials, either externally, internally or integral with the product. The ends of the tone wire shall be stubbed up through a one-inch (1") diameter SCH 80 PVC pipe which shall be installed in the concrete valve pad adjacent to the valve box on both sides of the directional drill. Use either a continuous green-sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Conductors must be located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp, or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of three (3) inches overlap. Test conductors for continuity. Each conductor that passes must be identified as such by removing the last six (6) inches of the sheath. No deductions are allowed for failed tracking conductors. Conductor ends must be stubbed out through the PVC conduit at the isolation valve box at the terminus of the drill.

3.6 DEWATERING

A. Where such effort is necessary, cost for groundwater control during the course of the directional drilling work shall be included in the unit contract price for the work.

B. Dewatering required during the course of the project to lower water table, to remove standing water, surface drainage seepage, or to protect ongoing work against rising waters or floods shall be considered incidental to the work being performed.

3.7 DISPOSAL OF EXCESS MATERIAL

A. Dispose of excess material, including, but not necessarily limited to, drill fluid, casing water, cuttings and pit spoil, off of the project site.

B. Non-hazardous waste meeting the requirements of a Class III Waste shall be disposed of in a FDEP permitted Class III Landfill.

C. Non-hazardous waste meeting the requirements of a Class I or II waste shall be disposed of in a FDEP permitted Class I or Class II landfill.

3.8 DOCUMENTATION REQUIREMENTS OF RECORD DRAWINGS

A. Provide the ENGINEER a complete set of As-Built Plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract plans and include utility and/or topography plan and profile, cross-section, boring location and subsurface conditions as directed by the ENGINEER. As-Built Plans shall show appropriate elevations and be referenced to two permanent benchmarks as shown on the drawings, and in a State Plane grid system and NAVD 88 datum, as designated on the Contract plans. As-Built Plans shall be same scale in black ink on white paper, of the same size and weight as the Contract Drawings. Submittal of electronic plans data in addition to hard copy plans is required and shall be compatible with the industry standard CAD software. As-Built Plans shall be signed and sealed by a Professional Land Surveyor licensed in the State of Florida. Specific plans content requirements include but may not be limited to the following:

1. The Contract plan view showing the center line location of each facility installed, or installed and placed out of service, to an accuracy of 0.1 feet at the ends and other points physically observed in accordance with the bore path report.

2. As directed by the ENGINEER, provide a plan and profile for each bore path. Show the ground or pavement surface and center line elevation of each facility installed, or installed and placed out of service, to an accuracy of within 0.1 feet at the ends and other exposed locations. Each bore path shall be depicted on the Contract plans using the same datum as the Contract plans.

3. Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

4. Include bore notes on each plan stating the final bore path diameter, product pipe diameter and type, drill entry and exit angles, and installed bore path radius for each pipeline installed by HDD.

3.9 CLEANING

A. General. Directional drilling operation site cleaning shall meet the requirements of Section 017423 Cleaning.

B. Spillage. Clean spillage, on adjacent streets, from construction operations on a daily basis, if spillage occurs.

END OF SECTION

SECTION 330523.16

JACKING, AUGERING AND MINING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Pipeline installation in casing pipe beneath highways, railroads and other structures may be installed by jacking and augering or by jacking and mining.

B. Related Work Specified in Other Sections Includes:

1. Section 033100 – Concrete, Masonry, Mortar and Grout

2. Section 312316 – Excavation - Earth and Rock

3. Section 314000 – Shoring, Sheeting and Bracing

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM C 76 - Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
2. ASTM A 139 - Specification for Electric-Fusion (Arc) -Welded Steel Pipe (NPS in 4 in. and Over)
3. OSHA PL-91-596 - Occupational Safety Health Act of 1970 Public Law 91-596

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. Working drawings of the jacking pipe, jacking frame, jacking head, reaction blocks, sheeting, including design calculations and the complete jacking installation.

2. Necessary permit applications and approvals by the appropriate authority.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all products and materials as specified in Division 1.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: Use the following for casing piping.

1. Spiral Weld or smooth wall steel pipe, meeting the requirements of ASTM A 139, Grade B. The minimum casing pipe size shall be determined by maintaining a minimum of a four inch (4") difference between the carrier pipe's largest outside diameter (including restraints) and the casing pipe's inside diameter. The wall thickness shall be a minimum of .25 inches for up to twenty inch casings, .312 inches for twenty-four to thirty-six inch casings, and .50 inches for forty-two inch and larger casings. For special design considerations, obtain approval from Collier County Utilities.

B. Fill Material: Use fill material consisting of 1-1/4 pounds of Bentonite per gallon of water during jacking to fill any voids between pipe and the earth.

PART 3 EXECUTION

3.1 INSTALLATION

A. Casing Pipe:

1. Install all casing pipe in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1.

2. The provisions of this section shall represent the minimum standards for the installation of casing pipe for sewer force main or water main pipeline.

3. Install all sewer force mains and water mains in a casing to be placed under all present and future Collier County Department of Transportation & Engineering roadways. Conform steel casing procedures to the requirements of Collier County DOT. All work and materials shall be subject to inspection by DOT. Restore the Department's property and surface conditions to the original condition in keeping with the Department's specifications and standards.

4. In general, install all underground sewer force mains and water mains crossing all existing Collier County roadways, Florida State Highways and railroads within steel casing pipe extending at least five (5) feet beyond pavement edge. Obtain specific crossing requirements in advance from the authority having jurisdiction.

5. Submit the necessary permit documents and data to the appropriate authority and receive approval thereof. Maintain traffic on the roadway and

keep all workmen and equipment clear of the travelway during the work. Comply with all Federal, State and County safety regulations and any permit(s).

6. Locate casing pipes crossing under State and County roadways at suitable approved alignments in order to eliminate possible conflict with existing or future utilities and structures with a minimum 36 inches depth of cover between the top of the casing pipe and the surface of the roadway. Conduct boring operations in such a manner as not to create hazardous conditions or impede traffic flow.

7. For casing pipe crossing under roadways, railroads, or other installations not within the jurisdiction of Collier County, comply with the regulations of said authority in regard to design, specifications and construction. State Highway casing installations shall be as specified in the FDOT, "Utility Accommodation Guide", and for railroads, the American Railway Engineering Association, Part 5, Section 5.2, "Specifications for Pipelines Conveying Nonflammable Substances", shall be applicable. However, in no case shall the minimum casing pipe diameter and wall thickness, for a specific carrier pipe size, be less than that specified above.

8. Use a simultaneous and continuous installation of any dry boring and jacking operation until the casing pipe is in final position. Maintain correct line and grade. Use full-ring welded add-on sections of casing pipe, developing water-tight total pipe strength joints. Use pipe lengths of at least 18 feet. Casing welders shall be certified welders. A copy of the certification shall be obtained by the Engineer of Record and given to the County Manager or designee prior to the welding procedure. Produce no upheaval, settlement, voids, cracking, movement or distortion of the existing roadbed or other facilities during the casing installation. Fill any voids with 1:3 portland cement grout at sufficient pressure for roadway protection. Following placement of the carrier pipe within the steel casing, install masonry plugs at each open end. Plugs shall be suitable for restraining the external earth load, while allowing internal drainage.

9. Mechanically bore casing pipe holes through the soil by a cutting head on a continuous auger mounted inside the pipe. Extend the auger a maximum of 2 inches beyond the end of the casing pipe to preclude formation of voids outside the pipe shell. Auger should not be of a greater diameter than the outside diameter of the encasement.

10. Adequately protect the casing pipe to prevent crushing or other damage under jacking pressures. Provide backstops for adequately distributing the jack thrust without causing deformation of the soil or other damage. Replace damaged casing pipe if not installed; however, if installed, abandon encasement pipe in place, suitably plug, and install an alternate installation, as directed by the County Manager or designee.

11. In the event of obstruction, withdraw auger, cut and cap excess pipe and fill void with 1:3 portland cement grout under sufficient pressure

12. Excavate and maintain required boring or jacking pits or shafts to the minimum dimension. Adequately barricade, sheet, brace and dewater excavation as required.

13. Deviation from approved jack and bore methods and above specifications is grounds for work stoppage and line replacement at the expense of the CONTRACTOR.

B. Casing Spacers:

Use Stainless Steel Casing Spacers (see County Approved Product List, Appendix F) being on center and restrained as the preferred method for installing the carrier pipe. Use skids installed with 6 ft to 10 ft spacing as recommended by the manufacturer. After the carrier pipe has been tested for leakage, block the casing ends with either an 8" wall of brick masonry with a weep hole installed near the bottom of each wall or casing spacer end seals (see County Approved Product List, Appendix F) with stainless steel bands.

C. Augering: Conduct augering with the proper equipment and procedure such that the carrier pipe and the casing pipe can be installed to the grades specified without disturbing the adjacent earth. Submit all equipment and procedures for prior approval.

D. Hand Mining: Conduct hand mining only in casings that are sufficiently large enough to permit such operation. Provide adequate fresh air supply within the casing pipe and conduct all operations in accordance with the requirements of the U.S. Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act 7 1970 (PL-91-596).

E. Jacking Pit: Make the jacking pit of adequate length to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Make the pit sufficiently wide to allow ample working space on each side of the jacking frame. Make the depth of the pit such that the invert of the pipe, when placed on the guide frame, is at the elevation desired for the completed line. Provide excavation in conformance with Section 312316.

F. Sheeting: Sheet the jacking pit tightly and keep it dry at all times. Conform sheeting to Section 314000. Have complete design calculation for sheeting the jacking pit sealed and submitted by a Professional Engineer registered in the State of Florida.

G. Jacking Frame: Use a jacking frame that applies a uniform pressure over the entire pipe wall area of the pipe to be jacked.

H. Reaction Blocks: Use reaction blocks designed to carry the thrust of the jacks to the soil without excessive soil deflection and in such a manner as to avoid any disturbance of adjacent structures or utilities.

I. Operation: Use hydraulic jacks in the jacking operation. Use extreme care to hold the pipe to exact line and grade. Advance the excavation at the heading manually or with an auger. Do not allow the advance to exceed one foot ahead of the casing pipe. Make every effort to avoid loss of earth outside the casing.

J. Safety Railing: Provide a safety railing all around the top of the pit at all times.

K. Restore property and surface conditions to the original condition in accordance with Collier County DOT specifications and standards.

L. Carrier Pipe:

Utilize joint restrained pipe for the entire water main or force main pipe length inside the casing. Use special supporting of the carrier pipe within the casing with a design approved by the County Manager or designee.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 331200

WATER VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and install complete and ready for operation all valves and appurtenances as shown on the Drawings and as specified herein.

1.2 REFERENCES

A. Codes, specifications, and standards referred to by number or title form a part of this Section to the extent required by the references to codes, specifications, and standards. Latest revisions, as of the date of bid opening, apply, unless otherwise noted on the Drawings or specified in this Section.

B. Standards

Designation	Title
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
ANSI/AWWA C500	Gate Valves
ANSI/AWWA C509	Resilient-Seated Gate Valves 3 through 12 NPS, for Water and Sewage Systems
ANSI/AWWA C512	Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service
ANSI/B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 125
ANSI/B16.3	Malleable Iron Threaded Fittings, Class 150 and 300
ANSI/B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
ASTM A276	Specification for Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A231	Specification for Steel Casting, Austenitic, for High-Temperature Service

ASTM A743	Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, and Nickel-Base Corrosion-Resistant for General Application
MSS SP-60	Connecting Flange Joint Between Tapping Sleeves and Tapping Valves

1.3 DEFINITIONS

A. References to valve sizes on the Drawings and in the Specifications are intended to be nominal size, and shall be interpreted as nominal size.

1.4 SUBMITTALS

A. General: as specified in:

1. General Conditions;

2. Supplementary General Conditions;

1.5 QUALITY ASSURANCE

A. Testing: Test valves as specified in this Section.

PART 2 PRODUCTS

2.1 GENERAL:

A. All valves and appurtenances shall be of the size shown on the Drawings and if possible all equipment of the same type shall be from one manufacturer.

B. All valves and appurtenances shall have the name of the maker and the working pressure for which they are designed cast in raised letters on the body.

C. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

2.2 MANUFACTURERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

2.3 DESIGN

A. Resilient, Wedge or Gate Valves and Boxes

1. Valves for pipe less than 2 inches in diameter shall conform to the requirements of AWWA C509 (latest revisions) and shall be cast iron, single wedge, non-rising stem, screwed bonnet, 125 pounds S.P., 200 pounds W.O.G with stuffing box repackable under pressure and all parts renewable.

Ends shall be as shown or indicated on the drawings. For approved air release line valves, bacterial sampling station line valves, curb stops, corporation stops, and ball valves see County Approved Product List, Appendix F.

2. Resilient, wedge or gate valves 2 inches in diameter and larger shall be ductile iron body, non-rising stem, bronze mounted gate valves, mechanical joint conforming to requirements of the AWWA C515 and shall be provided with a 2 inch square operating nut with the word “open” and an arrow cast in the metal to indicate direction. Valves shall be vertical resilient, wedge, or gate type and shall turn to the left (counter clockwise) to open. The wedge or gate shall be ductile iron per ASTM A536, minimum 65,000-psi strength and, completely encapsulated with urethane rubber, permanently bonded to the wedge or gate to meet ASTM test for rubber metal bond, ASTM D429. The valve stems for non-rising stem assemblies shall be cast bronze with integral collars in full compliance with AWWA. OS & Y stems shall be on bronze bar stock. The NRS stem stuffing box shall be the O-ring seal type with two rings located above thrust collar; the two rings shall be replaceable with valve fully open and subjected to full rated working pressure. The minimum safe working pressure shall be 200 psi. All valves thirty inches (30”) or larger shall have a concrete slab placed under the valve to help distribute the total weight of the valve and reduce line sagging. The concrete slab shall have 6”x6” 10/10 welded wire mesh, have lifting eyes, constructed using 3,000 psi concrete, be six inches (6”) thick, and sized according to the following table:

Valve Size	Length	Width
30”	42”	30”
36”	48”	36”
42”	54”	42”
48” – 54”	60”	48”
60” – 66”	78”	60”

3. There shall be two low torque thrust bearings located above and below the stem collar. The stem nut shall be independent of wedge and shall be made of solid bronze. There shall be a smooth unobstructed waterway free of all pockets, cavities and depressions in the seat area. The body and bonnet shall be coated with fusion-bonded epoxy both interior and exterior. Each valve shall have the manufacturers name, pressure rating and year manufactured cast on body. The valve shall be designed and tested to be opened and closed under a differential pressure of at least twice the working pressure.

B. Valves for Buried Service

1. Valves for buried service shall meet all the requirements as specified herein but shall have mechanical joint ends and stainless steel cover bolts.

2. All buried valves shall have cast-iron two-piece valve boxes (see County Approved Product List, Appendix F). Valve boxes shall be provided with suitable heavy bonnets to extend to such elevation at the finished grade surface as directed by the ENGINEER. The barrel shall be two-piece, screw type. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling, shall be designed so as to prevent the transmission of surface loads directly to the valve or piping, and shall be complete with cast iron covers. Covers shall have "WATER" cast into the top. The covers shall be so constructed as to prevent tipping or rattling. All valve boxes located in paved roadways or sidewalks shall have locking covers.

3. Where valves are located out of pavement, the boxes shall be adjusted to finished grade with a concrete collar as shown in the Details.

4. Valve boxes shall be of the heavy duty, traffic bearing cast iron, adjustable screw type with a drop cover. The valve box assembly shall consist of a bottom section, top section and cover which is cast from gray iron, formulated to ASTM specification A-48 latest revision, minimum tensile of 21,000 psi and shall be free from blowholes, shrinkage or other imperfections not true to pattern. The shaft size shall be 5 1/4" and the adjustable length shall be from 18" to 36". The wall thickness shall be 1/4". The weight of the assembly shall be 61 pounds $\pm$ 2 pounds, with the cover weight being a minimum of 13 pounds.

5. The name of the manufacturer and foundry of origin shall be cast into each of the components of the assembly in legible form. The assembly shall be suitable for highway traffic wheel loads of 16,000 pounds and shall withstand a proof load test of 25,000 pounds without failure or permanent deflection.

C. Check Valves

1. All check valve bodies shall be cast iron per ASTM A126 Class B, having integral (not wafer) flanges.

2. The seat shall be centrifugally cast bronze with an O-ring seal and be locked in place with stainless steel lock screws and be field replaceable, without the use of special tools.

3. Swing check valves shall have a shaft of single and continuous stainless steel, extending both sides of the body with a lever and weight. The air cushion cylinder, when specifically required, shall be constructed of corrosion resistant material and the piston shall be totally enclosed within the cylinder and not open at one end. The air cushion cylinder assembly shall be externally attached to either or both sides of the valve body and shall permit adjustability to cushion the closure of the valve. Cushioning shall be by air trapped in the cushion cylinder, which shall be fitted with a one-way adjustable control check valve to cushion disc contact to the seat at

the shut-off point. The bottom cylinder head shall be swivel mounted and not rigid to follow the change of force angles as the lever raises or lowers to open or close the check valve. Valve shall prevent backflow on normal pump shut off or power failure, at zero velocity and be watertight. The disc shall be cast iron utilizing a double clevice hinge connected to a ductile iron disc arm. The disc arm assembly shall be suspended from a stainless steel shaft, which passes through a seal retainer on both sides of the valve body.

4. Rubber flapper swing valves shall have a heavily constructed cast iron body and cover. The body shall be long pattern design (not wafer) with integrally cast-on end flanges. The flapper shall be Buna-N having an O-ring seating edge and be internally reinforced with steel. Flapper shall be captured between the body and the body cover in a manner to permit the flapper to flex from closed to full open position. Flapper shall be easily removed without the need to remove the valve from line. The check valves shall have full pipe size flow area. Seating surface to be on a 45° angle requiring the flapper to travel only 35° from closed to full open position for minimum head loss. Valve has non-slam closure characteristics. Flapper shall create an elastic spring effect to assist the flapper to close against a slight head to prevent or minimize slamming. Valve shall be designed for 175 psi working pressure for water. The valve shall be suitable for buried service.

5. Valve exterior to be painted with Red Oxide Phenolic Primer Paint as accepted by the FDA for use in contact with Potable Water. Materials shall be certified to the following ASTM specifications:

   a. Body, cover & disc - Cast Iron - ASTM A126, Class B

   b. Disc Arm - Ductile Iron - ASTM A536

   c. Seat - Aluminum Bronze or Stainless Steel - ASTM B148, ASTM A276

   d. Disc Seat - Buna-N or metal

   e. Cushion cylinder - Corrosion-resistant Commercial material

D. Backflow Prevention Devices

1. Backflow prevention devices shall be reduced pressure principle assemblies and shall be USC approved, and shall meet all requirements of the Collier County Cross-Connection Control/Backflow Prevention Ordinance, as then amended. Refer to Section 3, Utility Detail Drawings.

E. Combination Air Release Valves for Potable Water and Non-Potable Irrigation Systems

1. Air release valves shall exhaust large quantities of air during the filling of a pipeline or vessel. The valve shall be capable of venting air up to sonic

velocity without blowing shut; closing only after all the air has been vented. The valve shall continue to release small quantities of air under pressure as often as needed to keep the system free of accumulated air. The valve shall automatically open to allow air to re-enter during draining or whenever a negative pressure occurs.

2. Combination air valves shall be of the size shown on the plans and conform to the requirements of AWWA C512 and be of the “Kinetic” design capable of exhausting air at up to sonic velocity without blowing shut.

3. Body and cover shall be ASTM A126 Class B cast iron with stainless steel floats and replaceable seats of Buna-N or other suitable material. Internal linkage mechanism shall be 18-8 stainless steel. Plastic or bronze components are not acceptable. Air release orifice shall be suitable for 300 PSI maximum working pressure. Screens shall be installed on the opening of all air release valves.

4. Valves 3-inch size and smaller shall have a threaded inlet connection, and larger valves shall have a flanged inlet faced and drilled per ANSI B16.1 Class 250.

5. Valves shall have a threaded outlet on valves to 4-inch size and a protective cowl on larger sizes.

6. 1 inch NPT inlet and outlet shall be provided, unless otherwise specified on the drawings.

7. Connections from corporation stops to air release valves shall be brass for rigidity.

F. Tapping Valves and Sleeves

1. All tapping sleeve and valve assemblies shall meet the requirements of AWWA Standard C500, latest revision. Cast iron tapping sleeves or stainless steel wrap-around sleeves, and cast iron valves shall be used to make live taps into the existing water mains where shown on the drawings. Flanges must conform to AWWA C207 Class D ANSI 150# drilling. Mechanical Joint (MJ) tapping sleeves are also acceptable. All bolts and nuts shall be stainless steel.

2. CONTRACTOR shall verify type of existing main prior to ordering. The tapping valve shall have an inlet flange to match the sleeve and a mechanical joint outlet for connection to water main pipe. Tapping valve shall meet the requirements for gate valves specified herein. The sleeve shall have provisions for a tap and shall be pressure tested at 150 psi for a minimum of 30 minutes prior to tapping.

G. Service Connection Materials

1. Service Saddles (see County Approved Product List, Appendix F)

    a. Service saddles or fittings shall be used with taps to all types of pipe. Gasket shall be cemented in place and confined in a retaining groove. Saddles shall be cast iron saddles with double brass straps.

    b. Tapping sleeves and valves shall be used for all taps.

2. Water Meters

    a. Potable Water Meters: Potable water meters provided for service connections to the COUNTY water distribution system shall be designed to accept an encoder compatible with the COUNTY Automatic Meter Reading (AMR) system. The COUNTY will install the meter and the AMR encoder unit on 2" and smaller meters. AMRs 3" and larger shall be turned over to the technician doing the full bore flush. All potable water meters larger than 2" shall be installed above ground. These meters shall be equipped with a backflow preventer and installed by the CONTRACTOR at his expense, including the AMR encoder unit. The type of backflow device utilized for potable lines shall be on the Water Department approved list of backflow preventers, Appendix G. All potable water meters 3" or greater shall be purchased by the owner and installed by the CONTRACTOR. The master meter assemblies shall be built in accordance with the design details in Section 3 – Utilities Detail Drawings. The location of all meters shall be clearly shown on the construction plans.

    b. Non-Potable Irrigation Water Meters: Non-potable water meters provided for service connections to the COUNTY non-potable reclaimed distribution system shall be designed to accept an encoder compatible with the COUNTY Automatic Meter Reading (AMR) system. The COUNTY will install the meter and the AMR encoder unit on 2" and smaller meters. All non-potable water meters 3" or greater shall be purchased by the owner and installed by the CONTRACTOR. The master meter assemblies shall be built in accordance with the design details in Section 3 – Utilities Detail Drawings. The location of all meters shall be clearly shown on the construction plans.

3. Corporation Stops for Service Connections

    a. Corporation stops (see County Approved Product List, Appendix F) shall meet the requirements of AWWA C800; ends AWWA thread x compression, CTS.

4. Water Service Tubing

a. Water service connection tubing shall be blue polyethylene municipal service tubing as shown on Utility Detail Drawing W-12.

b. Polyethylene tubing shall meet the requirements of AWWA Standard C901. Polyethylene tubing shall be 3406 polyethylene.

5. Polyethylene Service Tube Stiffeners

a. A solid ring, stainless steel insert shall be installed with each and every compression connection made with polyethylene tubing.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all valves and appurtenances in accordance with manufacturer's instructions and in the locations shown, true to alignment and rigidly supported. Repair any damage to the above items to the satisfaction of the ENGINEER before they are installed.

B. After installation, test all valves and appurtenances for at least one hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, repair it to the satisfaction of the ENGINEER.

C. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, check all plans and figures, which have a direct bearing on their location and assure the proper location of these valves and appurtenances during the construction of the structures.

D. Flanged joints shall be made with stainless steel bolts.

E. Buried mechanical joints shall be made with COR-TEN bolts.

F. Prior to assembly of split couplings, thoroughly clean the grooves as well as other parts. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, center the gasket properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, tighten the nuts until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.

G. Prior to the installation of sleeve-type couplings, thoroughly clean the pipe ends for a distance of 8". Soapy water may be used as a gasket lubricant. A follower

and gasket, in that order, shall be slipped over each pipe to a distance of about 6" from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. Insert the other pipe end into the middle ring and bring to proper position in relation to the pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flaires. After the bolts have been inserted and all nuts have been made up finger-tight, uniformly tighten diametrically opposite nuts progressively all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

H. Carefully inspect each valve, open it wide and then tightly close it and test the various nuts and bolts for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Gate valves, unless shown otherwise, shall be set with their stems vertically above the centerline of the pipe. Remove and replace any valve that does not operate correctly.

I. Carefully center valve boxes over the operating nuts of the valves so as to permit a valve wrench or key to be fitted easily to the operating nut. Valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support flange as shown in Section 3, Utility Detail Drawings. The valve box shall not transmit surface loads to the pipe or valve. Exercise care to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug and reset. Before final acceptance of the work, adjust all valve boxes to finish grade. Valve extension stems or risers shall not be used.

3.2 AIR RELEASE VALVE INSTALLATION

A. Prior to pressure testing a pipeline, all air release valve assemblies on that pipeline shall be installed.

3.3 SHOP PAINTING

A. Ferrous surfaces of valves and appurtenances shall receive a coating of epoxy in accordance with AWWA Standard C550 and meets or exceeds all test requirements including the Food and Drug Administration Document Title 21 of the Federal Regulations on Food Additives, Section 175.000 entitled "Resinous and Polymeric Coating"; Impact Test Requirement in accordance with the ASTM D2794.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 331619

HYDRANTS

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Furnish and install fire hydrants where shown on the Drawings or directed by the ENGINEER.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 033100 – Concrete for Non-Plant Work

B. Section 331200 – Water Valves and Appurtenances

1.3 QUALITY ASSURANCE

A. Install hydrants to meet current requirements of Collier County Utilities.

B. Provide manufacturer's certificate those products meet or exceed minimum requirements as specified.

1.4 SUBMITTALS

A. Submit manufacturer's certificates on conformance.

B. Shop Drawings: Submit manufacturer's drawings and data sheets for material to be supplied under this Section. Indicate sizes and types to be installed.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. During loading, transportation and unloading, exercise care to prevent damage to materials.

B. Handling: Fire hydrants should be unloaded carefully. The hydrant should be carefully lowered from the truck to the ground, not dropped. Only hoists and slings with adequate load capacity to handle the weight of the hydrant shall be used.

C. Storage: Hydrants should be stored in the fully closed position to prevent entry of foreign material that could cause damage to the seating surfaces. Whenever practical, hydrants should be stored indoors. If outside storage is required, means should be provided to protect the operating mechanism. In outside storage, parts and flanges should be protected from the weather and foreign materials.

PART 2 PRODUCTS

2.1 FIRE HYDRANTS

A. Fire hydrants shall be of the dry barrel, compression type conforming to AWWA C502 “Standard for Dry-Barrel Fire Hydrants” and additional requirements as set forth herein.

B. Hydrant shall have break away upper sections capable of ready replacement without loss in the event of traffic damage. Each hydrant shall have a 6" bottom inlet connection and valve opening at least 5-1/4 inches in diameter. Hydrants shall have a national standard pentagon 1.5 inch, point to flat operating nut and turn to the left (counter clockwise) to open. Each hydrant shall be fitted with one 4-1/2-inch pumper connection and two 2-1/2 inch hose connections, both having threads that conform to the Fire Division Standard for the area. Hose caps shall be chained (unless specified without by appropriate fire control district) to the hydrant barrel and fitted with nuts similar to the hydrant operating nuts. Each hydrant shall have a barrel of sufficient length to bring the bottom of the 6" pipe connection 3 feet below the surface of the finished ground. Each hydrant shall have breakaway flanges and be made in at least two sections bolted together. All interior working parts of the hydrant shall be removable from the top of the hydrant to allow repairs without removing the hydrant barrel after it has been installed. Hydrants shall have renewable O-ring stem seals. Hydrant barrels shall be painted AWWA Safety Yellow (lead free) or as specified by appropriate fire control district. They shall be designed for a working pressure of 150 psi.

C. Hydrant shall have no drain ports. If ports exist, they shall be plugged with a threaded plug.

D. Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stops shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir with O-ring seals.

E. Hydrants shall be designated for 150 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drain shall function and there shall be no leakage into the bonnet.

F. Hydrants shall be of the years manufacture when construction commenced.

G. Acceptable models, see Appendix F, County Approved Product List.

PART 3 EXECUTION

3.1 INSTALLATION

A. Set hydrants plumb and in true alignment with mains. Utilize restrained joints as shown in the Collier County Standard Details. Carefully backfill around hydrants so as not to disturb the hydrant and thoroughly compact backfill so as to support the hydrant securely. The hydrants clearance measured from finish grade to the center of pumper connection shall be based upon manufacturers recommendations.

B. Hydrants shall be located a minimum of 4 feet from the curb in urban areas, and a minimum of 14 feet from the edge of pavement in rural areas, and in accordance with local Fire Department requirements. A gate valve shall be provided at the connection to the main as shown in the Standard Details.

C. Hydrants requiring a lead to cross a roadway shall have a valve on both sides of the road. The valve nearest the hydrant must be within 20 feet of the hydrant. This requirement is not applicable to privately owned and operated water distribution systems.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333200

PUMP STATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK FOR COUNTY PUMP STATIONS

A. This section includes the following items for COUNTY owned and operated pump stations: wet wells, access covers, pumps, wet well equipment, valves, emergency bypasses, pump control panels, pump controller, antenna subsystem, disconnects, electric meters, electric service, pump wiring, lightning arrestors, and odor control systems.

B. Conform all pump stations to the specifications, Utilities Detail Drawings, and latest National Electrical Code (NEC) requirements.

C. When a pump station has a peak design flow coming into the station greater than 500 gpm, contact Public Utilities Planning and Project Management Department for specifications.

D. For systems eligible to be taken over by the COUNTY, provide enough room to operate and maintain all water and wastewater systems in a simple and non-awkward manner. If a pump station pump needs to be replaced, provide enough room for the COUNTY to readily remove the pump, and to do so without interfering with traffic. To be eligible for conveyance to the COUNTY, the pump station easement area must be designed to 30'X30', or twice the depth of the wet well by twice the depth of the wet well, whichever is larger, as defined in the Collier County Standards and Procedures Ordinance, Subsection 7.7(c), as amended or superseded.

E. Schedule required COUNTY inspections of (1) pump station installation prior to cover-up and (2) pump station start-up.

F. Install all fencing and gates around the pump station in accordance with Section 323113.

G. Communications: When proposing fiber-optic connectivity at pump stations, a letter of availability shall be requested to the COUNTY for review and approval.

H. Elevated platforms shall be provided where necessary to provide access to wet wells, pump station control panels, electrical devices and panels, generators, and bypass equipment. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 SCOPE OF WORK FOR PRIVATE GRINDER PUMP STATIONS

A. This section includes the following items for privately owned and operated grinder pump stations: wet wells, pumps, impeller, valves, level control, alarm, well equipment, pump control panels, pump controller, disconnects, and sloping requirements for private pump stations.
B. All maintenance tasks for private grinder pump stations must be possible without entry into the grinder pump station per 29 CFR 1910.146 (OSHA Permit-Required Confined Spaces).
C. The grinder pump station shall be free from electrical and fire hazards as required for functionality in a residential environment. The completed assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. (UL) to be safe and appropriate for the intended use. UL listing of components of the grinder pump station, or third-party testing to UL standard is not acceptable.
D. All private grinder pump stations shall bear the seal of NSF International to show that station meets accepted standards for plumbing equipment in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications.
E. Private pump service sewers shall conform to applicable parts of the Florida Building Code and the COUNTY's Design Criteria. Where the COUNTY's standards are more restrictive than the Florida Building Code, the COUNTY's standards shall prevail.
F. Private pump station force main connections must follow the COUNTY's requirements for testing.
G. Schedule required COUNTY inspections of (1) testing of force main connection prior to cover-up and (2) pump station start-up.
H. Prior to the start-up inspection, the following documentation must be furnished to the COUNTY via electronic mail or a secure electronic file transfer service:
    1. As-built drawing (in both PDF and DWG formats) showing the completed pump station and force main locations, sizes, materials, and elevations along with the location of all valves, the pump-out connection, the control panel, and the generator receptacle on the property and
    2. A pump test curve from the pump manufacturer.

PART 2 EQUIPMENT

2.1 MATERIALS FOR COUNTY PUMP STATIONS

A. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

B. Wet Well: The concrete structure shall consist of precast, reinforced sections conforming to ASTM C76 and/or ASTM C478. 8-foot diameter wet wells shall have a minimum wall thickness of 8 inches. Wall thickness for larger wet wells shall conform to ASTM standards for wall thickness, but shall not be less than 8 inches in any case. The minimum inside diameter for all wet wells eligible to be owned and maintained by Collier County shall be 8 feet. As a deviation, a 6-foot

diameter wet well can be utilized if the ENGINEER can demonstrate that the wet well is sufficient hydraulically and the developer can demonstrate that the pump station shall be used for the perpetual and exclusive use of that development. For pump stations that will not be owned and maintained by Collier County, the ENGINEER shall set the design specifications for the wet well, provided such design does not in any way endanger the health, safety and/or welfare of the public. Base riser section shall be monolithically cast with the base slab. All concrete shall utilize Type 2 cement and have a minimum compressive strength of 4000 psi at 28 days. On new construction, if more than one hole is abandoned and required to be cemented in, provide a new wet well barrel section. Reinforcing steel for all wet well structures should be sized by the unit manufacturer and verified by the ENGINEER. All connections to the wet well for gravity sewer piping shall be equal to those for manholes as described in Section 333913. Factory double coat all exterior surfaces with an acceptable bituminous or epoxy sealer a minimum of 18 mils thick. Seal all riser joints utilizing plastic joint sealing compound (see County Approved Product List, Appendix F). Reinforcement and top slab thickness shall be specified by the design ENGINEER for H-20 loadings in all cases. Minimum reinforced slab thickness shall be 8 inches. Typical standards for wet wells are available in the Collier County Standard Details. The ENGINEER shall be responsible for designing all wet well structures to overcome buoyancy forces exerted on the installed structure. Coat all wet well interiors with an acceptable field applied internal protection (see County Approved Product List, Appendix F) in accordance with Section 099723.

C. Above-Ground Valves and Piping: Above-ground valves and piping must be positioned so that it does not lie above any gravity sewer line entering the wet well, unless field conditions dictate otherwise and the COUNTY has granted prior approval. Typical above-ground valves and piping standards are shown in the Collier County Standard Details. All valve and flange bolting shall be Type 316 stainless steel.

D. Pumps: Sewage pumps (see County Approved Product List, Appendix F) shall be of the submersible type suitable for operation in sewage of temperature not exceeding 115 degrees Fahrenheit. Pump head curves and design specifications for each application proposed shall be submitted for review and approval within the ENGINEER's hydraulic design report. All pumps shall be three-phase unless approved by a Utility Deviation Form. At least one (1) pump in each wet well shall be equipped with an opening in the volute with a bolted cover for a mix-flush system (see County Approved Product List, Appendix F).

E. Access Covers: Access covers for pump station wet wells shall be above the 100-year flood elevation unless the structure is located within a documented velocity and tidal flood zone, and elevation differentials prohibit such installation. In such cases, watertight access covers shall be utilized. The ENGINEER shall provide shop drawings of such access covers for review and approval by THE County Manager or designee prior to use. Access covers shall be constructed of diamond plate aluminum sheets and aluminum structural members. All access covers shall be attached to aluminum angle frames with stainless steel hinges and fasteners. Angle frames shall be firmly anchored into the top concrete slab of the structure.

All access covers shall be equipped with a ratchet-type restraint mechanism to prevent accidental closing of the cover and torsion bar or spring assist type openers. Assist openers shall be manufactured of stainless steel. Access covers shall be designed for H-20 loadings.

F. Wet Well Equipment: All pump discharge piping shall be HDPE pipe and shall be in conformance with pipe utilized for wastewater force mains. All fittings shall be HDPE fused, flange/flange, or Uni-Flange connections. All nuts, bolts, fasteners, brackets, pump guide rails and other hardware located inside the wet well shall be 316 stainless steel. A pump out with a screened vent shall be provided on all installations, with the pipe extended through the wet well lid (see details). Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wetwells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present shall comply with the National Electrical Code (NEC) requirements for Class I Group D, Division 1 locations. Electrical equipment located in wet wells shall be suitable for use under corrosive conditions.

G. Valves: Discharge piping for each pump shall be equipped with a weighted check valve and plug valve. A tee with an isolation plug valve, equipped with a quick coupling (see County Approved Product List, Appendix F), shall be provided for a means of emergency bypass access to the wastewater force main. Valves shall be supported by stainless steel pipe supports.

H. Emergency Bypass: A 4-inch emergency bypass connection shall be provided down-stream from the in-line discharge piping valves. The connection shall be readily accessible and be equipped with a plug-type isolation valve and 4-inch male camlock type quick coupling and cap.

I. Pump Control Panel (see County Approved Product List, Appendix F): Panel enclosure construction shall be equal to a NEMA 4X stainless steel with 3-point latch where required and utilize stainless steel. When possible, panel door shall open away from wetwell and not towards wetwell hatch to ensure safety during maintenance of wetwell and panel. To ensure proper installation of control panel, contact the Wastewater Division prior to rough-in or installation of control panel, for a pre-construction meeting with respective Wastewater Collections personnel. Control panels shall be mounted on two 6-inch by 6-inch precast concrete posts. All mounting bars, nuts, bolts, etc. shall be stainless steel. A 110/120-volt (110V) receptacle shall be provided inside the control panel for pump stations that have outdoor control panels. Ground fault interruption (GFI) protection shall be provided for all outdoor outlets.

J. Pump Controller: Provide a pump control panel (see County Approved Product List, Appendix F) including a telemetry control unit (TCU) for pump controlling purposes. At a minimum, the TCU shall include an integrated 2-Watt digital radio with and Ethernet module for dual communications capability, an 18-amp-hour back-up battery, a manufacturer's prefabricated wire harness, all manufacturer recommended surge protection, and suitable devices for measuring wastewater flow. The TCU shall incorporate three on-board fail-safe HOA switches and

Triplex/Duplex/Simplex configurable operation mode. An on-board 240 or 460 VAC three-phase monitor shall be provided. The Alarm light and bell shall be activated by the TCU and the external push-button alarm silence switch shall be wired into the TCU. The TCU shall incorporate an on-board 4- by 20- character LCD display for elapsed runtime of each pump. During the automatic sequence, the pumps shall be controlled in an alternate mode. Pump controller shall be Data Flow Systems model TCU800 with features listed above.

K. Antenna Subsystem: Provide a high gain antenna (see County Approved Product List, Appendix F) for use to transmit and receive TCU data to and from the COUNTY's existing SCADA server. Antenna shall utilize all welded-aluminum elements. Element connections utilizing nuts and bolts are not acceptable. Antenna shall have a single radiator element connected to a type N female connector. Antenna shall be supported on a mast/pole and have DC grounding for lightning protection. Antenna mounting hardware shall be made of stainless steel. Antenna shall meet or exceed the quality, reliability and performance of the RTA series as provided by Data Flow Systems, Inc. Antenna mast/pole shall be a 21foot by 1.25 inch SCH80 galvanized pole. Mounting of the antenna mast/pole shall be in accordance with all applicable local and state building codes as they pertain to structural strength and wind velocity requirements. Tower shall meet or exceed the quality and reliability of the 25G manufactured by Rohn. Coaxial cable shall be RTC 400 as supplied by Data Flow Systems, Inc. Type N connectors shall be utilized at both ends of the coax. Type N connectors shall be sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink tubing. Coaxial cable shall be secured to the mast/pole with E.V.A.-coated 316 stainless steel cable ties. Cable ties shall meet or exceed the quality, reliability and performance of AE112 cable ties manufactured by Band-It. For pump stations to be conveyed to the County, a startup and successful testing of Data Flow telemetry equipment by Data Flow representatives and County Wastewater Collections instrumentation and telemetry representatives is required prior to County acceptance. After initial startup, for pump stations to be conveyed to the County, the latitude and longitude of pump stations shall be provided.

L. Disconnect: A circuit breaker disconnect shall be provided to isolate the pump control panel. Disconnect shall be installed on the service line between the electric meter and control panel and shall be lockable in the "ON" or "OFF" position. Disconnects shall be housed in a NEMA 4X, stainless steel enclosure or better.

M. Electric Meter: The electric meter servicing the pump station shall be located adjacent to the pump control panel, and shall be located and wired to service only the pump station facility.

N. Electric Service: All underground electric services shall be fully conduited in 2-inch diameter Schedule 80 PVC pipe from the power company source point to the pump control panel. The maximum length of the electric service from the power company transformer to the pump control panel shall be 200 feet. One spare conduit shall be provided and terminated in the meter. Only copper service wire shall be utilized. Sizing of the service wire shall be verified with the power company and the

extent and location of the service shall be indicated on the record drawings. The CONTRACTOR shall certify that the voltage drop across the service does not exceed five percent (5%) of the power company's line voltage at full load start-up of the pump station pumps. All pump stations shall have minimum 100-amp service. All electrical components shall be located within the COUNTY right-of-way or County Utility Easement (CUE).

O. Pump Wiring: Power wiring for each pump, from the control panel to the wet well shall be conduited in separate 2-inch diameter Schedule 80 PVC pipe and an appropriately sized water-tight fitting with separate strain relief shall be installed on each line. A spare parallel 2-inch PVC pipe conduit from the panel to the wet well shall be provided. All wire shall be stranded THHN or MTW copper wire. The pump motor cords shall be flexible and serviceable under conditions of extreme usage. Total of angle bends shall be 180 degrees or less. All conduits between wetwell and control panel shall not exceed a total of 180 degrees of bends per run. All service conduits shall be 2" Schedule 80 PVC except where noted. The pump motor cords shall be flexible and have an appropriate amount of slack.

P. Lightning Arrestors: All pump stations shall be equipped with lightning arrestor(s) (see County Approved Product List, Appendix F). The lightning arrestor shall be installed externally on the load side of the disconnect, between the disconnect and the main breaker. The penetration through the disconnect must be made below the working mechanism of the disconnect.

Q. Odor Control Systems for Community Pump Stations: Furnish and install an 8'X11' concrete slab for potential future odor control system. A Pre-Engineered Biofiltration Odor Control System shall be furnished if required by the engineer of record.

R. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

S. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

2.2 MATERIALS FOR PRIVATE PUMP STATIONS

A. All private grinder pump stations shall conform to the requirements specified in Section 2.1 above, unless otherwise stated in this section.

B. Pumps: Private pump stations shall be constructed using progressive cavity, non-clogging, non-jamming, positive or semi-positive displacement grinder pump(s) capable of operating at a negative total dynamic head (TDH) equipped with thermal overload protection. Grinder pumps shall be capable of grinding all material typically found in domestic or commercial wastewater to a fine slurry that will pass through the pump, 1-1/4-inch NPT discharge piping and downstream appurtenances.

C. Impeller: The grinder impeller shall be a one-piece, rotating type cutter wheel constructed from hardened 4140 steel. The cutter teeth shall be treated and hardened to 56 to 60 Rockwell C. The shredder ring shall be stationary type with a staggered tooth pattern and made of white cast iron per ASTM A532(1B).

D. Valves: In addition to valve requirements described in Section 2.1, an anti-siphon valve shall be integral with the grinder pump station pump. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the grinder pump station discharge piping. The check valve will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow.

E. Level Control: Level sensing control for private grinder pump stations shall be a non-fouling type with no moving parts in contact with the wastewater.

F. Alarms: All grinder pump station shall be equipped with a high level audible and visual warning alarm to notify the residential or commercial property owner(s) of a high wet well level.

G. Wet Well: The wet-well basin for all grinder pump stations shall be constructed from any watertight material suitable for light commercial applications, such as high-density polyethylene (HDPE), polyethylene (PE), or glass-fiber reinforced polyester (FRP). FRP wet wells must conform to ASTM D3753. All grinder pump station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure. The grinder pump station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable. No secondary welding of the wet well basin or cover will be accepted. The wet well shall be vented to the atmosphere.

H. Wet Well Equipment: Pumps and all electrical devices, components, and connections inside the wet well shall be explosion proof.

I. Anti-Siphon/Check Valve: All private grinder pump stations shall be equipped with a factory installed, gravity operated flapper-type integral check valve and anti-siphon valve built into the stainless-steel discharge piping, per Section 2.1 and Section 2.2. valve requirements.

J. Pump Control Panel: All electrical elements for private grinder pump stations shall be furnished pre-wired and housed in a NEMA 4X enclosure. In a flood zone, a NEMA 6P

enclosure is required if the control panel is mounted less than a foot above the base flood elevation. A NEMA Control circuit shall be 115 volts. The door of the control box shall be hinged of the dead type with locking hasp and suitable accessories to allow wall mounting. Motor shall be activated by a magnetic type contactor and protected by a UL-listed electrical monitoring system against damaging high current or low voltage conditions. An automatic reset, integral thermal overload protector shall protect the motor against excessive heat. The sensor shall reset automatically when the motor cools. An alarm test switch, HOA switch, run light, auto/off switch, and overload reset button shall be supplied inside the control box. A terminal strip with box type connections shall be supplied to make all power and control connections. All terminals shall be marked for easy identification. A ground terminal strip shall also be provided and labeled.

K. Disconnect: The grinder pump station shall be equipped with a factory-installed NEMA 6P electrical quick disconnect for all power and control functions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Finished grade shall be 1 inch to 4 inches below the bottom of the lid and shall slope away from the wet well.

B. Fill grinder pump stations with water prior to backfill compaction to prevent deformation of the basin wall and follow all other manufacturer's installation instructions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333313

WASTEWATER VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install complete and ready for operation all valves and appurtenances as shown on the Drawings and as specified herein.

B. The equipment shall include, but not be limited to, the following:

1. Eccentric Plug Valves
2. Check Valves
3. Vacuum Breakers
4. Air Release Valves
5. Flange Adapter Couplings
6. Flexible Couplings
7. Diaphragm Seals
8. Unions
9. Mechanical Type Seals
10. Hose End Faucets
11. Pressure Gauges
12. Reduced Pressure Backflow Preventer
13. Flow Meters

1.2 DESCRIPTION OF SYSTEMS

A. All the equipment and materials specified herein are intended to be standard for use in controlling the flow of wastewater and reclaimed water.

1.3 QUALIFICATIONS

A. All the types of valves and appurtenances shall be products of well-established reputable firms who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

1.4 SUBMITTALS

A. Submit within 30 days after execution of the contract a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

B. Complete shop drawings of all valves and appurtenances shall be submitted to the ENGINEER for approval in accordance with the General Conditions.

1.5 TOOLS

A. Special tools, if required for normal operation and maintenance shall be supplied with the equipment.

PART 2 PRODUCTS

2.1 GENERAL

A. All valves and appurtenances shall be of the size shown on the Drawings and as far as possible all equipment of the same type shall be from one manufacturer.

B. All valves and appurtenances shall have the name of the maker and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.

C. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

2.2 DESIGN

A. Eccentric Plug Valves

1. All valves (see County Approved Product List, Appendix F) shall be eccentric plug valves unless otherwise specified.

2. Plug valves shall be tested in accordance with AWWA C504 Section 5. Each valve shall be performance tested in accordance with AWWA C504 Section 5.2 and shall be given a leakage test and hydrostatic test as described in AWWA C504 Paragraphs 5.3 and 5.4. The leakage test shall be applied to the face of the plug tending to unseat the valve. The Manufacturer shall furnish certified

copies of reports covering proof of design testing as described in AWWA C504 Section 5.5.

3. Plug valves shall be of the tight closing, resilient faced, non-lubricating variety and shall be of eccentric design such that the valve's pressure member (plug) rises off the body seat contact area immediately upon shaft rotation during the opening movement. Valve pressure ratings shall be as follows and shall be established by hydrostatic tests as specified by ANSI B16.1-1967. Valves shall be drip-tight in both directions (bi-directional) at rated pressure of 175 psi through 12-inch diameter, and 150 psi for 14-inch diameter and above. The valve shall be provided with a 2-inch square operating nut.

4. The valve body shall be constructed of cast iron ASTM A126, Class B. Body ends shall be mechanical joint to meet the requirements of AWWA C111/ANSI A21.11 or single gasket push-on type.

5. The valve plug shall be constructed of cast iron or ductile iron and shall have a conical seating surface that is eccentrically offset from the center of the plug shafts. The plug and shafts shall be integral. The entire plug face shall be totally encapsulated with Buna N (Nitrile) rubber in all valve sizes. The rubber to metal bond must withstand 75 lbs. pull under test procedure ASTM D-429-73, Method B. When the plug is in full open position, plug geometry and body waterway contours must provide a passageway that allows flow capacity equal to 100% of the adjacent pipe area.

6. Valve seat mating surface shall be constructed of a welded-in overlay of not less than 90% nickel or be a one-piece stainless steel ring. Seat ring contour must be precision machined.

7. A mechanical "brake" shall be supplied on all valves and shall be capable of "locking" the valve in any intermediate position between full-open and full-closed.

8. Valves shall have multiple V-type packing and packing glands and shall be capable of being field adjusted or repacked without the bonnet or plug being removed from the valve with the valve under the full rated pressure. Valves shall have a port position indicator.

9. For corrosion protection, the interior ferrous surfaces of all plug valves shall have a 2-part epoxy internal coating to a minimum of 20 mils thickness.

10. Valve shaft seals shall be adjustable and comply with AWWA C507 Section 10 and with AWWA C507 Section 11.

11. Manual valves shall have lever or gear actuators and tee wrenches, extension stems, floorstands, etc. as indicated on the plans. All valves 6" and larger shall be equipped with gear actuators. All gearing shall be enclosed in a semi-steel housing and be suitable for running in a lubricant with seals provided on all

shafts to prevent entry of dirt and water into the actuator. All actuator shafts shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. All adjustable stop shall be provided to set closing torque. All exposed nuts, bolts, and washers shall be stainless steel. Valve packing adjustment shall be accessible without disassembly of the actuator.

12. Valves and gear actuators for submerged service shall have seals on all shafts and gaskets on the valve and actuator covers to prevent entry of water. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. All exposed nuts, bolts, springs and washers shall be stainless steel.

13. Three-way plug valves shall be non-lubricated gear oriented. Valve bodies shall be ASTM A-126 Class, and be semi-steel with 125 lb. ANSI standard flanges. Plugs shall be resilient faced. Three-way valves shall be 3-way, 3-port 270-degree turn.

14. Plug valves installed such that actuators are 6 feet or more above the floor shall have chain wheels.

15. Where shown on the Drawings, plug valves shall be installed with extended shafts and actuators. Actuators for extended shafts shall be mounted on floor stands where indicated on the drawings or shall be removable handwheels where floor stands are not called for. Six-inch sleeves shall be provided for extended shafts in all floors; where necessary covers shall be provided. Shafts shall be of adequate strength to operate the valve and shall be stainless steel where submerged and carbon steel elsewhere. Floor stands and covers, where called for shall be cast iron. Floor stands shall be equipped with valve position indicators. Where shown on the drawings, plug valves shall be furnished with extended bonnets, equal to DeZurik Figure 640.

16. All buried plug valves shall have a remote position indicator in the valve box showing position of the valve. A stainless steel centering and I.D. plate shall be provided showing direction of opening and number of turns to open for each valve.

B. Valves for Buried Service

1. Valves for buried service shall meet all the requirements as specified herein for interior except that buried valves shall have mechanical joint ends.

2. All buried valves shall have cast-iron two-piece valve boxes (see County Approved Product List, Appendix F), valve boxes shall be provided with suitable heavy bonnets to extend to such elevation at the finished grade surface as directed by the ENGINEER. The barrel shall be two-piece, screw type. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling, shall be designed to prevent the transmission of surface loads

directly to the valve or piping, and shall be complete with cast iron covers. Covers shall have "SEWER" cast into the top. The covers shall be so constructed as to prevent tipping or rattling. All valve boxes located in paved roadways or sidewalks shall have locking covers.

3. Where valves are located out of pavement, the boxes shall be adjusted to finished grade and a concrete slab two feet square and six inches thick shall be poured around the box, as shown in the Details.

4. Valve boxes shall be of the heavy duty, traffic bearing cast iron, adjustable screw type with a drop cover. The valve box assembly shall consist of a bottom section, top section and cover which is cast from gray iron, formulated to ASTM specification A-48 latest revision, minimum tensile of 21,000 psi and shall be free from blowholes, shrinkage or other imperfections not true to pattern. The shaft size shall be 5 1/4" and the adjustable length shall be from 18" to 36". The wall thickness shall be 1/4". The weight of the assembly shall be 61 pounds $\pm$ 2 pounds, with the cover weight being a minimum of 13 pounds.

5. The name of the manufacturer and foundry of origin shall be cast into each of the components of the assembly in legible form. The assembly shall be suitable for highway traffic wheel loads of 16,000 pounds and shall withstand a proof load test of 25,000 pounds without failure or permanent deflection. The valve box shall be cast, machined, assembled, and packaged within the United States and shall fully comply with the Buy American provisions of Public Law 102-240, enacted 12/18/91.

C. Check Valves

1. All check valve bodies shall be cast iron per ASTM A126 Class B, having integral (not Wafer) flanges.

2. The seat shall be centrifugally cast bronze with an O-ring seal and be locked in place with stainless steel lock screws and be field replaceable, without the use of special tools.

3. The shaft shall be single and continuous stainless steel, extending on one side of the body with a lever and weight.

4. The air cushion cylinder, when specifically required, shall be constructed of corrosion-resistant material and the piston shall be totally enclosed within the cylinder and not open at one end. The air cushion cylinder assembly shall be externally attached to either or both sides of the valve body and will permit adjustability to cushion the closure of the valve. Cushioning shall be by air trapped in the cushion cylinder, which shall be fitted with a one-way adjustable control check valve to cushion disc contact to the seat at the shut-off point. The bottom cylinder head shall be swivel mounted and not rigid to follow the change of force angles as the lever raises or lowers to open or close the check valve.

Valve shall prevent backflow on normal pump shut-off or power failure, at zero velocity, and be watertight.

5. The disc shall be cast iron utilizing a double clevice hinge connected to a ductile iron disc arm. The disc arm assembly shall be suspended from a stainless steel shaft, which passes through a seal retainer on both sides of the valve body.

6. Valve exterior to be painted with Red Oxide Phenolic Primer Paint as accepted by the FDA for use in contact with Potable Water. Materials shall be certified to the following ASTM specifications:

   a. Body, cover & disc - Cast Iron - ASTM A126, Class B

   b. Disc Arm - Ductile Iron - ASTM A536

   c. Seat - Aluminum Bronze or Stainless Steel - ASTM B148, ASTM A276

   d. Disc Seat - Buna-N or metal

   e. Cushion cylinder - Corrosion-resistant Commercial material

   f. Exposed Nuts and Bolts – 316 Stainless Steel

7. For corrosion protection, the interior ferrous surfaces of all check valves used in sewage applications shall be coated with a factory applied, two-part epoxy coating to a minimum of 20 mils thick.

D. Automatic Air Release Valves for Wastewater Systems

All force mains shall have automatic air release valves installed as they are indicated on the plans. These Automatic Air Release Valves (ARV's) shall conform to the following:

1. The ARV shall be a "Combination" ARV modified with a check valve on the discharge of the air piping to allow air release only operation.

2. The body of these valves shall be conical shaped to maintain maximum air gap to ensure no contact between the sewage and the seal.

3. The ARV shall seal at zero (0) psi and have an overall operating range of 0 – 250 psi, (0 – 17.2 bar).

4. The ARV shall close watertight when liquid enters the valve, even when the fluid is rising without pressure, (no minimum operating pressure required).

5. The working pressure shall be 250 psi (17.2 bar) tested to 360 psi (25 bar).

6. The ARV shall include both a Polypropylene Debris Shield funnel and an Orifice Strainer to prevent solids from entering sealing area.

7. The ARV shall have a rolling cup seal diaphragm for infinitely variable operation, providing water hammer inhibition.

8. The ARV body shall be constructed of 316 stainless steel. The float shall be Delrin (Polyoximethylene, POM) and the Float Spindle shall be of 316 stainless steel. The valve seat and all internal working parts shall be of corrosion-resistant materials. ARV flange hardware (nuts, bolts, washers) shall be of 316 stainless steel construction.

9. The threaded or flanged outlet size of the ARVs shall be sized by the design engineer. A minimum diameter of two inches (2") shall be provided.

10. All parts required for ARV maintenance shall be the same for all connection sizes (i.e. the internal parts for the 2" ARV are identical to the internal parts for the 4" ARV).

11. All ARV manufacturers and models shall comply with the County Approved Product List (Appendix F). All ARVs shall be installed in accordance with manufacturer recommendations and shall have an isolation valve connection for control.

12. All ARVs installed for wastewater transmission systems (except at pump stations or wastewater treatment facilities) shall be installed in above ground polyethylene enclosures as shown on the County's standard details. Color of enclosures shall be dark green.

E. Flange Adapter Couplings

1. Flange adapter couplings shall be of the size and pressure rating required for each installation and shall be suitable for use on either cast iron or ductile iron pipe. They shall be similar or equal to Dresser Company, Style 128. All couplings shall have enough factory installed anchor studs to meet or exceed the test pressure rating for this project, 100-psi minimum.

F. Flexible Couplings:

1. Flexible couplings shall be either the split type or the sleeve type as shown on the Drawings.

   a. Split type coupling shall be either the split type or the sleeve type as shown on the Drawings. The couplings shall be mechanical type for radius groove piping. The couplings shall mechanically engage and lock grooved pipe ends in a positive coupling and allow for angular deflection and contraction and expansion.

b. Couplings shall consist of malleable iron, ASTM Specification A47, Grade 32510 housing clamps in two or more parts, a single chlorinated butyl composition sealing gasket with a "C" shaped cross-section and internal sealing lips projecting diagonally inward, and two or more oval track head type bolts with hexagonal heavy nuts conforming to ASTM Specification A183 and A194 to assemble the housing clamps. Bolts and nuts shall be stainless steel.

c. Victaulic type couplings and fittings may be used in lieu of flanged joints. Pipes shall be radius grooved as specified for use with the Victaulic couplings. Flanged adapter connections (see County Approved Product List, Appendix F) at fittings, valves, and equipment.

d. Sleeve type couplings (see County Approved Product List, Appendix F) shall be used with all buried piping. The couplings shall be of steel. The coupling shall be provided with stainless steel bolts and nuts unless indicated otherwise.

e. All couplings shall be furnished with the pipe stop removed.

f. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

g. If the CONTRACTOR decides to use victaulic couplings in lieu of flanged joints, he shall be responsible for supplying supports for the joints.

G. Diaphragm Seals (see County Approved Product List, Appendix F):

1. Diaphragm seals shall be installed on pressure gauge connection to all lines where shown on the Drawings, to protect pressure switches used to monitor excessive pressures on pipe lines. The diaphragm shall be "thread attached" to both piping and pressure switches. Diaphragm seals shall be constructed of cadmium plated carbon steel, except for the lower housing which shall be specifically chosen according to the fluid pressure being monitored.

2. Diaphragm seals shall have a flushing connection.

H. Unions

1. Unions on ferrous pipe 2" in diameter and smaller shall be 150 pounds malleable iron, zinc-coated. Unions on water piping 22" in diameter and larger shall be flange pattern, 125-pound class, zinc-coated. Gaskets for flanged unions shall be of the best quality fiber, plastic, or leather. Unions shall not be concealed in walls, ceilings, or partitions.

I. Mechanical Type Seals

1. Mechanical type seals (see County Approved Product List, Appendix F) shall consist of an adjustable modular bolted, synthetic rubber and plastic sealing element.

J. Hose End Faucets

1. Hose end faucets (see County Approved Product List, Appendix F) for potable water supply at submersible stations shall be furnished with removable key and shall be lockable.

K. Pressure Gauges

1. Each pressure gauge shall be direct mounted, cast aluminum case, with a four inch (4”) diameter dial and furnished with a clear glass crystal window, 3/8" shut-off valve, and a bronze pressure snubber. Provide diaphragm seals between shut-off valve and pressure gauge on all sludge and lines with nonclear matter in suspension of solution. All gauges shall be weatherproofed. The face dial shall be white finished aluminum with jet black graduations and figures. The face dial shall indicate the units of pressure being measured (e.g., feet, inches, etc.) or be dual scale.

2. Gauges shall be sized with an appropriate range of pressure readings shown in pounds per square inch (PSI).

L. Reduce Pressure Backflow Preventer

1. If shown on the drawings, backflow preventers shall be supplied at each pump station, and installed in accordance with the Collier County Standard Details.

M. Flow Meters for Master Pumping Stations

1. Meters shall be of the magnetic type (see County Approved Product List, Appendix F). Flow meters shall be designed to record both the peak pumping station capacity and anticipated minimum flows with equally high accuracy. All meters shall be tied to the Radio Telemetry SCADA System. The flow metering system shall be installed within the pumping station structure, if space is available, or in an exterior protected and drained pit. In all cases, meter by-pass valves and piping shall be provided.

2. Flow meters shall be supplied for “Master Pumping Stations” only.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all valves and appurtenances in the locations shown, true to alignment and rigidly supported. Repair any damage to the above items to the satisfaction of the ENGINEER before they are installed.

B. Carefully inspect each valve, open it wide and then tightly close it, and test the various nuts and bolts for tightness. Take special care to prevent any foreign matter from becoming lodged in the valve seat. Valves, unless shown otherwise shall be set with their operator shaft vertically. Repair and replace any valve that does not operate correctly.

C. Carefully center valve boxes over the operating nuts of the valves to permit a valve wrench or key to be fitted easily to the operating nut. Valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support flange as shown on the Collier County Standard Details. The valve box shall not transmit surface loads to the pipe or valve. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work, adjust all valve boxes to finish grade. Valve operating risers shall be installed with any valves required to ensure that the operating nut is 30-inches or less from the ground surface.

D. After installation, test all valves and appurtenances for at least 1 hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, repair it to the satisfaction of the ENGINEER.

E. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, check all plans and figures that have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.

F. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections.

G. Buried mechanical joints shall be made with COR-TEN bolts.

H. Prior to assembly of split couplings, thoroughly clean the grooves as well as other parts. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, center the gasket properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, tighten

the nuts until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.

I. Prior to the installation of sleeve-type couplings, thoroughly clean the pipe ends for 8 inches. Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to about 6" from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. Insert the other pipe end into the middle ring and bring to proper position in relation to the pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flaires. After the bolts have been inserted and all nuts have been made up finger-tight, uniformly tighten diametrically opposite nuts progressively all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

3.2 AIR RELEASE VALVE INSTALLATION

A. Each air release valve shall be installed at a high point in the pipeline.

B. Prior to pressure testing a pipeline, all air release valve assemblies on that pipeline shall be installed.

3.3 SEWER SERVICE CONNECTIONS

A. Materials, Construction:

1. All sewer service connections shall be of SDR 35 PVC as specified herein with elastomeric gaskets on pipe and fittings.

2. Service lines shall be connected to the sewer mains by means of a PVC wye fitting. The service branch of the wye fitting will be elevated depending on the depth of the sewer and the elevation of the property to be served. 45-degree bends or other fittings shall be used to connect the service line at the wye branch. Service lines shall be installed at such grades as will adequately serve the properties, minimum 1% slope.

3. Service lines shall extend from the sewer to the property line and be plugged. Plugs shall be plastic with sealer. Service lines shall be 6 inches for single residential properties and 6 inches pipe and larger for commercial, industrial, and multiple residential services. Service lines will have a minimum of 3 feet and a maximum of 5 feet of cover at the property line. Service will be provided to each lot. All laterals shall have a vertical clean out installed at the property line. Clean outs shall extend 24 inches above grade and should be capped. After final connection of the lateral to a structure the clean out shall be cut off at grade and capped.

3.4 SHOP PAINTING

A. Coat ferrous surfaces of valves and appurtenances with rust-inhibitive primer. Cap all pipe connection openings to prevent the entry of foreign matter prior to installation.

3.5 FIELD PAINTING

A. Paint all metal valves and appurtenances specified herein and installed in valve and meter pits as specified.

3.6 INSPECTION AND TESTING

A. Subject completed pipe to hydrostatic pressure test at full working pressure. Repair all leaks and retest the line as approved by the ENGINEER. Prior to testing, support the gravity pipelines in an approved manner to prevent movement during tests.

END OF SECTION

SECTION 333913

SEWER MANHOLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing sewer manholes and all other appurtenances for a complete installation. Provide precast reinforced concrete manholes conforming to ASTM C478 in accordance with the Collier County Standard Details.

B. Related Work Specified in Other Sections Include:

1. Section 055600 – Metal Castings

2. Section 099723 – Concrete Coatings

1.2 REFERENCE

A. Codes and standards referred to in this Section are:

1. ASTM C 76 - Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

2. ASTM C 478 - Specification for Precast Reinforced Concrete Manhole Sections

3. ASTM C 32 - Specification for Sewer and Manhole Brick (Made for Clay or Shale)

4. ASTM C 443 - Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets [Metric]

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings of sewer manholes as specified in Division 1.

B. Quality Control: Submit shop and field test reports of concrete samples tested in an approved laboratory.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Take every precaution to prevent injury to the manhole sections during transportation and unloading. Unload manhole sections using skids, pipe hooks, rope slings, or suitable power equipment, if necessary, and keep the sections under control at all times. Do not allow the manhole sections to be dropped, dumped or dragged under any conditions. Follow applicable requirements specified in Division 1.

B. Damaged Section: If any manhole section is damaged in the process of transportation or handling (see Section 2.3.C below), contact the Public Utilities Wastewater Department for visual inspection. If the Wastewater Department deems it necessary to reject the manhole section, reject and immediately remove such sections from the site, and replace the damaged manhole sections at no increase in Contract Amount.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. See County Approved Product List, Appendix F, for acceptable manufacturers of plastic joint sealing compound and sewer manhole frames and covers.

2.2 MATERIALS

A. Concrete, Steel Reinforcement and Aggregates: Provide reinforced concrete, cementitious materials, aggregates and steel reinforcement conforming to the requirements of ASTM C 478, with 4000 psi concrete, Grade 40 reinforcement bars, Type II cement, and a minimum wall thickness of 8 inches.

B. Steel reinforced polymer concrete manholes may be furnished and installed instead of the Type II cement manholes described above. If provided, steel reinforced polymer concrete manholes shall not require interior and exterior protection as described in part 3.1 F and 3.1 G. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years' experience manufacturing polymer concrete. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

C. Manhole Frames and Covers: Provide manhole frames and covers as shown on the Collier County Standard details. Castings for manhole frames, covers and other items shall conform to the ASTM Designation A48, Class 30. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects in positions which would impair their strength, or otherwise make them unfit for the service intended. The scating surfaces between frames and covers shall be machined to fit true so the frames and covers do not shift under traffic

conditions or permit entry of storm water from flooding. Lifting or “pick” holes shall be provided, but shall not penetrate the cover. The words SANITARY SEWER, as well as COLLIER COUNTY shall be cast in all manhole covers except those owned by a private party. All manhole frames and covers shall be traffic bearing unless otherwise specified. Frames and covers shall be fully bedded in mortar to the correct finished grade elevation with materials shown in the COUNTY’s Standard Detail Drawings.

D. Preformed Joint Sealing Compound: Provide preformed joint sealing compound for joining manhole sections.

E. Concrete Protective Liner: Provide concrete protective liner conforming to Section 02608.

F. Pipeline Connections: Provide neoprene boots with type 316 stainless steel clamps of a design approved by the County Manager or designee for joining sewers to manhole riser sections. Fill the unfilled portion of the connection with mortar or concrete to guarantee a watertight seal.

G. Doghouse Manholes: Doghouse manholes over existing sanitary sewer pipes are permitted, and in a number of instances, preferred. Provide a concrete base a minimum of 8 inches thick, with proper reinforcing rods to prevent cracking. Pour concrete base upon a 12-inch base of gravel. Precast manhole rings may be set in the concrete over the existing pipe. Concrete should then be used to form both the bench and to seal the pipe entrances, both inside and especially outside. Once dry, remove the top of the pipe in the manhole.

H. Standard Manholes: The standard manhole shall be 4 feet or more in depth measured from the base of the cover frame to the top of the concrete footing and shall be of the concentric cone type, as shown in the Standard Details. If the manhole is 4 feet or less in depth, it shall be classified as a "Shallow Manhole" as specified below.

I. Shallow Manholes: The shallow manhole shall be 4 feet or less in depth measured from the base of the cover frame to the top of the concrete footing and shall be of flat top construction, as shown in the Standard Details.

J. Manhole Inverts: Form manhole inverts from concrete having a minimum 28 day compressive strength of 2500 psi, and as shown in the Standard Details. Inverts for "straight-through" manholes may be formed by laying the pipe straight through the manhole, pouring the concrete invert, and then cutting out the top half of the pipe. Construct curved inverts of concrete, as shown in the Standard Details, and form a smooth, even, half pipe section. Precast inverts may be used, however, no large "bowls" shall be permitted in the center of the manhole. To alleviate this problem, grout the invert to form a smooth, uniform invert as shown in the Standard Details. Maintain a 0.1 foot drop across the manhole.

K. Inflow Protectors: In all manholes, install an inflow protector manufactured from a high-quality 304 stainless steel with a consistent thickness of not less than 18 gage (see County Approved Product List, Appendix F). The inflow shall have a deep-dish bowl design with no less than 8 inches in depth to allow easy and unobstructed removal of the manhole cover. The manhole inflow protector is to be manufactured with a one-piece rubber gasket installed at the factory for a tight, consistent fit. The rubber gasket is to be designed to securely wrap around the entire leading edge of the inflow protector at the point where it comes in contact with the manhole frame and cover. The wrap around rubber gasket is to be manufactured to a width of no less than 3/8 inches, consistent on top and bottom of the leading edge of the inflow protector. The gasket shall be no more than 3/32 inches thick. The insert removal handle shall be manufactured of a high-quality stainless steel for strength and durability. The handle is installed in such a way that it does not interfere with the installation or removal of the manhole lid. The insert handle will be manufactured to withstand a minimum pull force of 500 pounds before it fails or separates from the insert. The inscription “PROPERTY OF COLLIER COUNTY UTILITIES” shall be etched, at the base of the handle frame, to provide a long-lasting identification marker for the COUNTY.

L. Chimney Seals: Install a minimum of two (2) precast concrete or HDPE riser rings with a chimney seal (see County Approved Product List, Appendix F) between manhole and cast iron frame.

2.3 SOURCE QUALITY CONTROL

A. If requested by the County Manager or designee, at least three cylinders shall be taken each day that manhole sections are cast, with batch samples to be designated by the laboratory representative. At least one set of cylinders will be taken from each 9 cubic yards of concrete used in manhole section construction. These samples will be tested for strength. If the samples fail to meet specified minimum concrete strength requirements, all manhole sections manufactured from the concrete from which the cylinders were made will be rejected.

B. The County Manager or designee reserves the right to core manholes either at the job site or point of delivery to validate strength of concrete and placement of steel. If cores fail to demonstrate the required strength or indicate incorrect placement of reinforcing steel, all sections not previously tested will be considered rejected until sufficient additional cores are tested, at no increase in Contract Amount, to substantiate conformance to these requirements.

C. Components of the manhole shall be free of fractures, cracks, and undue roughness. Concrete shall be free of defects, which indicate improper mixing or placing, and surface defects such as honeycomb or spalling. Cracks or broken ends due to improper handling will not be acceptable. No lift holes will be allowed except in rise and corbel sections. These holes shall not penetrate the wall and shall be filled with non-shrink grout after installation.

PART 3 EXECUTION

3.1 INSTALLATION

A. Lifting Holes: Grout lifting holes through the structure with non-shrink grout.

B. Precast Base: Provide a precast base of not less than 8 inches in thickness with a minimum dimension across the precast base of 72 inches poured monolithically with the bottom section of the manhole walls, reinforced, with a minimum 28-day compressive strength of 3000 psi.

C. Joining Manhole Sections: Join precast sections using plastic joint sealing compound (see County Approved Product List, Appendix F) and trimmed prior to grouting. The first construction joint shall be not less than 2 feet above the base slab. Use tongue and groove joints suitable for the flexible gasket. Use non-shrink grout inside and outside for sealing between manhole precast sections. Grout shall be of a type acceptable to the County Manager or designee and designed for use in water. Seal all openings and joints watertight.

D. Top Termination: Terminate manhole tops at such elevations as will permit laying up grade rings under the manhole frame to make allowances for future street grade adjustments.

E. Drop Connections: Manufacture drop connections, where required on precast manholes, with the manhole elements at the casting yard. Drop manholes shall be constructed per the Collier County Standard Details.

F. Internal Protection: Provide internal protection for all manholes by either of the following (not required for steel reinforced polymer concrete manholes as described in 2.2 B. above):

1. Sewpercoat, or

2. IET Coating system, or

3. Raven Lining Systems

Install the coating systems per manufacturer's recommendation and completely protect the structure from corrosion. The liner or coating systems must extend and seal onto manhole ring, seal onto and around pipe openings, and any other protrusions, completely cover the bench and flow invert. Provide a five (5)-year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the coating or liner system, and shall protect the structure for at least five (5) years from all leaks and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.
Repair internal coating of existing manholes cored during tie-in of new sewers by applying approved coating material as listed above in accordance with the manufacturer's recommendations. If existing manhole has an internal coating

other than that listed above, sandblast the interior of the existing manhole and apply an approved coating in accordance with the manufacturer's recommendations.

G. Coal Tar Epoxy: Coat all manhole, wet well, and valve vault exteriors with two (2) coats of coal tar epoxy to a minimum thickness of 8 dry mils (not required for steel reinforced polymer concrete manholes as described in 2.2 B. above).

END OF SECTION

SECTION 334713

HDPE IRRIGATION POND LINER

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Specifications and guidelines for MANUFACTURING and INSTALLING geomembrane.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting.

2. D 1238 Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.

3. D 1505 Test Method for Density of Plastics by the Density-Gradient Technique.

4. D 1603 Test Method for Carbon Black in Olefin Plastics.

5. D 3895 Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry.

6. D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

7. D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.

8. D 5397 Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.

9. D 5596 Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.

10. D 5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes.

11. D 6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

12. D 6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.

B. Geosynthetic Research Institute

1. GRI GM 13 Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes.

2. GRI GM 17 Test Properties, Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes.

1.3 DEFINITIONS

A. Lot- A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.

B. Construction Quality Assurance Consultant (CONSULTANT) - Party, independent from MANUFACTURER and INSTALLER that is responsible for observing and documenting activities related to quality assurance during the lining system construction.

C. ENGINEER- The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.

D. Geomembrane Manufacturer (MANUFACTURER) - The party responsible for manufacturing the geomembrane rolls.

E. Geosynthetic Quality Assurance Laboratory (TESTING LABORATORY)- Party, independent from the OWNER, MANUFACTURER and INSTALLER, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the OWNER.

F. INSTALLER- Party responsible for field handling, transporting, storing, deploying, seaming and testing of the geomembrane seams.

G. Panel- Unit area of a geomembrane that will be seamed in the field that is larger than 100 ft^2.

H. Patch- Unit area of a geomembrane that will be seamed in the field that is less than 100 ft^2.

I. Subgrade Surface- Soil layer surface which immediately underlies the geosynthetic material(s).

1.4 SUBMITTALS POST-AWARD

A. Furnish the following product data, in writing, to ENGINEER prior to installation of the geomembrane material:

1. Resin Data shall include the following.

2. Certification stating that the resin meets the specification requirements (see Section 1.09).

3. Geomembrane Roll.

4. Statement certifying no recycled polymer and no more than 10% rework of the same type of material is added to the resin (product run may be recycled).

B. The INSTALLER shall furnish the following information to the ENGINEER and OWNER prior to installation:

1. Installation layout drawings:

a. Must show proposed panel layout including field seams and details.

b. Must be approved prior to installing the geomembrane.

2. Approved drawings will be for concept only and actual panel placement will be determined by site conditions.

3. Installer's Geosynthetic Field Installation Quality Assurance Plan.

C. The INSTALLER will submit the following to the ENGINEER upon completion of installation:

1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents.

2. Material and installation warranties.

3. As-built drawings showing actual geomembrane placement and seams including typical anchor trench detail.

1.5 QUALITY ASSURANCE

A. The OWNER will engage and pay for the services of a Geosynthetic Quality Assurance Consultant and Laboratory to monitor geomembrane installation.

1.6 QUALIFICATIONS

A. MANUFACTURER

1. See County Approved Product List, Appendix F, for approved geomembrane manufacturer.

2. MANUFACTURER shall have manufactured a minimum of 5000,000 square feet of polyethylene geomembrane during the last year.

B. INSTALLER

1. Installation shall be performed by the manufacturer approved dealer/installer.

2. INSTALLER shall have installed a minimum of 15,000 square feet of HDPE geomembrane during the last 3 years.

3. INSTALLER shall have worked in a similar capacity on at least 3 projects similar in complexity to the project described in the contract documents, and with at least 5,000 square feet of HDPE geomembrane installation on each project.

4. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.

5. The INSTALLER shall provide a minimum of one Master Seamer for work on the project.

a. Must have completed a minimum of 15,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for the use on this Project.

1.7 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

A. Labeling - Each roll of geomembrane delivered to the site shall be labeled by the MANUFACTURER. The label will identify:

1. manufacturer’s name

2. product identification

3. thickness

4. length

5. width

6. roll number

B. Delivery- Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

C. Storage- The on-site storage location for geomembrane material, provided by the CONTRACTOR to protect the geomembrane from punctures, abrasions and excessive dirt and moisture for should have the following characteristics:

1. level (no wooden pallets)

2. smooth

3. dry

4. protected from theft and vandalism

5. adjacent to the area being lined

D. Handling- Materials are to be handled so as to prevent damage.

1.8 WARRANTY

A. Material shall be warranted, on a pro-rata basis against Manufacturer's defects for a period of 5 years from the date of geomembrane installation.

B. Installation shall be warranted against defects in workmanship for a period of 1 year from the date of geomembrane completion.

1.9 GEOMEMBRANE

A. Material shall be smooth/textured polyethylene geomembrane as shown on the drawings.

B. Resin

1. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane.

2. Natural resin (without carbon black) shall meet the following minimum requirements:

Property	Test Method	HDPE	LLDPE
Density [g/cm^3]	ASTM D 1505	0.932	0.915
Melt Flow Index [g/10 min.]	ASTM D 1238 (190/2.16)	• 1.0	• 1.0
OIT [minutes]	ASTM D 3895 (1 atm/200°C)	100	100

C. Geomembrane Rolls:

1. Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black.

2. Geomembrane shall be free of holes, pinholes as verified by on-line electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

3. Geomembrane material is to be supplied in roll form. Each roll is to be identified with labels indicating roll number, thickness, length, width and MANUFACTURER.

4. All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in section 1.09, B, and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified and indicated during manufacturing, these pinholes may be corrected during installation.

D. Smooth surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s):

Table 1.1: Minimum Values for Smooth Black-Surfaced HDPE Geomembranes

Property	Test Method[1]	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5199	 30 (0.75) 27 (0.69)	 40 (1.0) 36 (0.91)	 60 (1.5) 54 (1.4)	 80 (2.0) 72 (1.8)	 100 (2.5) 90 (2.3)	 120 (3.0) 108 (2.7)
Density, g/cm^3	ASTM D 1505	0.94	0.94	0.94	0.94	0.94	0.94
Carbon Black Content, %	ASTM D 1603, mod.	2.0	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 2*	*Note 2*	*Note 2*	*Note 2*	*Note 2*	*Note 2*
Tensile Properties: *(each direction)* Strength at Yield, lb/in (kN/m)	ASTM D 6693	 63 (11)	 84 (15)	 130 (23)	 173 (30)	 216 (38)	 259 (45)
Strength at Break, lb/in (kN/m)		122 (21)	162 (28)	243 (43)	324 (57)	405 (71)	486 (85)
Elongation at Yield, %	(1.3" gauge length)	13	13	13	13	13	13
Elongation at Break, %	(2.0" gauge length)	700	700	700	700	700	700
Tear Resistance, lb (N)	ASTM D 1004	21 (93)	28 (124)	42 (187)	56 (249)	70 (311)	84 (373)
Puncture Resistance, lb (N)	ASTM D 4833	59 (263)	79 (352)	119 (530)	158 (703)	198 (881)	238 (1059)
Notched Constant Tensile Load, hours	ASTM D 5397, app.	400	400	400	400	400	400
Oxidative Induction Time, min.	ASTM D 3895	100	100	100	100	100	100

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.
2 Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

E. Textured surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s).

Table 2.1: Minimum Values for Black Surfaced Coextruded Textured HDPE Geomembranes

Property	Test Method[1]	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thickness (mils)
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5994	 30 (0.75) 27 (0.69)	 40 (1.0) 36 (0.91)	 60 (1.5) 54 (1.4)	 80 (2.0) 72 (1.8)	 100 (2.5) 90 (2.3)
Density, g/cm^3	ASTM D 1505	0.94	0.94	0.94	0.94	0.94
Carbon Black Content, %	ASTM D 1603, modified	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 4*	*Note 4*	*Note 4*	*Note 4*	*Note 4*
Tensile Properties[2]: *(each direction)* Strength at Yield, lb/in (kN/m) Strength at Break, lb/in (kN/m)	ASTM D 6693	 63 (11) 45 (8)	 84 (15) 60 (11)	 130 (23) 90 (16)	 173 (30) 120 (21)	 216 (38) 150 (27)
Elongation at Yield, % Elongation at Break, %	(1.3" gauge length) (2.0" gauge length)	13 150	13 150	13 150	13 150	13 150
Tear Resistance, lb (N)	ASTM D 1004	21 (93)	28 (124)	42 (187)	56 (249)	70 (311)
Puncture Resistance, lb (N)	ASTM D 4833	54 (240)	72 (320)	108 (480)	144 (641)	180 (801)
Notched Constant Tensile Load [3], hours	ASTM D 5397, appendix	400	400	400	400	400
Oxidative Induction Time, min.	ASTM D 3895	100	100	100	100	100

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.
[2] The combination of stress concentrations due to coextrusion texture geometry and the small specimen size results in large variations of test results. Therefore, these tensile properties are minimum average roll values.
[3] NCTL on coextruded textured product is conducted on representative smooth membrane samples.
[4] Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

F. Extrudate Rod or Bead:

1. Extrudate material shall be made from same type resin as the geomembrane.

2. Additives shall be thoroughly dispersed.

3. Materials shall be free of contamination by moisture or foreign matter.

1.10 EQUIPMENT

A. Welding equipment and accessories shall meet the following requirements:

1. Gauges showing temperatures in apparatus (extrusion welder) or wedge (wedge welder) shall be present.

2. An adequate number of welding apparati shall be available to avoid delaying work.

3. Power source must be capable of providing constant voltage under combined line load.

1.11 DEPLOYMENT

A. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.

B. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.

C. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:

1. Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage (spreader bar, protected equipment bucket).

2. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.

3. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.

4. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 6 psi.

5. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.

D. Sufficient material (slack) shall be provided to allow for thermal expansion and contraction of the material.

1.12 FIELD SEAMING

A. Seams shall meet the following requirements:

1. To the maximum extent possible, orient seams parallel to line of slope, i.e., down and not across slope.
2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.

3. Slope seams (panels) shall extend a minimum of five-feet beyond the grade break into the flat area.

4. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the CONSULTANT and INSTALLER.

5. Align seam overlaps consistent with the requirements of the welding equipment being used. A 6-inch overlap is commonly suggested.

B. During Welding Operations

1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.

C. Extrusion Welding

1. Hot-air tack adjacent pieces together using procedures that do not damage the geomembrane.

2. Clean geomembrane surfaces by disc grinder or equivalent.

3. Purge welding apparatus of heat-degraded extrudate before welding.

D. Hot Wedge Welding

1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.

2. Clean seam area of dust, mud, moisture and debris immediately ahead of hot wedge welder.

3. Protect against moisture build-up between sheets.

E. Trial Welds

1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.

2. Make trial welds under the same surface and environmental conditions as the production welds, i.e., in contact with subgrade and similar ambient temperature.

3. Minimum of two trial welds per day, per welding apparatus, one made prior to the start of work and one completed at mid shift.

4. Cut four, one-inch wide by six-inch long test strips from the trial weld.

5. Quantitatively test specimens for peel adhesion, and then for shear strength.

6. Trial weld specimens shall pass when the results shown in Table 3 are achieved in both peel and shear test.

a. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).

b. The break is ductile.

7. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.

8. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld.

F. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. INSTALLER shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.

G. Defects and Repairs

1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.

2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.

1.13 FIELD QUALITY ASSURANCE

A. MANUFACTURER and INSTALLER shall participate in and conform to all terms and requirements of the Owner's quality assurance program. CONTRACTOR shall be responsible for assuring this participation.

B. Quality assurance requirements are as specified in this Section and in the Field Installation Quality Assurance Manual if it is included in the contract.

C. Field Testing

1. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.

a. Vacuum Testing
(1) Shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.

b. Air Pressure Testing

(1) Shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.

c. Other approved methods.

2. Destructive Testing (performed by CONSULTANT with assistance from INSTALLER)

a. Location and Frequency of Testing

(1) Collect destructive test samples at a frequency of one per every 1500 lineal feet of seam length.

(2) Test locations will be determined after seaming.

(3) Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute, http://www.geosynthetic-institute.org) to minimize test samples taken.

b. Sampling Procedures are performed as follows:

(1) INSTALLER shall cut samples at locations designated by the CONSULTANT as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.

(2) CONSULTANT will number each sample, and the location will be noted on the installation as-built.

(3) Samples shall be twelve (12) inches wide by minimal length with the seam centered lengthwise.

(4) Cut a 2-inch wide strip from each end of the sample for field-testing.

(5) Cut the remaining sample into two parts for distribution as follows:

(a) One portion for INSTALLER, 12-inches by 12 inches

(b) One portion for the Third Party laboratory, 12-inches by 18-inches

(c) Additional samples may be archived if required.

c. Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determing the Integrity of Non-

Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

d. INSTALLER shall repair all holes in the geomembrane resulting from destructive sampling.

e. Repair and test the continuity of the repair in accordance with these Specifications.

D. Failed Seam Procedures

1. If the seam fails, INSTALLER shall follow one of two options:

a. Reconstruct the seam between any two passed test locations.

b. Trace the weld to intermediate location at least 10 feet minimum or where the seam ends in both directions from the location of the failed test.

c. The next seam welded using the same welding device is required to obtain an additional sample, i.e., if one side of the seam is less than 10 feet long.

d. If sample passes, then the seam shall be reconstructed or capped between the test sample locations.

e. If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

1.14 REPAIR PROCEDURES

A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.

B. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.

C. INSTALLER shall be responsible for repair of defective areas.

D. Agreement upon the appropriate repair method shall be decided between CONSULTANT and INSTALLER by using one of the following repair methods:

1. Patching- Used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.

2. Abrading and Re-welding- Used to repair short section of a seam.

3. Spot Welding- Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.

4. Capping- Used to repair long lengths of failed seams.

5. Flap Welding- Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.

6. Remove the unacceptable seam and replace with new material.

E. The following procedures shall be observed when a repair method is used:

1. All geomembrane surfaces shall be clean and dry at the time of repair.

2. Surfaces of the polyethylene which are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.

3. Extend patches or caps at least 6 inches for extrusion welds and 4 inches for wedge welds beyond the edge of the defect, and around all corners of patch material.

F. Repair Verification

1. Number and log each patch repair (performed by CONSULTANT).

2. Non-destructively test each repair using methods specified in this Specification.

1.15 MEASUREMENT AND PAYMENT

A. Payment for geomembrane installation will be as per contract unit price per square foot, as measured parallel to liner surface, including designed anchor trench material and is based upon net lined area.

B. Net lined area is defined to be the true area of all surfaces to be lined plus designed burial in all anchor trenches, rubsheets, and sacrificial layers.

C. Prices shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals.

END OF SECTION

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SECTION 409500

FIBER-OPTIC COMMUNICATION STANDARDS

PART 1 GENERAL

1.1 OVERVIEW

A. The standards herein pertain to all work associated with the procurement, installation, configuration, and testing of fiber-optic communications and associated infrastructure for County installations.

B. All contractors and subcontractors selected to perform fiber-optic communications work for the County shall adhere to the standards described in this document.

C. Additional requirements may be defined in engineering plans related to the fiber-optic communications work performed. In the event of a conflict, the most stringent requirement shall be followed. In the event of a conflict where the most stringent requirement cannot be resolved, Contractor shall inform County in writing identifying the discrepancy for final direction.

1.2 DEFINITIONS

A. Common Abbreviations

1. Amps: Ampere.
2. ANSI: American National Standards Institute.
3. ASTM: American Society for Testing and Materials.
4. AWG: American Wire Gauge.
5. CCITD: Collier County Information Technology Department.
6. CFR: Code of Federal Regulations.
7. dB: Decibel.
8. EIA: Electronic Industries Alliance.
9. FDEP: Florida Department of Environmental Protection.
10. HASB: High Airspeed Blowing.
11. HDPE: High Density Polyethylene.
12. IT: Information Technology.
13. km: Kilometer.
14. lbs: Pounds.
15. m: Meter.
16. N: Newton.

17. NEC: National Electric Code.
18. NEMA: National Electrical Manufacturers Association.
19. NESC: National Electrical Safety Code.
20. nm: Nanometer.
21. OSHA: Occupational Safety and Health Administration.
22. OTDR: Optical Time Domain Reflectometer.
23. PVC: Polyvinyl Chloride.
24. RCDD: Registered Communications Distribution Designer.
25. RUS: United States Rural Utilities Service.
26. SC: Subscriber Connection.
27. SDR: Standard Dimension Ratio.
28. SMF: Single Mode Fiber.
29. SRM: Standard Route Marker.
30. TIA: Telecommunications Industry Association.
31. UV: Ultraviolet.
32. VAC: Volts Alternating Current.
33. WGU: Wire Grounding Unit.

1.3 COORDINATION ACTIVITIES

A. Work involving the installation of fiber-optic cabling and equipment will interface with equipment provided by Others including, but not limited to, the following:
   1. Mounting of the IT Telecommunications Panel
      a. The IT telecommunications panel shall be mounted to an equipment rack at the installation site. Refer to County Utility Detail G-12.

B. Contractor shall determine all interface and installation requirements at the site prior to procurement and delivery and coordinate as required with County.

C. Permitting:
   1. Contractor is responsible for determining and obtaining all necessary permits for the work being performed, including, but not limited to:
      a. Stormwater.
      b. Utilities.
      c. Right-of-way.
      d. Canal crossings [South Florida Water Management District].
      e. FDEP.
   2. Contractor is responsible for all permitting fees.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:

1. Contractor shall be firms, corporations, individuals, or partnerships normally engaged in the deployment, maintenance, and repairs of fiber-optics at the municipal, county or state level.
2. Contractor shall have one or more of the following certifications
    a. Registered Communications Distribution Designer (RCDD)
    b. IMSA Fiber Optics for Traffic Stem Technician 2
    c. IMSA Traffic Signal Technician Level 2
    d. IMSA Traffic Signal Technician Level 3
3. Contractor shall have a minimum of 5 years of experience performing fiber-optic communications work based on the relevant scope definition category or categories above.

PART 2 PRODUCTS

2.1 GENERAL

A. Each subsection below specifies the minimum requirements for each type of product. Contractor shall adhere to product requirements below unless otherwise approved by County in writing.

2.2 FIBER-OPTIC CABLE

A. General: Provide all-dielectric, dry-filled, loose-tube, dispersion-unshifted, single-mode fiber (SMF) with low water peak, gel free, and suitable for underground (i.e., in conduit) and aerial outside plant installation. All fiber optic cable shall be splice-compatible with existing dispersion-unshifted SMF and require no electronic equipment for dispersion compensation between new and existing fiber. Ensure that all components that comprise a single length of cable are continuous and of the same material. Furnish only commercial off-the-shelf materials, equipment, and components.

B. Optical Fibers:
    1. Ensure that the optical fibers used in the cable meet or exceed the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) TIA/EIA-492-CAAB specification, the U.S. Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900, and International Telecommunication Union ITU-T G.652.D requirements. Use only optical fibers meeting the additional requirements as follows:
        a. Optical:
            1) Cabled Fiber Attenuation:
                a) 1310 nm; Less than or equal to 0.35 dB/km.
                b) 1550 nm; Less than or equal to 0.25 dB/km.
            2) Point Discontinuity:
                a) 1310 nm; Less than or equal to 0.05 dB/km.
                b) 1550 nm; Less than or equal to 0.05 dB/km.

2. Ensure that all fiber in the buffer tube is usable fiber that complies with attenuation requirements. Ensure that fibers do not adhere to each other. Ensure that the fiber is free of surface imperfections and inclusions. Ensure that all fiber optic core glass is from the same manufacturer.

C. Buffer Tubes: Ensure that the fiber optic cable includes loose buffer tubes that isolate internal optical fibers from outside forces and provide protection from physical damage as well as water ingress and migration. Ensure that buffer tubes provide freedom of movement for internal optical fibers. Ensure buffer tubes allow for expansion and contraction of the cable without damage to internal optical fiber. Ensure that fiber does not adhere to the inside of the tube. Ensure that buffer tubes permit intentional scoring and breakout without damage to the fiber. Ensure that each fiber optic cable buffer tube contains 12 fibers per tube.

D. Color Code:

1. Ensure that the marking and color-coding of the fibers and buffer tubes conforms to the TIA-598-D standard.
2. Ensure that colors are permanent and stable during temperature cycling, and not subject to fading or smearing onto each other or into the water-blocking material. Ensure that fibers are colored with UV curable inks that remain clearly distinguishable as the intended color.

E. Strength Member: Ensure that the fiber optic cable contains a dielectric central and outside elements that prevent buckling of the cable and provide tensile strength. Ensure that the fiber optic cable can withstand a pulling tension of 600 lbs. without damage to any components of the fiber optic cable.

F. Outer Jacket:

1. Mark the jacket with the cable manufacturer’s name, fiber type, fiber count, date of manufacture”, and the sequential cable lengths marked in feet. All fiber-optic cabling shall have a stripe, yellow in color, along the entire length of the cable, and shall be marked "Collier County BCC IT" at three-foot intervals. Provide legible marking with contrasting color to that of the cable jacket.

G. Performance:

1. Bend radius: Ensure that the fiber optic cable is capable of withstanding a minimum unloaded bend radius of 10 times the cable diameter and a minimum loaded bend radius of 20 times the cable diameter when loaded to pulling tension of 600 pounds. Test the cable as required in the TIA -455-33B standard. Ensure that bending the fiber optic cable up to the minimum bend radius does not affect the optical characteristics of the fiber.

2. Cable Strength: Ensure that the fiber optic cable is capable of withstanding a pulling tension of 600 pounds during installation without increasing the fiber attenuation more than 0.8 dB/mile and without changing other optical fiber characteristics after the tensile load is removed. Ensure that optical fiber is proof-tested by the fiber manufacturer at a minimum of 100 kilo pounds per square inch. Ensure that the cable will withstand 25 impact cycles and the change in attenuation does not exceed 0.2 dB at 1550 nm when tested according to the requirements as detailed in the TIA -455-25D standard. Ensure that the change in attenuation will not exceed 0.15 dB during loading at 1550 nm, and that no fiber displays a measurable change in attenuation after load removal.

2.3 FIBER-OPTIC CONNECTION HARDWARE

A. General: Ensure that all splice enclosures, organizers, cable end preparation tools, and procedures are compatible with the fiber optic cable, and are approved by the County in writing.

B. Splice Enclosures:

1. Contain all optical fiber splices within a splice enclosure. Ensure that the enclosures provide storage for splices, fiber, and buffer tubes. Ensure that the splice enclosure restores the mechanical and environmental integrity of the fiber optic cable, encases the sheath opening in the cable, and organizes and stores optical fiber. Ensure all hinges and latching devices are stainless steel. Ensure that the enclosure is airtight and prevents water intrusion. Ensure that the splice enclosure can accommodate pressurization and has the ability to be reentered without requiring specialized tools or equipment. Ensure that the enclosure provides fiber and splice organizers including splice trays and strain relief.
2. Ensure that splice enclosures are hermetically sealed to protect internal components from environmental hazards such as moisture, insects, and UV light. Fiber optic splice enclosures shall also:
3. Comply with the Telcordia Technologies' GR-771-CORE standard and all applicable NEC requirements.
4. Provide space for future expansion equal to 100% of the initial utilization.
5. Provide fiber optic cable penetration end caps to accommodate a minimum installation of two trunk fiber optic cables and two fiber optic drop cables. Ensure that the enclosure end caps are factory-drilled to the proper diameter to accept and seal the fiber optic cable entries. Ensure that the cable entry locations can accommodate an assortment of cables with outside diameters ranging from 0.45 inches to 0.55

inches, plus 10%, without jeopardizing the waterproof characteristics of the enclosure.

C. Splice Trays: Ensure that splice trays are securely attached and accessible and provide sufficient storage for the fiber cable. Ensure splice trays provide access to individual fibers without disrupting other fibers in the tray. Ensure that splice trays hold the buffer tubes rigidly in place and provide protection for fusion splices. Ensure that the raceway accommodates the minimum bend radius of the fiber. Ensure that splice trays allow visible inspection of the fiber. Ensure that splice trays include a cover with a locking mechanism to hold it in place.

D. Cable Terminations:

1. Use Type SC connectors for all new network installations. Ensure that all connectors include a ceramic ferrule and provide a strain relief mechanism when installed on a single fiber cable that contains strength elements. Ensure that the optical fiber within the body of all connectors is mechanically isolated from cable tension, bending, and twisting.

E. Pre-Terminated Connector Assemblies: Ensure that pre-terminated cable assemblies consist of fiber optic cables with factory-installed connectors on one end of the cable and an un-terminated optical fiber on the other. Ensure that the pre-terminated connector assemblies are installed with fusion splices. Ensure that all buffer tubes and fibers are protected once the attachment of pre-terminated connector assemblies is complete.

F. Buffer Tube Fan-Out Kits: Ensure that a buffer tube fan-out kit is installed when fiber optic cables are terminated. Use a kit compatible with the fiber optic cable being terminated and that is color-coded to match the optical fiber color scheme. Ensure that the buffer tube fan-out kit supports 12 fiber strands.

G. Patch Panels:

1. Ensure that the patch panel is compatible with the fiber optic cable being terminated and color coded to match the optical fiber color scheme. Ensure that the patch panel has a minimum of 12 SC-type panel connectors unless otherwise shown in the Plans. Ensure that the patch panel dimensions do not exceed 14 inches x 6 inches x 4 inches for fiber counts of twelve or less. Ensure the patch panel is suitable for mounting within an approved cabinet at the field device location. Ensure patch panels are sized to accommodate specified coupler housings and maintain sufficient bend radius for cables. Ensure the patch panel is sized to occupy the minimum space required for capacity.
2. Connector Panels:

a. Ensure that the connector panel provides 12 SC-type, bulkhead-mount coupling connectors. Ensure that each coupling connector allows connection of a cable terminated on one side of the panel to a cable on the opposite side.

2.4 IT TELECOMMUNICATIONS PANEL

A. General:
   1. Function: Receive incoming fiber-optic cable at installation site from County network.
   2. Major parts include fiber-optic patch panel, network cabling, and accessories.

B. Enclosure Specifications:
   1. Manufacturers and Products:
      a. American Products; AP Minifort Model AM-462418-24RU.
      b. No substitutions.
   2. Panel Size:
      a. Include mounting bracket accessory from panel manufacturer for installation.
      b. Increase panel size if and as needed to accommodate additional network equipment or to increase heat dissipation to reach an internal steady-state operating temperature below the maximum operating temperature of all contained equipment.
   3. Provide ground bar inside enclosure.
   4. All conduit penetrations shall be made through the bottom face of the enclosure. Side or top penetrations are not acceptable.
   5. Include quad 120 VAC power receptacle gang box inside enclosure.
   6. Enclosure shall include a standard rack for mounting of rack-mounted equipment.

2.5 CONDUIT

A. Materials of Construction: Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:

- High Density Polyethylene (HDPE):
  - For use outside site boundaries, such as roadside pull boxes and splice enclosures.
- HDPE Standard Dimension Ratio (SDR) 13.5: ASTM F2160, NEMA TC-7
- All HDPE conduit shall be orange in color.
- Schedule 80 PVC:
  - For use inside site boundary for interconnection of fiber-optic equipment and to on-site fiber-optic handholes, pull boxes, and splice enclosures.

B. Locate Wire: Ensure that locate wire is a single copper solid conductor with a minimum gauge of No. 12 AWG with blue shielding. Ensure locate wire is insulated using a 45-millimeter minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

C. Locate Wire Grounding: Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:

1. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.
2. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.
3. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation.
4. The WGU system meets the minimum standards listed below for surge protection:
    a. Surge Element: Three-element maximum duty fail-safe gas tube.
    b. Rating: 40,000 Amp surge capacity (single-cycle, 8 by 20 microsecond waveform).
    c. Life: Minimum 1,000 surges (1000 Amps to ground).
    d. Insulation Resistance: 1,000 megohm minimum at 100 volts of direct current.
    e. Clamp Voltages:
        1) Impulse at 100 volts per microsecond.
        2) Direct Current: 300 to 500 volts.

D. Route Markers:

1. Ensure Standard Route Marker (SRM) is a rigid, three-sided driven post used for location and notification purposes only.
2. Ensure that each SRM is labeled and identified as a County IT fiber optic cable marker unless otherwise shown in the Plans. The labels must include the contact information for the Collier County IT department, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.
3. Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made

from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.

4. Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.
5. Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.
6. Ensure that SRMs installed at the minimum 2-foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

2.6 PULL AND SPLICE BOXES

A. General:

1. The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.
2. Ensure in-ground boxes have an open bottom design.

B. Marking:

1. The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, and bonded with adhesive material suitable for outdoor applications.
   a. Mark application as “COMMUNICATIONS”
   b. Manufacturer’s name or logo.

C. Dimensions:

1. For fiber optic cable applications, pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 18 inches deep shall be provided.
2. Rectangular splice boxes with nominal cover dimensions of 30 inches wide by 48 inches long or larger and no less than 18 inches deep shall be provided.

D. Fabrication:

1. Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.
2. Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.
3. The box construction shall be an ANSI Tier 22 Quazite brand enclosure.

PART 3 EXECUTION

3.1 PREPARATION

A. Conduit:
1. Ensure installed conduit system conforms to fiber-optic system requirements, including:
   a. Conduits: Size and number.
   b. Access Holes, Handholes, and Pull Boxes: Location and size, to ensure cables may be installed without exceeding manufacturer's limitations.
   c. Outlet Boxes: Size to coordinate with outlet cover plates for adequate volume and bend radius.
2. Expansion Plugs: Seal conduit to stop ingress of water and grit with fabricated expansion plugs.
3. Ensure duct bank, conduit, and other confined routing is free and clear of debris before cable placement.

3.2 SOURCE QUALITY CONTROL

A. Cable End Sealing: Ensure that fiber optic cable ends are capped or sealed to prevent the entry of moisture during shipping, handling, storage, and installation. Equip one end of the fiber optic cable with flexible pulling eyes.

B. Protective Wrap: Ensure that the fiber optic cable is shipped and stored with a protective wrap or other approved mechanical reel protection device over the outer turns of the fiber optic cable on each reel. Ensure that the wrap is weather resistant and protects the cable reel from environmental hazards. Ensure that the cable reel remains wrapped until cable is to be installed.

C. Packaging, Shipping and Receiving: Ensure that the packaging and delivery of fiber optic cable reels comply with the following minimum requirements:

1. Ensure cable is shipped on reels of marked continuous length.
2. Ensure each cable is shipped on a separate, strongly constructed reel designed to prevent damage to the cable during shipment and installation.
3. Ensure each reel has a minimum of 6 feet on each end of the cable available for testing.
4. Ensure that all fiber optic cable is continuous and free from damage.
5. Ensure no point discontinuities greater than 0.1 dB per reel.
6. Ensure satisfactory transmission loss test results as required by the TIA-455-61-A standard.
7. Ensure that the manufacturer submits the date of manufacture; product and serial numbers; cable data, including the reel length; refraction index; the project name and location; type of fiber and quantity of strands used; technical product data sheets; and reel numbers.

D. Manufacturer Testing and Certification: Submit documentation of all factory tests performed by the manufacturer for all fiber optic cable, splicing material, cable terminations, and patch panels as requested by the County.

3.3 INSTALLATION

A. Fiber-Optic Cable Installation:
   1. Install all materials and equipment according to the latest version of the manufacturer's installation procedures. Ensure that all materials and installation practices are in accordance with the applicable OSHA requirements as found in 29 CFR Part 1926, Safety and Health Standards for Construction. In addition, perform the following:
      a. Ensure conduit and innerduct is clean and free from damage prior to installing fiber optic cable.
      b. Document the sequential cable length markings at each splice box and pull box wall that the cable passes through and include the information with the as-built documentation.
   2. Provide all incidental parts needed to complete the installation as necessary for a complete and properly operating system.
   3. Cable Identification:
      a. All fiber cable shall be striped with a yellow color along the entire length of the cable.
      b. A cable tag with permanent ink shall denote "COLLIER COUNTY BCC IT FIBER-OPTIC CABLE" shall be affixed on the cable at every 3-foot interval.
   4. Pulling:
      a. Install the fiber optic cable by hand or by using a mechanical pulling machine. If a mechanical pulling machine is used, equip the machine with a monitored or recording tension meter.

Ensure that at no time the manufacturer's recommended maximum pulling tension is exceeded. Ensure that the central strength member and aramid yarn are attached directly to the pulling eye during cable pulling. Use pulling attachments to ensure that the optical and mechanical characteristics are not degraded during the fiber optic cable installation.

b. Ensure that excess cable is coiled in a figure eight and fed manually when pulling through pull boxes and splice boxes by hand. If pulleys and sheaves will be used to mechanically pull through pull boxes and splice boxes, ensure that the cable will never be pulled through a radius less than the manufacturer's minimum bend radius. Use large diameter wheels, pulling sheaves, and cable guides to maintain the appropriate bend radius. Provide tension monitoring at all times during the pulling operation. Ensure that cable pulling lubricant used during installation is recommended by the optical fiber cable manufacturer.

5. Blowing: Use either the high airspeed blowing (HASB) method or the piston method. When using the HASB method, ensure that the volume of air passing through the conduit does not exceed 600 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive. When using the piston method, ensure that the volume of air passing through the conduit does not exceed 300 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive.

6. Slack Cable Storage: Provide and store fiber optic cable at each pull box and splice box to allow for future splices, additions, or repairs to the fiber network. Store the fiber optic cable without twisting or bending the cable below the minimum bend radius.
   a. Store a total of 200 feet of fiber optic backbone cable in splice boxes, with 100 feet of cable on each side of the cable splice point.
   b. Store a minimum of 100 feet of fiber optic drop cable in splice boxes.
   c. Store 100 feet of spare fiber optic cable in pull boxes.

7. Fiber Optic Connection - Splicing:
   a. Perform all optical fiber splicing using the fusion splicing technique, and according to the latest version of the manufacturer's cable installation procedures, industry accepted installation standards, codes, and practices. Ensure that all splices match fiber and buffer tube colors.
   b. Ensure that splice loss does not exceed a maximum of 0.05 dB per splice as measured on the fusion splice machine when splicing newly installed fibers together. Ensure that splice loss does not exceed a maximum of 0.1 dB per splice as measured

on the fusion splice machine when splicing newly installed fibers to existing fibers.

c. Where a fiber cable is to be accessed for lateral or drop signal insertion, only open the buffer tube containing the fiber to be accessed and only cut the actual fiber to be accessed. If a fiber end is not intended for use, cut the fiber to a length equal to that of the fiber to be used and neatly lay it into the splice tray.

d. Treat any fibers exposed during splicing with a protective coating and place in a protective sleeve or housing to protect the fiber from damage or contaminants. Neatly store all splice enclosures within a splice box.

8. Splice Plan: Submit a splice plan showing the location and configuration of splices in the system for approval by the County. Perform all splicing according to the splice plan. Document each splice location and identify the source and destination of each fiber in each splice tray. Document all fiber colors and buffer jacket colors used during installation and develop a sequential fiber numbering plan as required in the TIA -598-D standard for color-coding in the documentation.

9. Splice Equipment: Use a fusion splice machine to splice all optical fiber. Ensure that splice equipment is new from the factory, or equipment has been serviced and certified by the factory or its authorized representative within the previous 12 months from the commencement of its use. Ensure that the calibration certificate is maintained in the splicing equipment case or provided electronically when requested. Clean all splicing equipment and calibrate according to the manufacturer's recommendations prior to each splicing session at each location.

B. Cable Termination Installation: Ensure that cables, buffer tubes, or strands are neatly routed, secured, and terminated in a patch panel in coordination with the County. Ensure all cable termination points include documentation regarding the identification, route, and function of each fiber installed at that location. Ensure that a copy of this information is placed alongside the installed equipment (for instance, in a document pouch or drawer within a field cabinet).

C. Patch Panel Installation: Ensure that patch panels are neatly installed and secured in a weather-proof enclosure.

D. Conduit Installation:

1. Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Standard Plans. Construct conduit runs as straight as possible. Mark the location of the conduit system

with route markers every 1,000 feet and at every pull box and splice box. Ensure that all route markers used are new and consistent in appearance.

2. Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.
3. Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.
4. Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.
5. Install the conduit system so the fiber optic cable maintains the minimum bend radius. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Coupling method and material to be in compliance with manufacturer's installation guidelines.
6. Conduit Terminations:
    a. Where conduit enters a box, fitting, or other enclosure, provide a bushing or adapter (end bell, conduit adapter, etc.) to protect the conductor or cable from abrasion unless the box, fitting, or enclosure provides equivalent protection.
    b. For conduit to be encased in concrete, wrap with tape, or otherwise protect all terminations to prevent the entrance of concrete.
    c. Connect new underground conduits to existing underground conduits with a pull box.
    d. Seal conduits terminating in a pull box or junction box with a moisture resistant sealant.
7. Restoration of Trench Areas: Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.
8. Above-Ground Installation
    a. Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration.
    b. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5-foot centers.
9. Elbow Curvature:
    a. For 2-inch conduit, the radius of curvature of the centerline of any bend shall not be less than 9.5 inches.

E. Fiber-Optic Cable Locate Wire:

1. Installation:
    a. Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. When conduit is placed by trenching, bury locate wire along the centerline of the top outer surface of installed conduit.
    b. Do not run locate wires into field cabinets. Terminate locate wires at the following locations or as shown on the Plans, nearest pull box to a field cabinet, nearest pull box to a building, and splice box locations. Ensure that wire termination occurs in a pull box.
    c. Install WGUs in pull boxes and splice boxes as shown in the Plans. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.
2. Testing: Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system. Perform continuity tests and insulation resistance tests on all locate wires. Replace, or repair defective locate wire at no additional cost.

F. Route Markers:

1. Install route markers for new fiber optic cable installations, replace route markers as shown in the Plans, and ensure the following:
    a. Markers are plumb and level and the notification information is clearly visible when viewed from the side facing the roadway.
    b. Markers are set within the right of way.
    c. Markers are placed at a one-foot offset from the conduit system.
    d. The top of the marker post is a minimum of five feet and maximum of six feet above the finish grade
    e. Place marker at each pull box location.
    f. Markers are installed on both sides of a stream, river, or other water crossing, and on both sides of aboveground attachments such as bridges and walls.
2. Remove and replace all marker posts damaged during installation at no additional cost. Provide as-built documentation at the completion of installation that includes location of all installed route markers and correlates the marker to the fiber optic infrastructure that it signifies.

G. Pull and Splice Boxes:

1. Do not install power and communication cables in the same box.

2. Install pull and splice boxes in accordance with Plans. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Prior to installation, pour in a bed of pea rock or crushed stone at least one foot deep, with horizontal dimensions four inches longer than the width and length of the pull box. The pull or splice box installation shall be placed so that the inside edge of the box rests entirely on a gravel bed. Do not install pull or splice boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without exceeding the cable bend radius.
3. Provide conductive metal ground rod that is at least 5/8 inches in diameter and 48 inches long. Ground rod shall be installed vertically within three inches of the inside edge of the pull or splice box, with at least 10 inches of the rod exposed above the gravel base.
4. Placement and Spacing: Pull boxes shall be spaced a maximum of 1,000 feet apart, and within 20 feet of either side of a roadway, and within 10 linear feet of any fiber optics termination point. The County agency shall reserve sole determination whether spacing of pull boxes shall be less or more than the standard 1,000 feet apart.
5. Relocation of Pull and Splice Boxes:
    a. Relocation of pull and splice boxes shall consist of removing an existing box and installing the box at the location shown in the Plans. Restore the area of the box removal and relocation to the condition of the adjacent area. The costs for restoration will be included in the Contract unit price of the relocation.
    b. Boxes damaged due to the Contractor's operations must be replaced by the Contractor at no cost to the County. Replacement boxes must be of the same material and size of the existing box, unless directed otherwise by the CCITD.

3.4 FIELD QUALITY CONTROL

A. Installation Testing:
1. General:
    a. Notify the CCITD of cable testing at least 14 calendar days in advance. Submit the testing procedures to the CCITD staff for approval prior to commencement of testing. Perform all tests at 1310 nm and 1550 nm wavelengths, and include the last calibration date of all test equipment with the test parameters set on the equipment in the test documentation. Ensure that the last calibration date of all test equipment is within the last 12 months and that the calibration certificate is maintained in the test equipment case or provided electronically when requested. Test all installed fibers (terminated and un-terminated) using

methods identified in this Section. All tests must be conducted with a launch box.

b. Fibers containing splices or fibers terminated on both ends must be bidirectionally tested.

c. Present the results of the optical time domain reflectometer (OTDR) testing (i.e., traces for each fiber) and a loss table showing details for each splice and termination tested to the CCITD in an approved electronic format. Ensure all OTDR testing complies with the EIA/TIA-455-61 standard.

2. OTDR Attenuation Testing: Perform testing on all fibers to ensure that attenuation does not exceed allowable loss (0.35 dB/km for 1310 nm wavelength, 0.25 dB/km for 1550 nm wavelength, plus 0.5 dB for any connectors and 0.1 dB for splices). Repair or replace cable sections exceeding allowable attenuation at no cost to the County.

3. OTDR Tracing: Test all fibers with an OTDR at wavelengths of 1310 and 1550 nm.

4. Splice Loss Testing: Ensure that the splice loss for a SMF fusion splice does not exceed a maximum bidirectional average of 0.1 dB per splice when measured using an OTDR. Repair or replace splices that exceed allowable attenuation at no cost to the County.

5. Connector Loss Testing**:** Ensure that the attenuation in the connector at each termination panel and its associated splice does not exceed 0.6 dB when measured using an OTDR. Repair or replace connectors exceeding allowable attenuation at no cost to the County.

B. Fiber Optic Cable Locator: Locate and mark all existing County owned or maintained fiber optic facilities within project limits prior to performing any subsurface work. Locate and mark as necessary to ensure that all fiber optic facilities are located and visibly marked at all times.

C. Fiber-Optic Cable Warranty: Ensure that the fiber optic cable, the splice enclosures, and terminations have a manufacturer's warranty covering defects for a minimum of two years from the date of final acceptance. Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

D. Pull and Splice Box Warranty: Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance. Ensure the warranty includes providing replacements, within 30 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

E. Documentation and Closeout

1. Within ten (10) days following successful installation and testing of the fiber-optic communication work, Contractor shall provide the County both printed and electronic copies of as-built network drawings.
2. At minimum, as-builts shall contain:
    a. Network block diagrams, identifying endpoints for fiber termination, number of fiber strands and cables, and topology layout.
    b. Updated site plan of each affected installation site identifying location of the IT telecommunications cabinet, in addition to pull boxes and handhole locations at the installation and interconnecting conduit.
    c. Updated overall site plan identifying the fiber-optic cable installation for the entire project, including all interconnecting segments between installations or other endpoint locations. Overall site plant shall include all pull boxes, splice vaults, handholes, and fiber cable lengths.
    d. As-built plans shall additionally be provided as converted Google Earth and Visio formats for County use.

END OF SECTION

SECTION 3

UTILITIES DETAIL DRAWINGS

For the latest revisions to the Utilities Detail Drawings visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 3

UTILITIES DETAIL DRAWINGS

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G-4	Pipe Conflict Detail	04/2006
G-5	Jack and Bore Detail	08/2008
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G-8	Typical Horizontal Directional Drill (HDD) Under a Roadway	07/2018
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Drawing No.	Title	Revision Date
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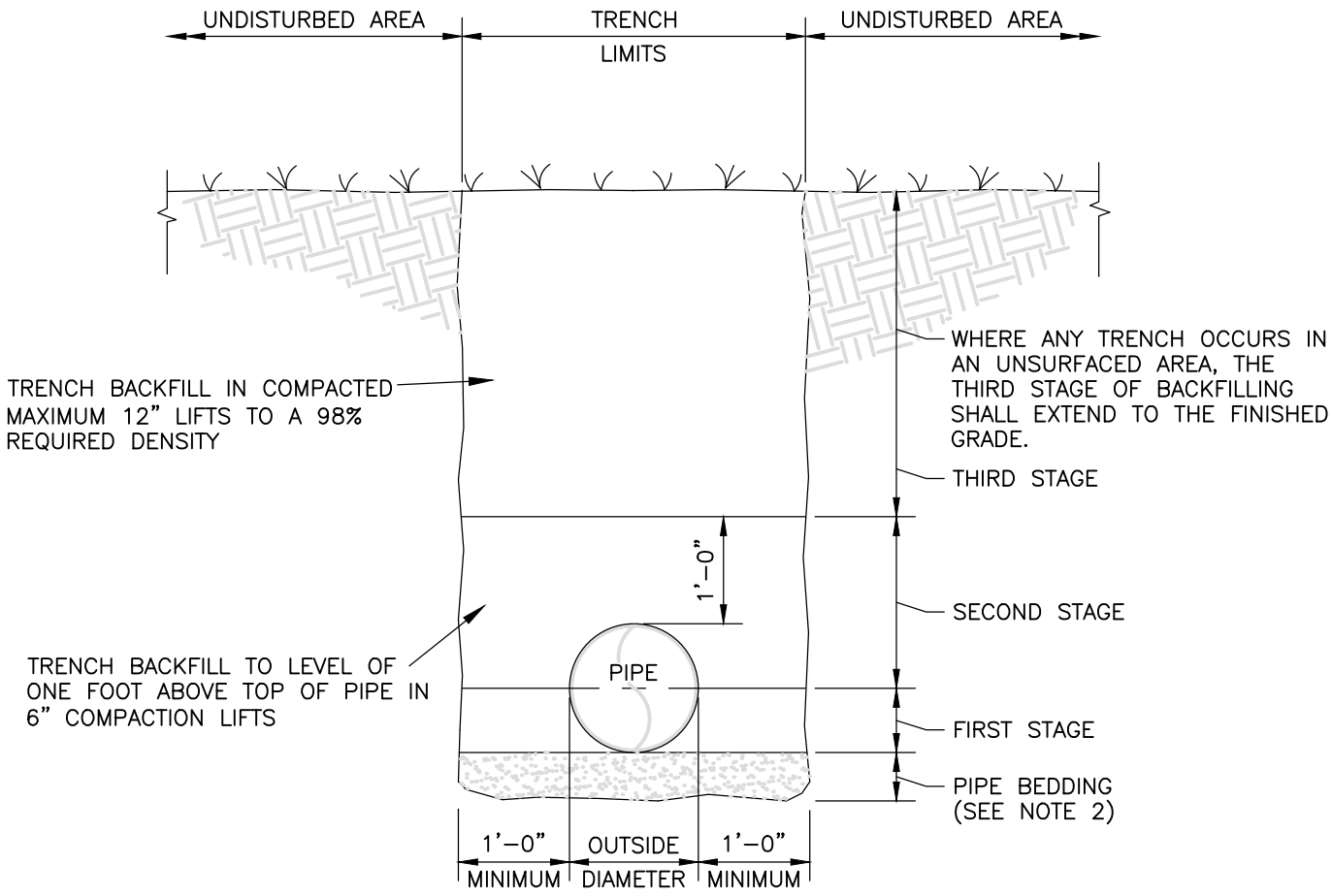
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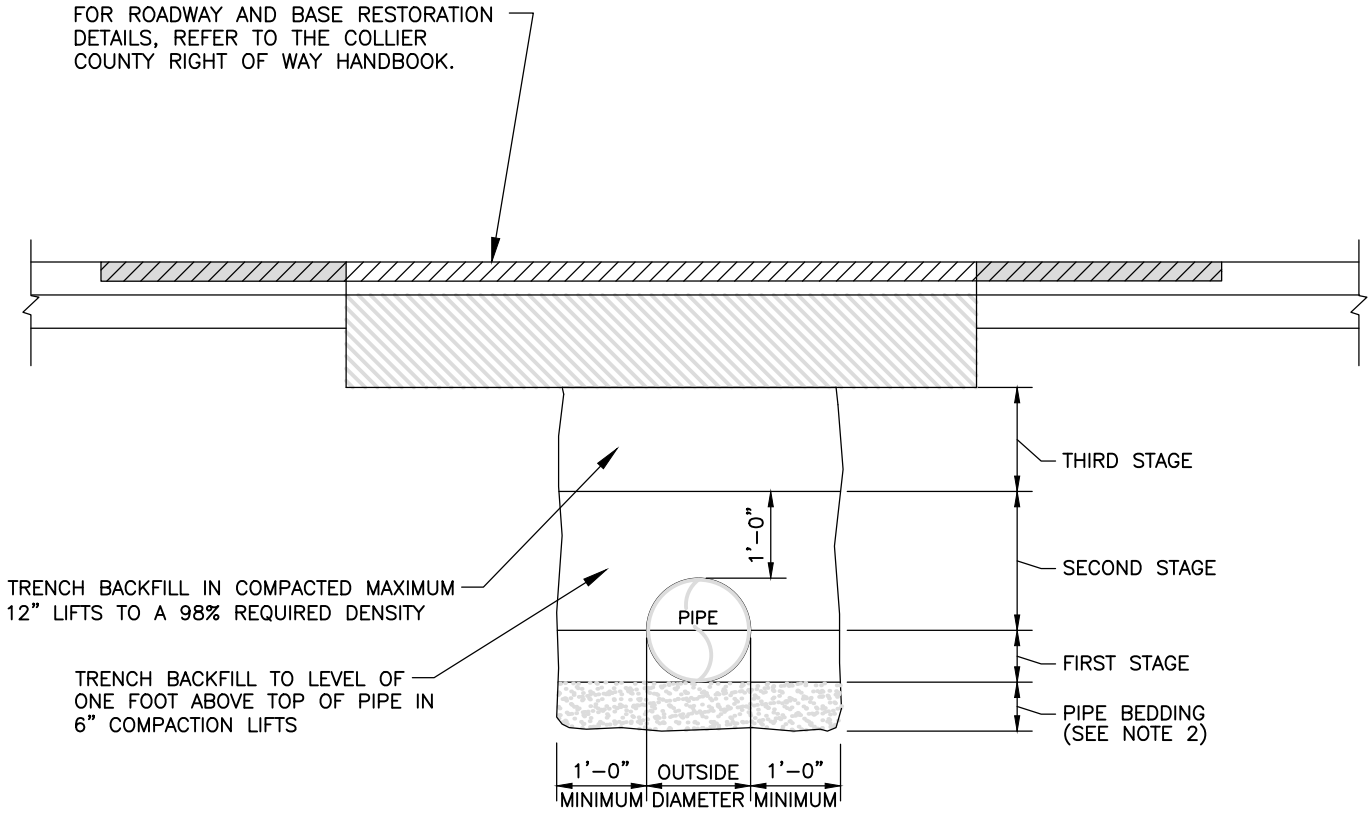


NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.

2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

UNPAVED AREA TRENCH BACKFILL DETAIL	REVISION DATE: APRIL 2006	Collier County	SHEET NO. G-1
NTS			

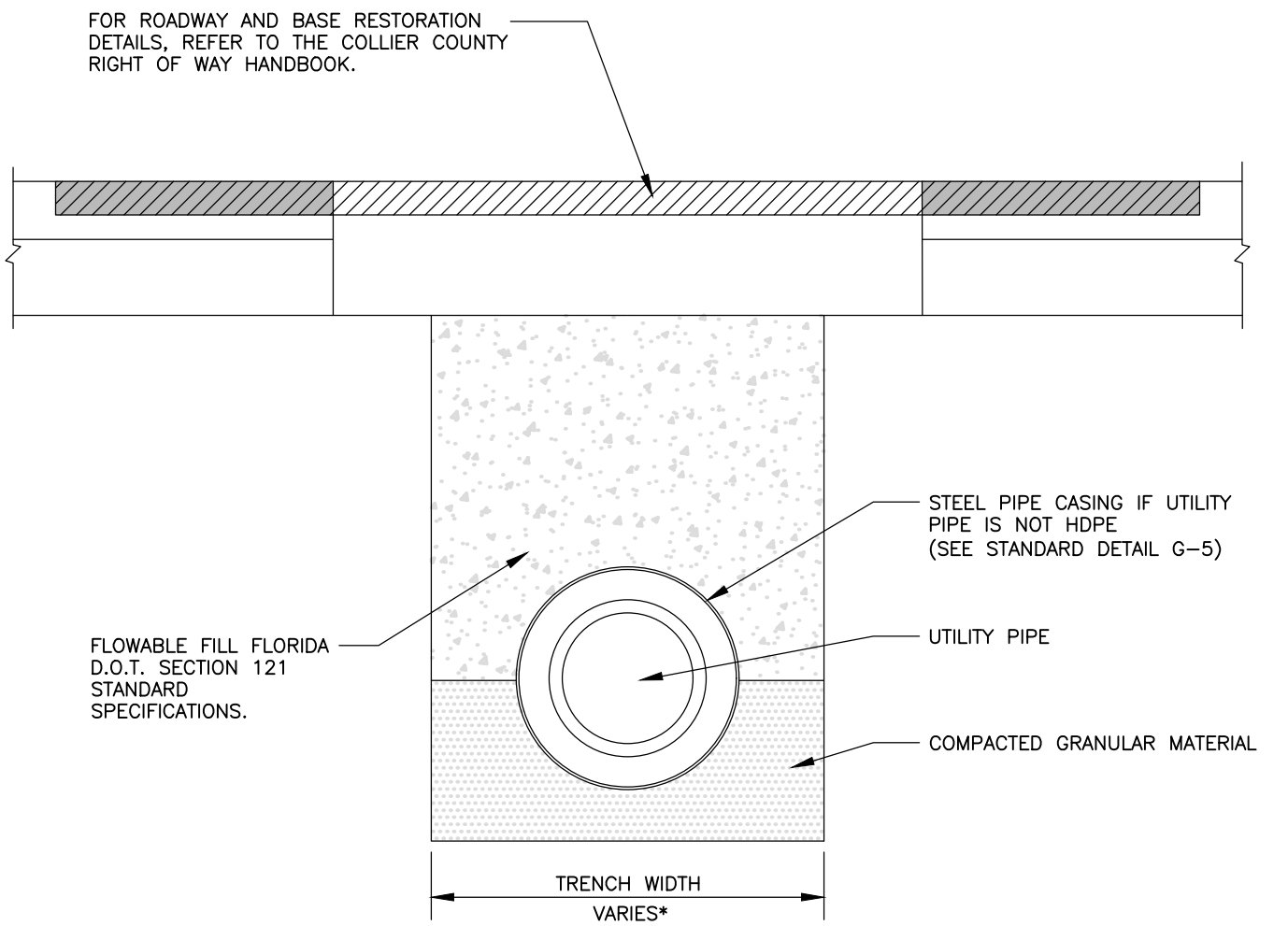


NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.

2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

PAVED AREA TRENCH RESTORATION DETAIL FOR PRIVATE ROADS	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2
NTS			

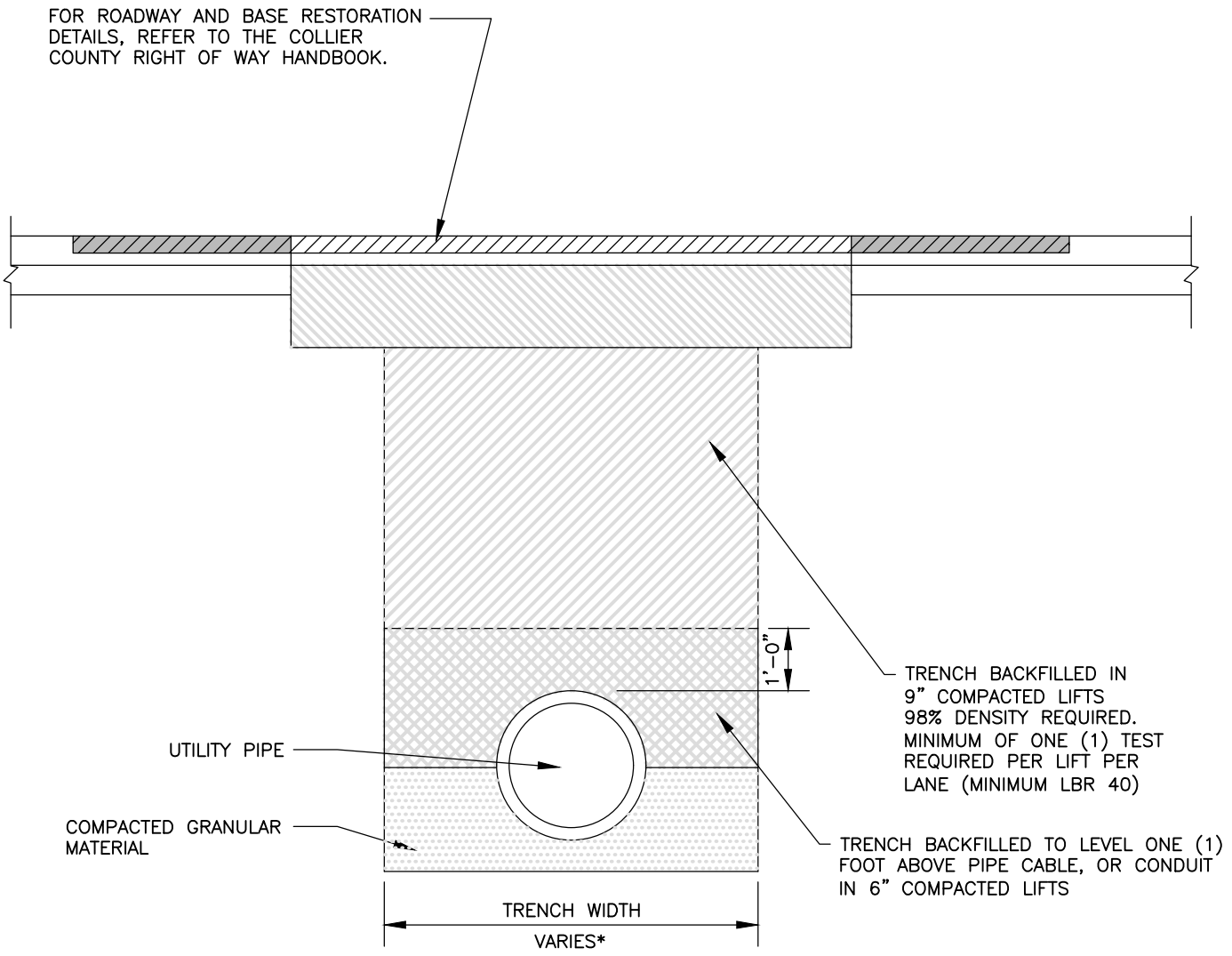


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.
2. ALL PIPES SHALL BE CONSTURCTED WITIHN A STEEL CASING PIPE IF INSTALLED ON A ROAD TO BE WIDENED, UNLESS THE UTILITY PIPE IS HDPE.

STATE ROAD, MAJOR COUNTY ROAD, AND NUMBERED COUNTY ROAD FLOWABLE FILL ROAD AND TRENCH RESTORATION NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2A

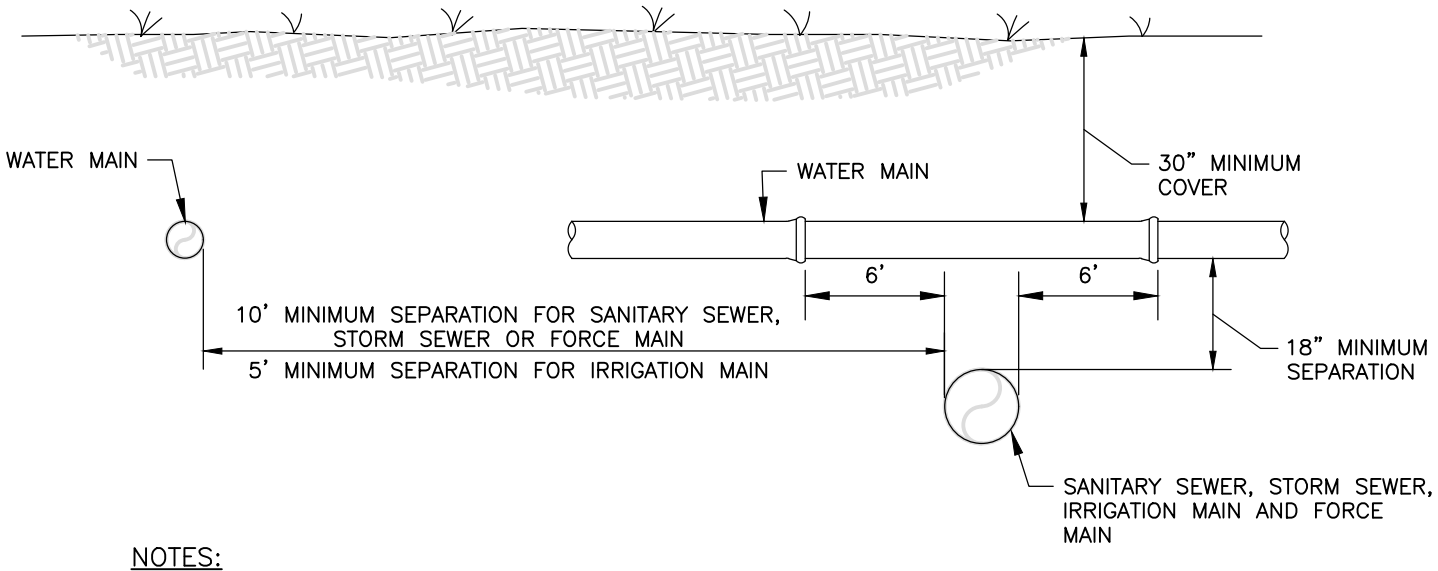


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. ALL MODIFIED PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY.
2. ALL TESTS SHALL BE COMPLETED AND SHALL MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACKFILLING.
3. RIGHT-OF-WAY PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY RIGHT-OF-WAY.
4. ASPHALT PATCH AND TAPERS MUST BE FLUSH WITH ADJACENT ASPHALT AND CURBING.

ROAD AND TRENCH RESTORATION FOR LOCAL ROADS	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2B
NTS			



NOTES:

1. WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER, NON-POTABLE IRRIGATION MAINS, AND FORCE MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18 INCHES MEASURED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE. THE 18 INCHES MINIMUM VERTICAL SEPARATION DISTANCE DOES NOT APPLY TO SEPARATIONS OF SEWER LATERALS AND POTABLE WATER MAIN PIPELINE INSTALLATIONS. ALSO, WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER AND FORCE MAINS BY 10 FEET AND FROM IRRIGATION MAINS BY 5 FEET MEASURED HORIZONTALLY BETWEEN OUTSIDE OF PIPES.

2. ALL CROSSINGS WITH VERTICAL CLEARANCE LESS THAN 18 INCHES SHALL REQUIRE SUBMISSION AND APPROVAL OF A DEVIATION. IF A DEVIATION IS SUBMITTED, THE FOLLOWING MINIMUM STIPULATIONS APPLY: THE CROSSING SHALL BE MADE USING A FULL LENGTH OF THICKNESS CLASS 200 (DR14) AWWA C-900 PVC OR CLASS 235 (DR18) AWWA C-905 PVC PIPE CENTERED ON THE CROSSING.

3. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.

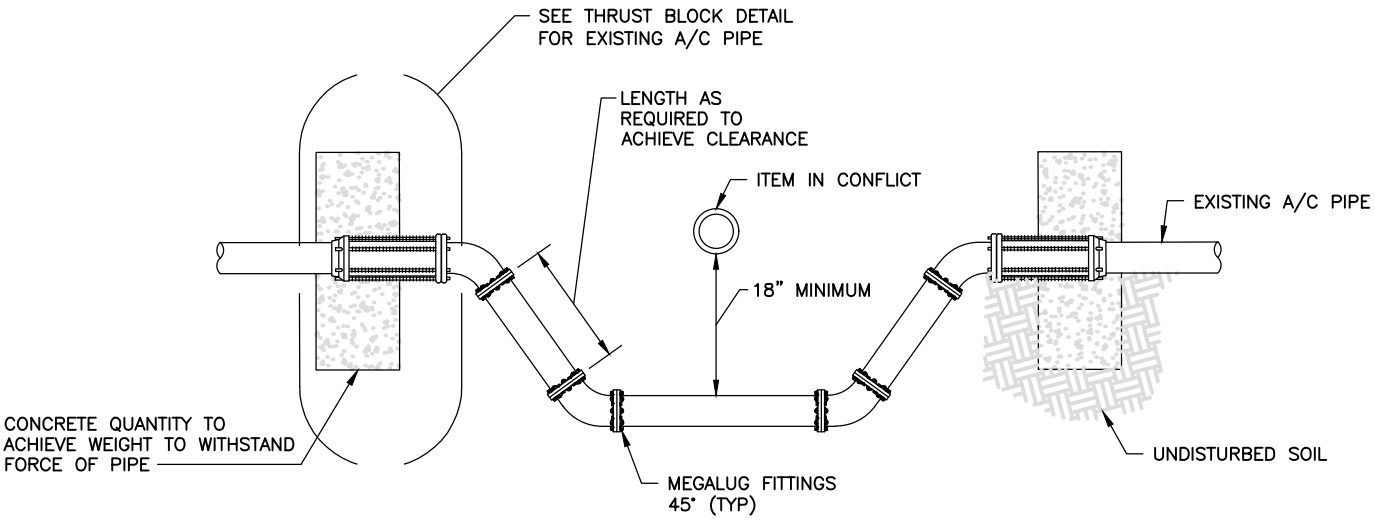
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.

5. WATER MAINS CROSSING ANY TYPE OF SANITARY SEWER, INCLUDING FORCE MAIN, OR STORM SEWER SHALL HAVE THE ONE FULL LENGTH OF WATER MAIN CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THAT THE WATER JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, FAC, AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRSSURE-TYPE SANITARY SEWERS, FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610.

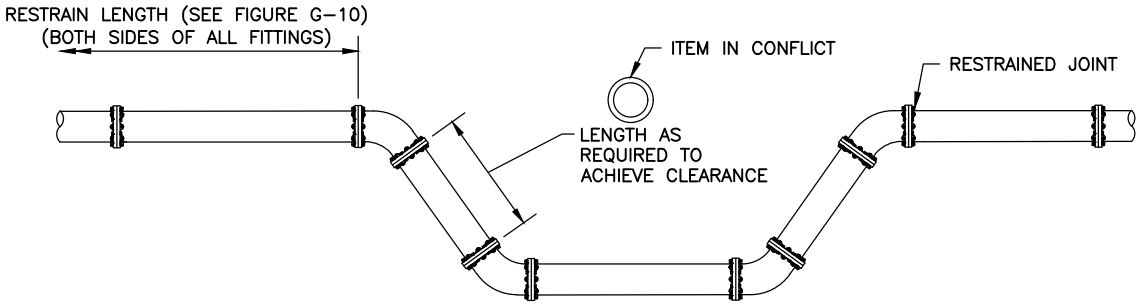
6. IF THE VERTICAL SEPARATION BETWEEN GRAVITY SANITARY SEWER AND STORMWATER LINES IS LESS THAN 18 INCHES, THEN 57 STONE SHALL BE UTILIZED BETWEEN THE TWO LINES.

7. SEE SECTION 1- DESIGN CRITERIA FOR ADDITIONAL REQUIREMENTS.

PIPE SEPARATION DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-3
NTS			



EXISTING A/C PIPE – HEADWALL

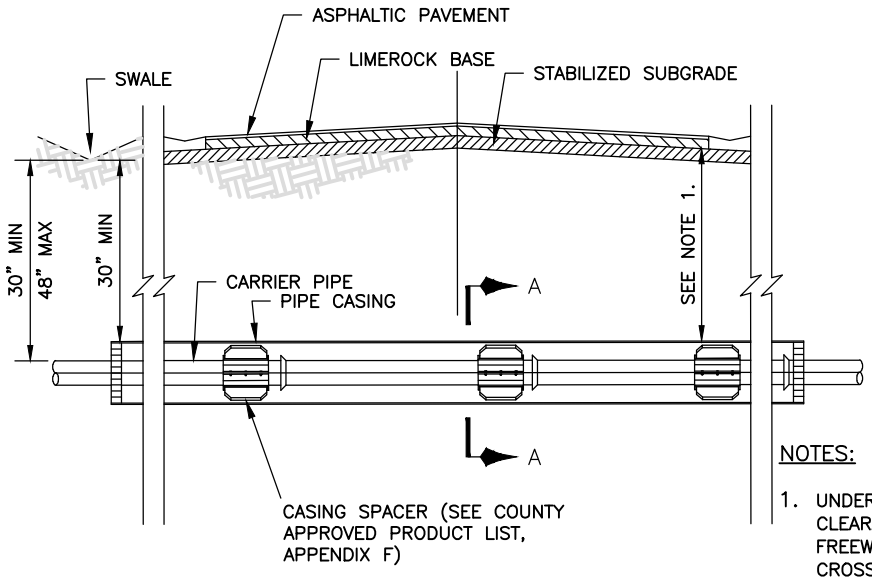


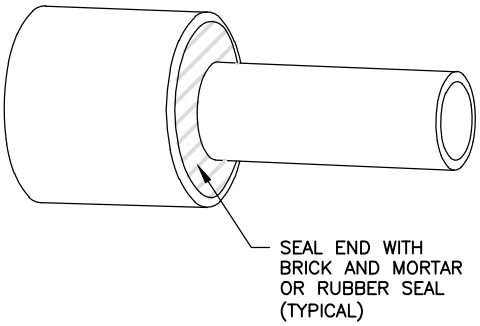
NEW & EXISTING PIPE – RESTRAINED JOINT

NOTES

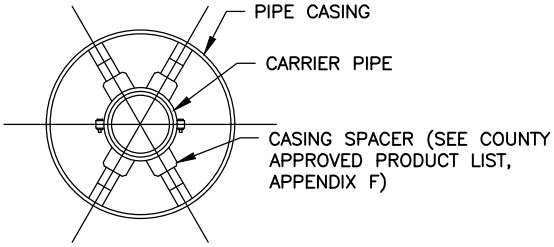
1. SEE SECTION 1 – DESIGN CRITERIA FOR AIR RELEASE VALVE REQUIREMENTS.

PIPE CONFLICT DETAILS	REVISION DATE: APRIL 2006	Collier County	SHEET NO. G-4
NTS			

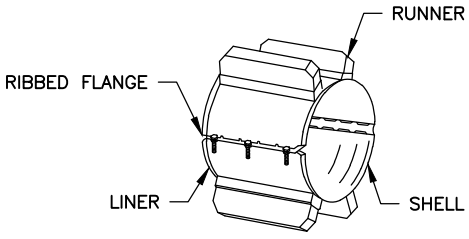




CASING END SEAL



SECTION A–A



SPACER

STANDARD NUMBER OF RUNNERS REQUIRED

UP TO 14" CARRIER PIPE	– 4 REQUIRED
OVER 14" THROUGH 36" CARRIER PIPE	– 6 REQUIRED
OVER 36" THROUGH 48" CARRIER PIPE	– 7 REQUIRED

NOTES:

1. UNDERGROUND CROSSINGS REQUIRE A MINIMUM VERTICAL CLEARANCE OF 48" BELOW PAVEMENT SURFACE FOR FREEWAYS, 36" FOR OTHER HIGHWAYS AND SUBAQUEOUS CROSSINGS OR 30" BELOW UNPAVED GROUND INCLUDING DITCH GRADE PER FLORIDA D.O.T.

2. SEE TECHNICAL SPECIFICATIONS FOR CARRIER PIPE AND CASING PIPE REQUIREMENTS.

STAINLESS STEEL SPACERS:

1. SPACERS SHALL BE BOLT–ON STYLE WITH A TWO PIECE SOLID SHELL MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS. THE SHELL SHALL BE LINED WITH A RIBBED PVC SHEET OF A 0.090" THICKNESS THAT OVERLAPS THE EDGES. RUNNERS MADE FROM UHMW POLYMER SHALL BE ATTACHED TO RISERS AT APPROPRIATE POSITIONS TO PROPERLY LOCATE THE CARRIER WITHIN THE CASING AND TO EASE INSTALLATION. RISERS SHALL BE MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS AND SHALL BE ATTACHED TO THE SHELL BY MIG WELDING. ALL WELDS SHALL BE FULLY PASSIVATED. ALL FASTENERS SHALL BE MADE FROM T–304 STAINLESS STEEL. CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

PLACEMENT OF SPACERS ON CARRIER PIPE:

1. GENERAL – ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.

2. PVC CARRIER – ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CARRIER PIPE:

1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF STAINLESS STEEL CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

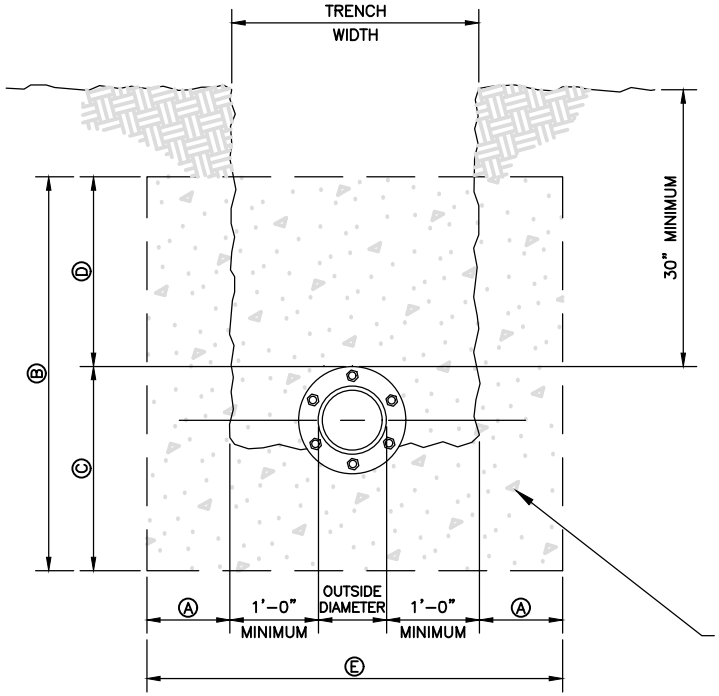
JACK AND BORE DETAIL

NTS

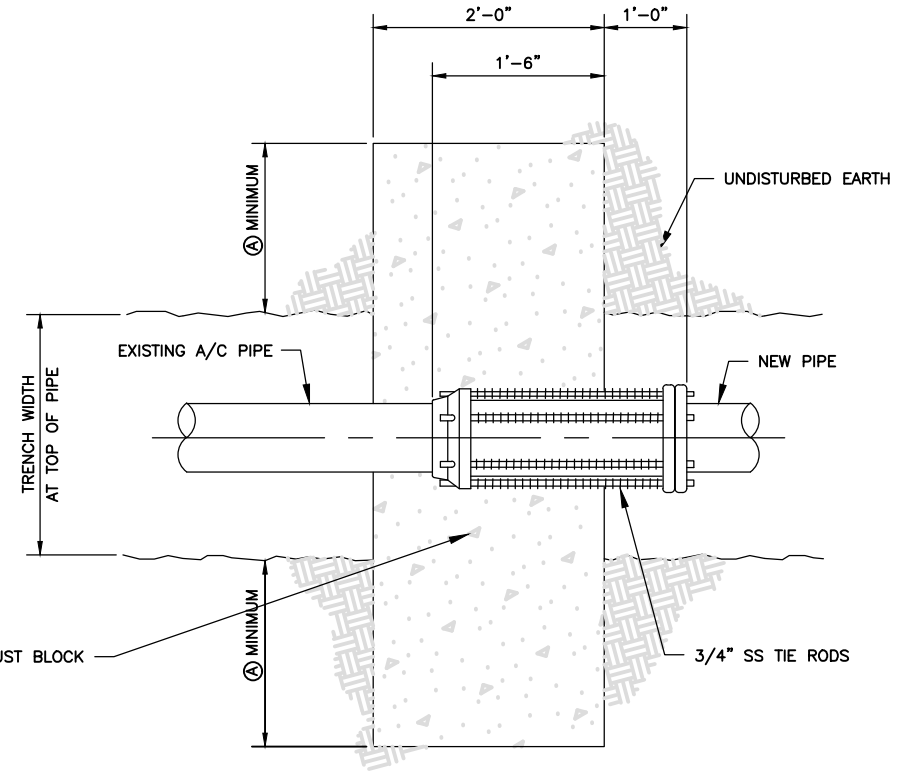
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
G–5



CROSS SECTION



PLAN VIEW

PIPE DIAMETER	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	NUMBER OF TIE RODS REQUIRED	CY.
4"	9"	36"	20"	16"	3'–10"	2	.85
6"	12"	36"	21"	15"	4'–6"	2	1.00
8"	12"	36"	22"	14"	4'–8"	2	1.04
10"	12"	36"	23"	13"	4'–10"	2	1.07
12"	18"	36"	24"	12"	6'–0"	2	1.33
16"	18"	36"	32"	4"	6'–4"	4	1.41

DESIGN ENGINEER SHALL VERIFY ABOVE DIMENSIONS AND THE NUMBER OF TIE RODS.

$$\text{CUBIC YARDS OF CONCRETE (CY)} = \frac{\left(\frac{Ⓑ \times Ⓔ}{12}\right) \times 2}{27}$$

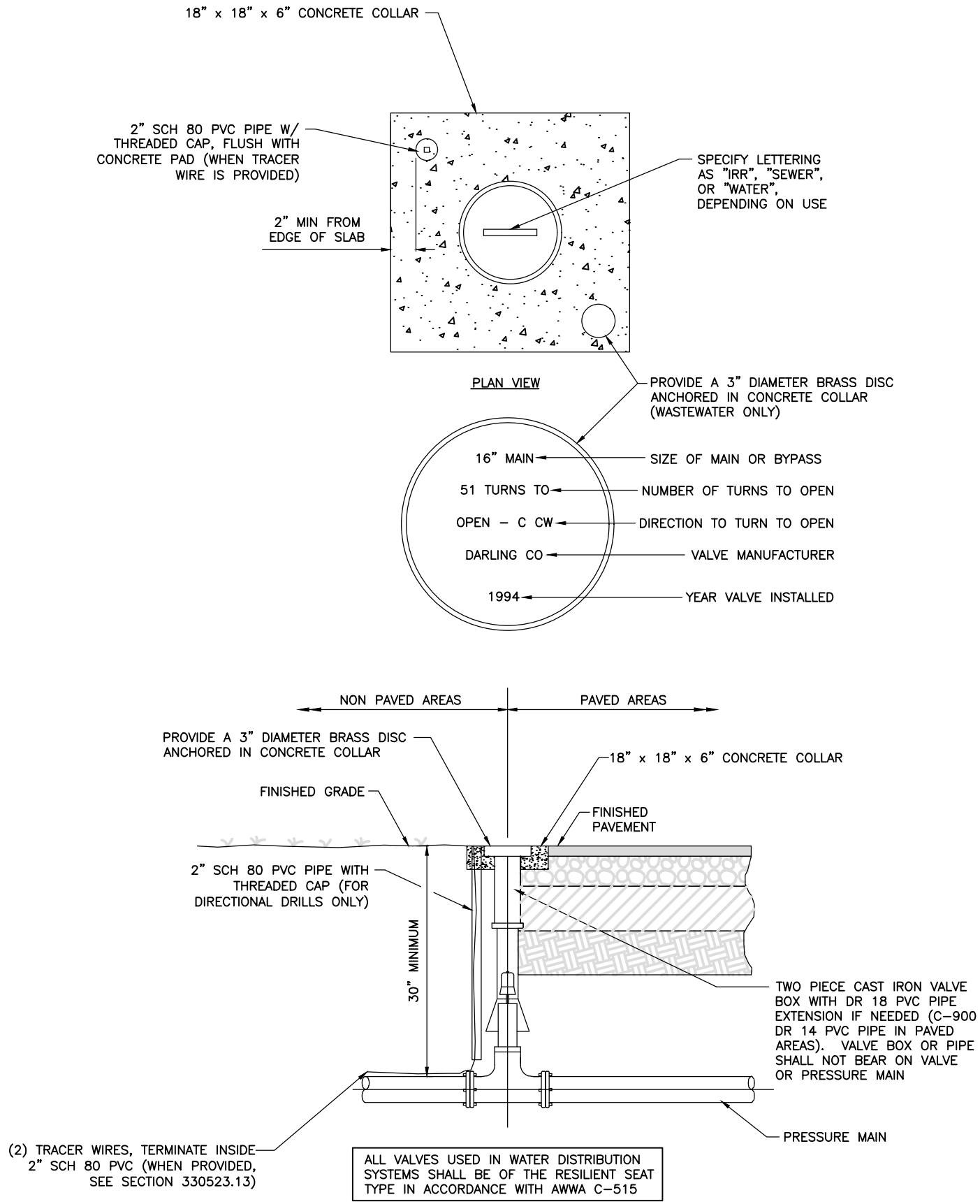
THRUST BLOCK DETAIL FOR EXISTING A/C PIPE

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
G–6



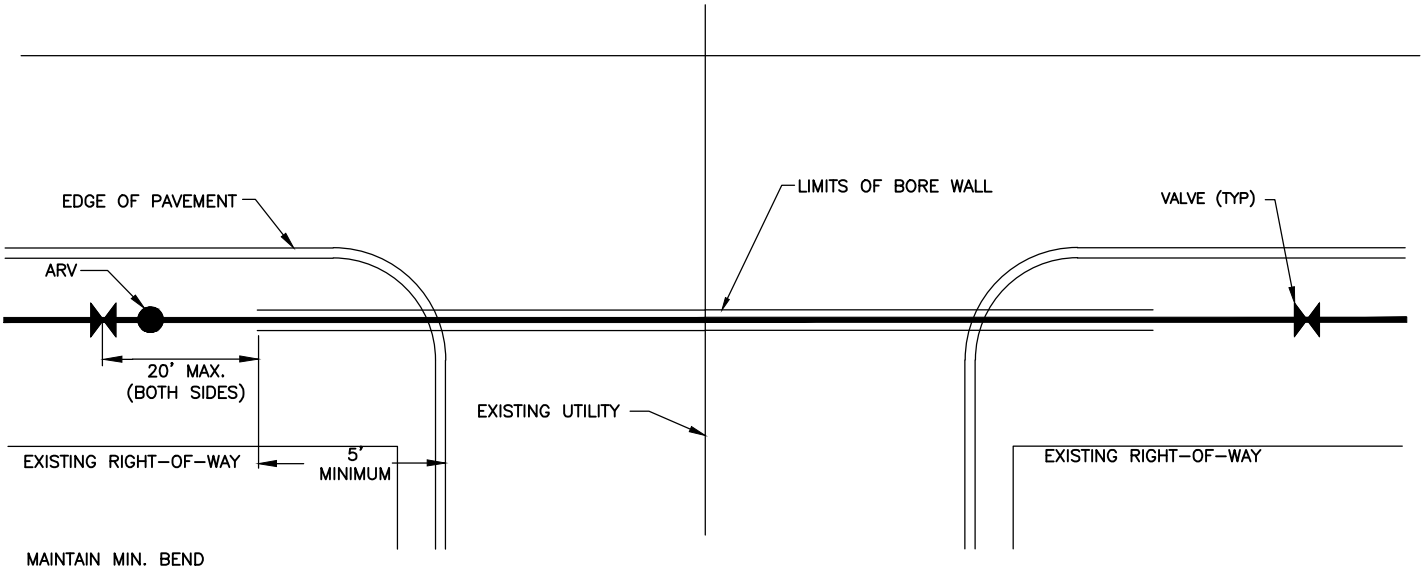
TYPICAL VALVE SETTING DETAIL

NTS

REVISION DATE:
JULY 2018

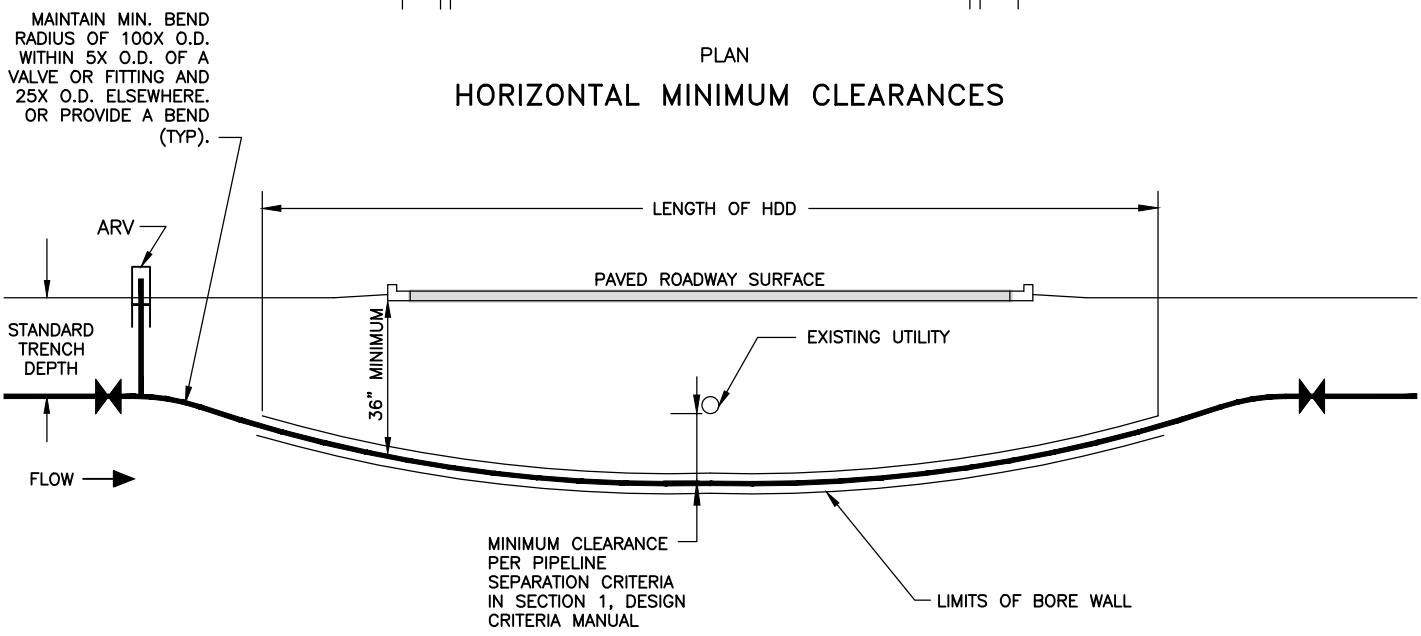
Collier County

SHEET NO.
G-7



PLAN

HORIZONTAL MINIMUM CLEARANCES



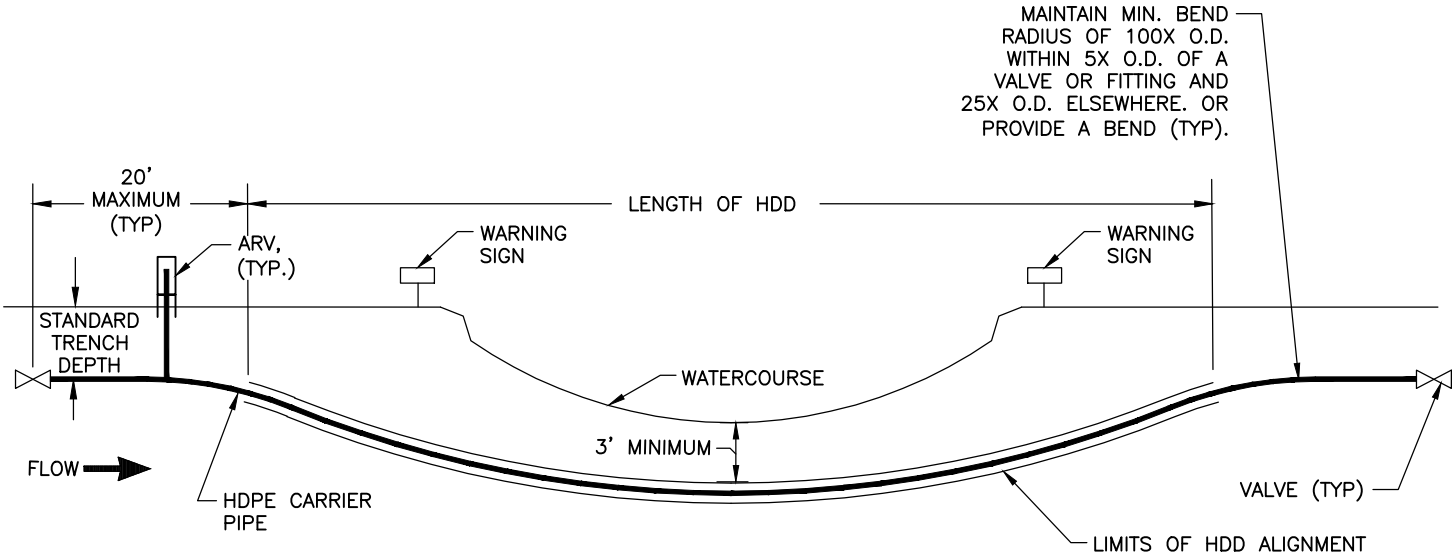
PROFILE

VERTICAL MINIMUM CLEARANCES

HDD INSTALLATION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE COLLIER COUNTY UTILITIES TECHNICAL SPECIFICATION SECTION 330523.13.
2. ALL HDD INSTALLATION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FLORIDA D.O.T. UTILITY ACCOMMODATIONS MANUAL AND THE COLLIER COUNTY UTILITIES STANDARDS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF AFFECTED AGENCIES AND COORDINATION WITH ALL UTILITIES PRIOR TO CONSTRUCTION.
4. ALL CONSTRUCTION MATERIALS, INCLUDING DRILLING FLUID, SHALL BE REMOVED FROM THE SITE PRIOR TO RESTORATION OF DISTURBED AREAS.
5. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
6. VALVES SHALL BE INSTALLED A MAXIMUM OF 20' FROM THE END OF ALL DIRECTIONAL DRILLS.

TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) UNDER A ROADWAY	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-8
NTS			

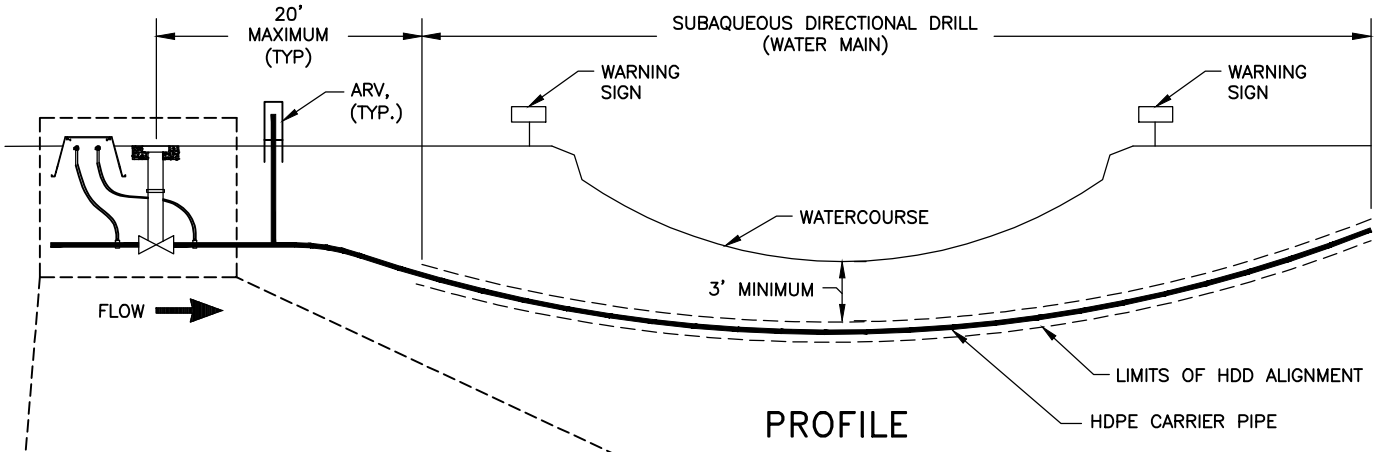


PROFILE

HDD INSTALLATION NOTES:

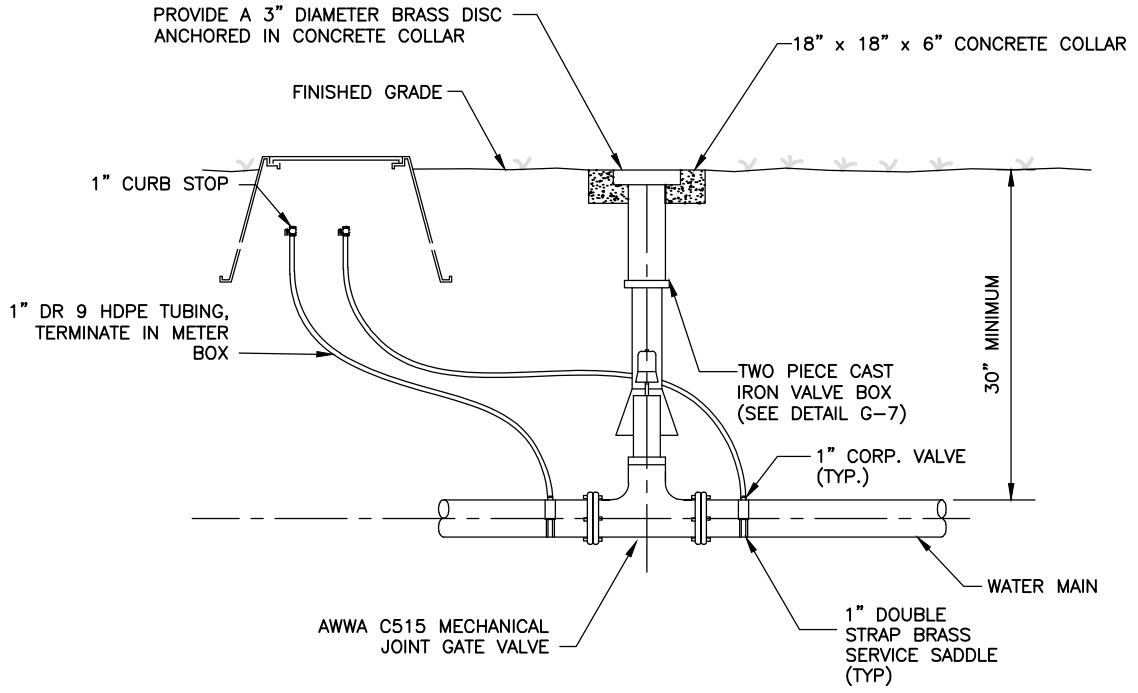
1. PROVIDE VALVES AT BOTH ENDS OF SUBAQUEOUS CROSSING. FOR WATERMAIN CROSSINGS, TWO 1" SERVICE TAPS AND SADDLES SHALL BE PROVIDED ON BOTH SIDES OF THE VALVE CLOSEST TO THE WATER SUPPLY AND TERMINATED INTO A METER BOX. SEE DETAIL G-9A.
2. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
3. ALL SUBAQUEOUS CROSSINGS SHALL BE DISCUSSED AT A PLAN PRE-SUBMITTAL CONFERENCE WITH REPRESENTATIVES OF THE WATER OR WASTEWATER DEPARTMENTS. SUBAQUEOUS WATER MAINS SHALL REQUIRE APPROVAL BY THE WATER OR WASTEWATER DEPARTMENT.
4. WARNING SIGNS SHALL BE PLACED ALONG BANKS OF WATERWAY TO CLEARLY IDENTIFY SUBAQUEOUS CROSSING. SIGNS SHALL INDICATE TYPE OF PIPELINE AND DEPTH OF PIPELINE BELOW BOTTOM OF WATER BODY.
5. VALVES SHALL BE INSTALLED WITHIN 20' OF THE END OF ALL DIRECTIONAL DRILLS.
6. DEPTH OF COVER BENEATH THE WATERCOURSE SHALL BE A MINIMUM OF 3' OR AS REQUIRED BY ACOE, SFWMD, OR OTHER APPLICABLE REGULATORY AGENCY.

TYPICAL SUBAQUEOUS HORIZONTAL DIRECTIONAL DRILL (HDD)	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-9
NTS			



PROFILE

NOTES:
1. WHERE BI-DIRECTIONAL FLOW DOES NOT OCCUR PLACE LEAK DETECTION ASSEMBLY AT UPSTREAM VALVE LOCATION AS SHOWN.
2. PLACE METER BOX AS FAR FROM NEARBY ROADWAY AS PRACTICABLE.



SUBAQUEOUS WATER MAIN VALVE DETAIL

NTS

REVISION DATE:
JULY 2018

Collier County

SHEET NO.
G-9A

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET							
	VERTICAL BENDS							
	90°		45°		22-1/2°		11-1/4°	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
4	60	24	25	10	12	5	6	3
6	85	34	35	14	17	7	9	3
8	110	43	45	18	22	9	11	9
10	133	52	55	21	27	10	13	5
12	155	60	64	25	31	12	15	6
16	198	76	82	31	40	15	20	8
18	218	83	90	35	44	17	22	8
20	238	90	98	37	47	18	23	9
24	277	104	115	43	55	21	27	10
30	330	122	136	51	66	24	33	12
36	379	139	156	57	75	28	38	14

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET				
	HORIZONTAL BENDS				DEAD ENDS (2)
	90°	45°	22-1/2°	11-1/4°	
4	23	9	5	2	55
6	32	13	6	3	77
8	40	17	8	4	100
10	48	20	10	5	120
12	56	23	11	6	141
16	71	29	14	7	181
18	77	32	15	8	200
20	84	35	17	8	218
24	96	40	19	10	253
30	112	47	22	11	303
36	127	53	25	13	350

NOTES:

1. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.

2. ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS. WITH RESTRAINT ON BOTH SIDES OF THE VALVE.

3. RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.

4. RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).

5. THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

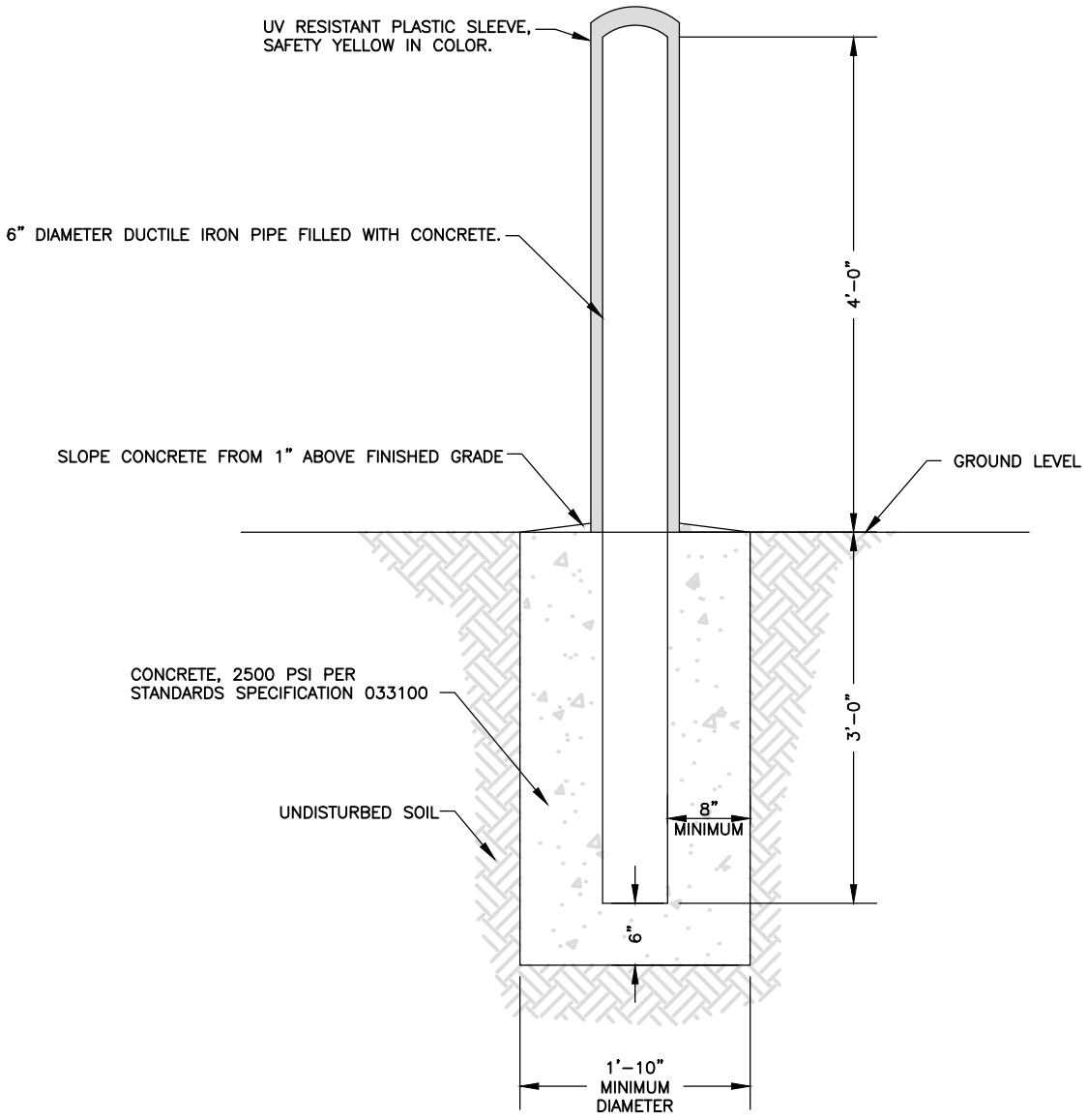
PIPE RESTRAINT SCHEDULE

NTS

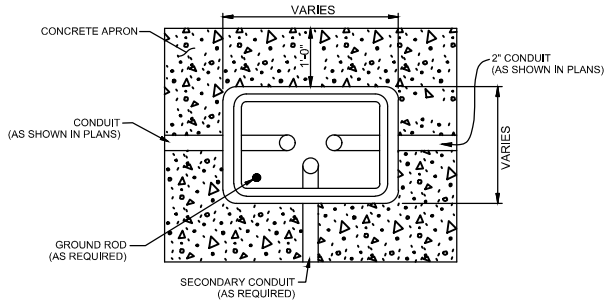
REVISION DATE:
JANUARY 2025

Collier County

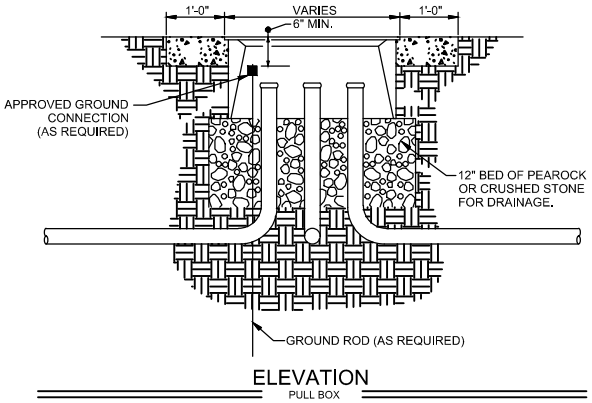
SHEET NO.
G-10



VEHICULAR GUARD POST DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-11
NTS			



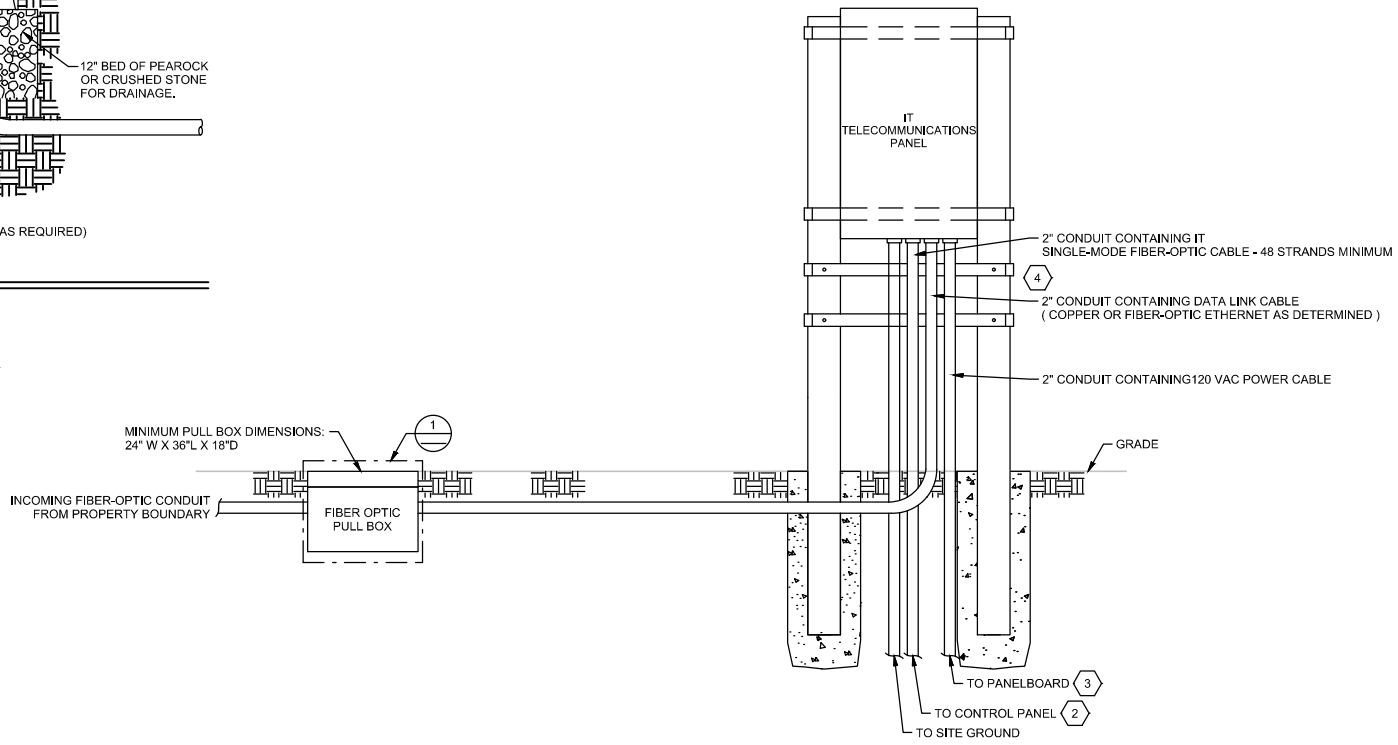
PLAN



1 DETAIL

EQUIPMENT SPECIFICATIONS

MARK	
1	DRAWING NOT TO SCALE.
2	CONTROL PANEL LOCATION AND CONFIGURATION VARIES. REFER TO COUNTY DETAILS WW-8, WW-8A, AND WW-8B FOR DETAILS.
3	120VAC PANELBOARD LOCATED ON EQUIPMENT RACK WITH OTHER PANELS NOT SHOWN. REFER TO COUNTY DETAIL WW-9A FOR COMPLETE EQUIPMENT RACK LAYOUT AND ADDITIONAL PANELBOARD REQUIREMENTS.
4	ALL TELECOMMUNICATIONS CONDUIT ENTERING SITE FROM STATION SIDE HANDHOLE SHALL BE SCH 80 PVC UNLESS OTHERWISE NOTED.
5	REFER TO COUNTY SPECIFICATIONS FOR DETAILED REQUIREMENTS ON MATERIALS OF CONSTRUCTION AND INSTALLATION METHODS.



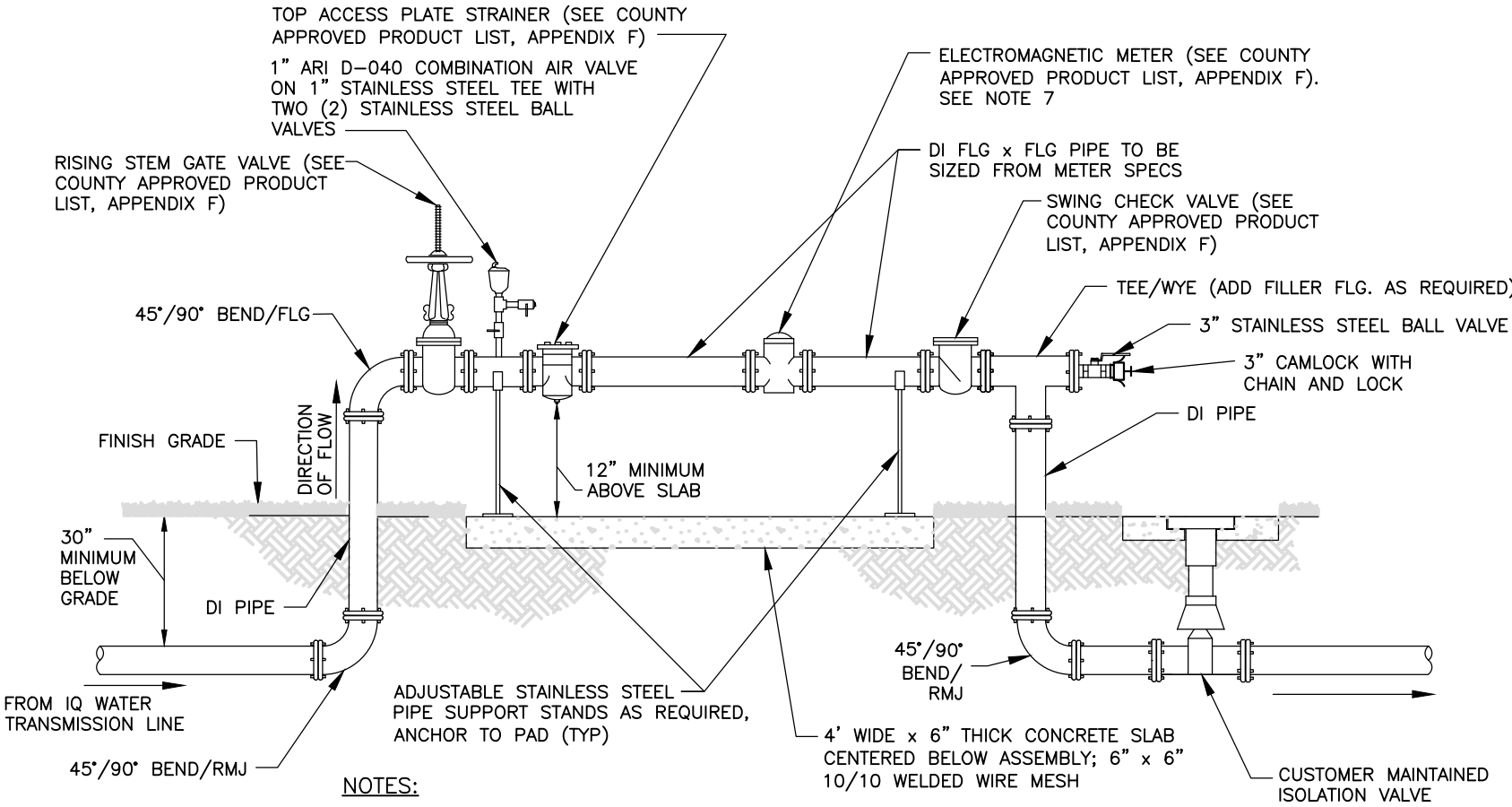
IT FIBER-OPTIC TELECOMMUNICATIONS DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
G-12



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE PAINTED PANTONE PURPLE 522-C.
2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. SUBMIT FOR REVIEW AND APPROVAL. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. ALL PIPES UNDER 3" SHALL BE BRASS.
6. METER ASSEMBLY SHALL BE LOCATED WITHIN C.U.E.
7. USE 45-DEGREE BENDS WHERE POSSIBLE.

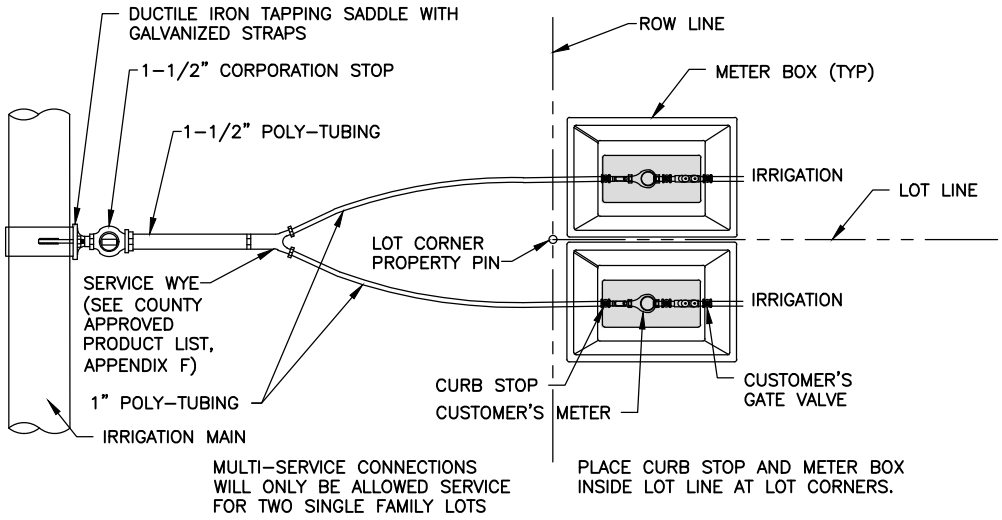
STANDARD IRRIGATION WATER NON-TELEMETRY METER ASSEMBLY 3" AND LARGER

NTS

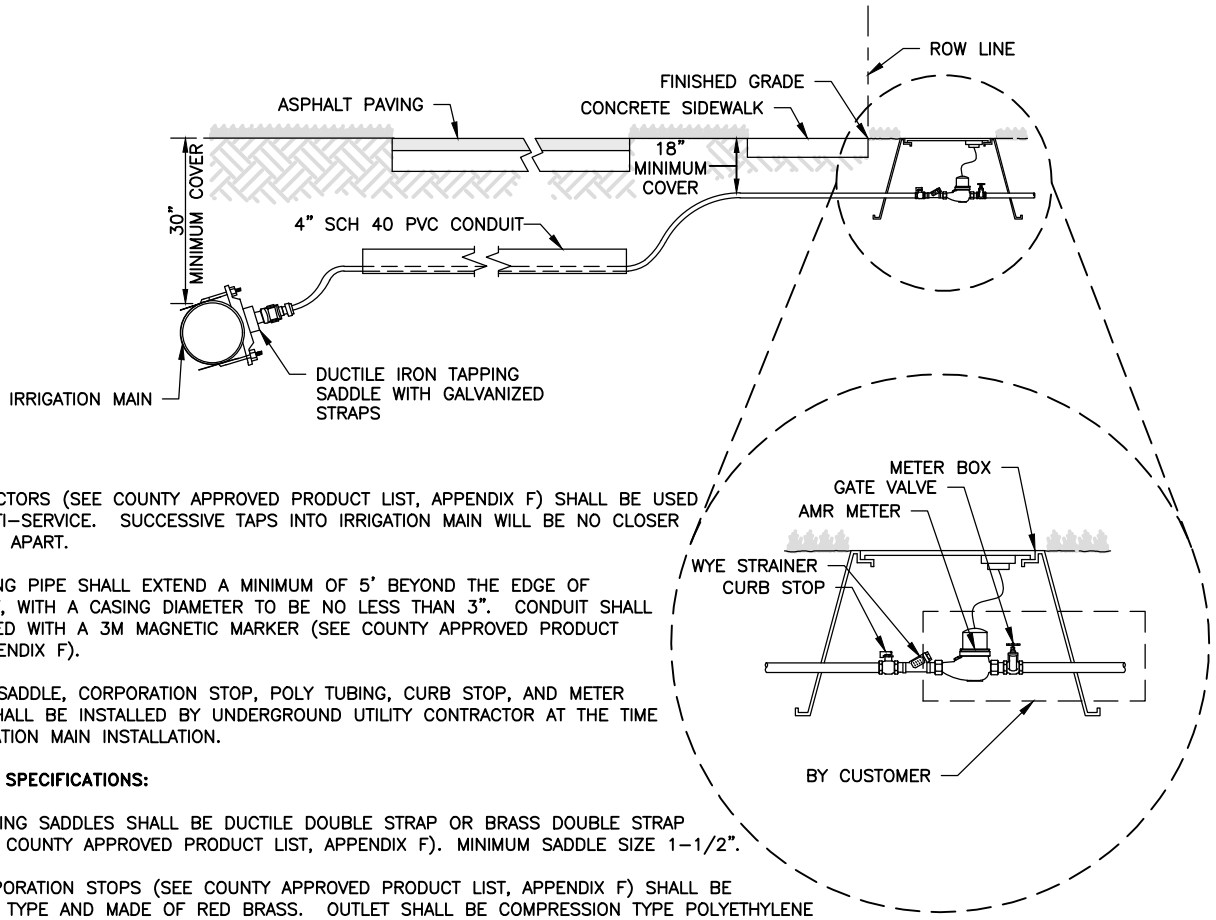
REVISION DATE:
JULY 2018

Collier County

SHEET NO.
NP-1



MULTIPLE METER SERVICE CONNECTIONS



NOTES:

1. Y CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI–SERVICE. SUCCESSIVE TAPS INTO IRRIGATION MAIN WILL BE NO CLOSER THAN 24" APART.

2. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 3". CONDUIT SHALL BE MARKED WITH A 3M MAGNETIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

3. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF IRRIGATION MAIN INSTALLATION.

4. **MATERIAL SPECIFICATIONS:**

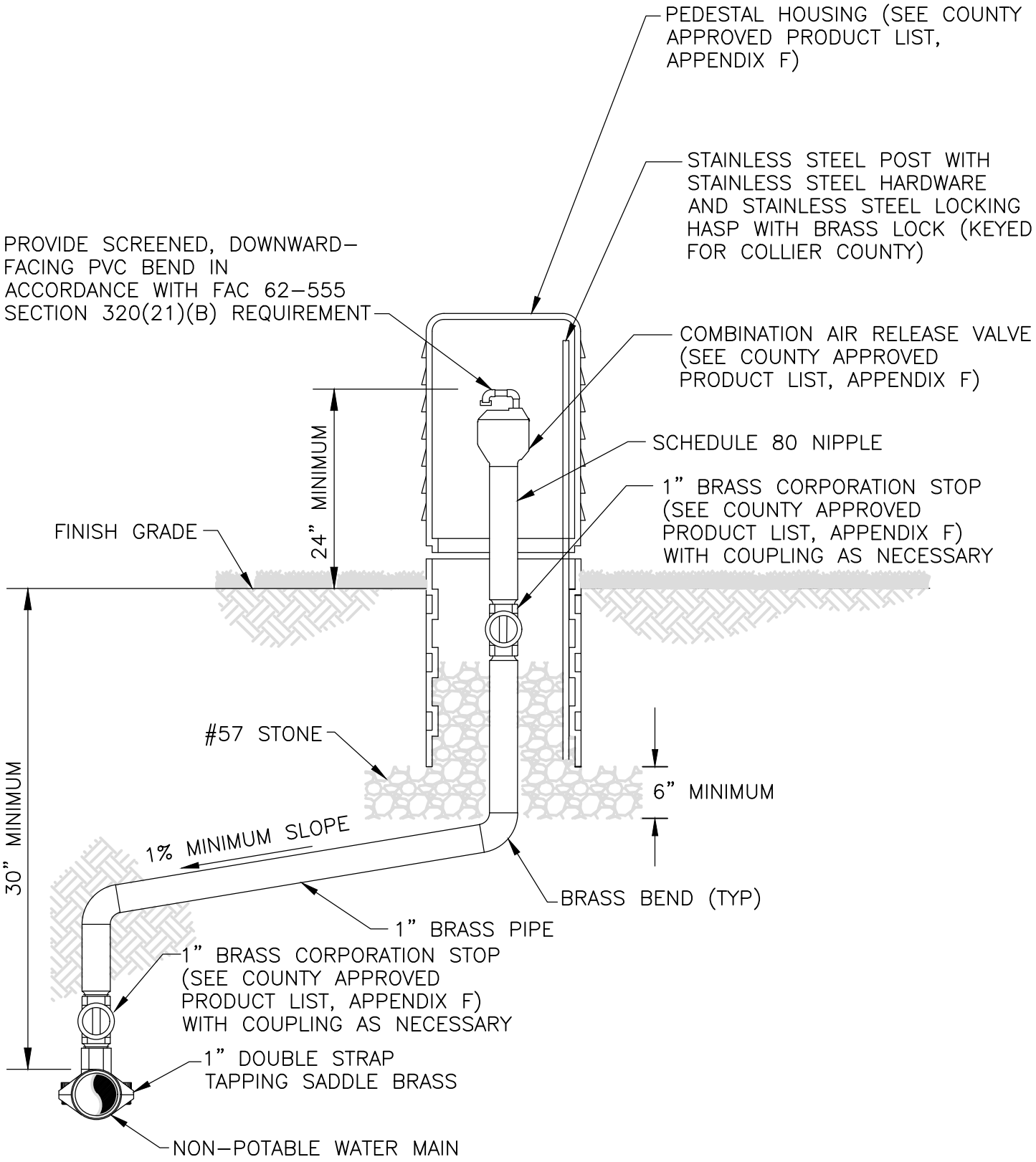
   A. TAPPING SADDLES SHALL BE DUCTILE DOUBLE STRAP OR BRASS DOUBLE STRAP (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F). MINIMUM SADDLE SIZE 1–1/2".

   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.

   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.

   D. AUTOMATIC METER READER (AMR) METER BOXES (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL HAVE CAST IRON READ LID.

TYPICAL IRRIGATION SERVICE METER SETTING DETAIL FOR CONNECTION TO IRRIGATION MAIN NTS	REVISION DATE: MAY 2009	Collier County	SHEET NO. NP–2



REUSE, RAW AND SUPPLEMENTAL WATER AIR RELEASE VALVE DETAIL	NTS	REVISION DATE: MAY 2009	Collier County

SHEET NO. NP-4

GENERAL NOTES:

1. ALL ABOVE GROUND PIPING SHALL BE PAINTED PANTONE PURPLE 522-C.

2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL HARDWARE NUTS AND BOLTS SHALL BE STAINLESS STEEL.

3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.

4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SHALL SLAB AND PROVIDE A 3' ACCESS OPENING.

5. ALL PIPES UNDER 3" SHALL BE BRASS.

6. METER ASSEMBLY SHALL BE LOCATED WITHIN COUNTY UTILITY EASEMENT.

7. ALL BELOW GRADE GROUND CONNECTIONS TO BE VIA EXOTHERMIC WELD (CADWELD) UNLESS INDICATED OTHERWISE.

CONTROL/ELEMENTARY SYMBOLS

- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- AR — ALARM RELAY
- AT — ALARM TIMER
- CR — CONTROL RELAY
- F/T FIT — FLOW INDICATOR TRANSMITTER (TOTALIZER)
- L/T LIT — LEVEL INDICATOR TRANSMITTER
- P/G — PRESSURE GAUGE
- TS — TAMPER SWITCH
- S/S — SURGE SUPPRESSION DEVICE
- SV — SOLENOID VALVE
- A — ALARM INDICATING LIGHT
- R — RUN INDICATING LIGHT
- MOMENTARY CONTACT PUSHBUTTON
- MOMENTARY BREAK PUSHBUTTON OR RESET
- MAINTAINED CONTACT ON-OFF SWITCH
- FUSE
- MOLDED CASE CIRCUIT BREAKER
- REMOTE TERMINAL BLOCK POINT

TSP — TWISTED SHIELDED PAIRS

ELECTRICAL PLAN SYMBOLS

- SYSTEMS CABINET AS NOTED OR MARKED
- CONDUIT AND WIRE CONCEALED IN FLOOR SLAB OR UNDERGROUND
- MOV — MOTOR OPERATED VALVE CONNECTION
- SERVICE OR EQUIPMENT GROUND

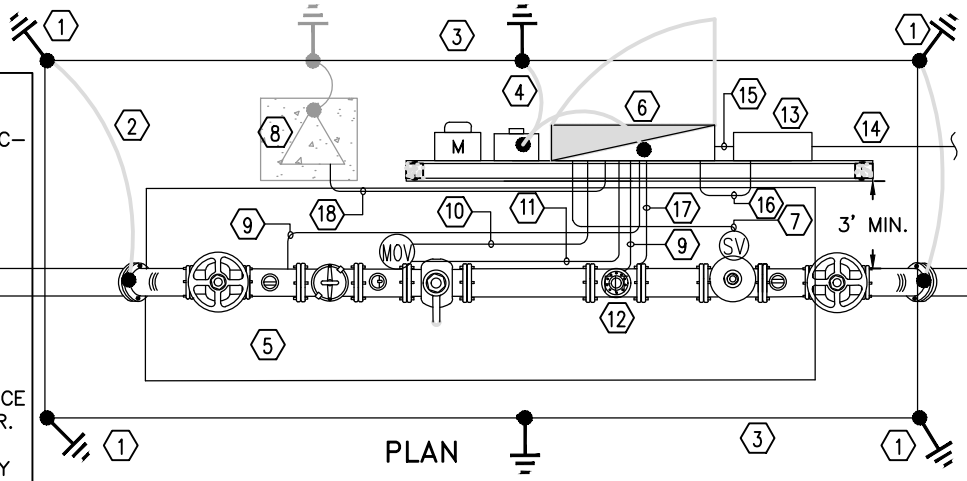
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE GENERAL NOTE AND KEYNOTES

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO. NP-E1



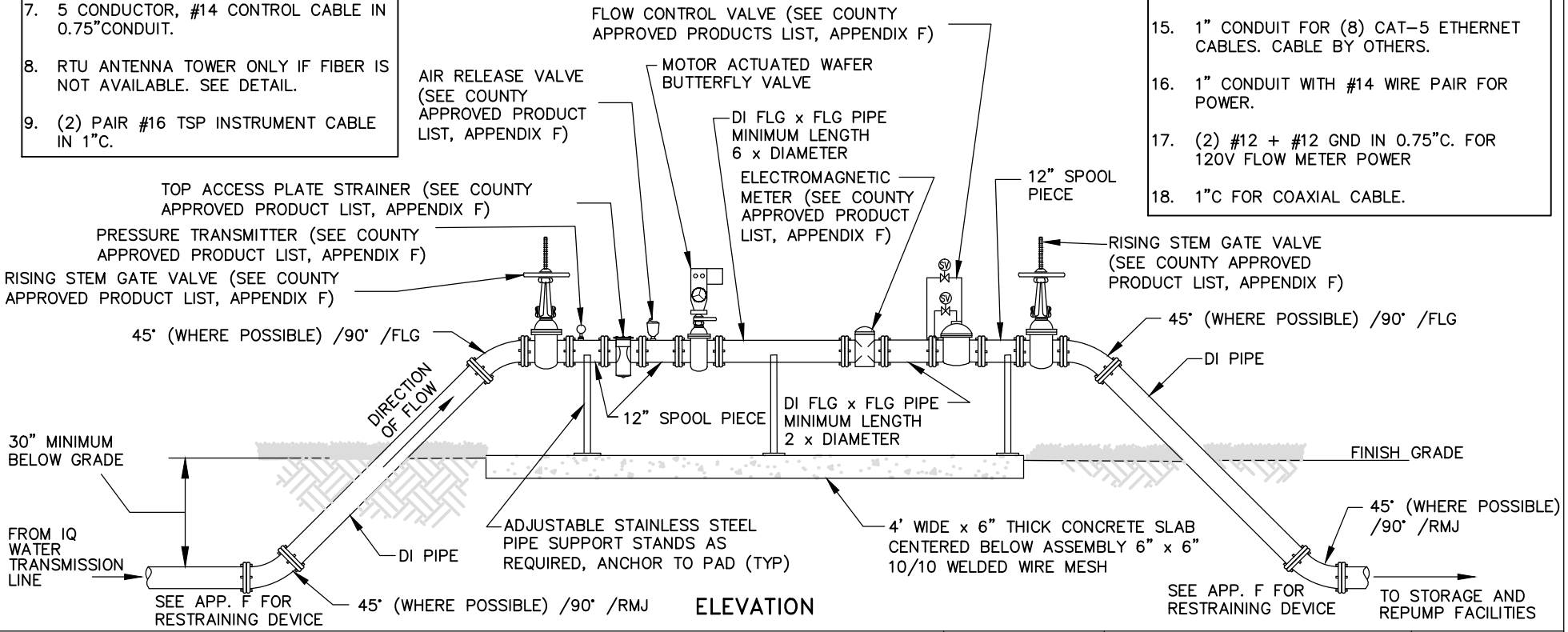
PLAN

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO EQUIPMENT/CABINETS ETC (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).
4. 60A, 240/120V, SINGLE PHASE SERVICE ENTRANCE RATED ENCLOSED BREAKER.
5. PRESSURE TRANSMITTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
6. VALVE CONTROL AND RTU PANEL (VCP).
7. 5 CONDUCTOR, #14 CONTROL CABLE IN 0.75"CONDUIT.
8. RTU ANTENNA TOWER ONLY IF FIBER IS NOT AVAILABLE. SEE DETAIL.
9. (2) PAIR #16 TSP INSTRUMENT CABLE IN 1"C.

KEYNOTES CONTINUED...

10. (2) #12 + #12 GND IN 0.75"C. FOR 120V MOV POWER
11. 14 CONDUCTOR #14 CONTROL CABLE IN 1.25" C.
12. ELECTROMAGNETIC FLOW METER WITH 4-20MA OUTPUT AND PULSE FLOW TOTALIZATION.
13. FIBER-OPTIC CONTROL ENCLOSURE, AMERICAN PRODUCTS PRODUCT #AM-462418-24RU.
14. 2" CONDUIT FOR FIBER-OPTIC CABLE. PROVIDE STUB-UP FOR SPLICE. CABLE BY OTHERS.
15. 1" CONDUIT FOR (8) CAT-5 ETHERNET CABLES. CABLE BY OTHERS.
16. 1" CONDUIT WITH #14 WIRE PAIR FOR POWER.
17. (2) #12 + #12 GND IN 0.75"C. FOR 120V FLOW METER POWER
18. 1"C FOR COAXIAL CABLE.



ELEVATION

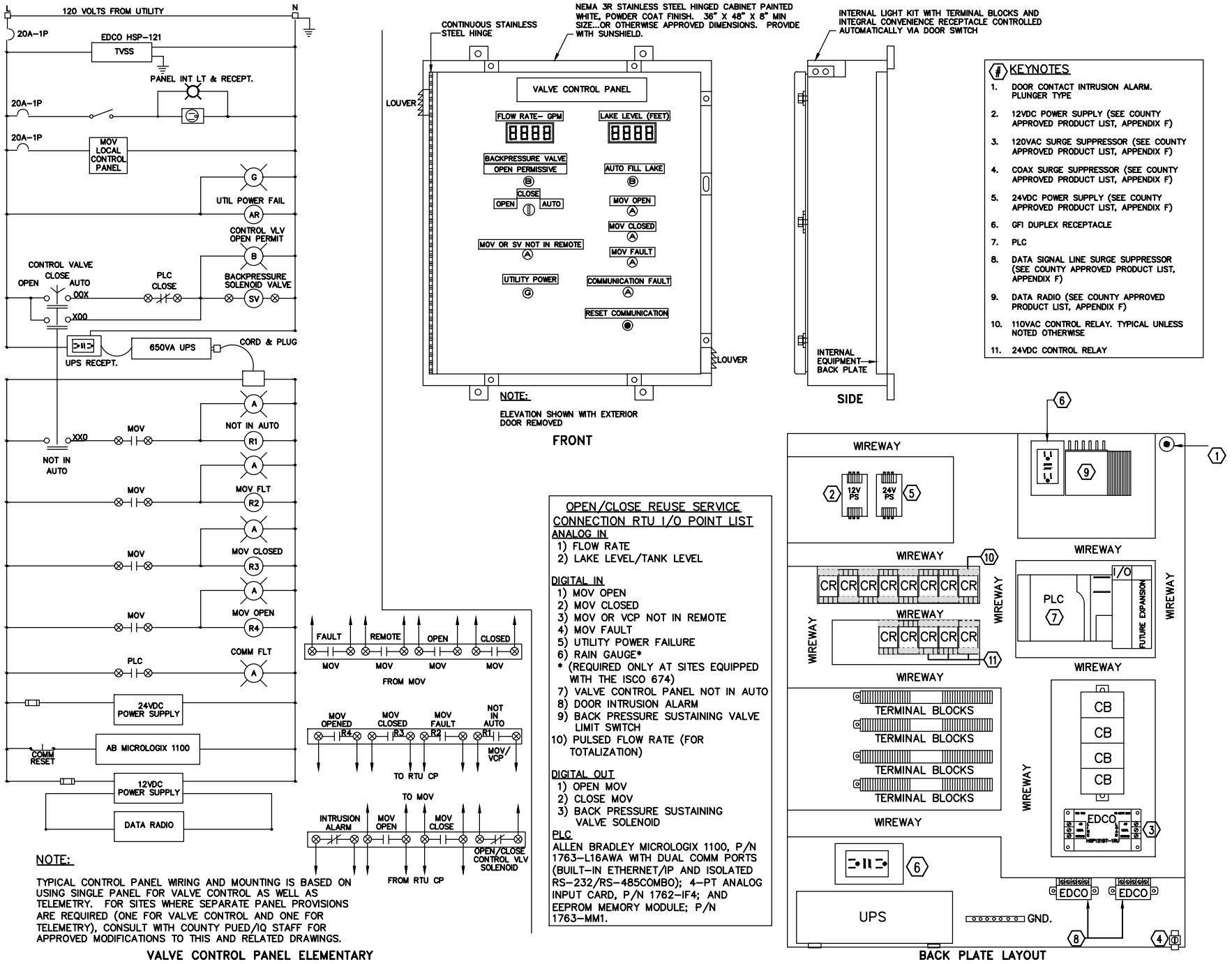
STANDARD IRRIGATION WATER METER ASSEMBLY 3" AND LARGER - TELEMETRY

NTS

REVISION DATE: JULY 2018

Collier County

SHEET NO. NP-E2



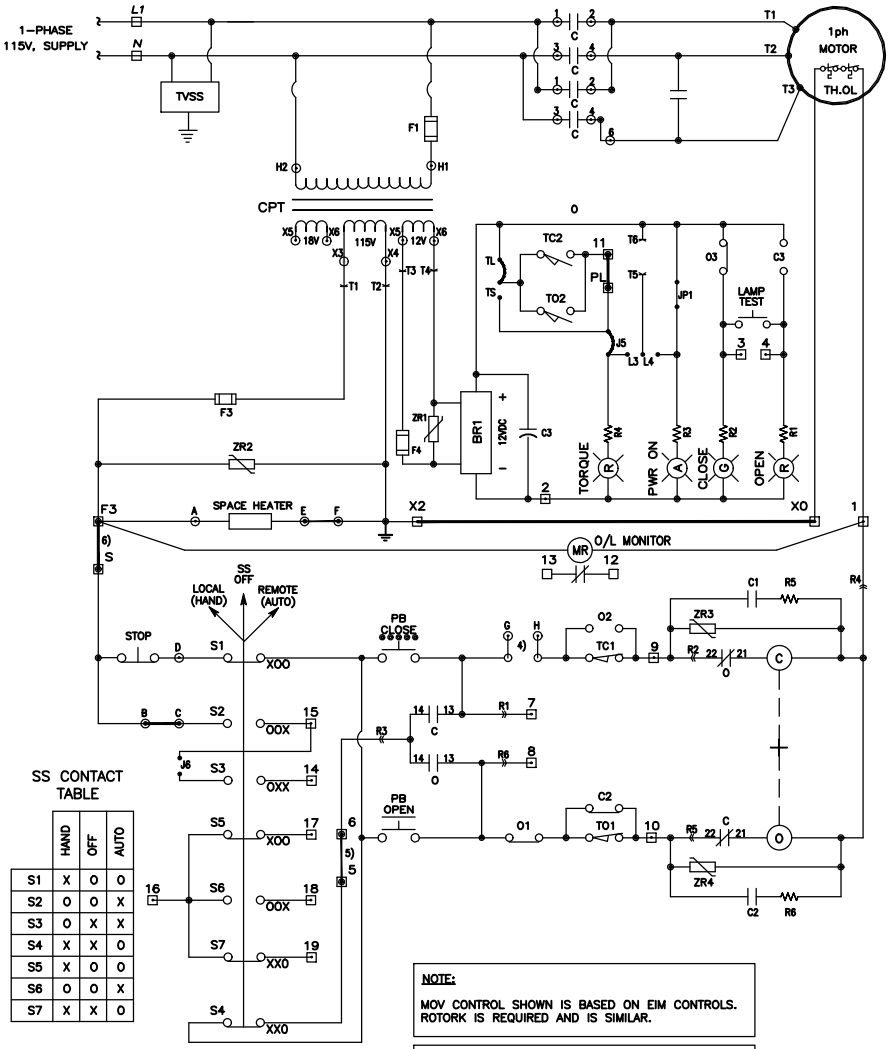
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LAYOUT & ELEMENTARY

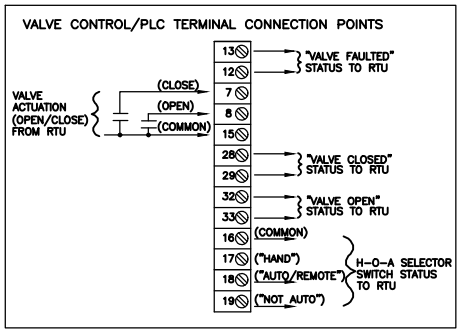
NTS

REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E3





LEGEND

O–OPEN CONTACT
C–CLOSE CONTACT
Ⓞ–OPENING COIL
Ⓒ–CLOSING COIL
+–MECHANICAL INTERLOCK
CPT–CONTROL POWER TRANSFORMER
TH.OL–THERMAL OVERLOAD CONTACTS
SS–SELECTOR SWITCH (LOCAL–OFF–REMOTE)
PB–PUSHBUTTON
MR–MONITOR RELAY
ZR–ZENER DIODE
Ⓡ–RED INDICATING LIGHT
Ⓐ–AMBER INDICATING LIGHT
Ⓖ–GREEN INDICATING LIGHT

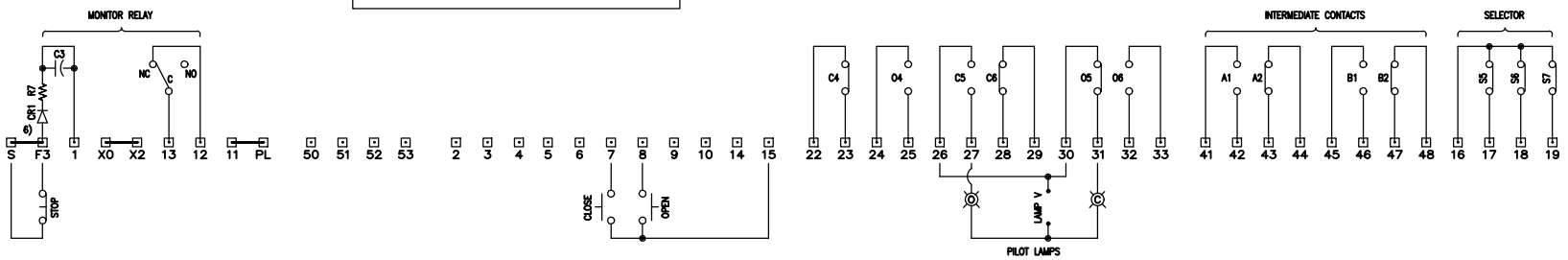
		VALVE POSITION			CONTACT FUNCTION
		CLOSE	MID	OPEN	
CLOSE rotor	C1	0	X	X	CLOSE COIL
	C2	X	0	0	BYPASS TO1
	C3	0	X	X	OPEN LAMP
	C4	X	0	0	
	C5	0	X	X	
	C6	X	0	0	
OPEN rotor	O1	X	X	0	OPEN COIL
	O2	0	0	X	BYPASS TC1
	O3	X	X	0	CLOSE LAMP
	O4	0	0	X	
	O5	X	X	0	
	O6	0	0	X	
A	A1	0		X	SPARE
	A2	X		0	SPARE
B	B1	0		X	SPARE
	B2	X		0	SPARE

NOTES

1) CONTACTS SHOWN: VALVE CLOSED; VOLTAGE: OFF; S/S: HAND
2) ⊡ CUSTOMER WIRES TO TERMINALS ON PWR AND TBM MODULES.
   ⊙ M2CP INTERNAL TERMINAL INTERCONNECT WIRING POINTS
   ——— FIELD CONNECTED WIRING BY OTHERS.
3) TORQUE SWITCH ( ) "TC1" & "TO1" NC CONTACTS OPEN, AND ( ) "TC2" & "TO2" N.O. CONTACTS MAKE ON FIELD ADJUSTABLE MECHANICAL OVERLOAD IN (C) "CLOSE" OR IN (O) "OPEN" DIRECTION.
4) FOR TORQUE SEATED VALVE: INSTALL G TO H STRAP ON LSM.
5) FOR MAINTAINED PB CONTROL: REMOVE 5 TO 6 STRAP ON TBM.
6) FOR REMOTE STOP PB OR RELAY: REMOVE F3 TO S STRAP ON TBM.
7) O & C (22–31) REVERSING CONTACTOR NC INTERLOCK CONTACTS.
   O & C (14–13) MOMENTARY PUSHBUTTON N.O. SEAL–IN CONTACTS.
8) MOTOR THERMAL CONTACTS OPEN WITH EXCESSIVE TEMPERATURE.
9) POSITION INDICATOR PILOT LIGHTS: LED SOLID–STATE
   "OPEN" INDICATES: FULL OPEN (RED)
   "CLOSE" INDICATES: FULL CLOSED (GREEN)
   MID–POSITION: BOTH "OPEN" AND "CLOSE" ILLUMINATED.
   "PWR ON" AND "TORQUE" INDICATORS ARE ONLY VISIBLE WITH COVER OPEN FOR CONVENIENCE DURING MAINTENANCE PROCEDURES.

NOTE:
MOV CONTROL SHOWN IS BASED ON EIM CONTROLS. ROTORK IS REQUIRED AND IS SIMILAR.

NOTE:
SET VALVE TO FAIL IN PLACE ON LOSS OF POWER.



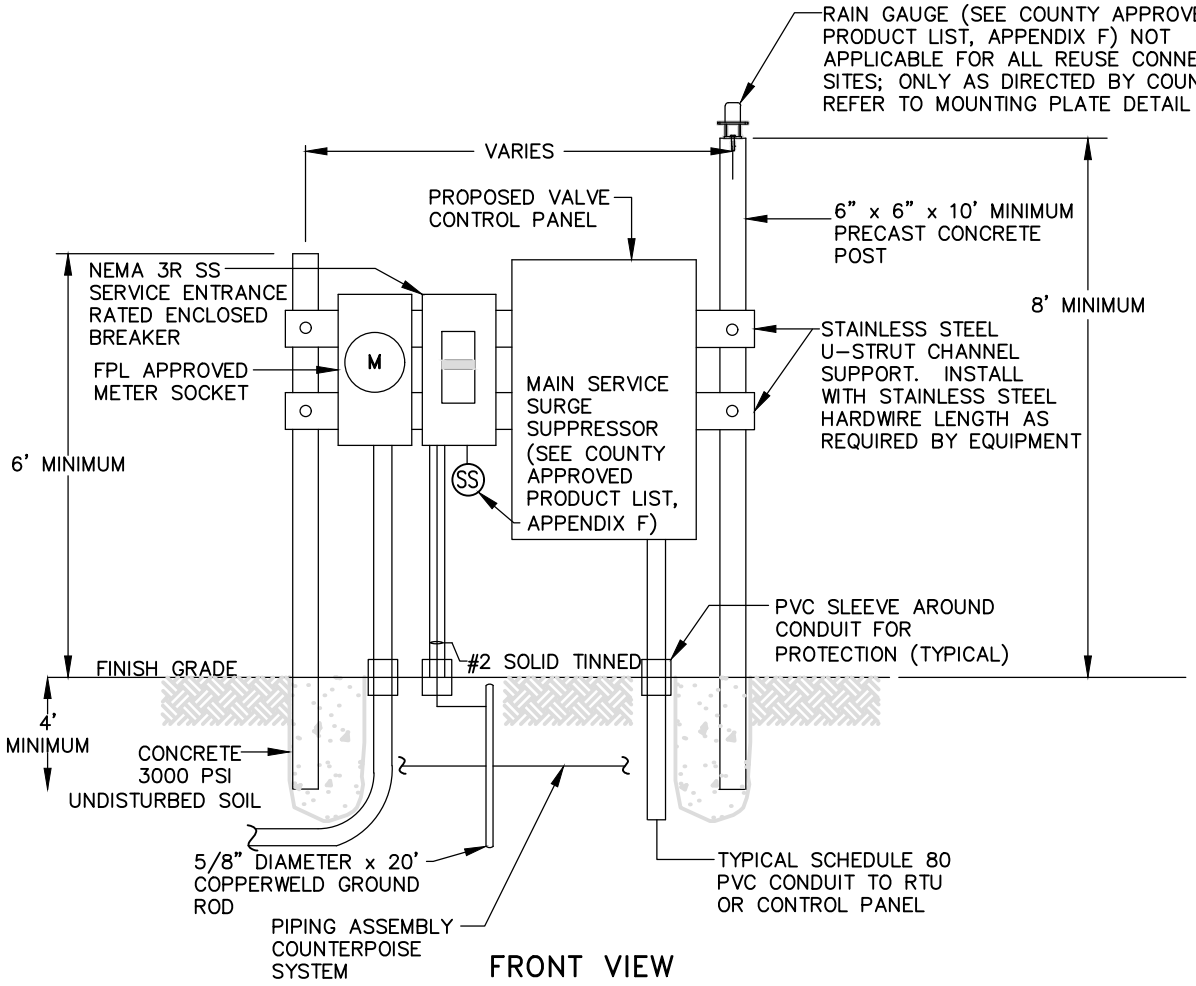
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
OPEN/CLOSED MOV CONTROL DIAGRAM

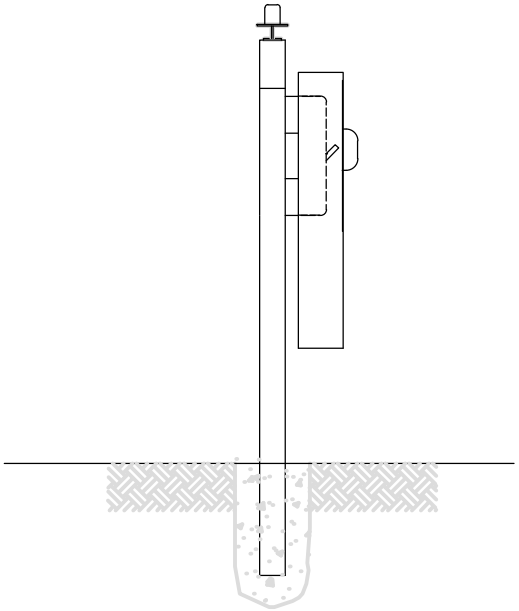
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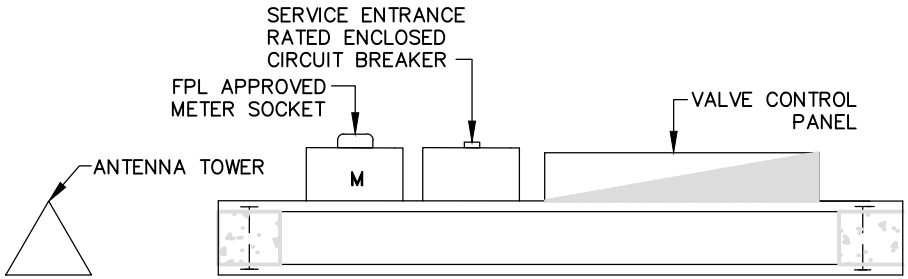
REVISION DATE:
APRIL 2006

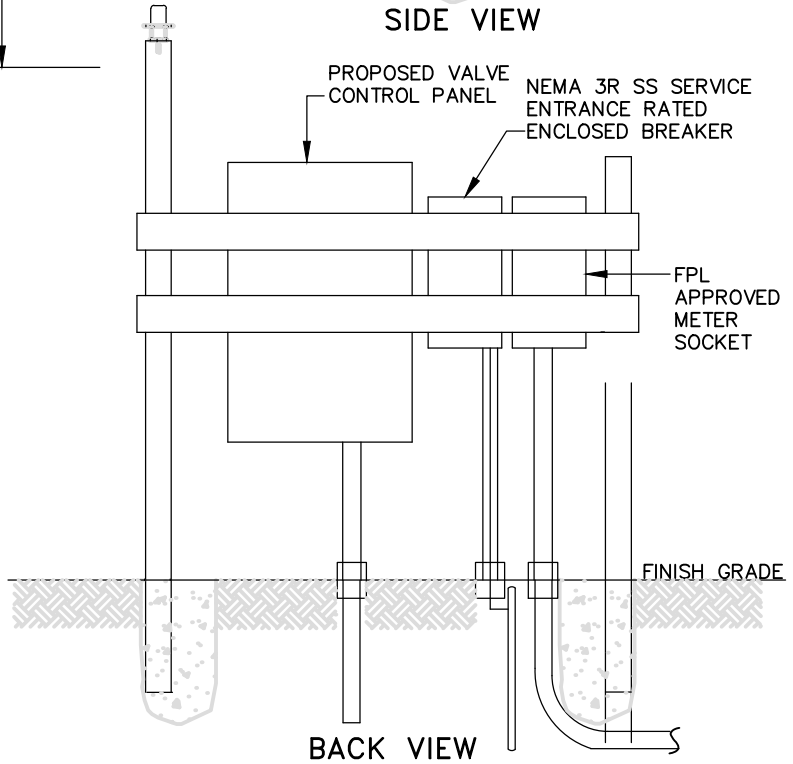
Collier County

SHEET NO.
NP–E4









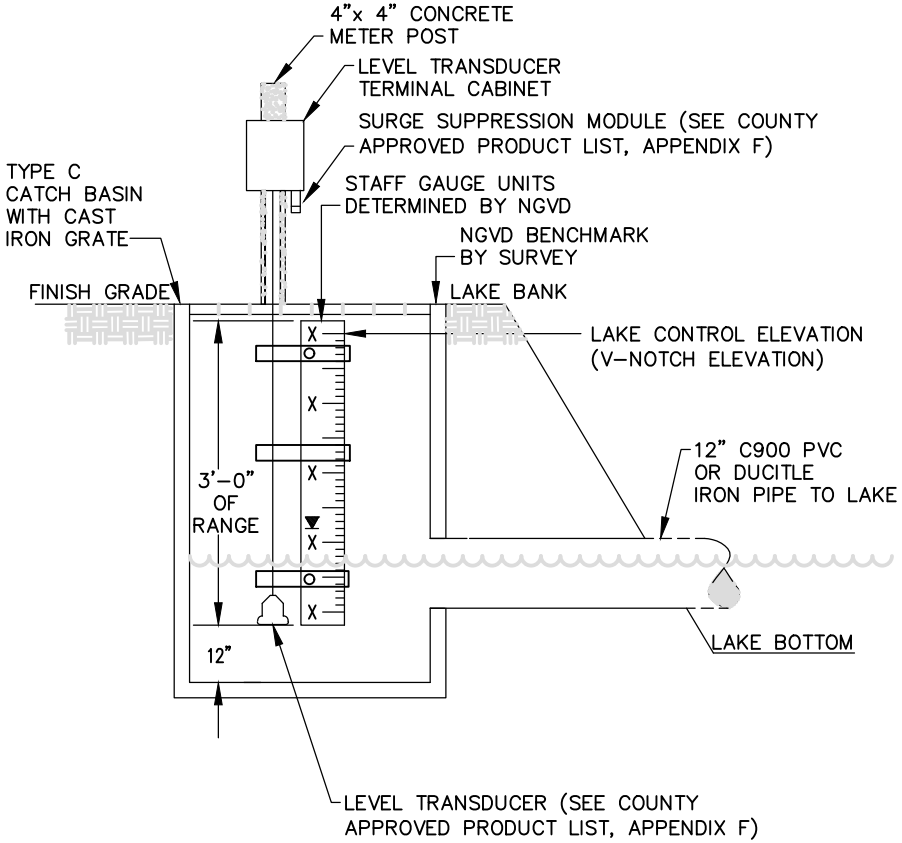
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE ELECTRICAL EQUIPMENT ELEVATIONS

NTS

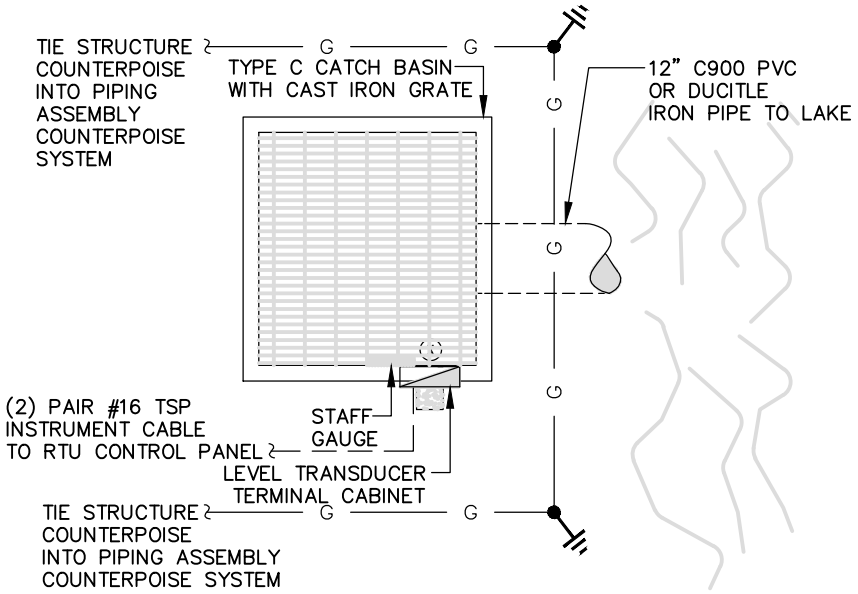
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E5



CROSS SECTION



PLAN VIEW

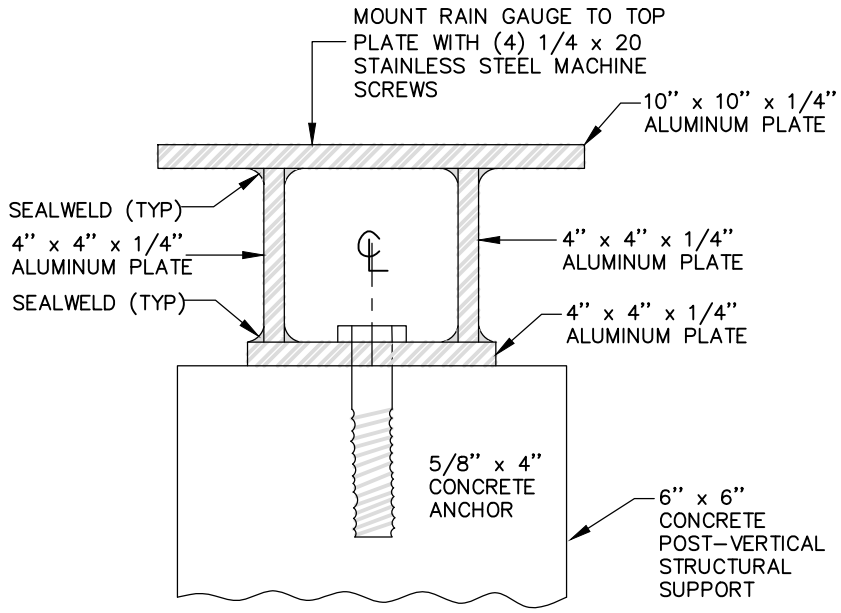
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LEVEL TRANSDUCER MOUNTING DETAILS

NTS

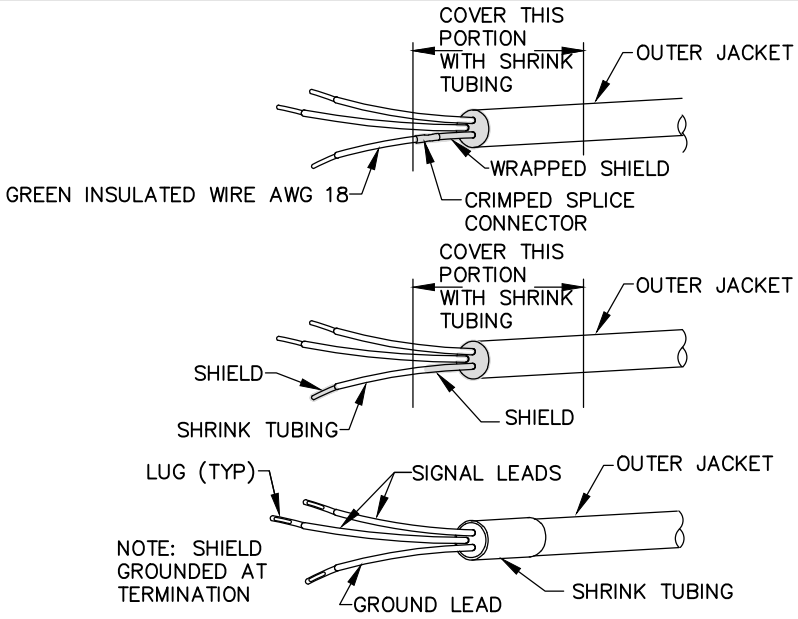
REVISION DATE:
AUGUST 2008

Collier County

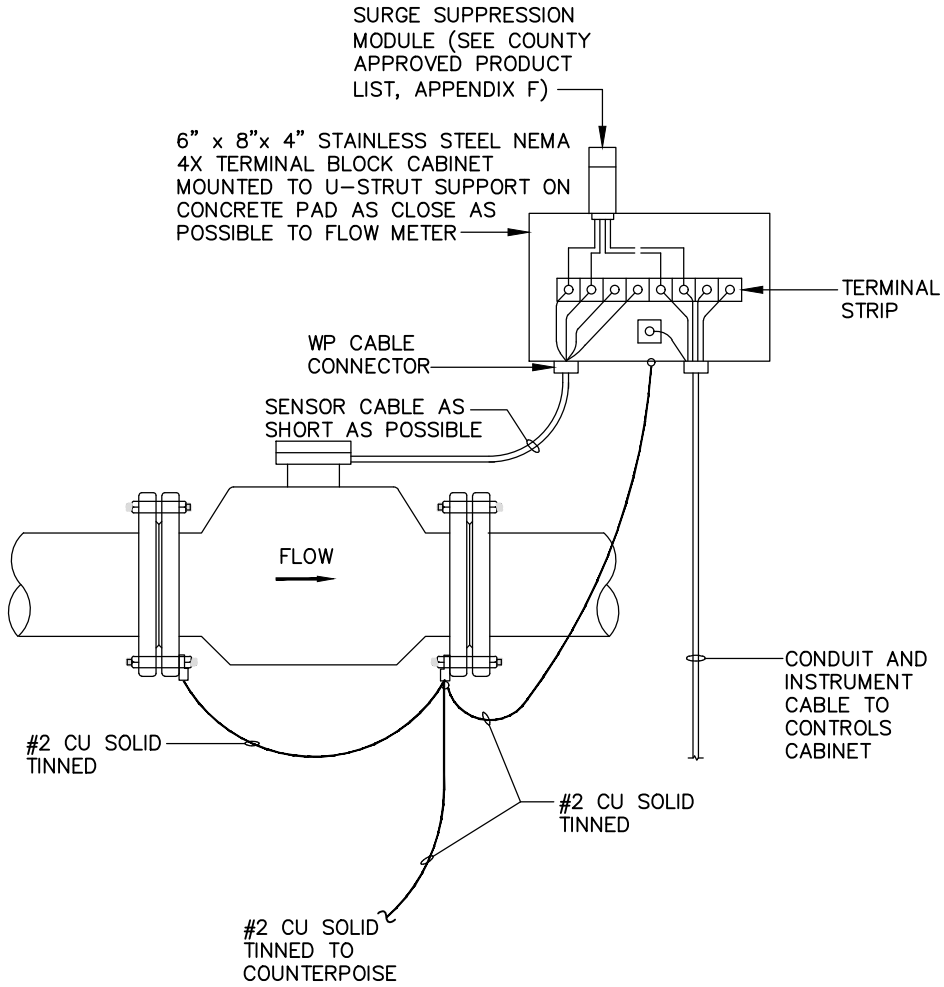
SHEET NO.
NP-E6



RAIN GAUGE MOUNTING PLATE



TERMINATION OF SHIELDED INSTRUMENT AND CONTROL CABLE



FLOW METER TRANSMITTER INSTALLATION DETAIL

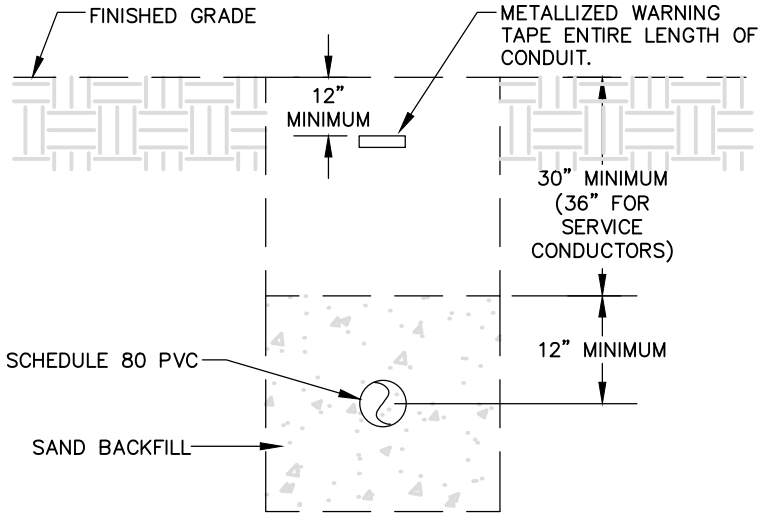
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE
SINGLE CONTROL PANEL SITE
ELECTRICAL DETAILS

NTS

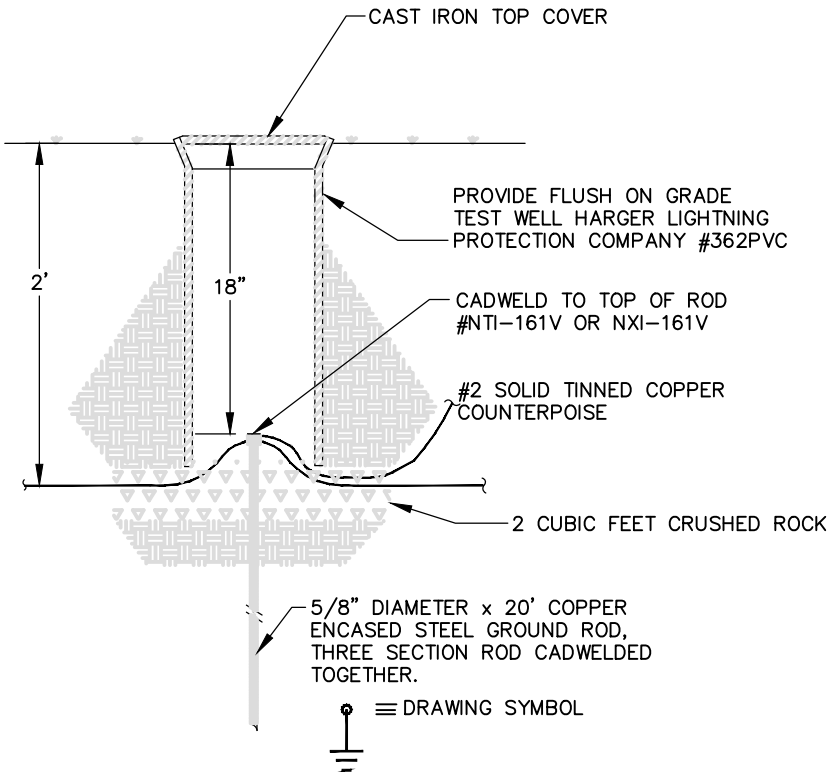
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E7



UNDERGROUND CONDUIT INSTALLATION



TYPICAL GROUND ROD INSTALLATION DETAIL

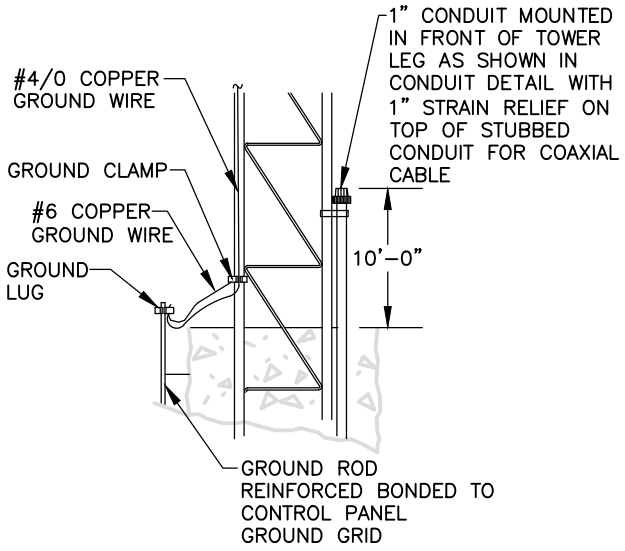
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE ELECTRICAL DETAILS

NTS

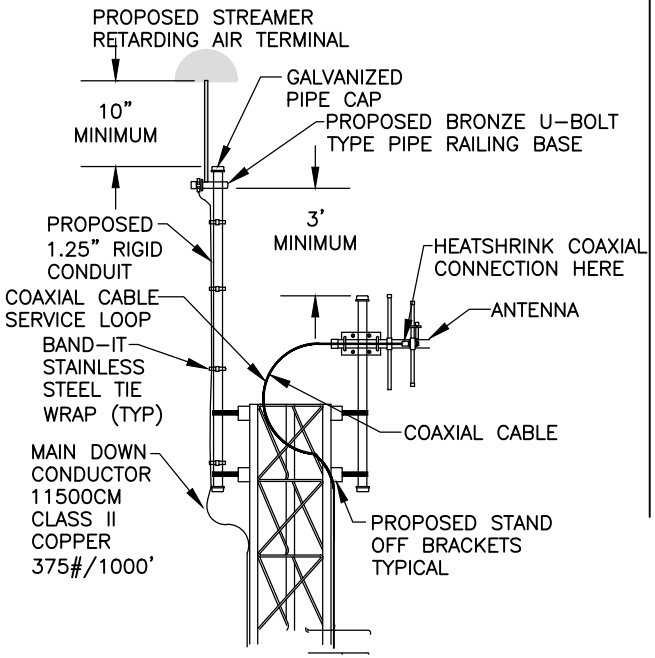
REVISION DATE:
APRIL 2006

Collier County

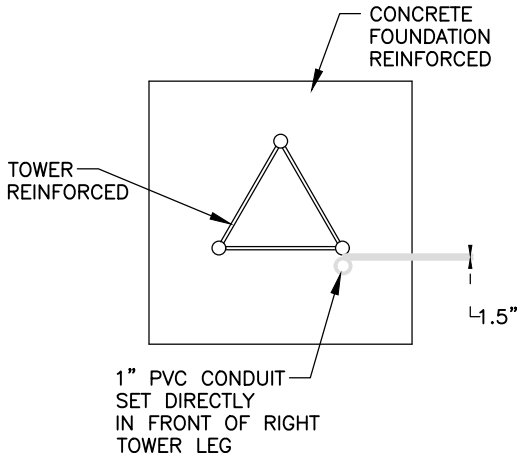
SHEET NO.
NP-E8



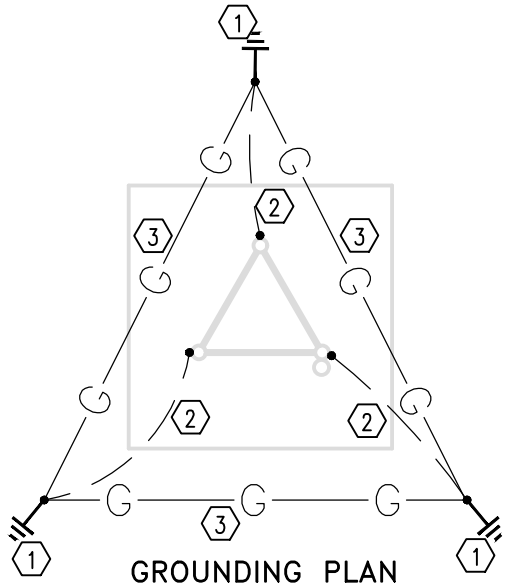
DETAIL #1 GROUNDING DETAIL



DETAIL #2 TOWER TOP DETAIL



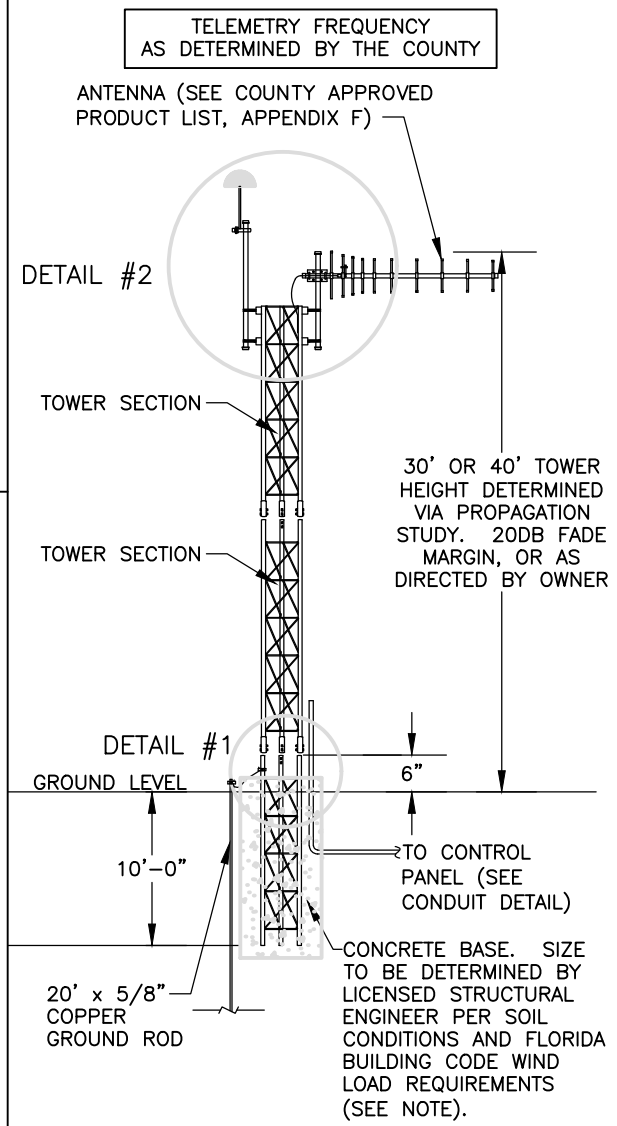
CONDUIT DETAIL TOP VIEW



GROUNDING PLAN

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO TOWER LEG (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).



NOTE:
TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS FOR 140 MPH WIND ZONE. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.

TYPICAL POLE DETAIL

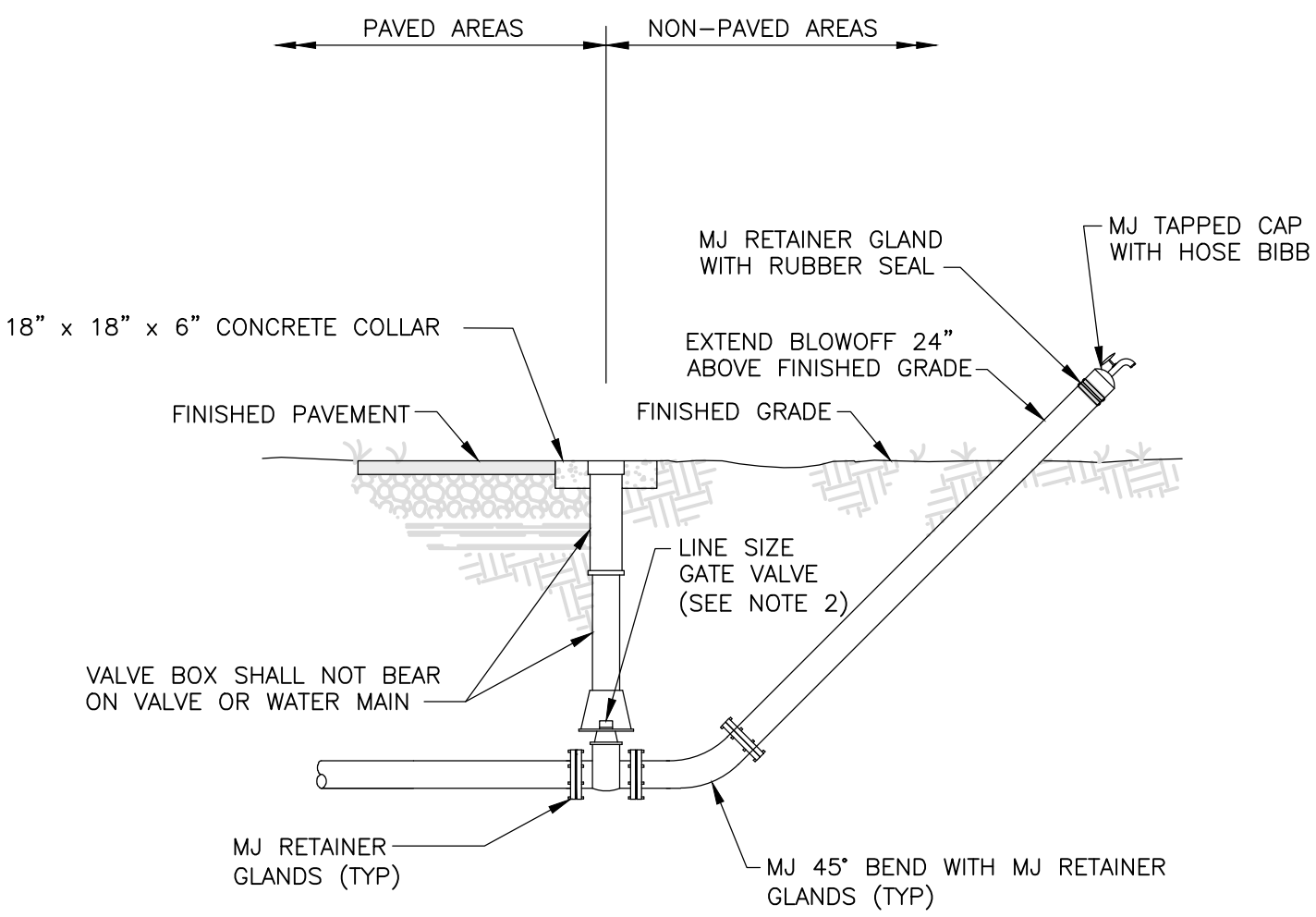
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
TYPICAL RTU ANTENNA TOWER DETAILS

NTS

REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E9

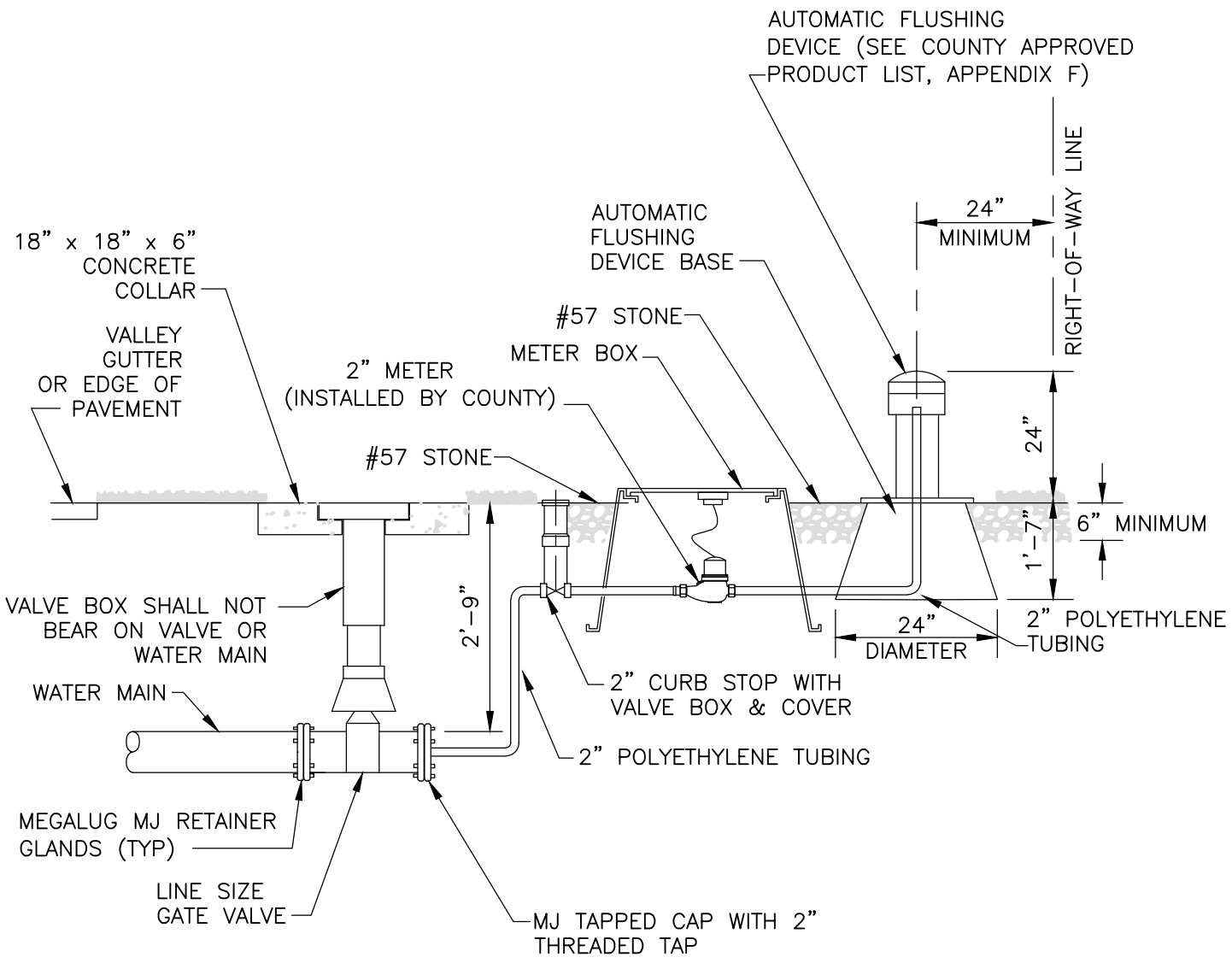


SIDE VIEW

NOTES:

1. MJ TAPPED CAP WITH HOSE BIBB IS TO BE REMOVED AFTER INITIAL BACTERIOLOGICAL CLEARANCE AND PRIOR TO WATER MAIN ACCEPTANCE.
2. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
3. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

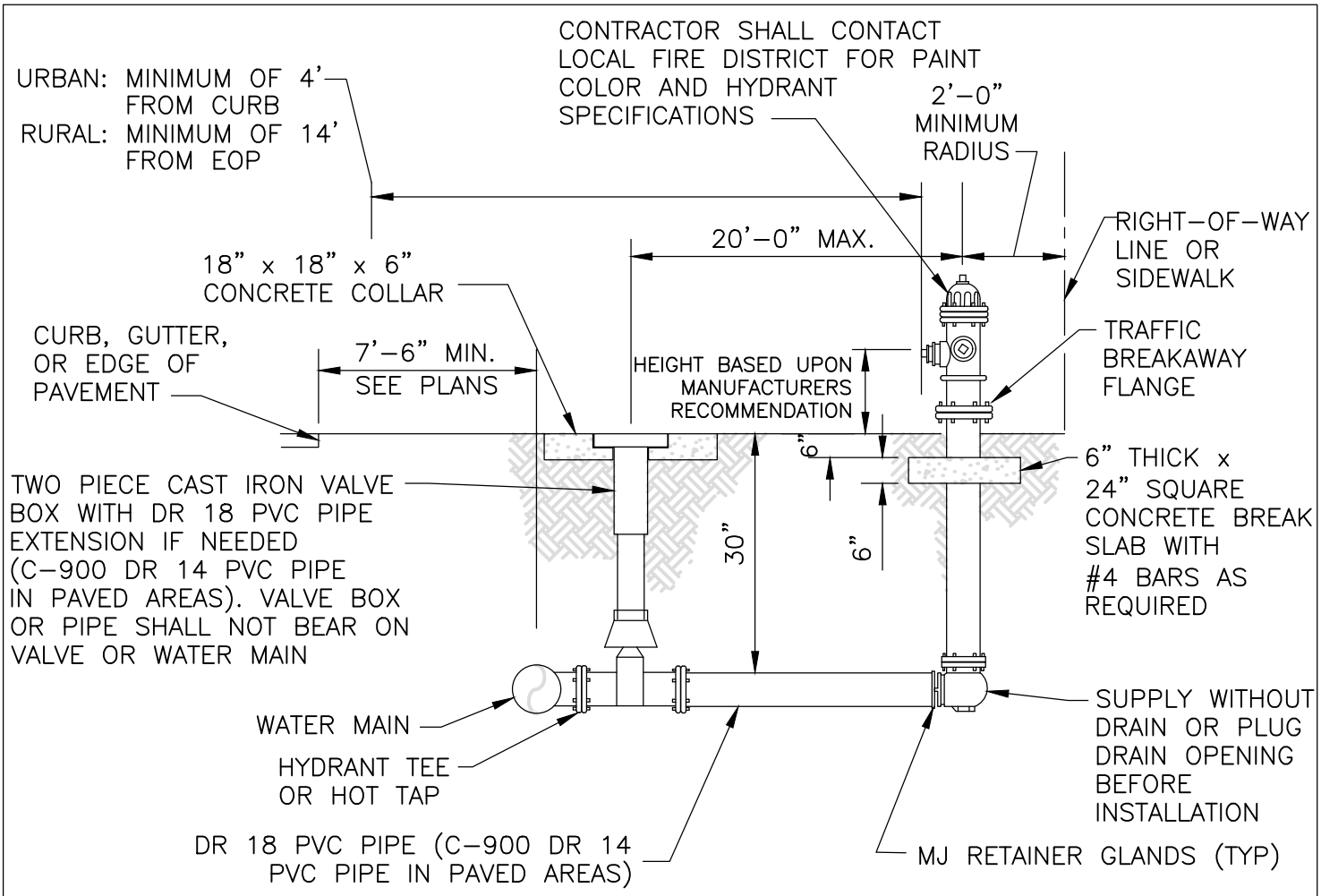
TEMPORARY BLOWOFF ASSEMBLY WITH BACTERIAL SAMPLING POINT DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W–1
NTS			



NOTES:

1. PIPING SHALL BE INSTALLED UP TO 2" CURB STOP WITH VALVE BOX AND COVER AT TIME OF MAIN INSTALLATION.
2. AUTOMATIC FLUSHING DEVICE SHALL BE SHUT OFF UNTIL MAIN LINE HAS BEEN BACTERIOLOGICALLY TESTED.
3. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
4. AT TIME OF ACCEPTANCE, WATER DEPARTMENT WILL INSTALL 2" METER.
5. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

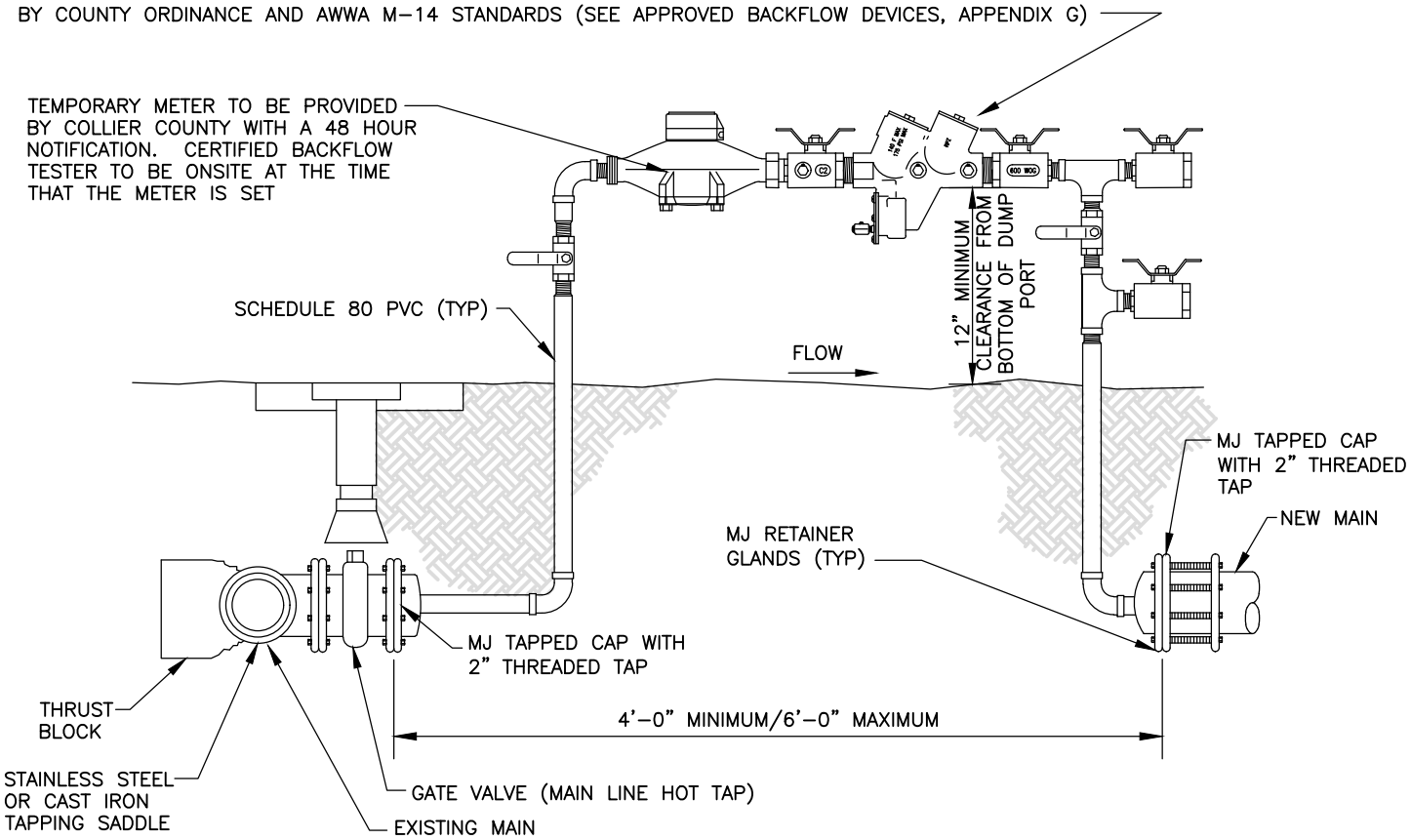
AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W-2
NTS			



NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5-1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C-502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

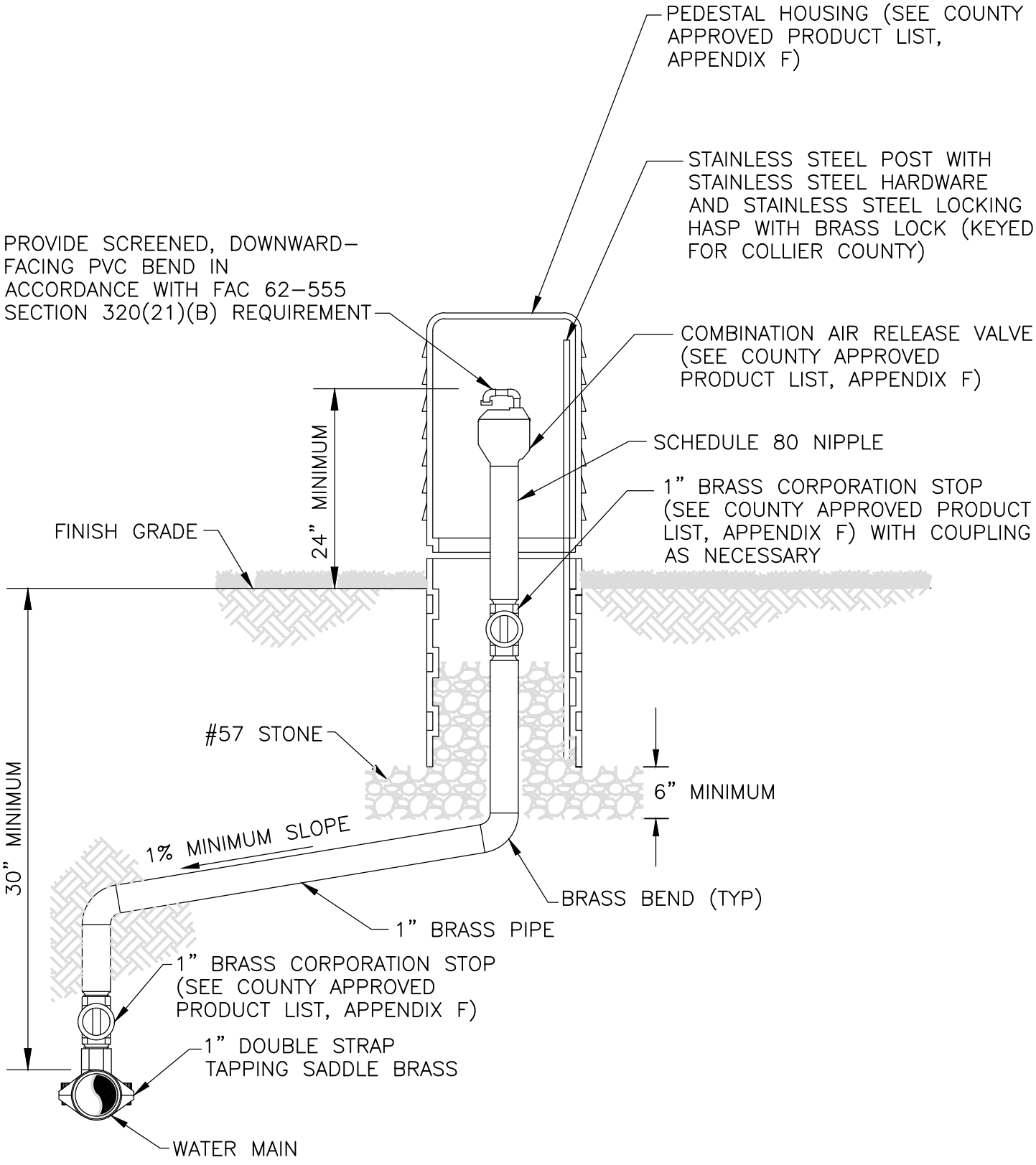
FIRE HYDRANT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-3
NTS			



NOTES:

1. FINAL CONNECTION TO BE WITNESSED BY COLLIER COUNTY WATER DISTRIBUTION.
2. MJ TAPPED CAPS TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP SYSTEM FOR TEMPORARY METER DOWNSTREAM OF BLIND FLANGE FOR CONSTRUCTION WATER.
4. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
5. JUMPER ASSEMBLY MUST BE MINIMUM OF 18" ABOVE FINISHED GRADE.
6. BACKFLOW ASSEMBLY REQUIRES INITIAL CERTIFICATION BY CERTIFIED BACKFLOW TESTER.
7. THIS ASSEMBLY SHALL ONLY BE USED IF NO COMBUSTIBLES WILL BE ON SITE. IF COMBUSTIBLES ARE BROUGHT ON SITE, THEN THE TEMPORARY BACKFLOW PREVENTERS AND FIRE PROTECTION METER TIE-IN ASSEMBLY SHALL BE USED.
8. THIS ASSEMBLY IS NOT APPROVED TO PROVIDE FIRE PROTECTION WATER TO THE SITE DURING CONSTRUCTION. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL AFTER TESTING, BACTERIAL CLEARANCE, FINAL INSPECTION AND COUNTY ACCEPTANCE.
9. GAP CONFIGURATION TO BE INSTALLED WITHIN 24 HOURS OR LESS AT THE DISCRETION OF THE WATER DISTRIBUTION DEPARTMENT.
10. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
11. FOR INSTALLATIONS WHERE LESS THAN 20' OF NEW WATER MAIN IS BEING CONSTRUCTED BETWEEN THE PERMANENT BACKFLOW ASSEMBLY AND THE EXISTING MAIN, NO TEMPORARY JUMPER IS REQUIRED.

CONNECTION TO EXISTING WATER MAIN DETAIL (GAP CONFIGURATION) NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. W-4



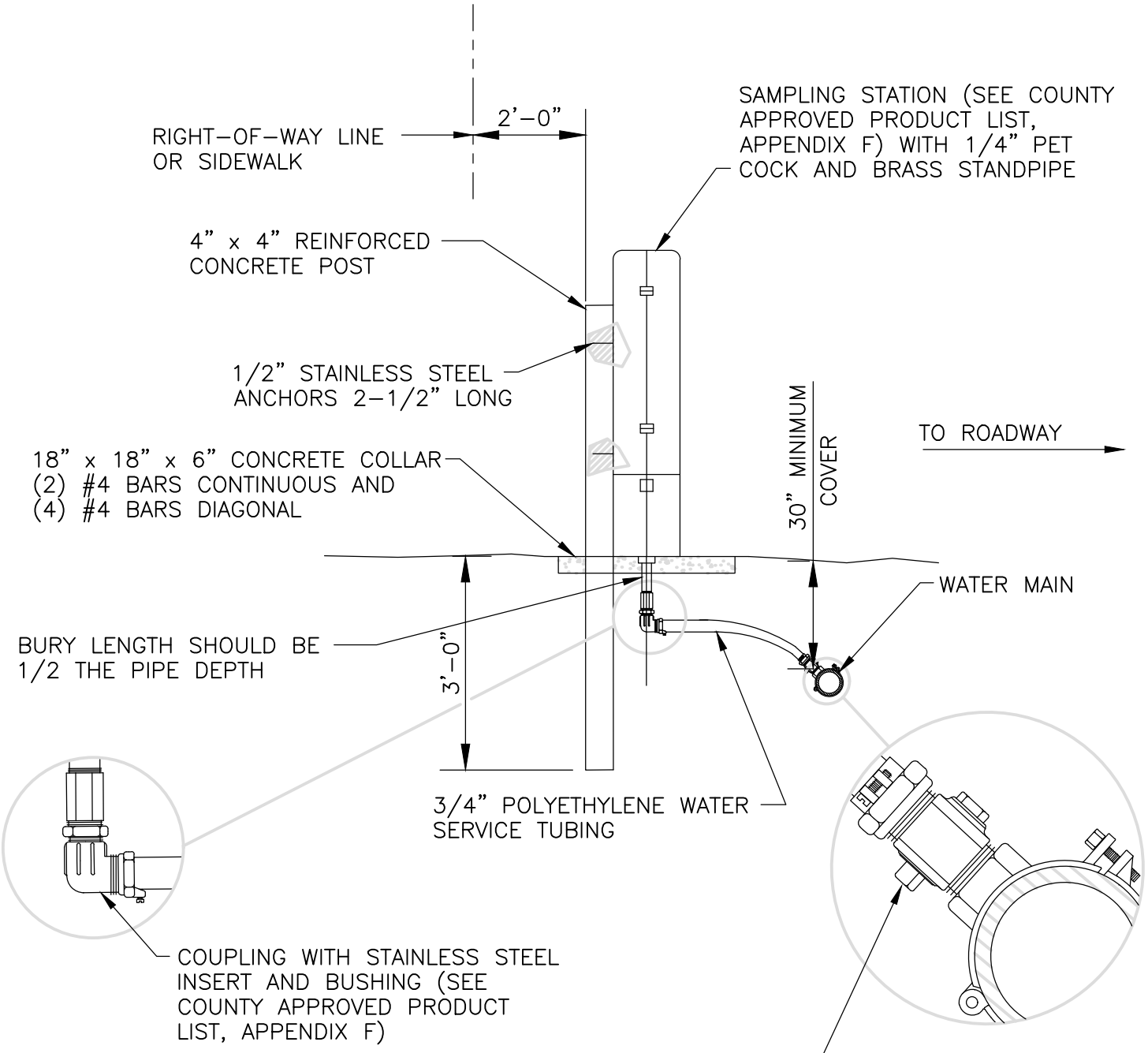
POTABLE WATER AIR RELEASE VALVE DETAIL

NTS

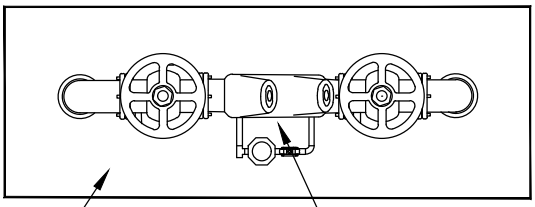
REVISION DATE:
AUGUST 2008

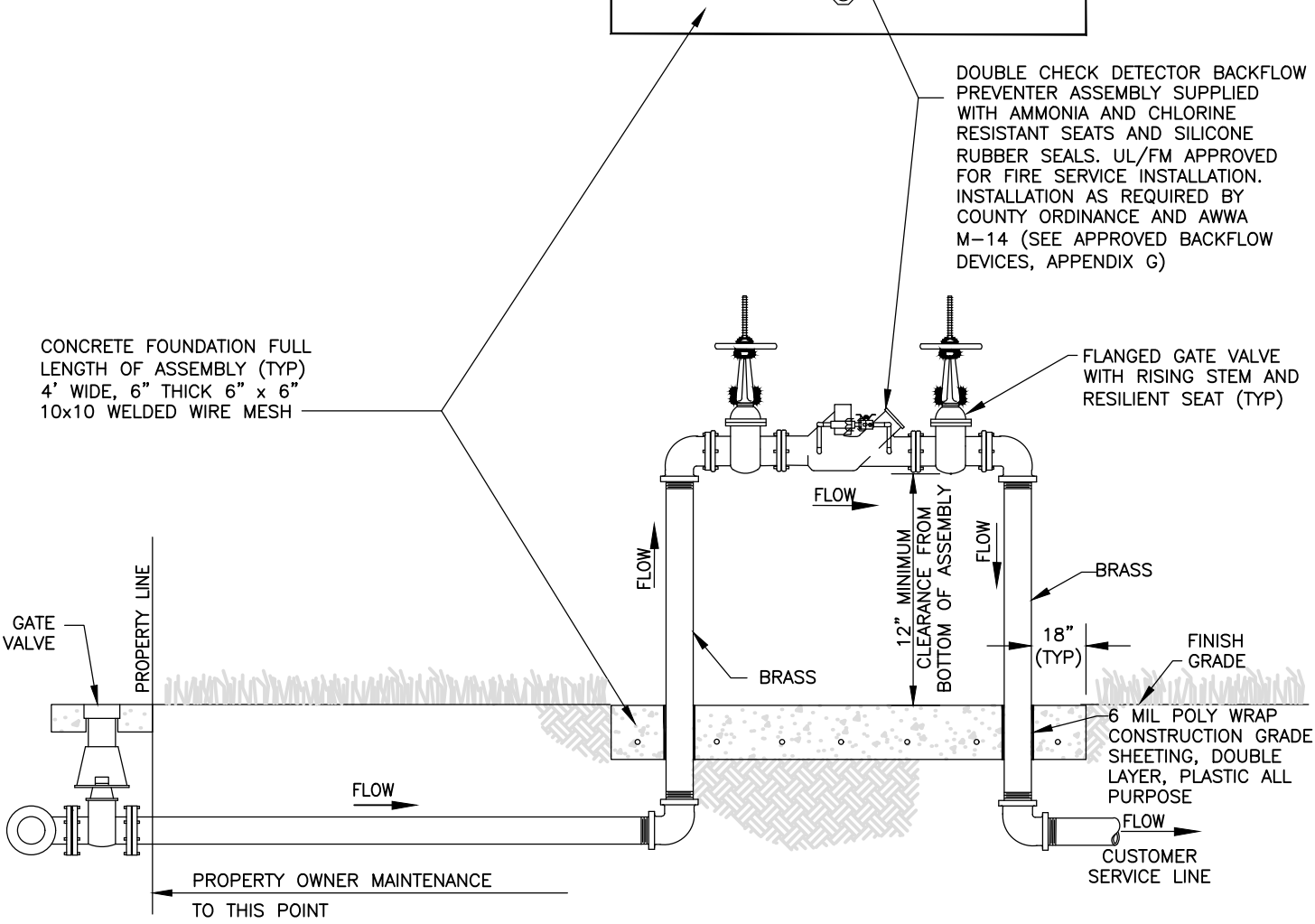
Collier County

SHEET NO. W-5



PERMANENT BACTERIAL SAMPLE POINT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W–6
NTS			

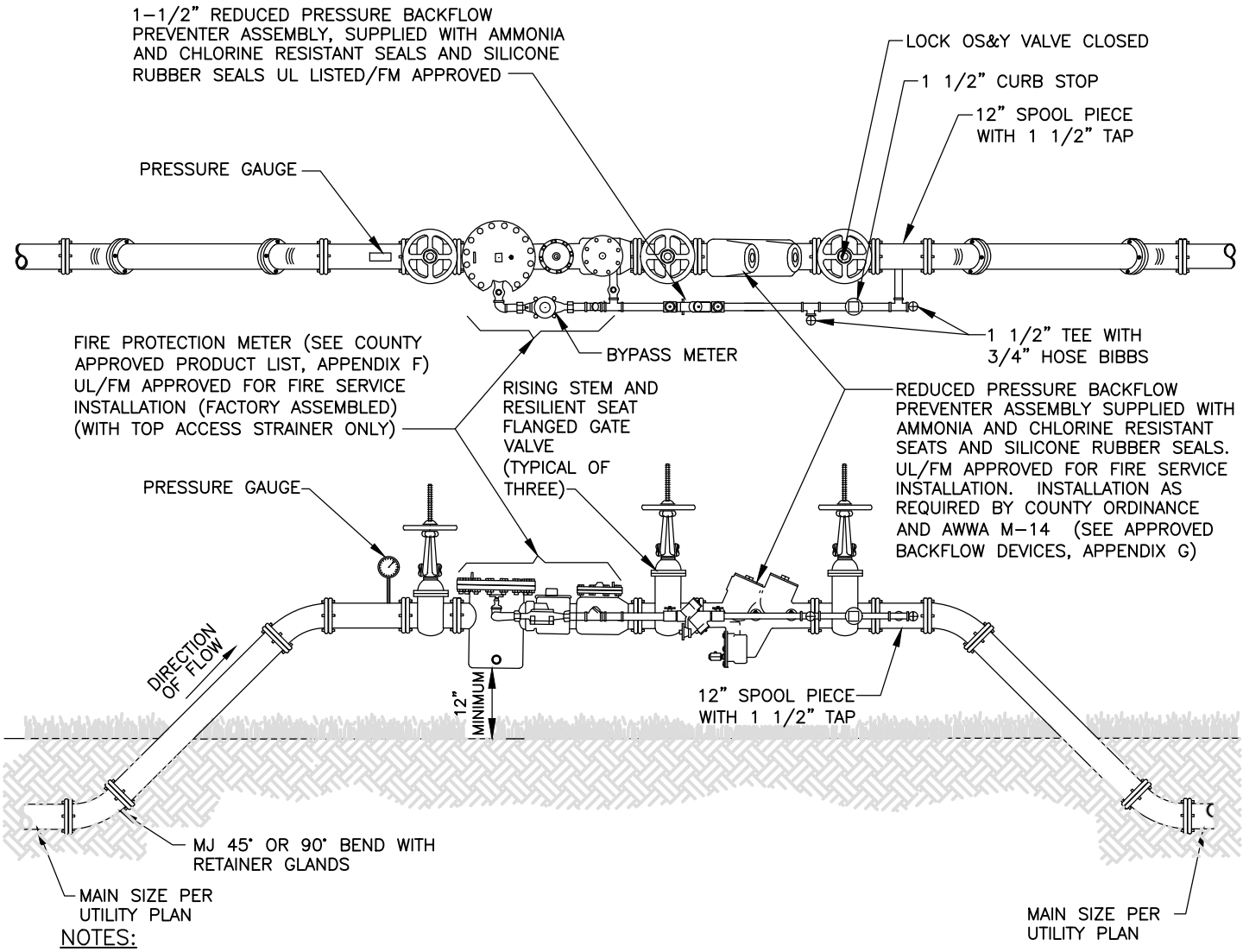




NOTES:

1. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT–OF–WAY LINE.
2. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
3. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M–14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.
8. ALL ABOVE GROUND PIPING SHALL BE BRASS.

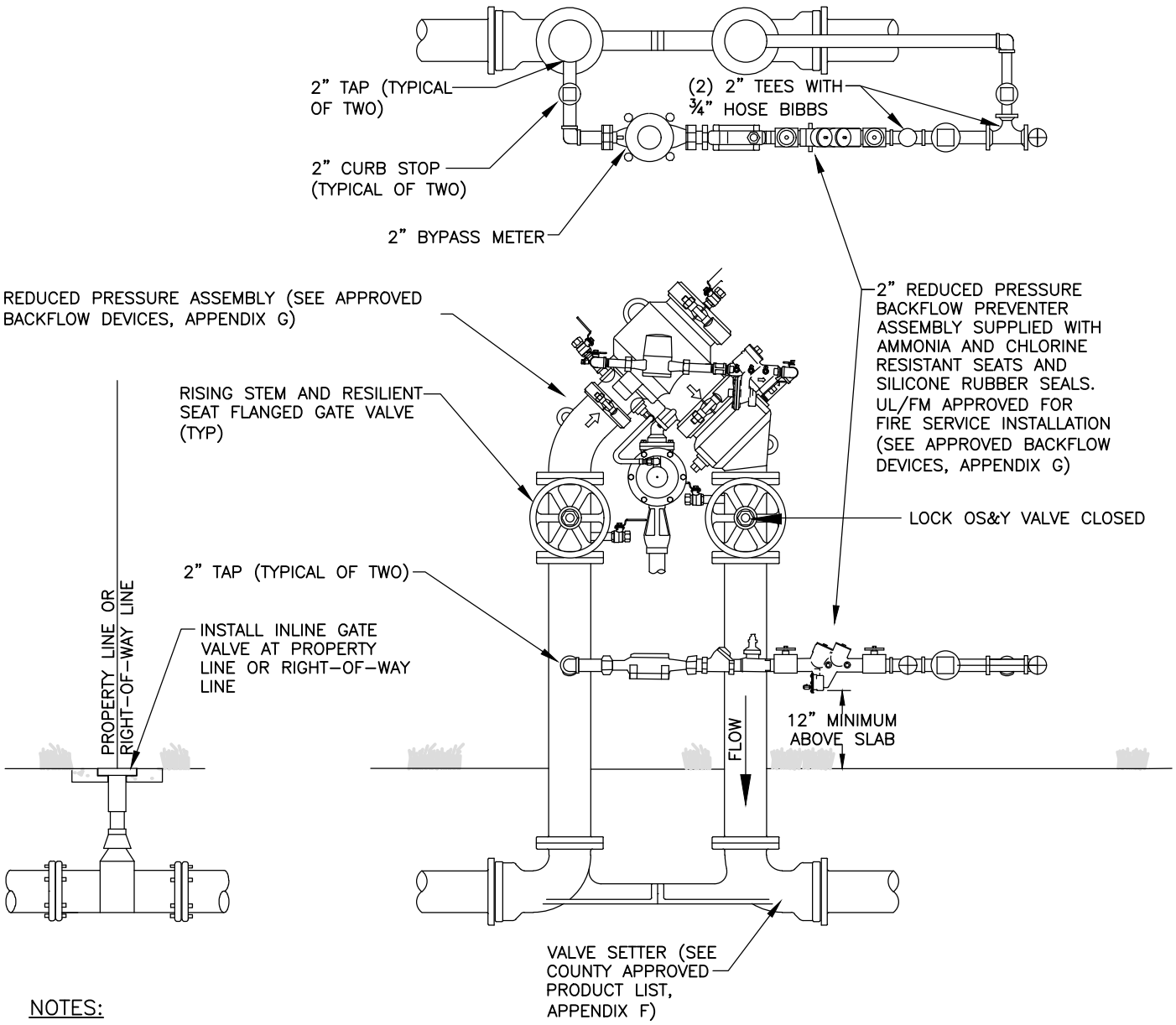
2–½" AND SMALLER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. W–8



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE-IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
8. A 4'X8' SIGN WITH 3" LETTERS OR BIGGER SHALL READ: IN CASE OF FIRE OPEN VALVE.

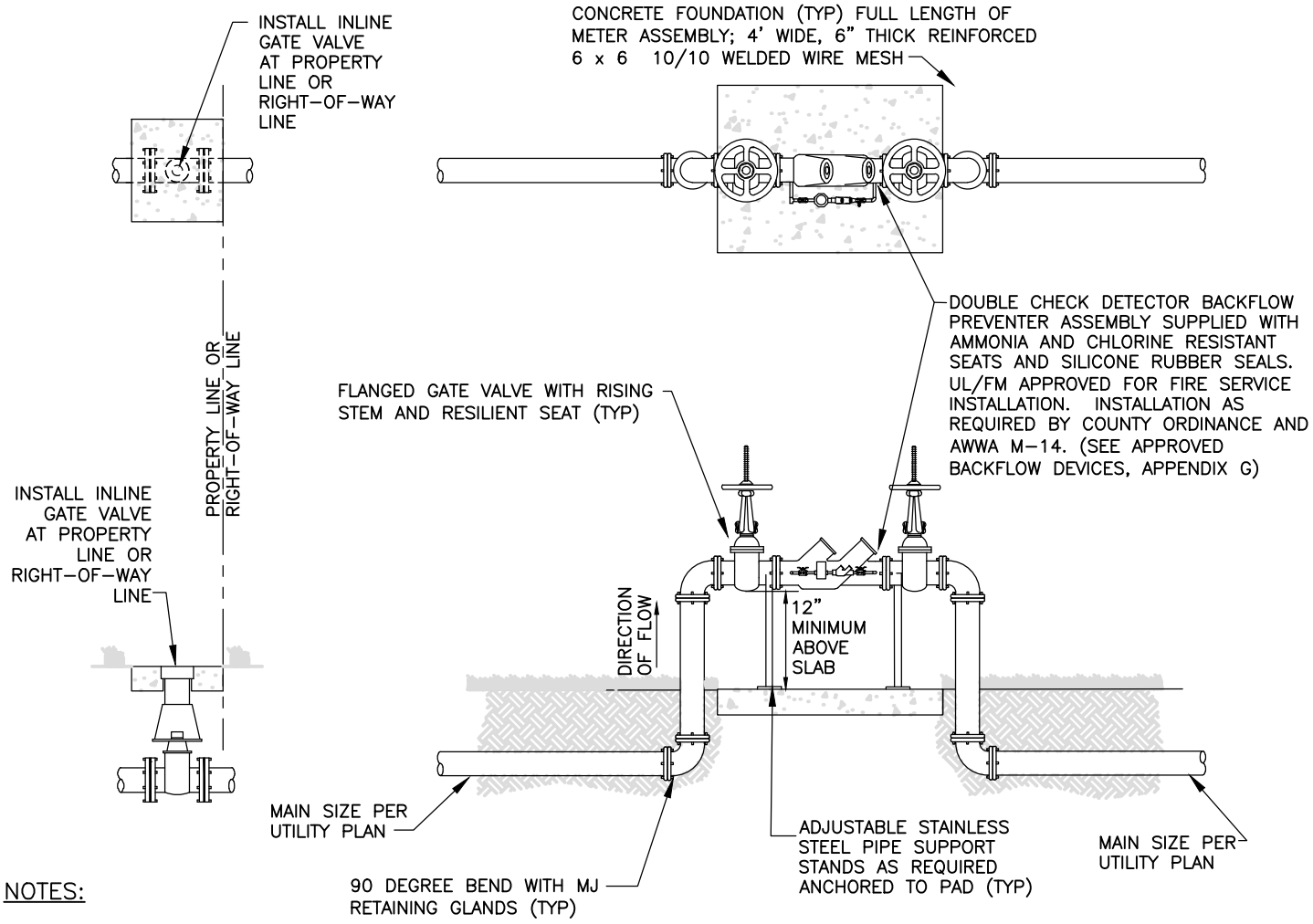
TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE-IN ASSEMBLY	REVISION DATE: JANUARY 2009	Collier County	SHEET NO. W-9
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE-IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. A 4'X8' SIGN WITH 3" LETTERS OR BIGGER SHALL READ: IN CASE OF FIRE OPEN VALVE.

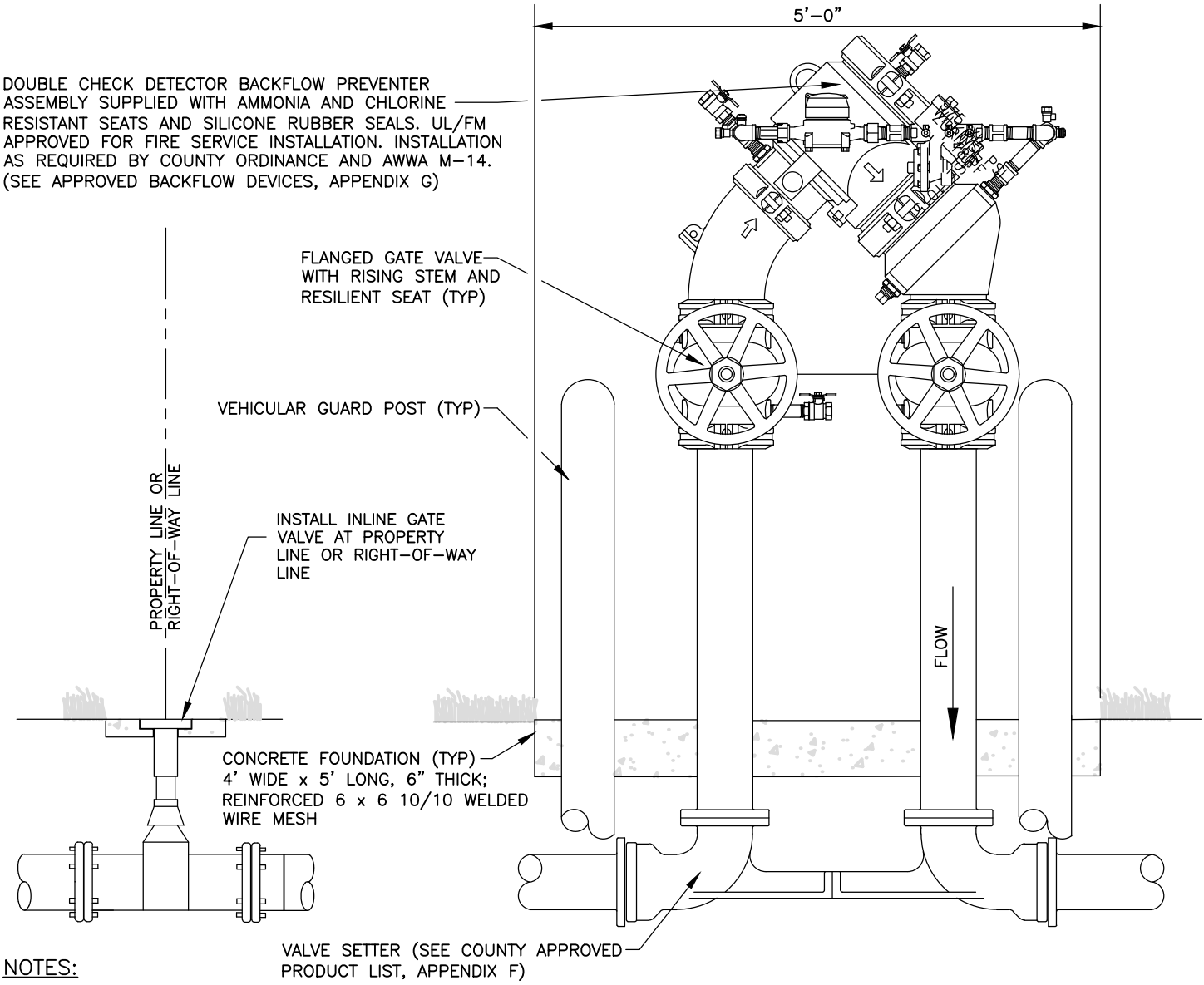
ALTERNATE TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE-IN ASSEMBLY NTS	REVISION DATE: JANUARY 2009	Collier County	SHEET NO. W-9A



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

3" AND LARGER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. W-11
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

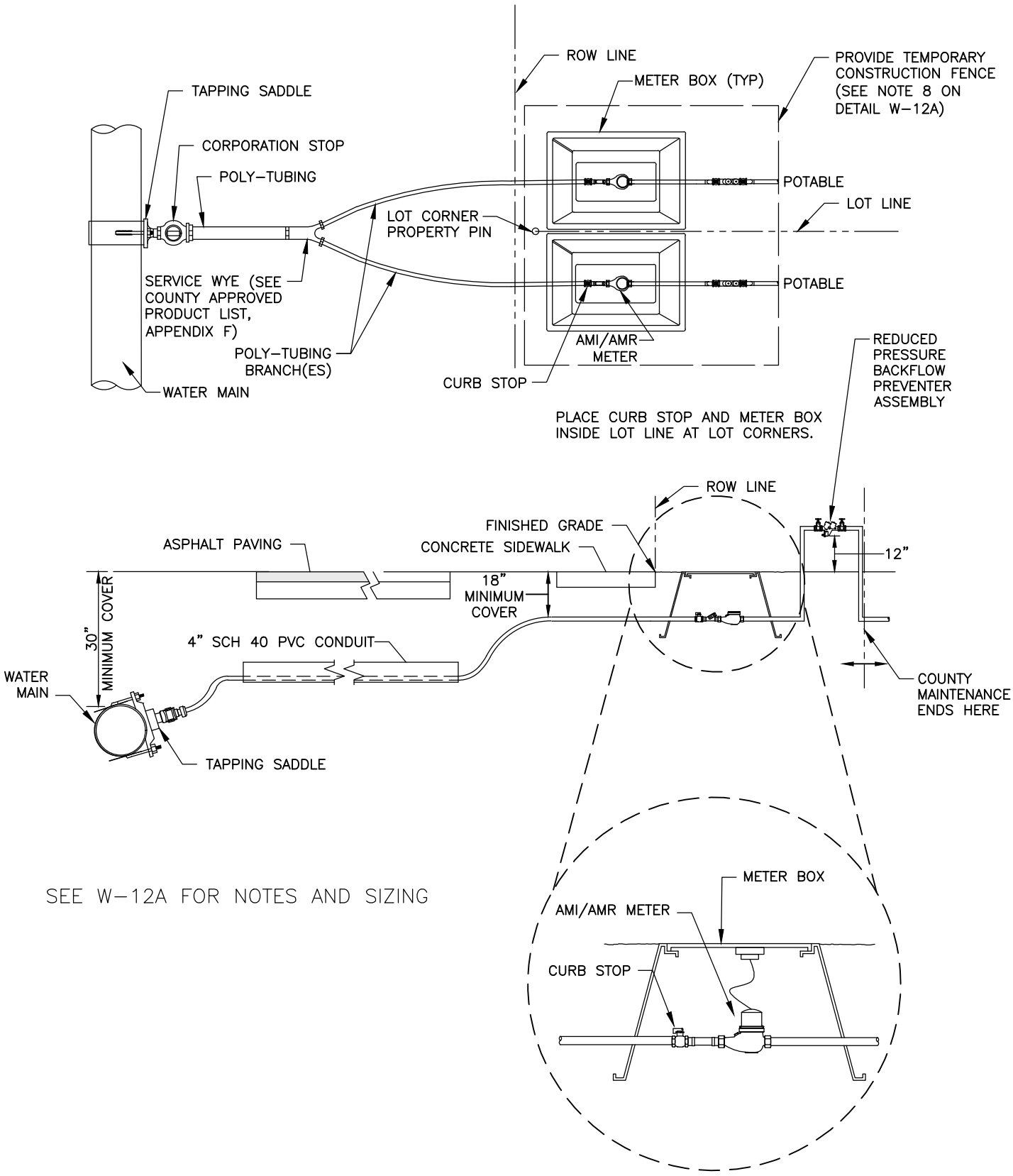
4" THROUGH 10" ONLY COMPACT FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL

NTS

REVISION DATE:
JULY 2011

Collier County

SHEET NO.
W-11A



SEE W-12A FOR NOTES AND SIZING

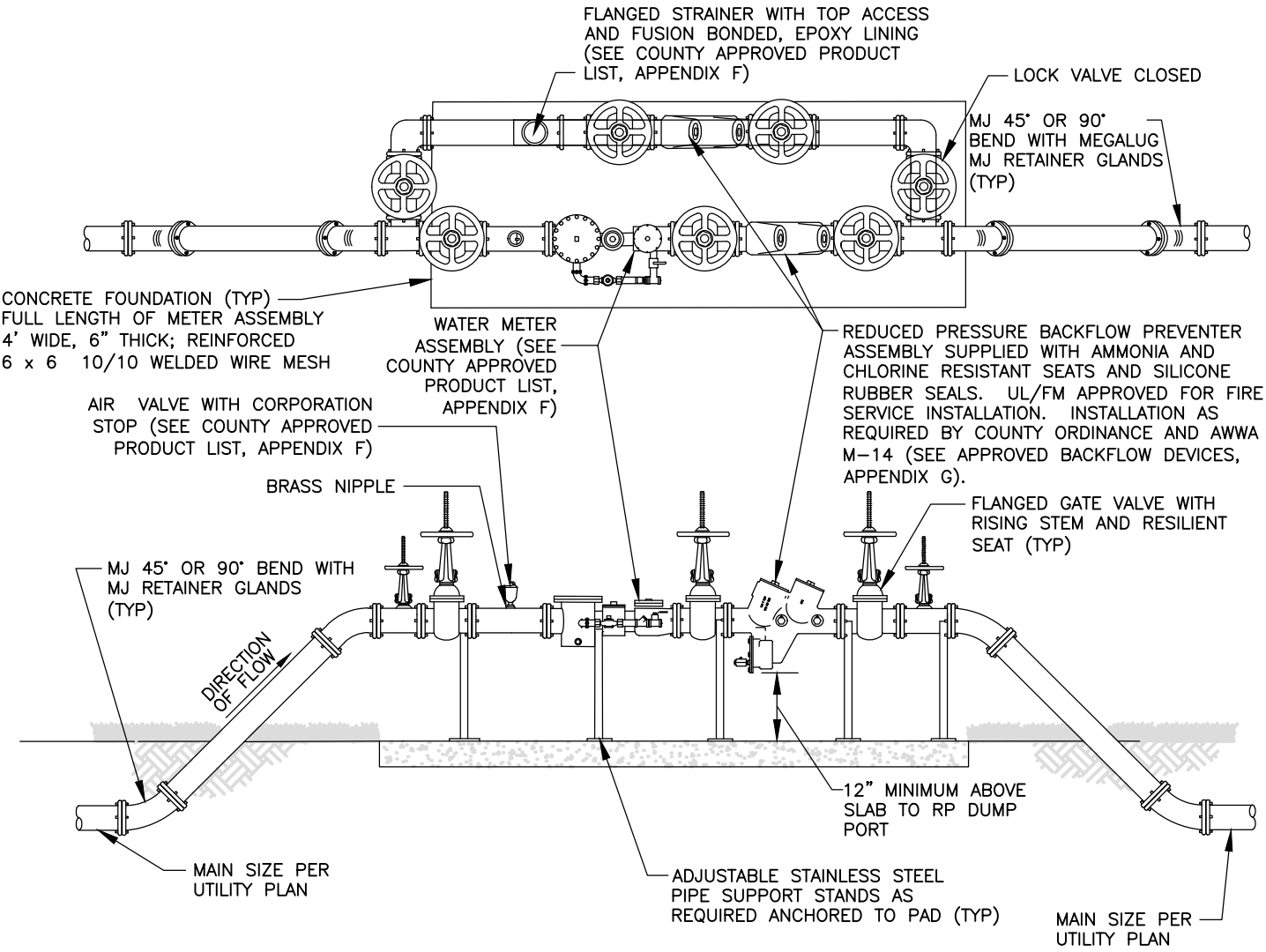
TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-12
NTS			

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	1–$\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	1–$\frac{1}{2}$"	1"
1" METER	1–$\frac{1}{2}$"	(2) 1" METERS	1–$\frac{1}{2}$"	1"
1–$\frac{1}{2}$" METER	1–$\frac{1}{2}$"			
2" METER	2"			

NOTES:

1. 1–$\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI–SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C–901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.
8. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AT WATER METER SETTINGS UNTIL BUILDING CERTIFICATE OF OCCUPANCY OR INSTALLATION OF SOD. FENCE TO BE 3' IN HEIGHT AND OFFSET 3' FROM ASSEMBLY.

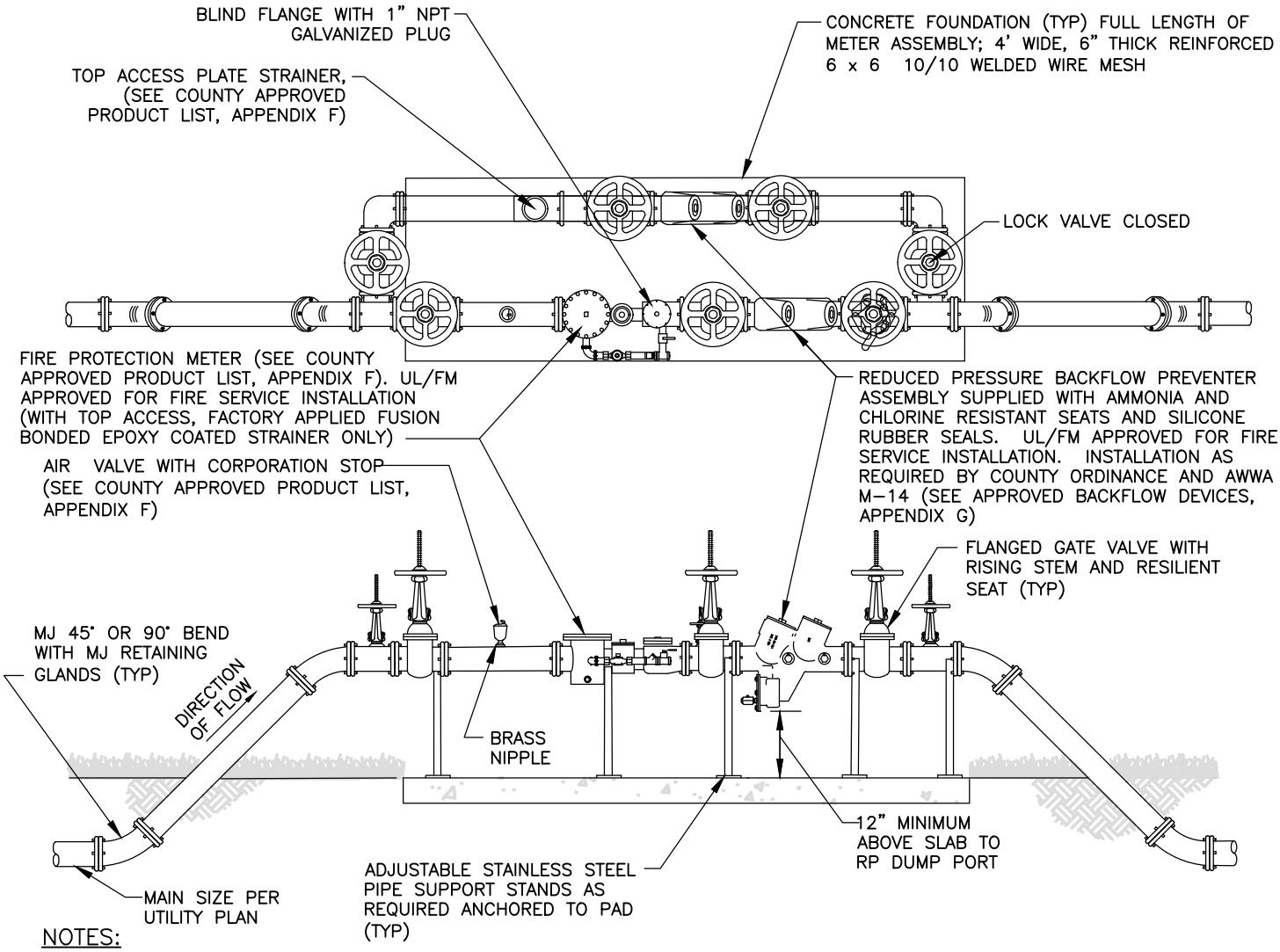
SERVICE CONNECTION SIZING CHART AND NOTES	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W–12A
NTS			



NOTES:

1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE ONLY.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW UNITS SHALL BE TESTED BY CERTIFIED BACKFLOW TECHNICIAN WITH TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT FOR CERTIFICATION AND APPROVAL.
6. COUNTY WILL REQUIRE DEDICATION OF ALL MATERIALS AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY WATER MAIN.
7. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION).

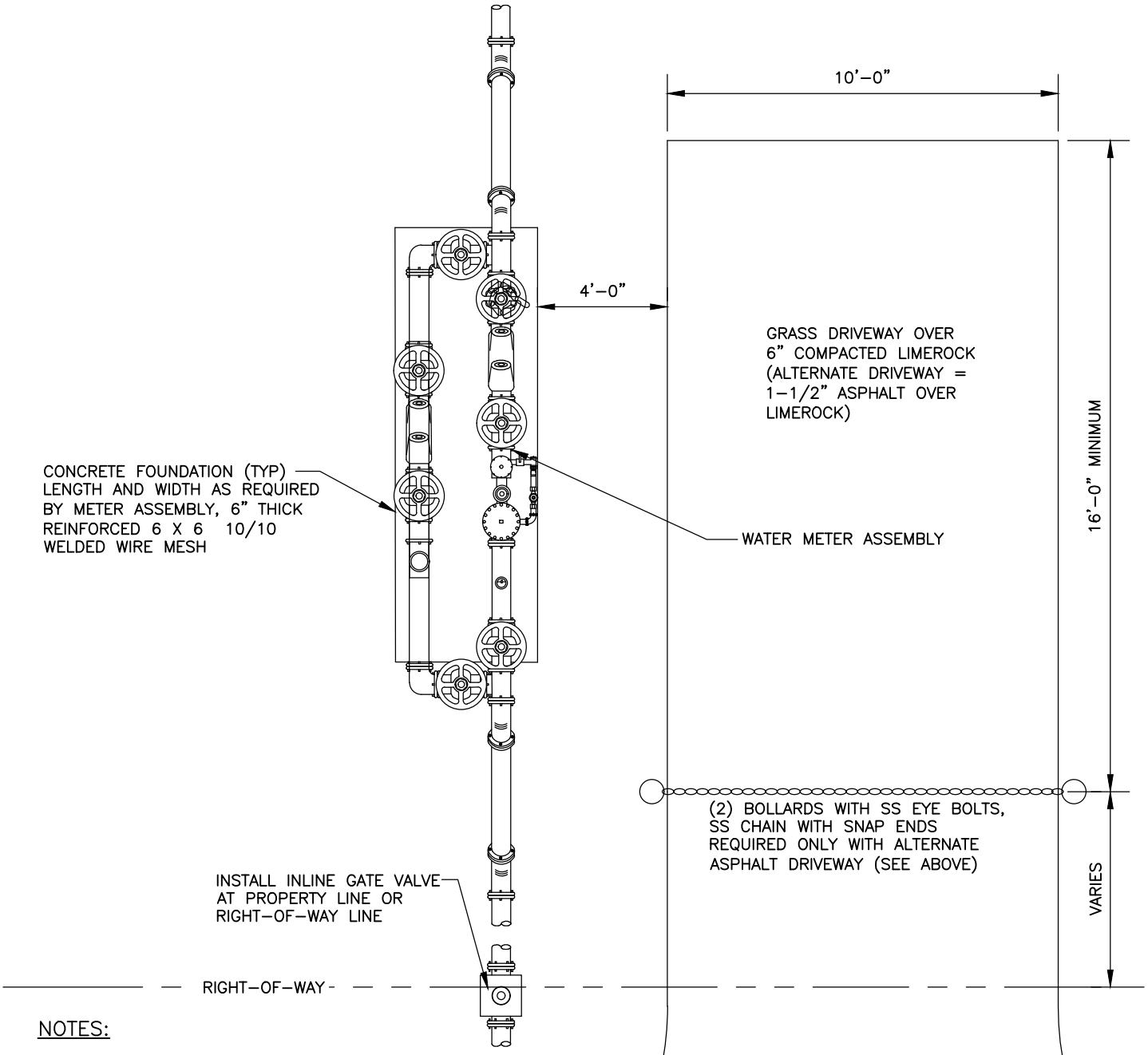
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-13
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. COUNTY REQUIRES DEDICATION OF ALL ABOVE GROUND MATERIAL AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY MAIN.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION),

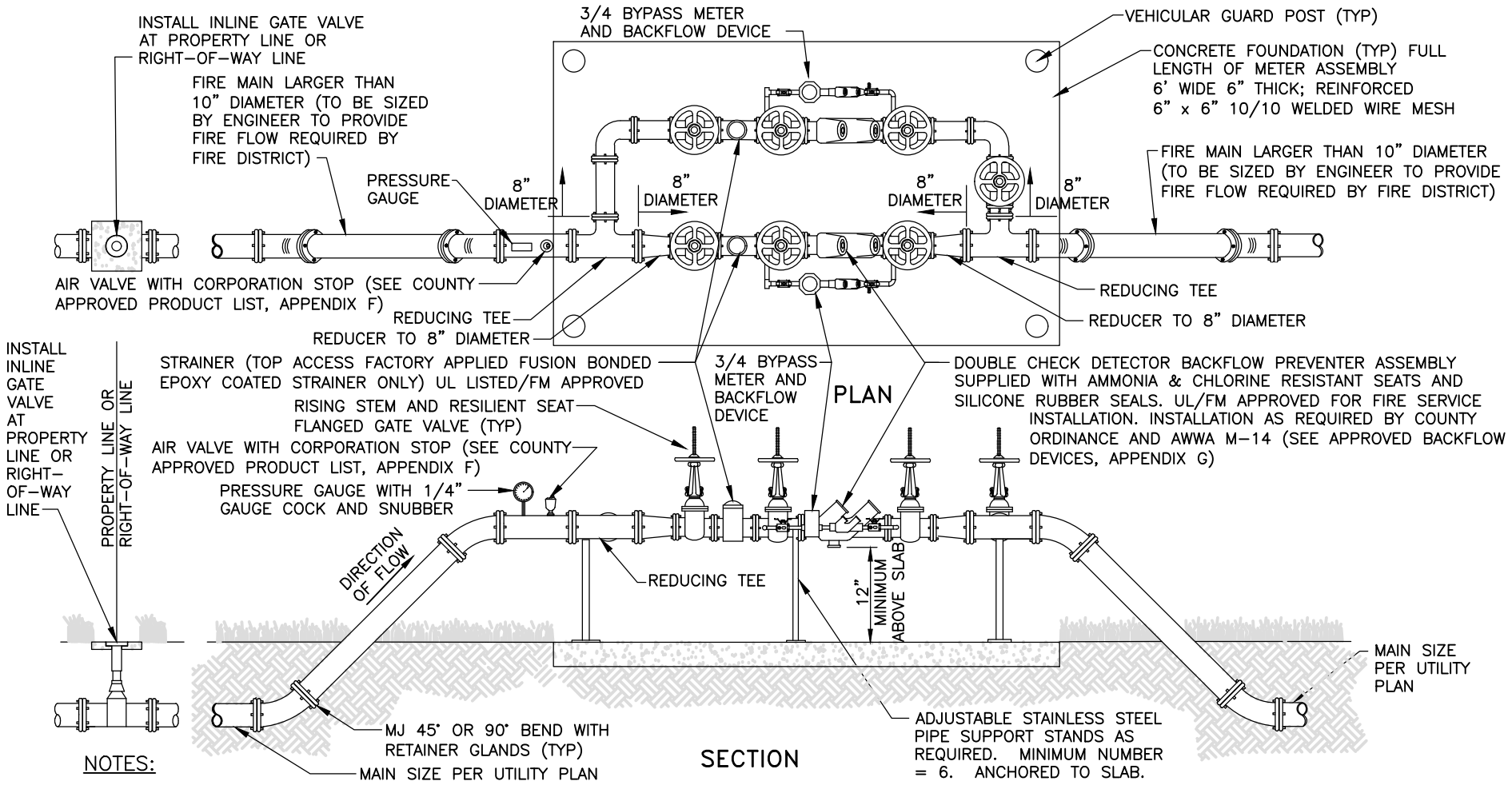
4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-14
NTS			



NOTES:

1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 515.
2. VEHICULAR GUARDPOSTS ARE NOT SHOWN. PROVIDE GUARDPOSTS AS REQUIRED BY WATER METER DETAIL AND SITE.
3. DRIVEWAY ORIENTATION TO BE AS APPROVED BY THE COUNTY.
4. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT.
5. IF ROADWAY CURB EXISTS, PROVIDE CONCRETE TRANSITION ONTO DRIVEWAY.

MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER	REVISION DATE: JULY 2018	Collier County	SHEET NO. W–14A
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE PRESSURE CLASS 350, ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
4. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. A REDUCED PRESSURE DETECTOR BAKCFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

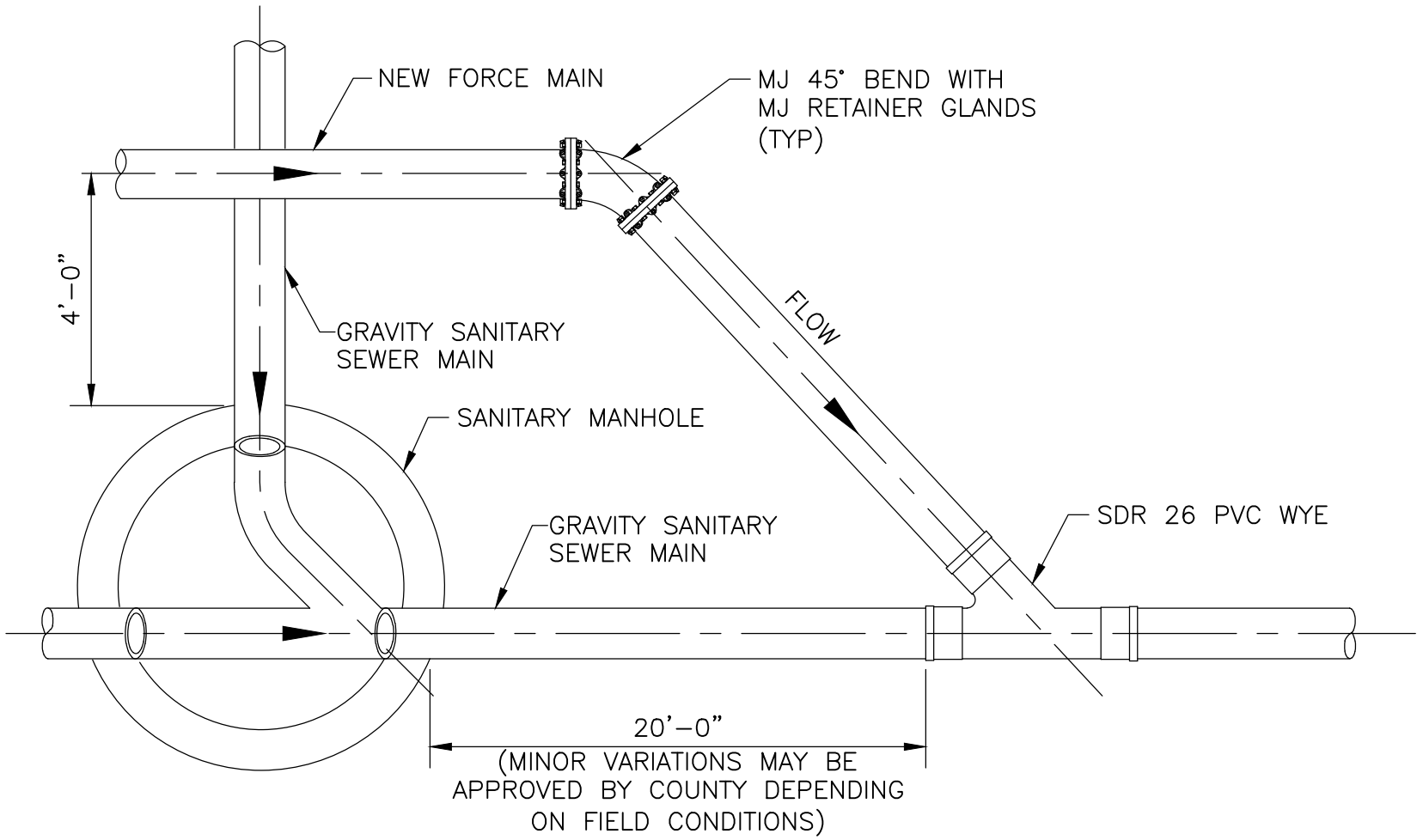
FIRE SERVICE DUAL DETECTOR CHECK ASSEMBLY OVER 10" FIRE MAIN DETAIL (DUAL 8" ASSEMBLIES)

NTS

REVISION DATE:
JULY 2011

Collier County

SHEET NO.
W-16



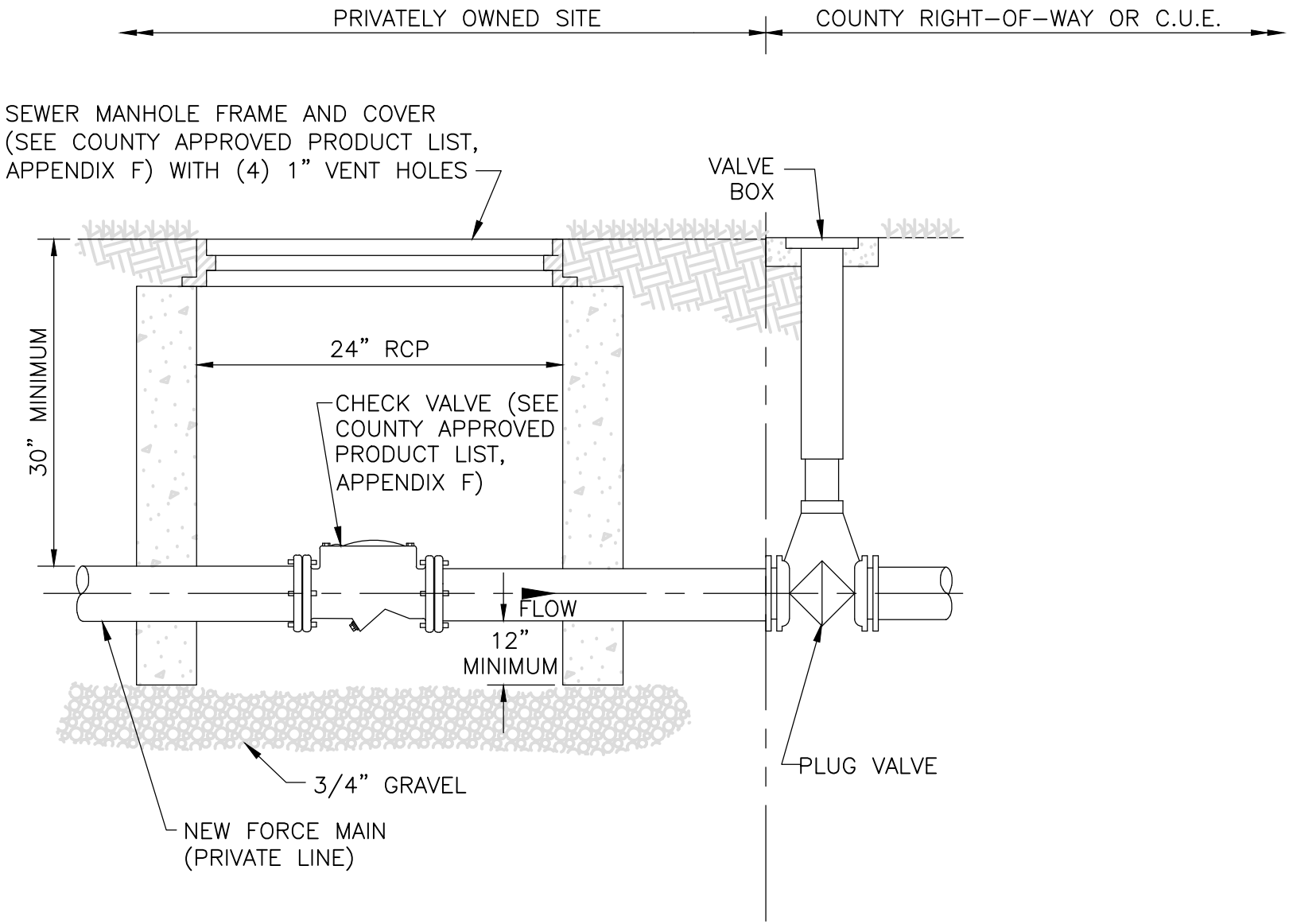
FORCE MAIN CONNECTION TO GRAVITY SANITARY SEWER DETAIL

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
WW–1



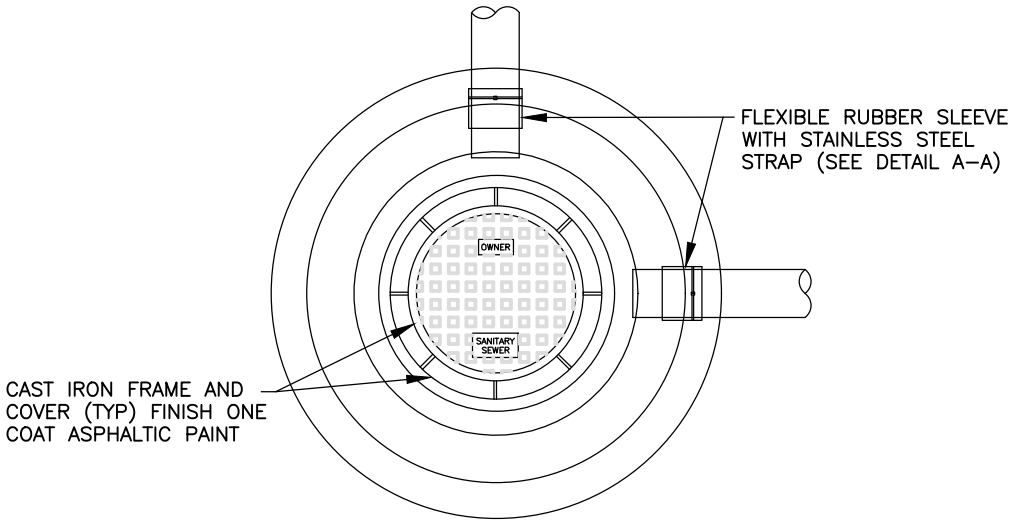
PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

NTS

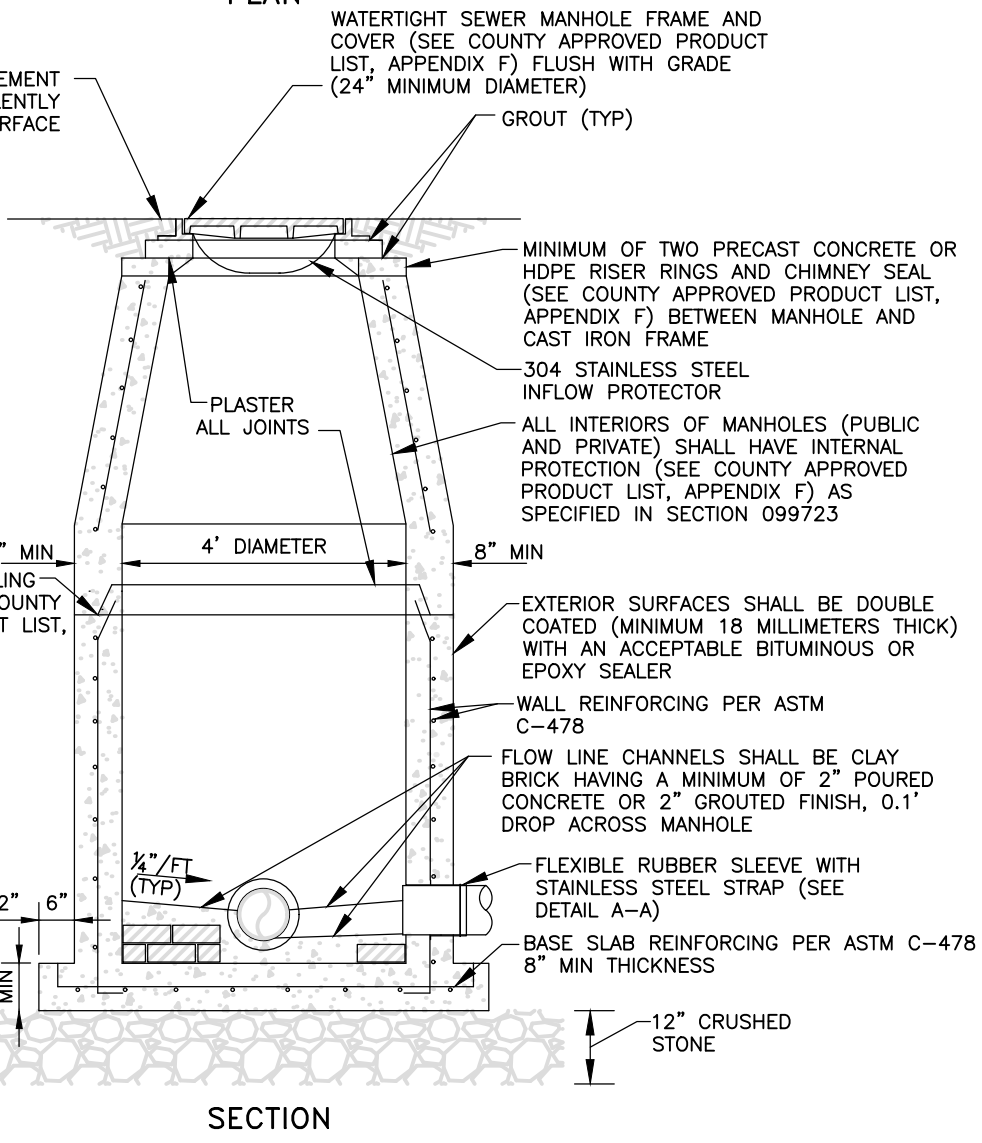
REVISION DATE: JULY 2018

Collier County

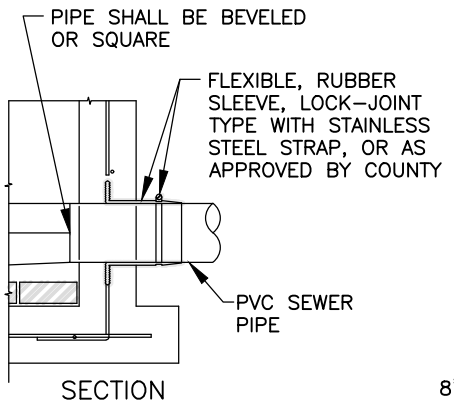
SHEET NO. WW-2



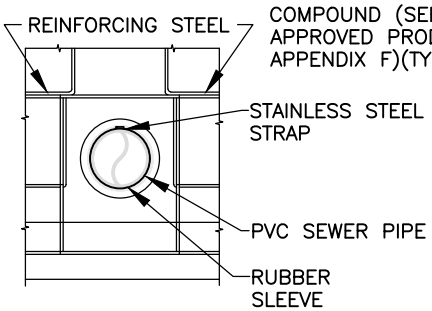
PLAN



SECTION



SECTION



ELEVATION

DETAIL A–A

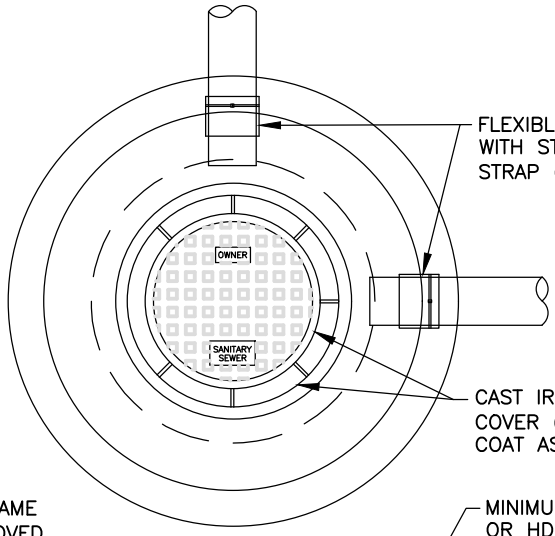
PRECAST REINFORCED CONCRETE MANHOLE DETAIL

REVISION DATE:
JANUARY 2025

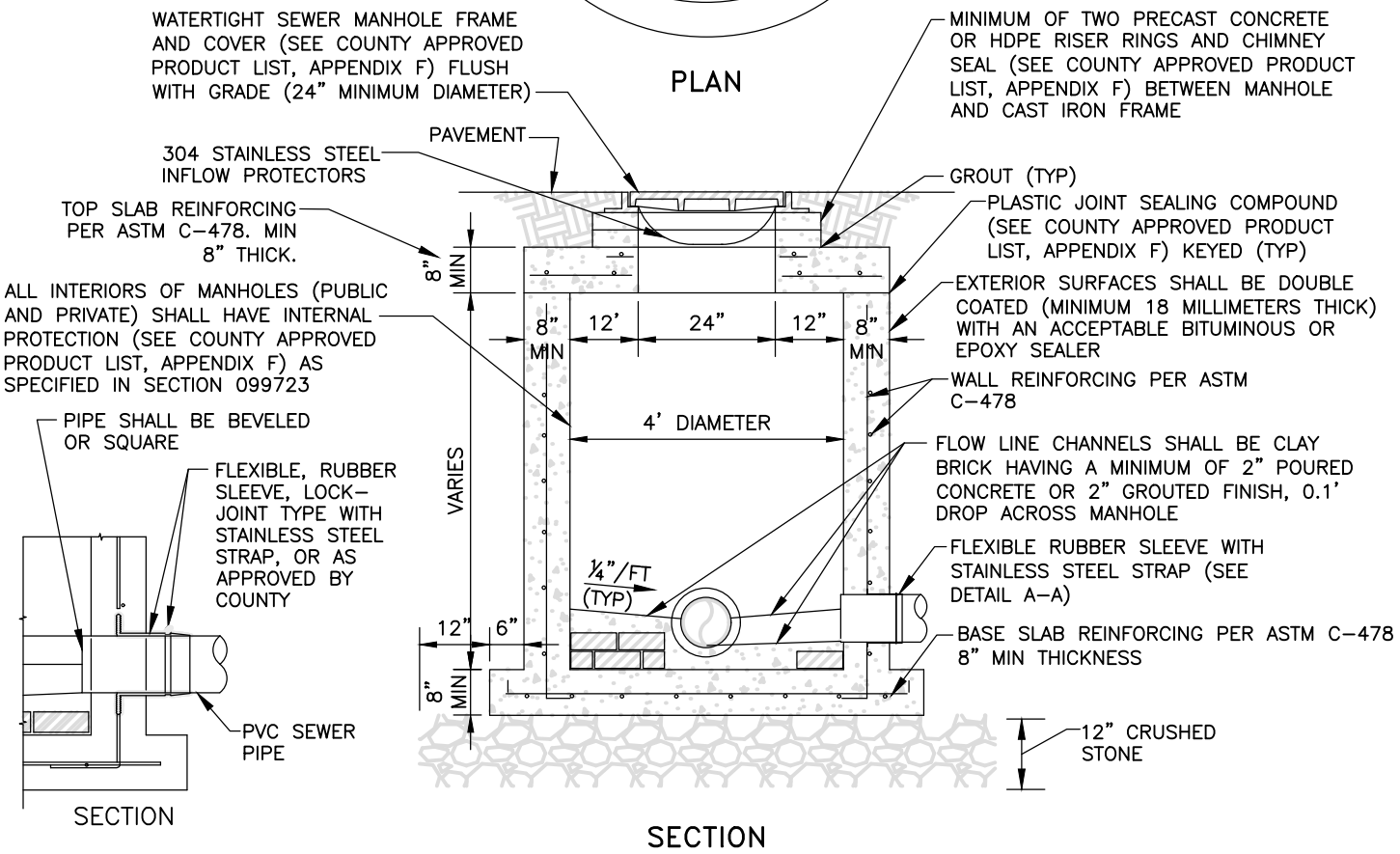
NTS

Collier County

SHEET NO.
WW–3

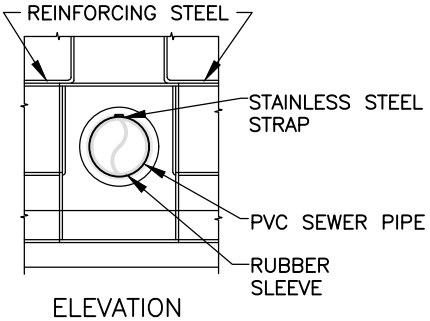


PLAN



SECTION

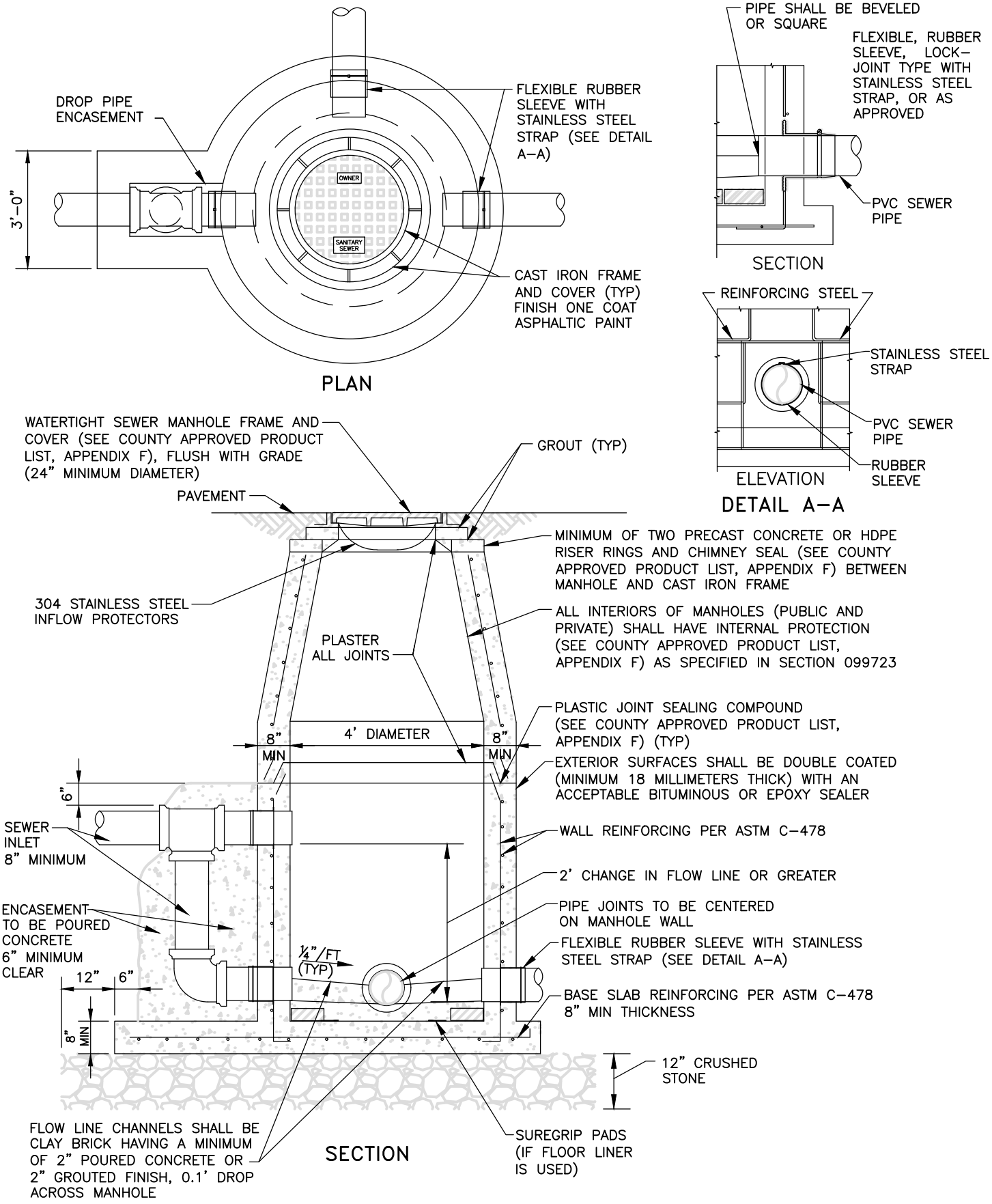
SECTION



ELEVATION

DETAIL A–A

SHALLOW MANHOLE DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW–4
NTS			



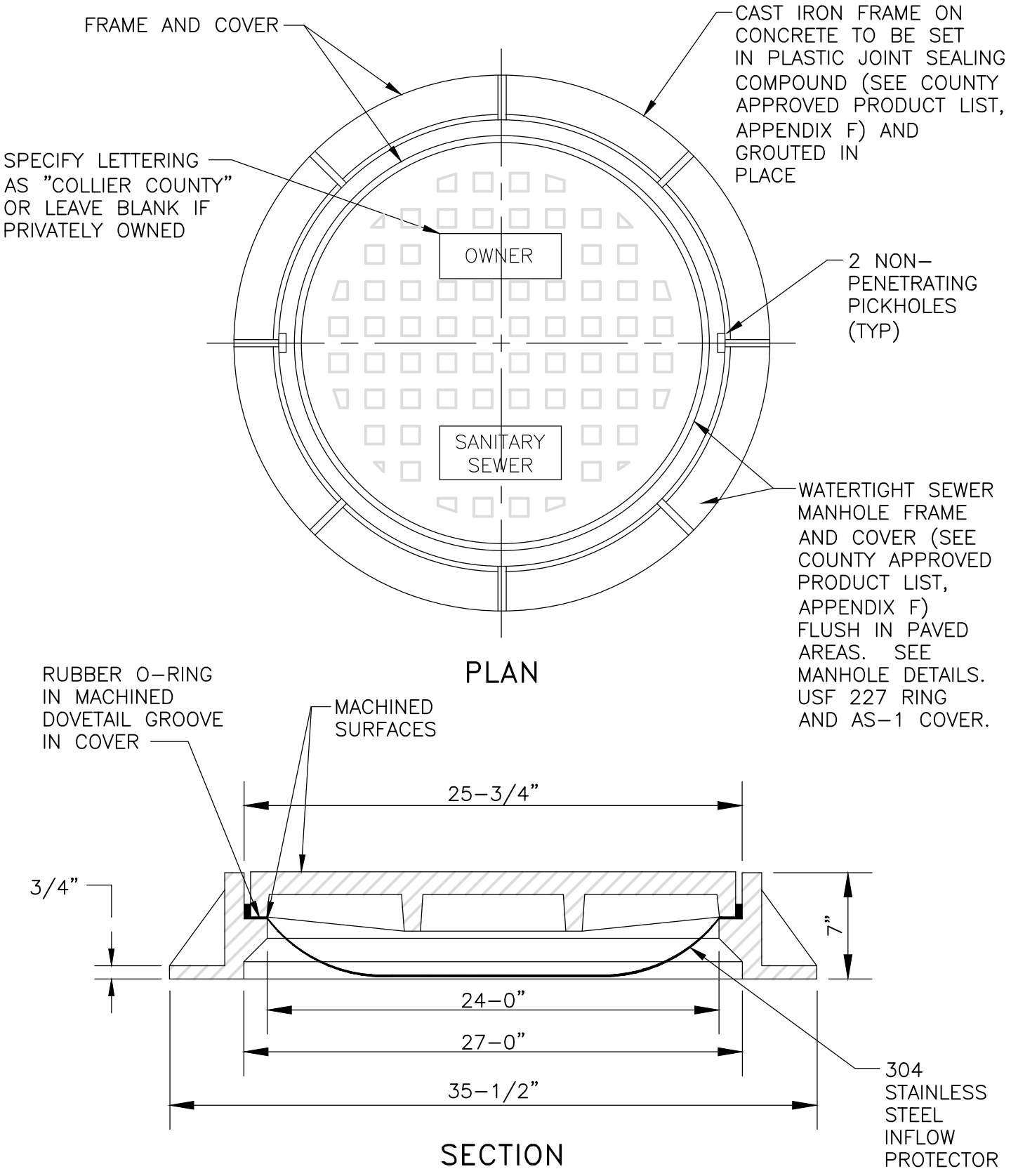
DROP MANHOLE DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–5



MANHOLE RING AND COVER DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW-6
NTS			

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

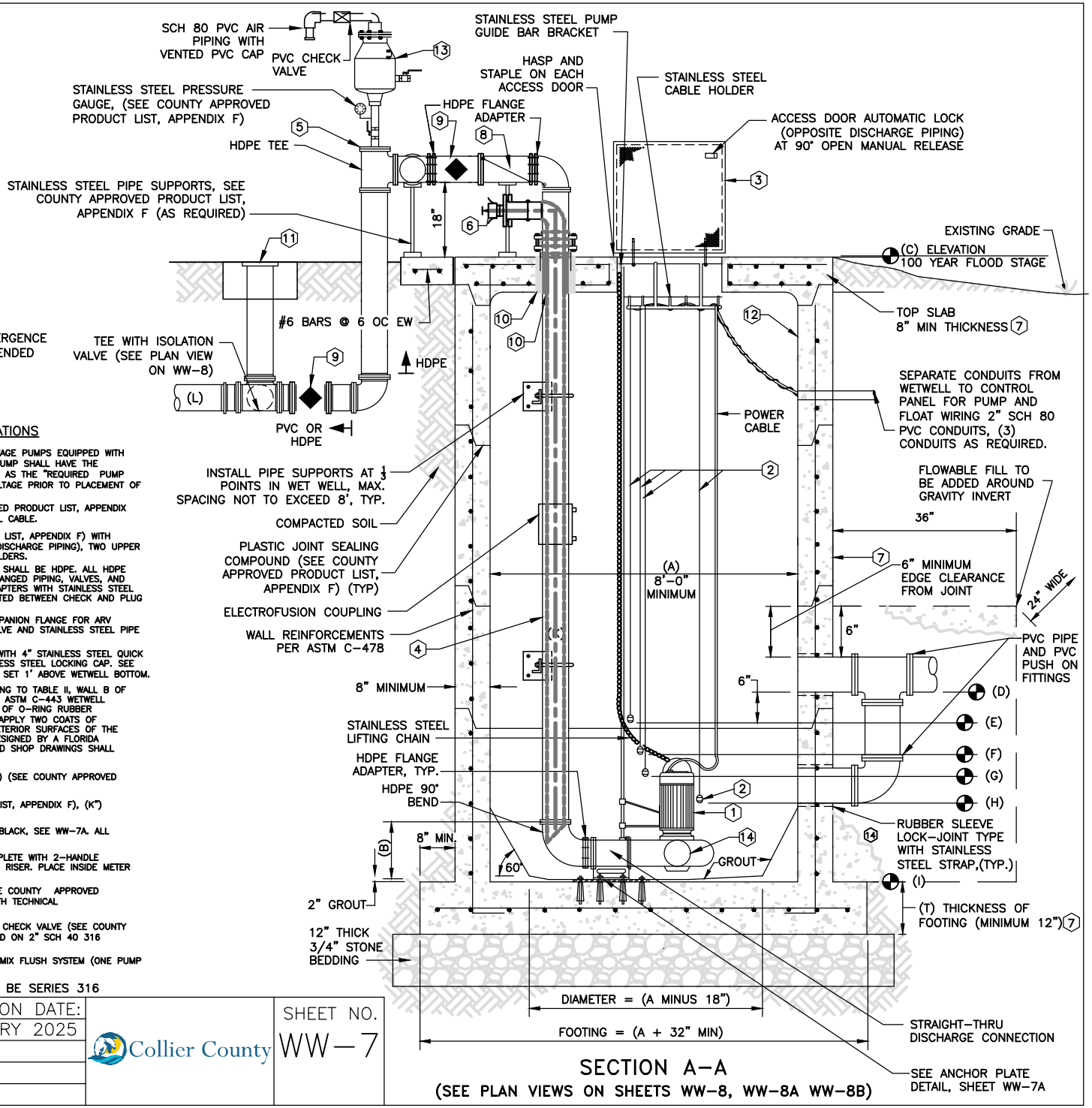
*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER (OPPOSITE DISCHARGE PIPING), TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76. O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. RAM-NEK MAY BE USED IN LIEU OF O-RING RUBBER GASKETS (SEE SPECIFICATION SECTION 034100). APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL. PUMP STATION WET WELL SHALL BE DESIGNED BY A FLORIDA PROFESSIONAL ENGINEER AND SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



SECTION A-A
(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)

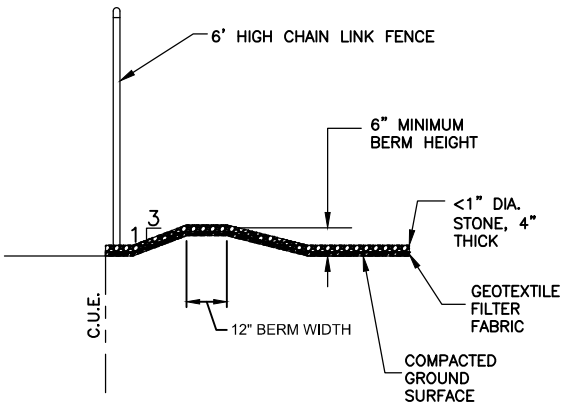
PUMP STATION DETAIL - PROFILE

NTS

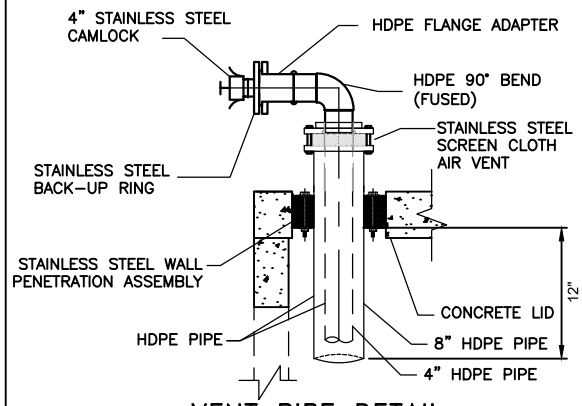
REVISION DATE:
JANUARY 2025

Collier County

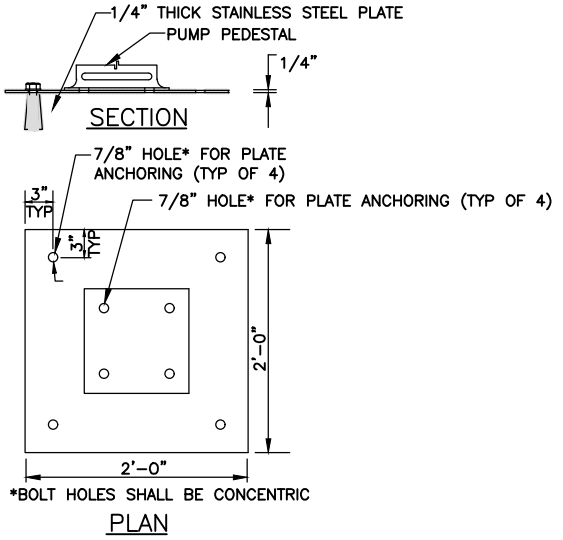
SHEET NO.
WW-7



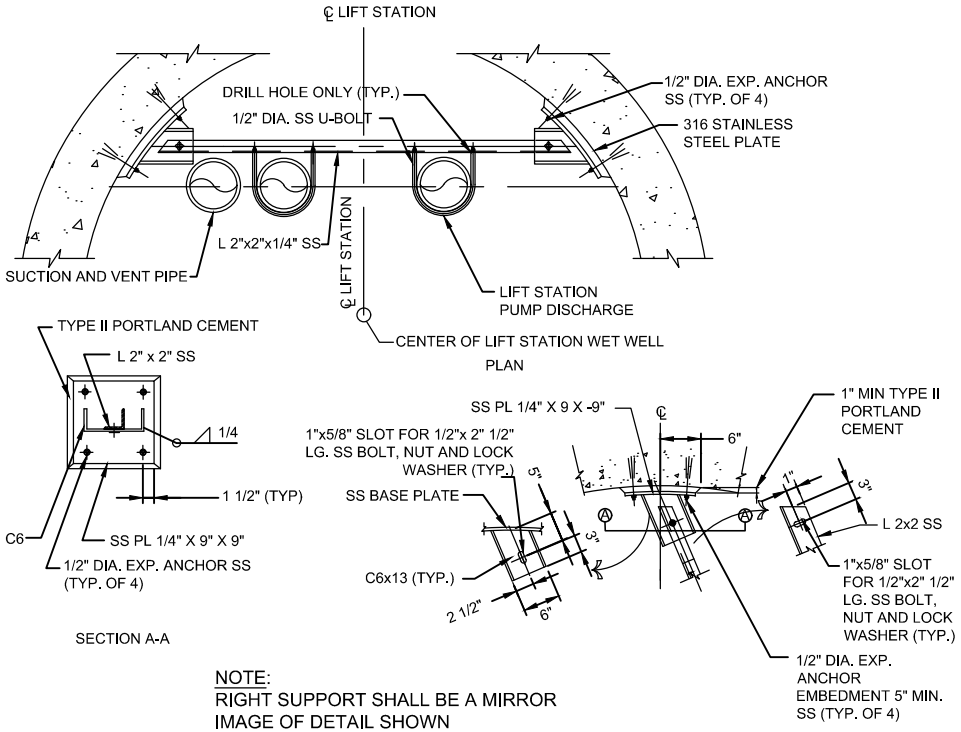
BERM DETAIL (FROM WW-8)



VENT PIPE DETAIL
(FROM WW-8, WW-8A, WW-8B)

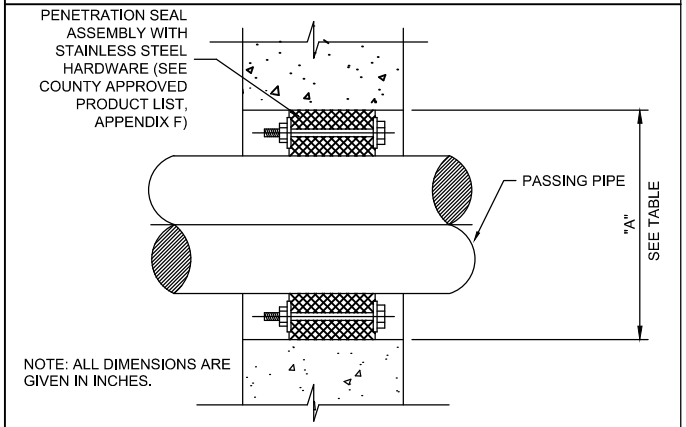


ANCHOR PLATE DETAIL (FROM WW-7)



NOTE:
RIGHT SUPPORT SHALL BE A MIRROR IMAGE OF DETAIL SHOWN

DISCHARGE PIPE SUPPORT DETAIL
(FROM WW-7)



PIPE SIZE	"A"	PIPE SIZE	"A"
2	4	14	18
4	8	16	20
6	10	18	24
8	12	20	26
10	14	24	28
12	16		

WALL PENETRATION DETAIL (FROM WW-7)

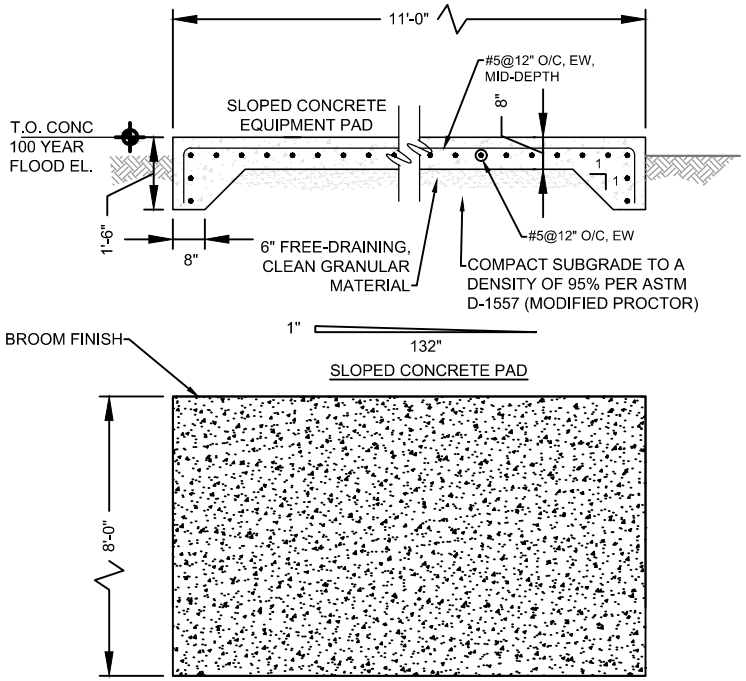
PUMP STATION AND WASTEWATER DETAILS

NTS

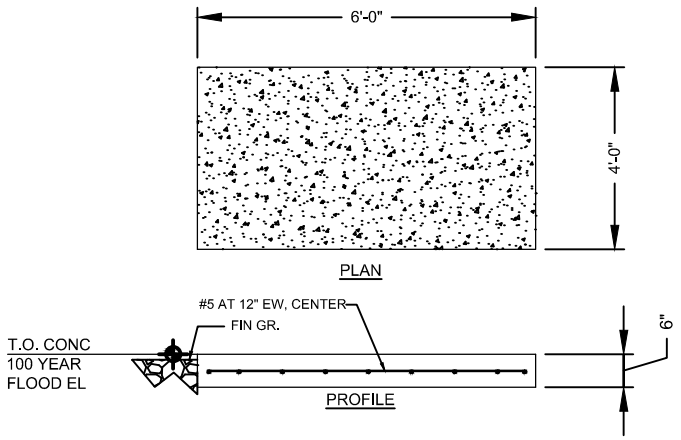
REVISION DATE:
JAN. 2015

Collier County

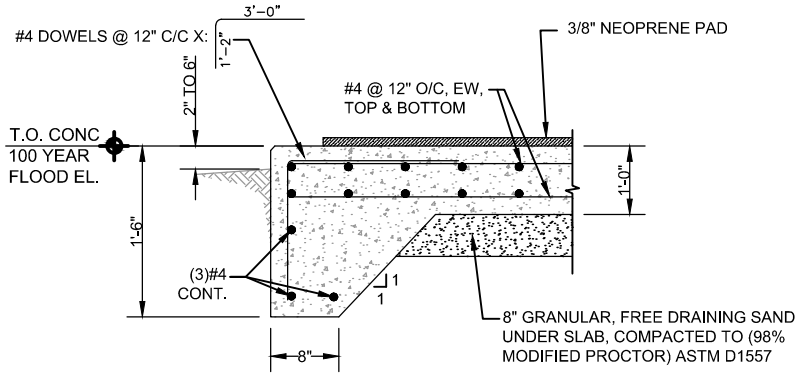
SHEET NO.
WW-7A



ODOR CONTROL PAD (TYPICAL)
N.T.S



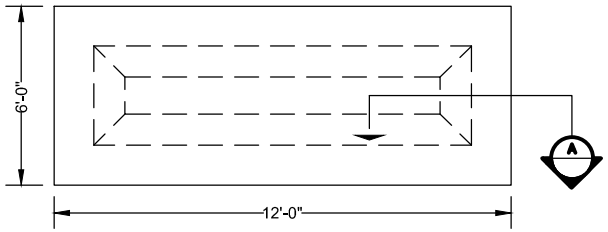
PUMP CONTROL PANEL PAD (TYPICAL) – N.T.S



SECTION A
SCALE: N.T.S.

GENERATOR (SLAB/REINF.)

NOTE: CONTRACTOR SHALL PROVIDE A 3/8" CLOSED CELL NEOPRENE PAD ON THE SLAB TO MATCH THE BASE FOOTPRINT OF THE GENERATOR OR THE DIESEL PUMP.



STAND–BY GENERATOR OR DIESEL PUMP CONCRETE SLAB DETAIL (TYP.) – N.T.S.

STRUCTURAL NOTES:

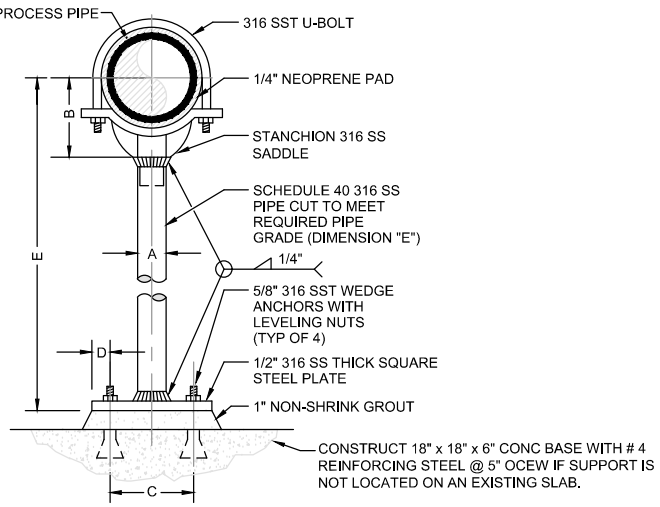
1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH; W/C = 0.45, AIR CONTENT 6% (±) 1%; SLUMP = 4" BEFORE ADDING WATER REDUCING AGENT.
2. ALL STEEL SHALL BE ASTM A615, GR 60.
3. ALL DIMENSIONS SHOWN ARE TYPICAL ONLY. CONTRACTOR TO VERIFY OVERALL SLAB SIZE WITH EQUIPMENT MANUFACTURER AND ENGINEER PRIOR TO CONSTRUCTION.
4. ALL SLABS SHALL HAVE TOOLED EDGES ON ALL SIDES

PUMP STATION CONCRETE DETAILS

REVISION DATE:
JAN. 2015
NTS

Collier County

SHEET NO.
WW–7B



PIPE SIZE	A	B	C	D	E	
					MIN	MAX
4	3	4 3/16	7	1	18	30
5	3	4 13/16	7	1	18	30
6	3	5 7/16	7	1	18	30
8	3	6 15/16	7	1	18	30
10	3	8 7/16	7	1	18	30
12	3	9 15/16	7	1	18	30

* ALL DIMENSIONS IN INCHES.

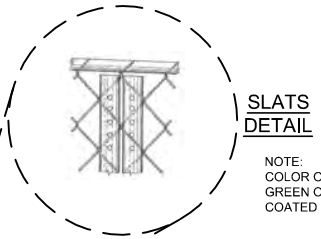
NOTES:

1. PIPE SUPPORT HEIGHT TO BE ADJUSTABLE.
2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT (DIMENSION "E").
3. PIPE SUPPORT TO BE COMPATIBLE WITH HDPE PIPE.
4. ALL MATERIALS AND HARDWARE TO BE 316 SS.

PIPE SUPPORT DETAIL

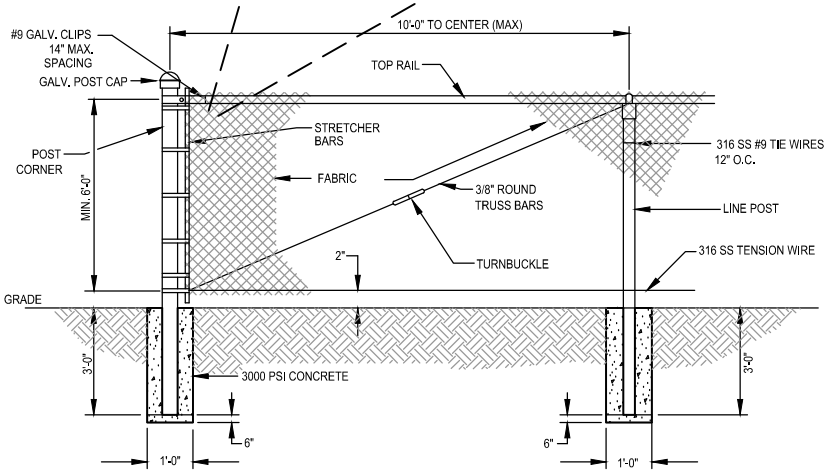
NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.

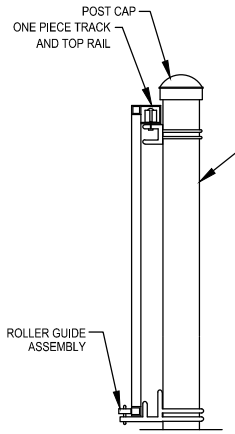


SLATS DETAIL

NOTE:
COLOR OF THE SLATS SHALL BE GREEN OR BLACK TO MATCH VINYL COATED PARTS



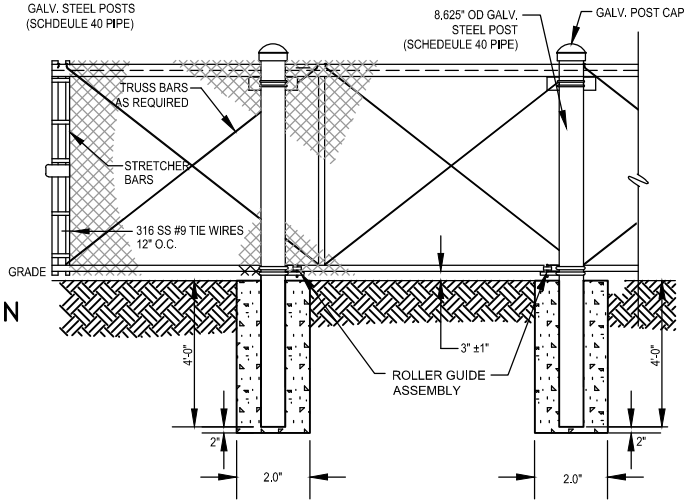
CHAIN LINK FENCE DETAIL



GATE SECTION

NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.



CHAIN LINK FENCE GATE DETAIL

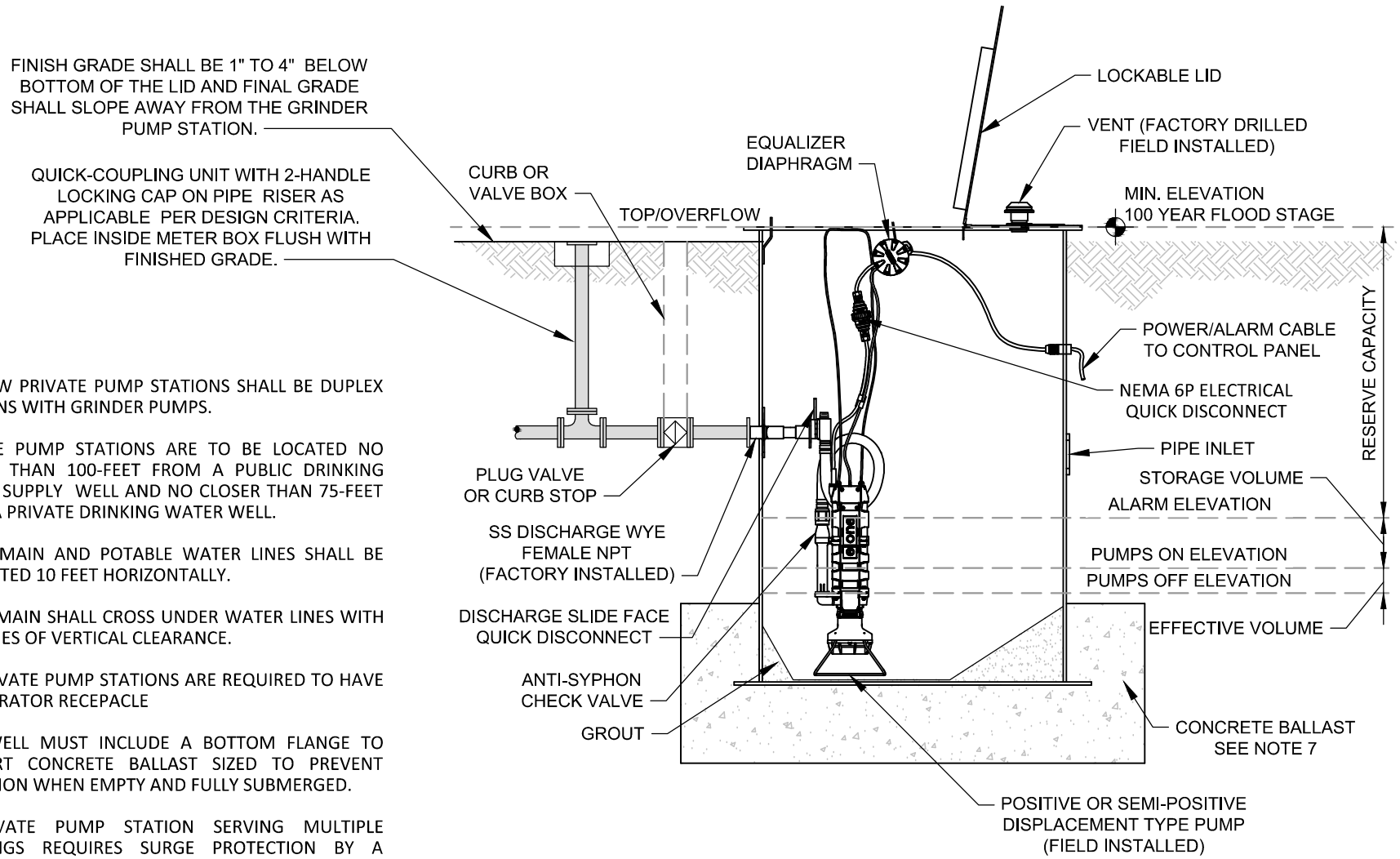
PUMP STATION AND WASTEWATER DETAILS

REVISION DATE:
JULY 2018

NTS

Collier County

SHEET NO.
WW-7C



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPACLE
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

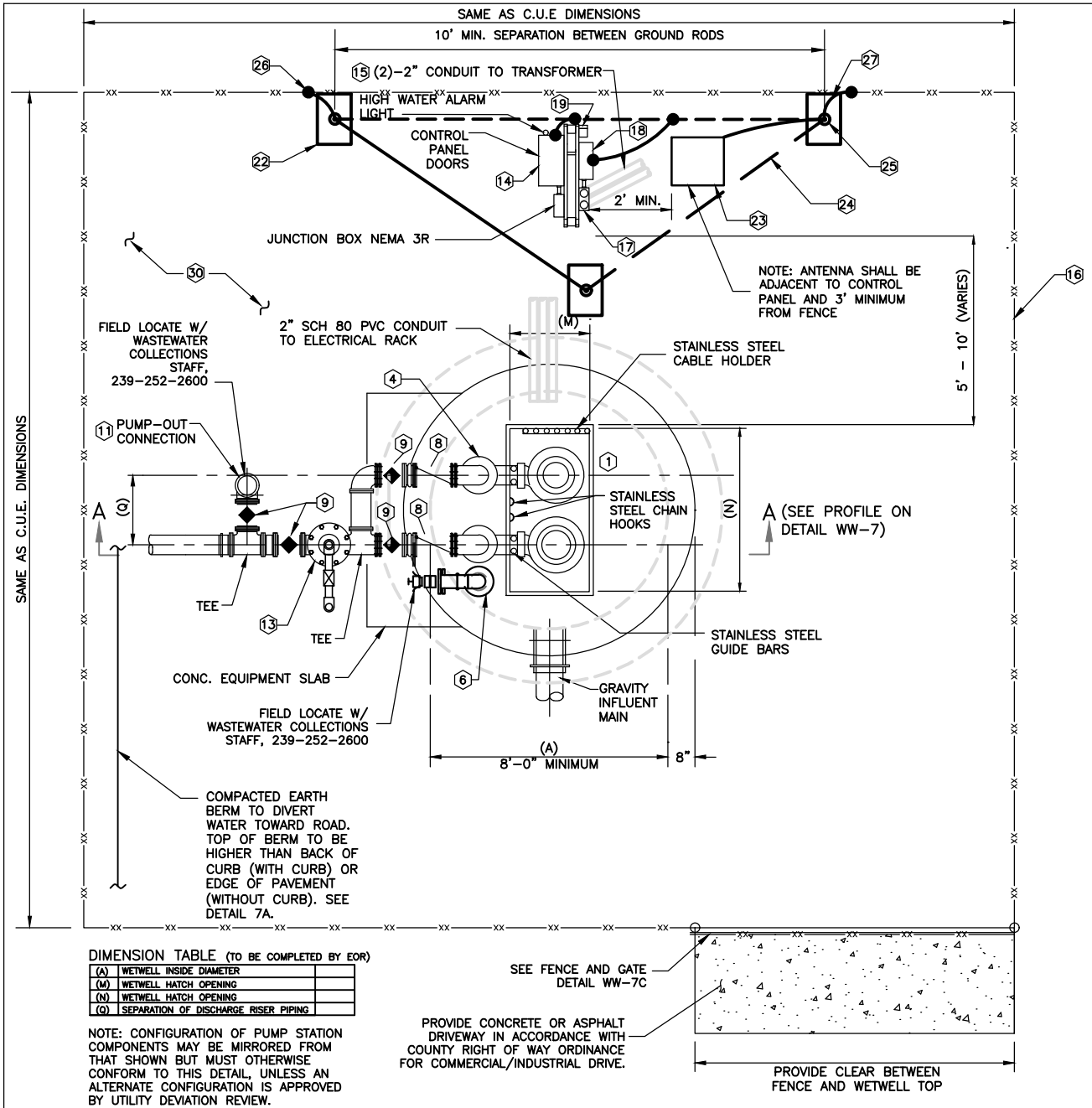
PRIVATE GRINDER PUMP STATION DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–7D



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK–CONNECT COUPLING UNIT WITH 2–HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW–7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK–COUPLING UNIT COMPLETE WITH 2–HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW–9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)–252–2600. SEE DETAIL WW–9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW–17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW–17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER–CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

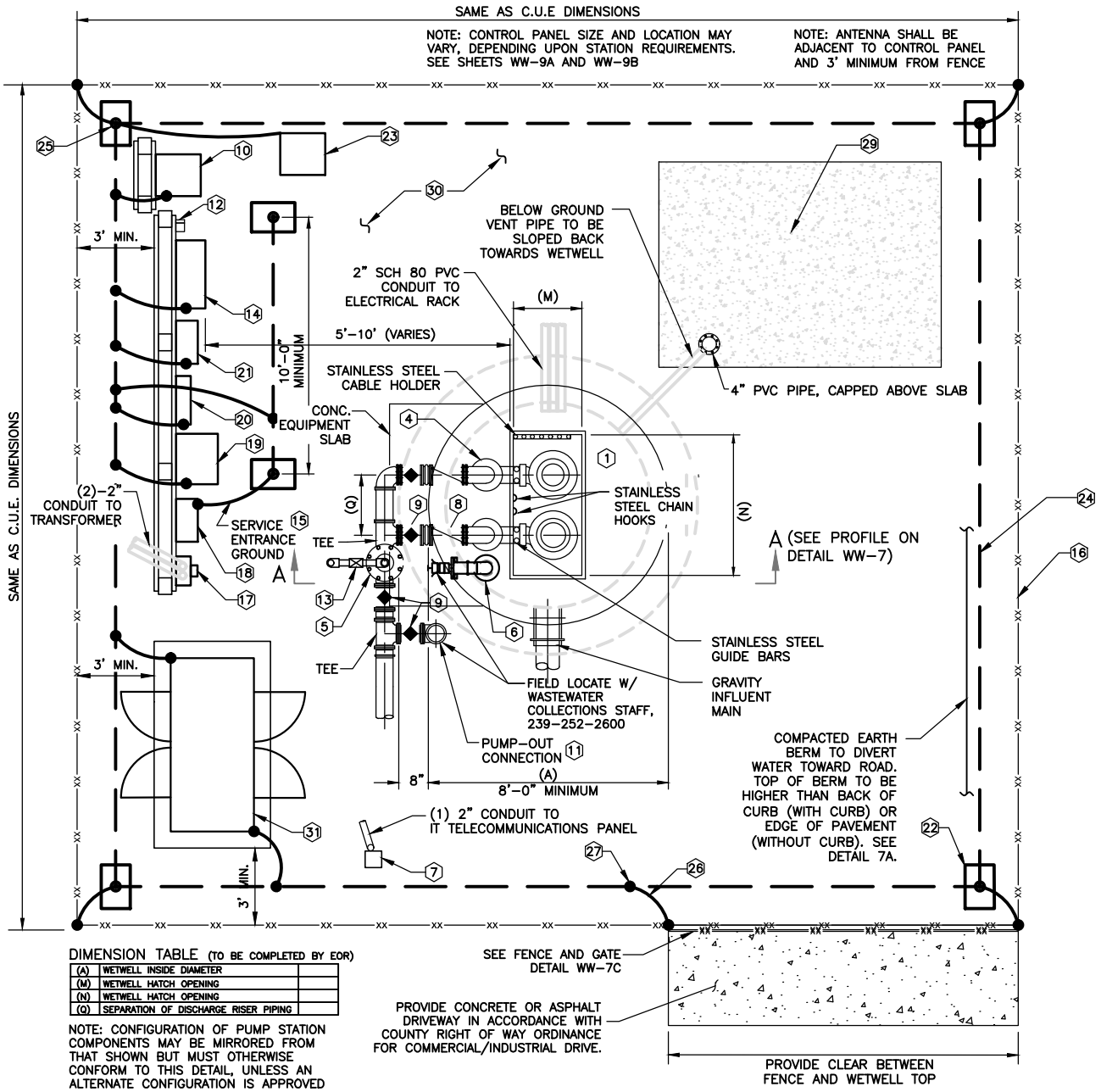
PUMP STATION DETAIL – PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW–8



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

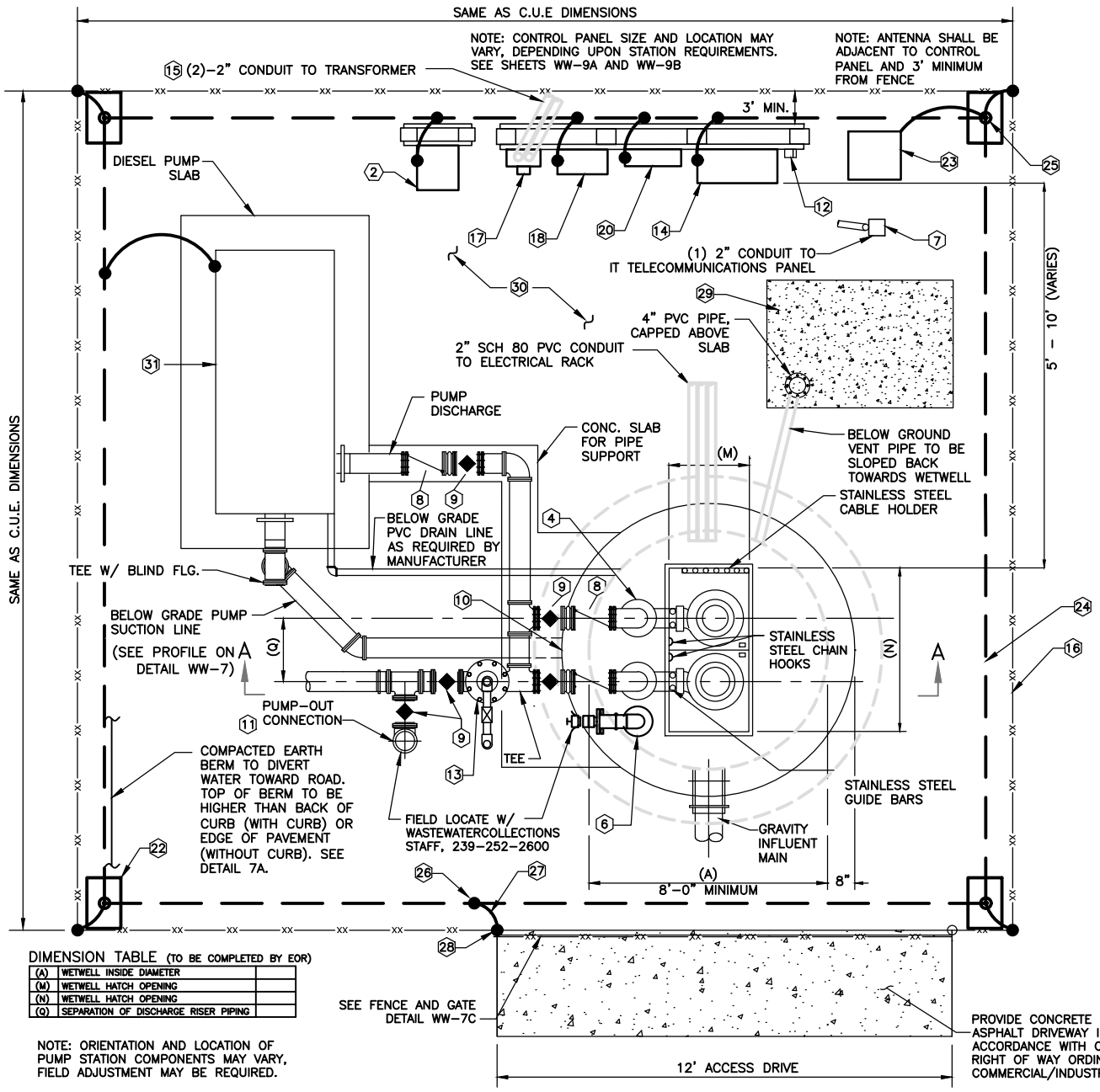
COMMUNITY PUMP STATION WITH GENERATOR DETAIL – PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. NOT USED
20. 120V PANELBOARD / MINI POWER ZONE AS REQUIRED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STAND-BY DIESEL PUMP WITH INTEGRATED FUEL TANK AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 221336.

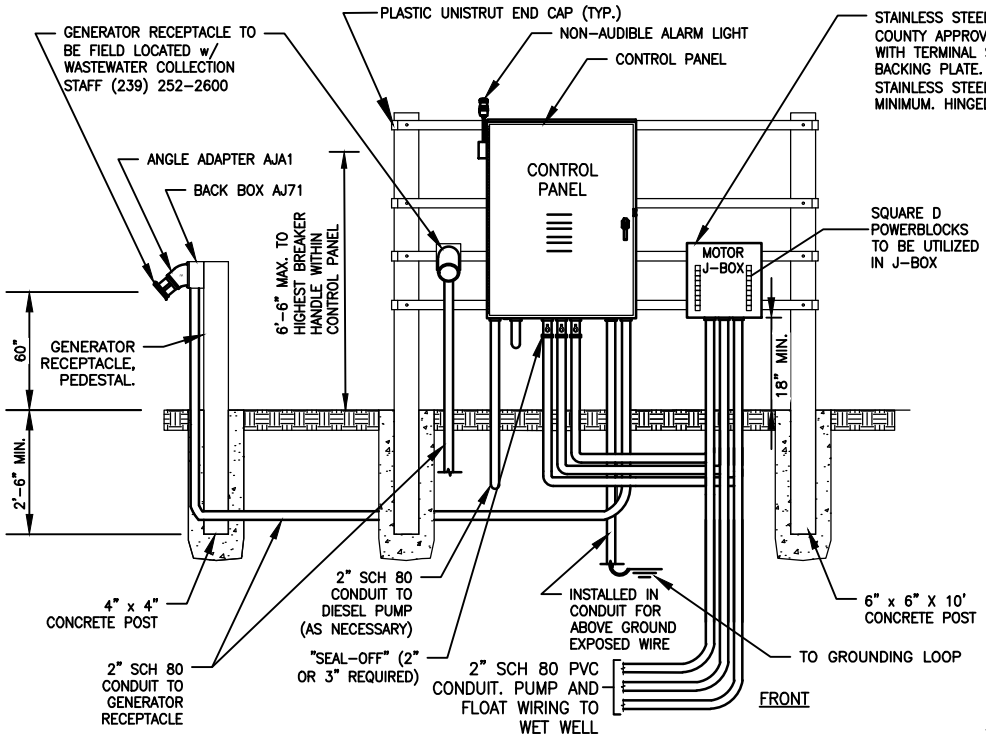
COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

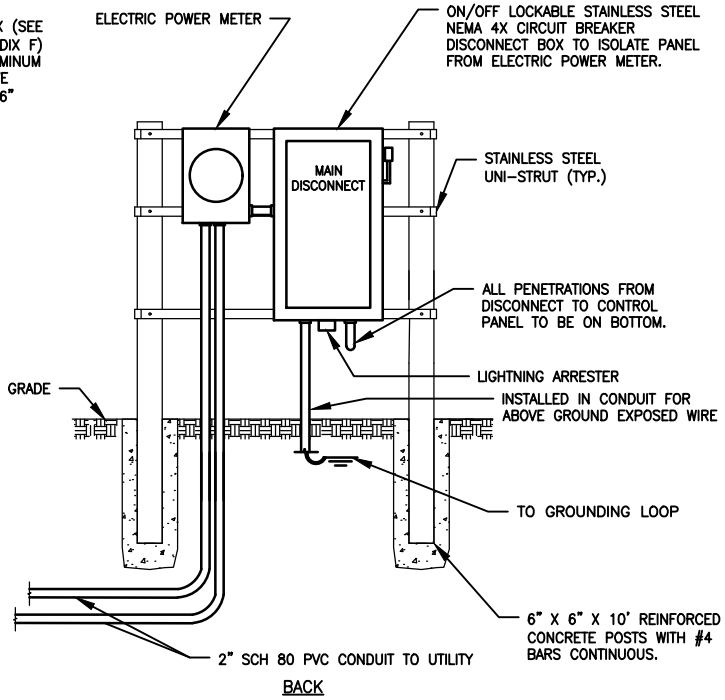
Collier County

SHEET NO. WW-8B



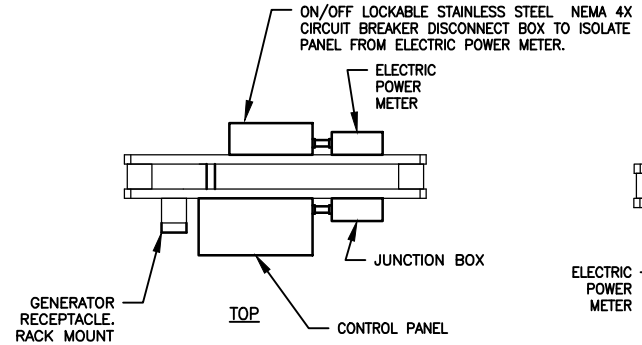
PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION

SCALE: 1" = 4'-0"



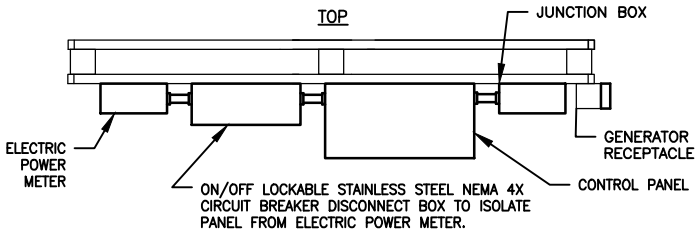
PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION

SCALE: 1" = 4'-0"



PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW

SCALE: 1" = 4'-0"



SINGLE SIDE ALTERNATE - PLAN VIEW

SCALE: 1" = 4'-0"

NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
8. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600
9. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
10. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
11. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

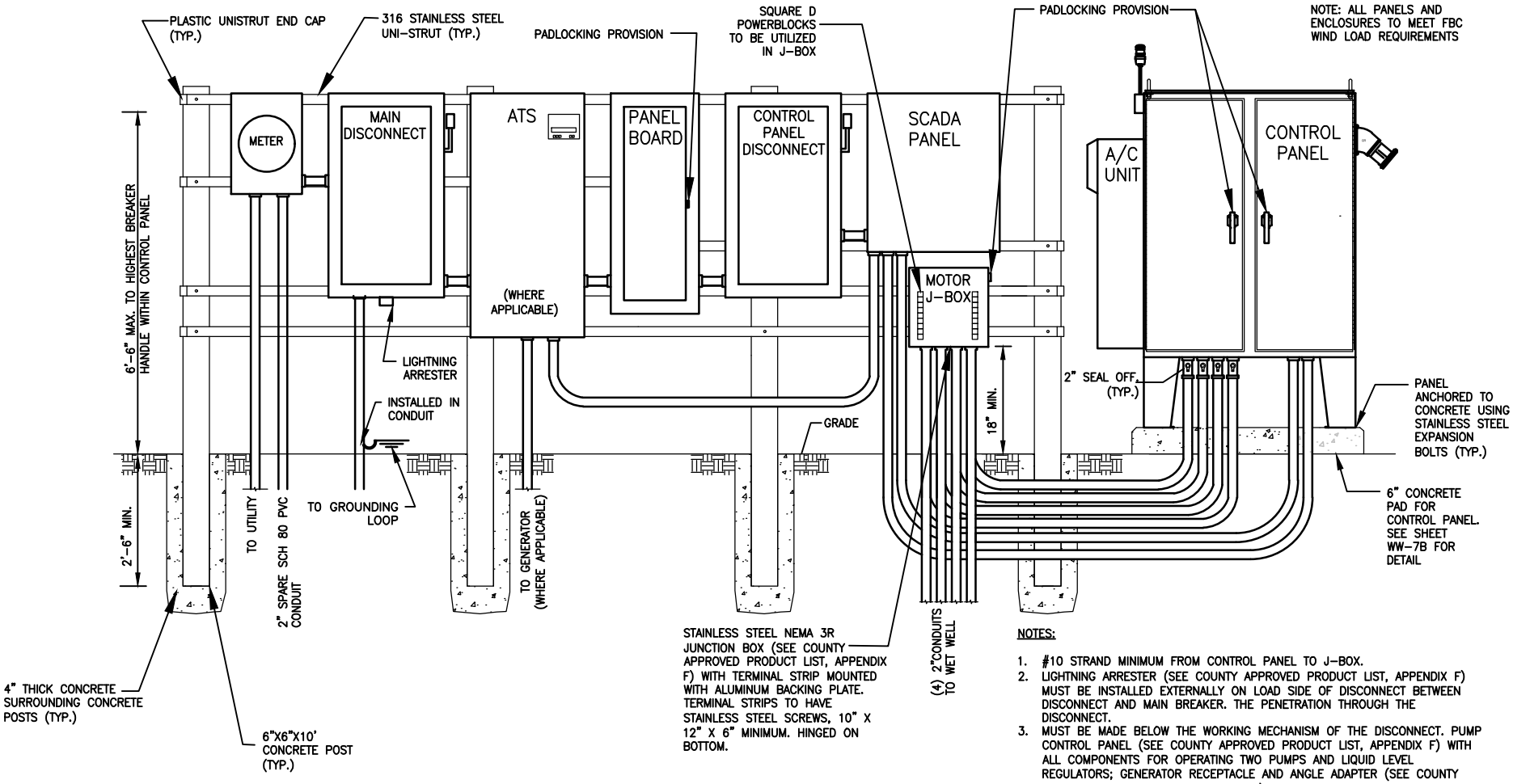
PUMP STATION CONTROL PANEL DETAIL

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-9



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT.
3. MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

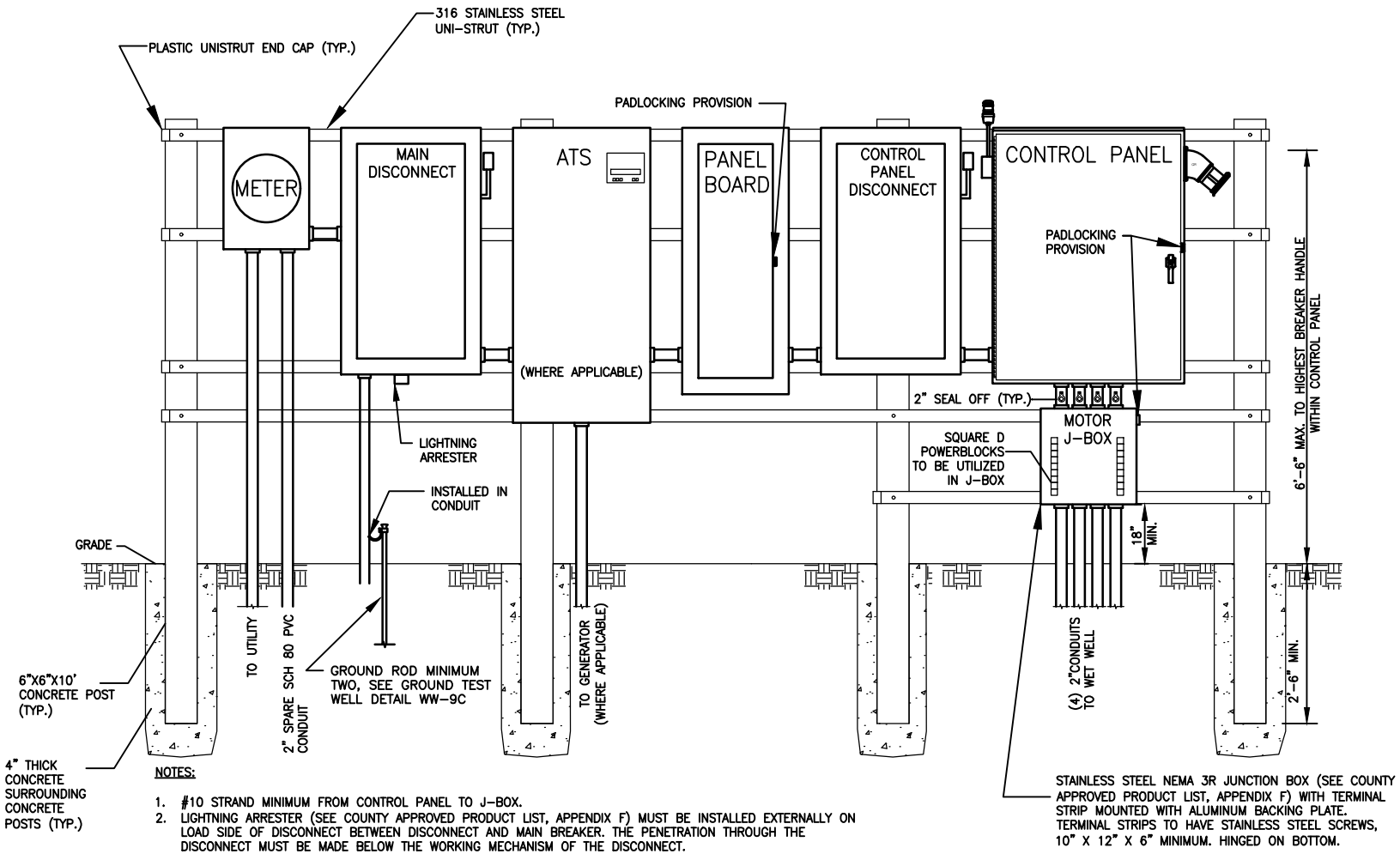
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-9A



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

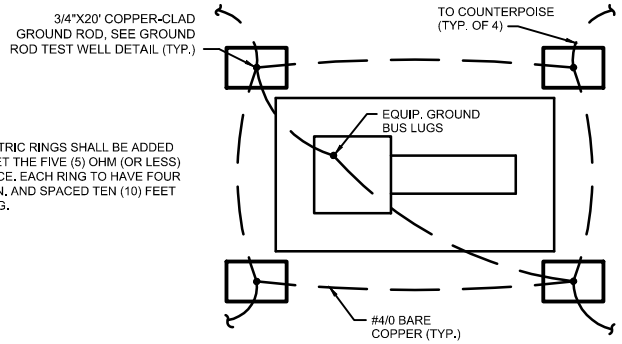
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

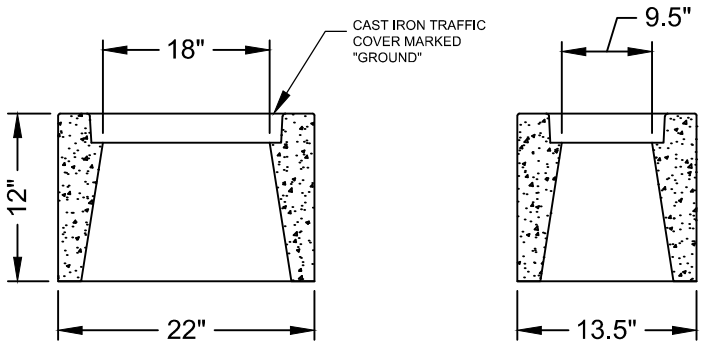
SHEET NO.
WW-9B

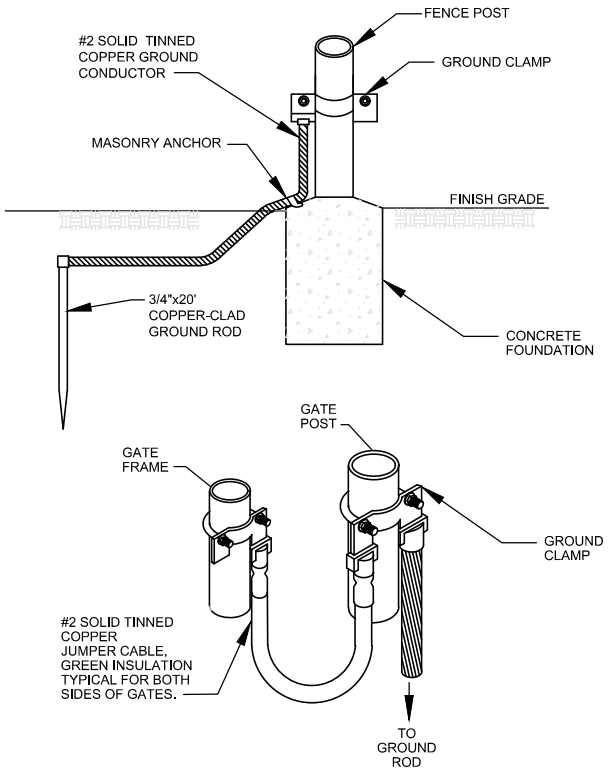


NOTES:
1. ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQUIRED TO MEET THE FIVE (5) OHM (OR LESS) SPECIFIED RESISTANCE. EACH RING TO HAVE FOUR (4) GROUND RODS MIN. AND SPACED TEN (10) FEET FROM THE INNER RING.

GROUND MAT DETAIL

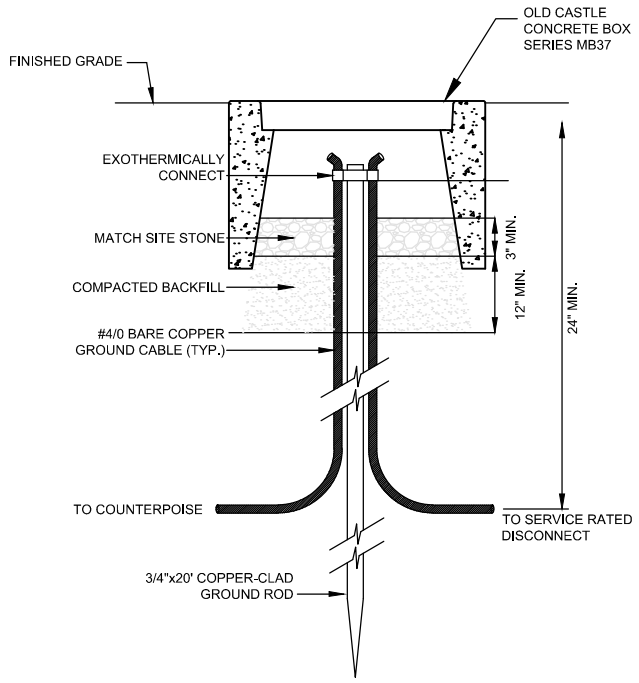
NOT TO SCALE





FENCE POST/GATE BONDING DETAIL

NOT TO SCALE



GROUND TEST WELL DETAIL

NOT TO SCALE

PUMP STATION LIGHTNING PROTECTION DETAILS

NTS

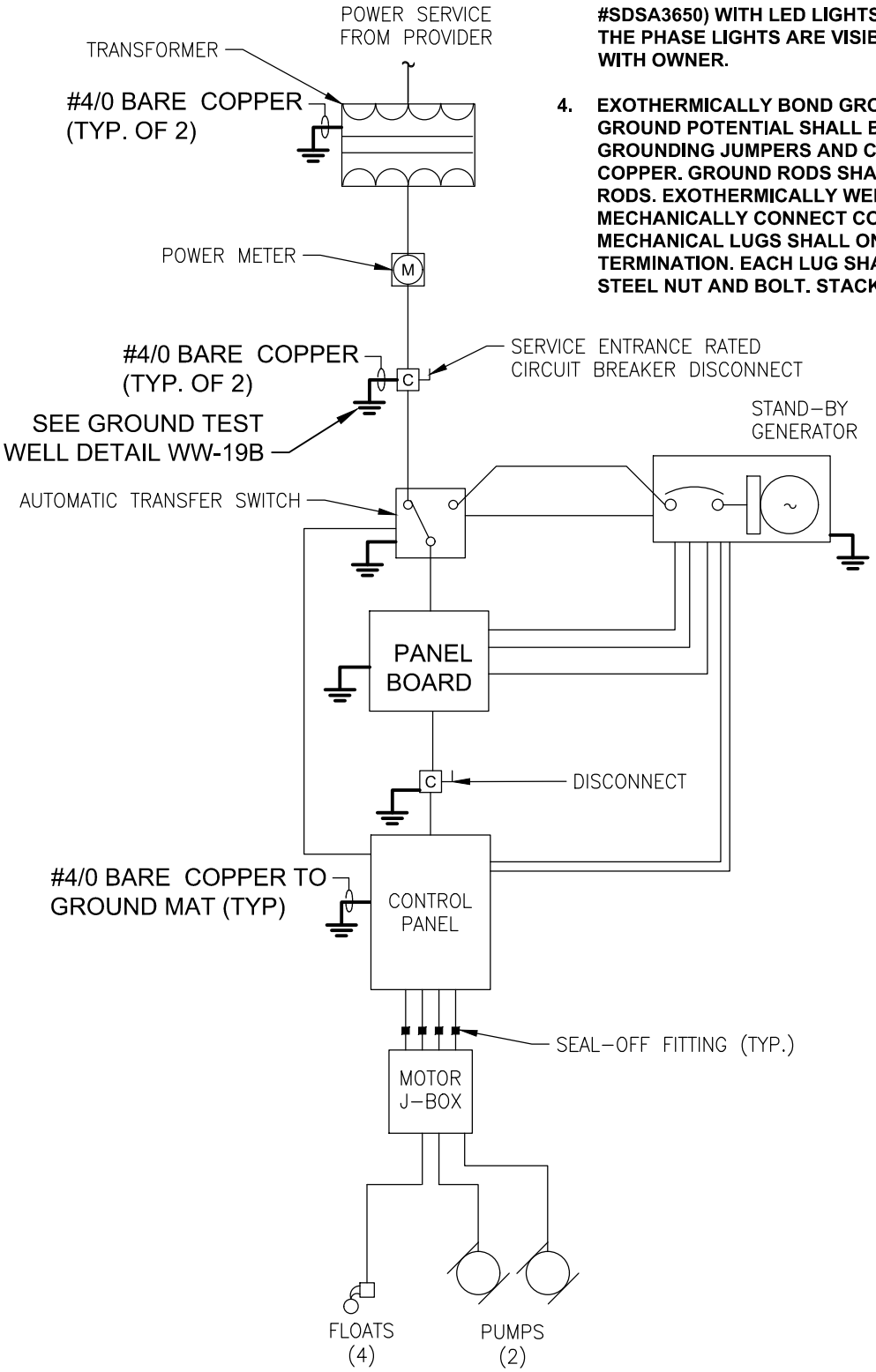
REVISION DATE:
JAN. 2015

Collier County

SHEET NO. WW-9C

NOTES

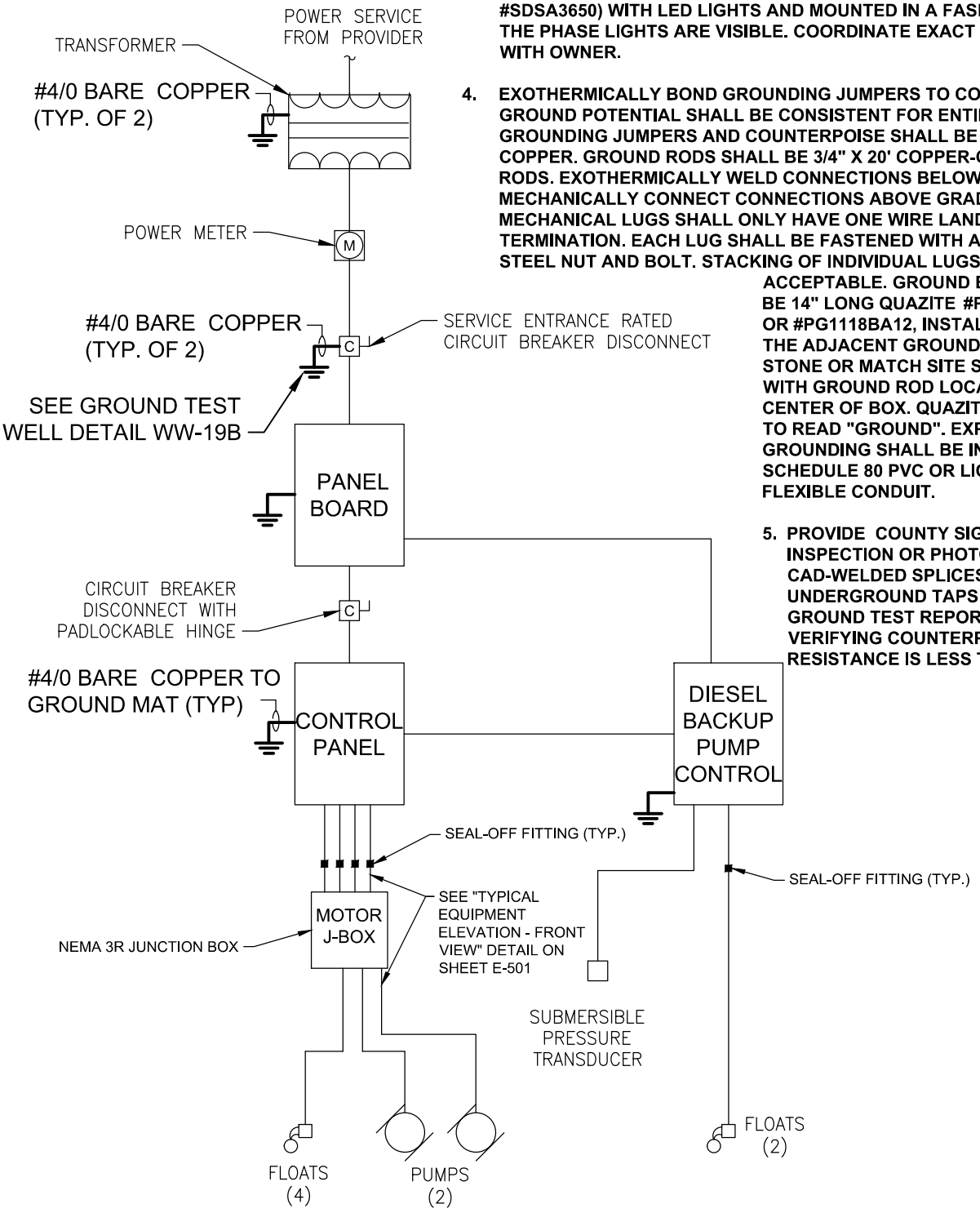
1. **BOND FENCE AND VEHICLE ACCESS GATE TO COUNTERPOISE.**
2. **PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.**
3. **SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.**
4. **EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.**
5. **PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.**



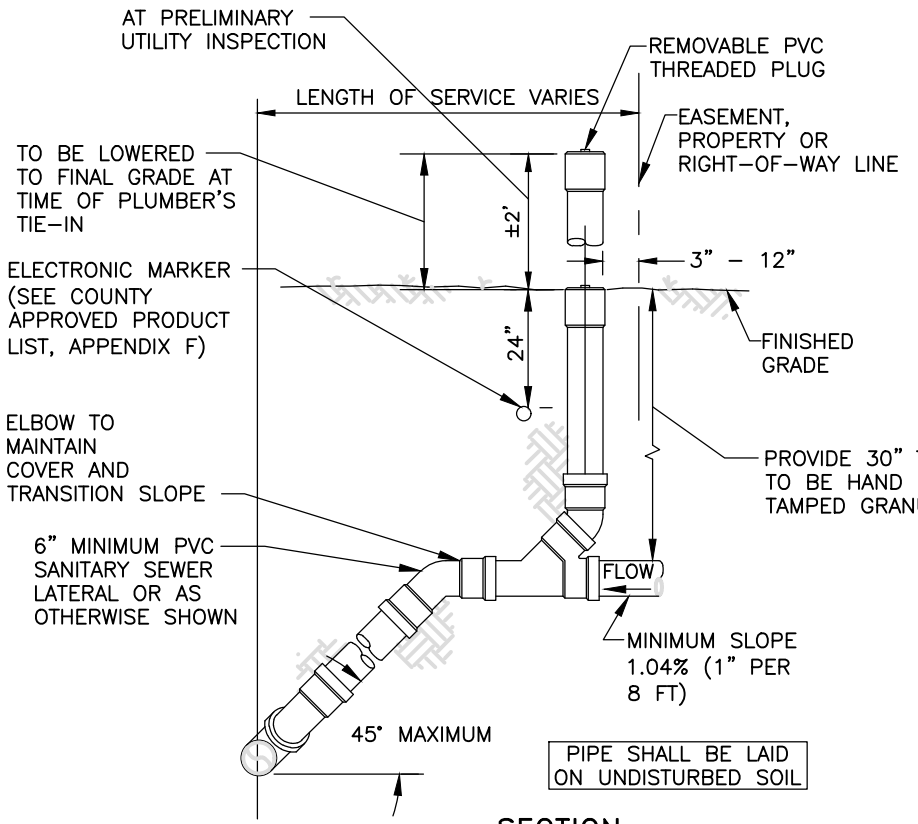
COMMUNITY PUMP STATION – RISER DIAGRAM WITH GENERATOR BACKUP	REVISION DATE: JAN. 2015	Collier County	SHEET NO. WW-9D
NTS			

NOTES

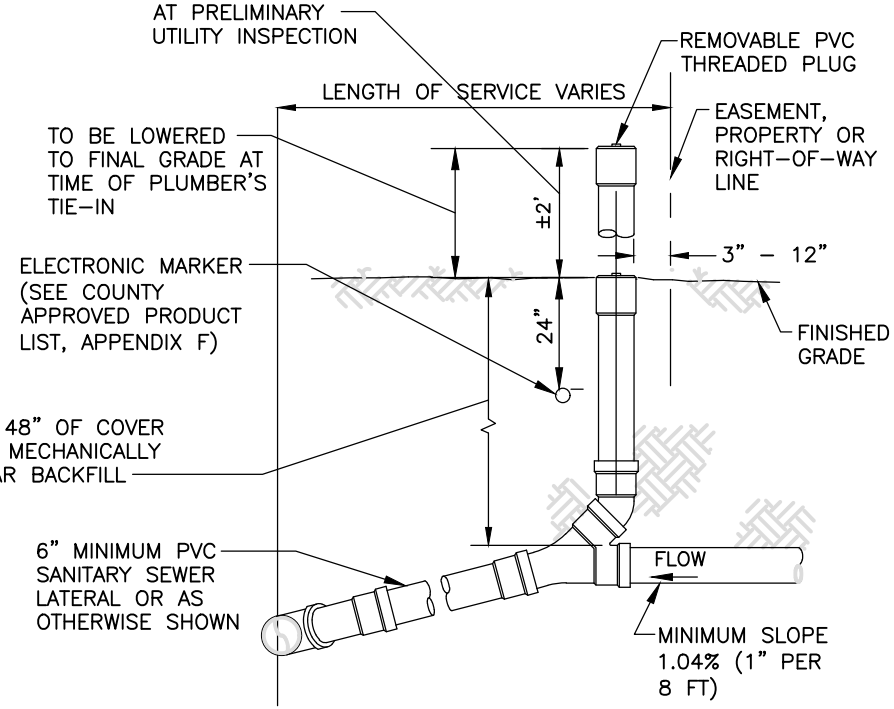
1. BOND FENCE AND ACCESS GATE TO COUNTERPOISE.
2. PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.
3. SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.
4. EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.
5. PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.



COMMUNITY PUMP STATION – RISER DIAGRAM WITH DIESEL BACKUP PUMP	REVISION DATE: JAN. 2015	Collier County	SHEET NO. WW–9E
NTS			



SECTION
DEPTH 8' AND OVER



SECTION
DEPTH LESS THAN 8'

NOTE:

AT TIME OF PLUMBER'S TIE-IN, ADD CONCRETE COLLAR AS PER DETAIL WW-12.

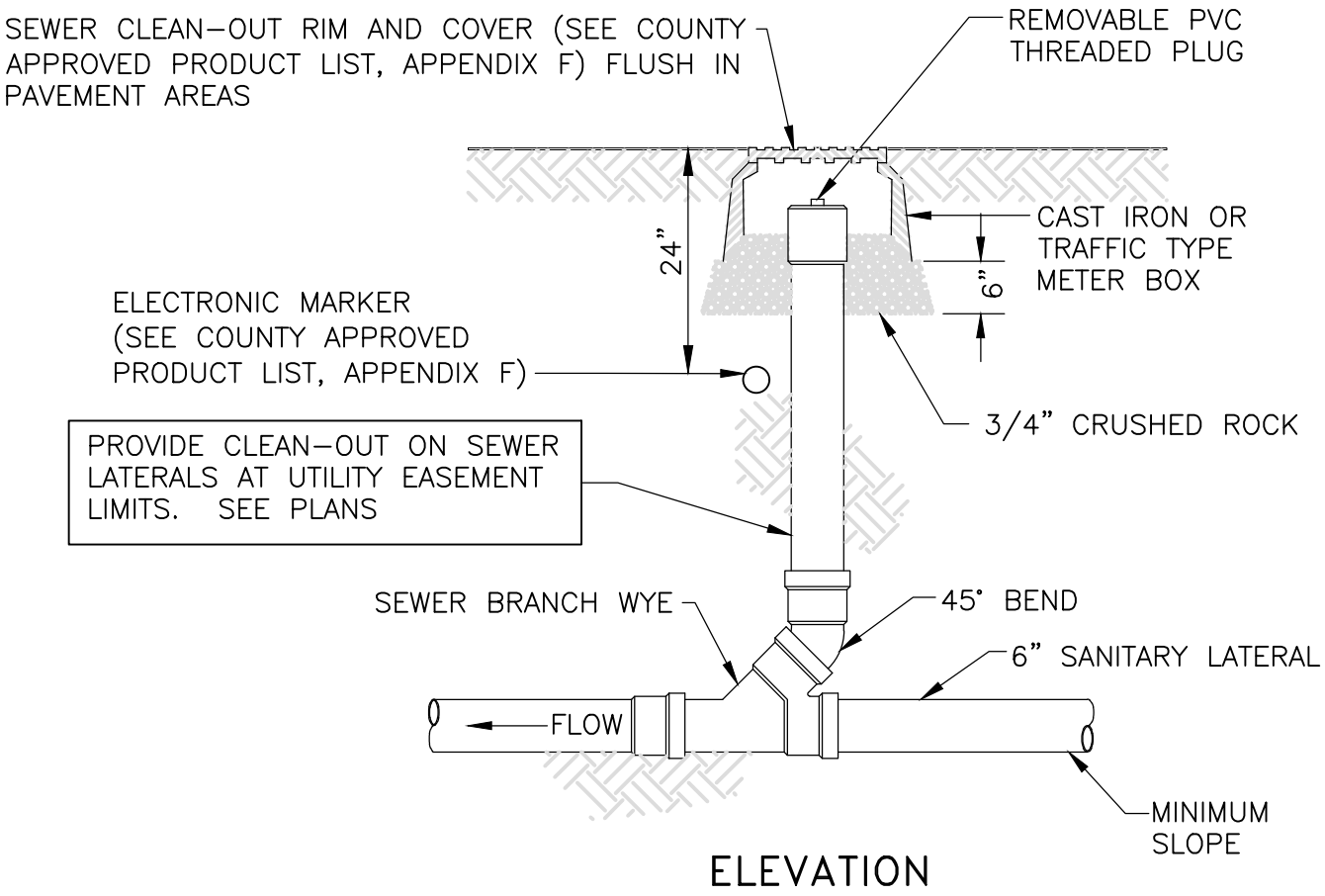
SEWER CONNECTION DETAILS
PROPERTY, RIGHT-OF-WAY OR EASEMENT LINE

NTS

REVISION DATE:
MAY 2009

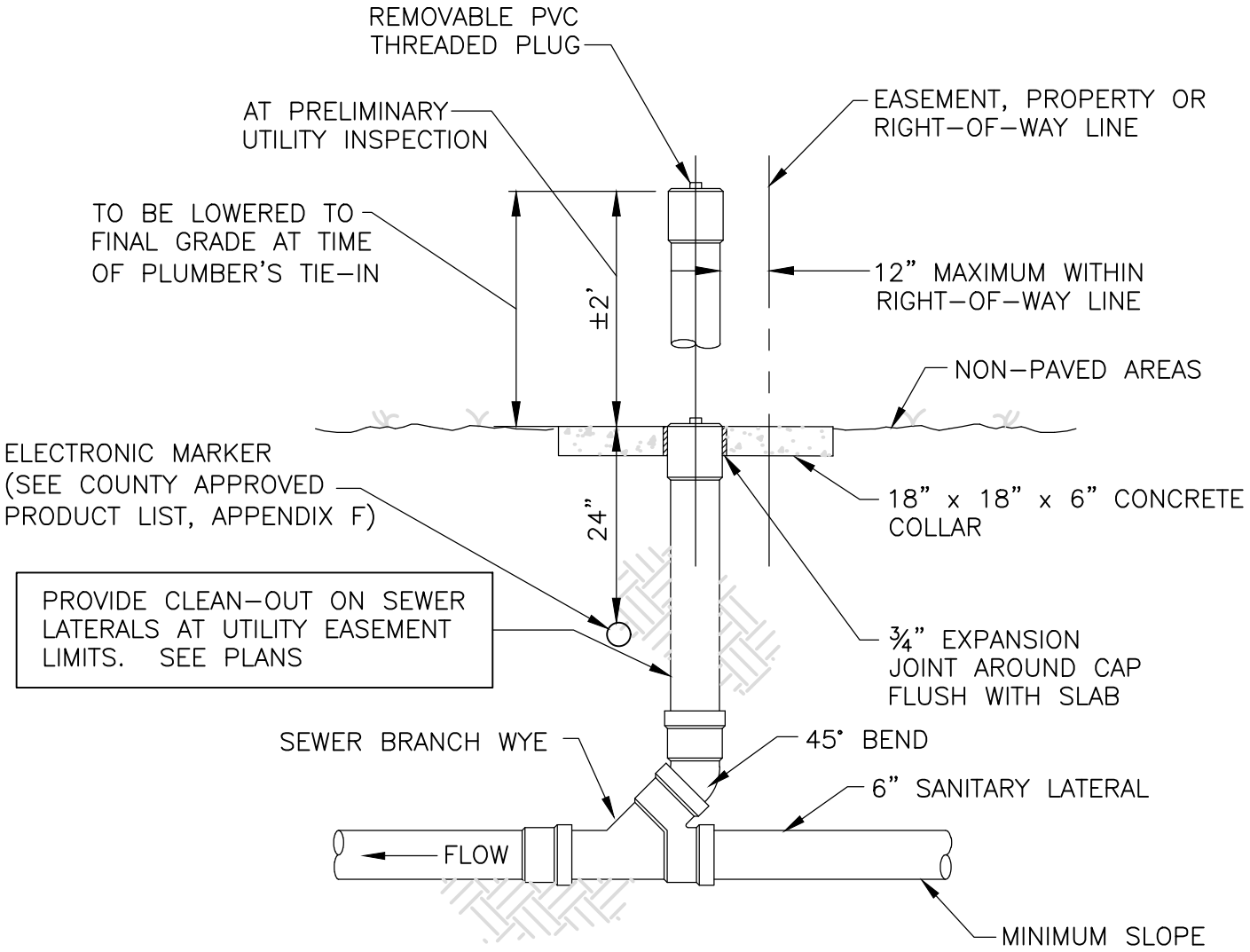
Collier County

SHEET NO.
WW-10



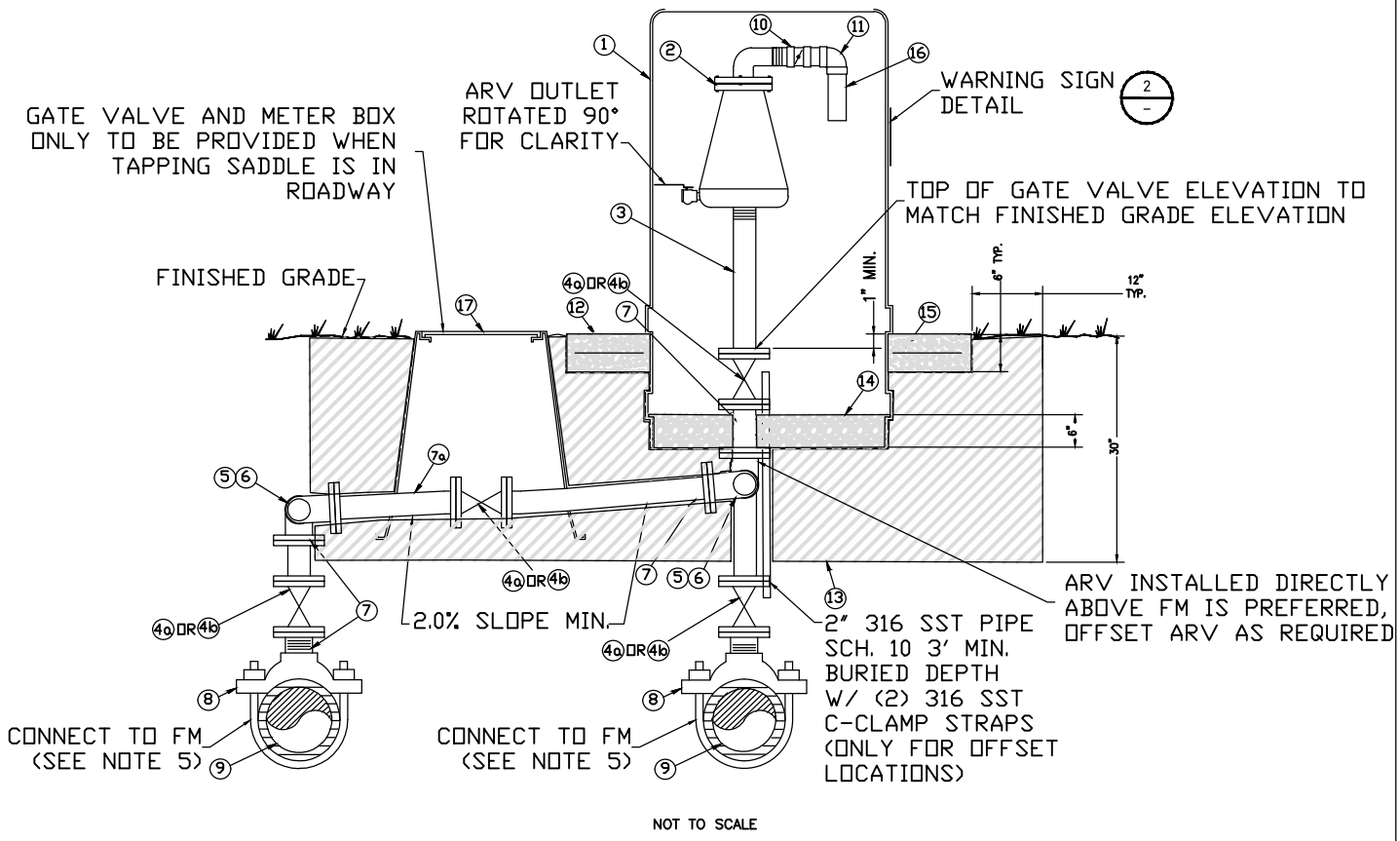
ELEVATION

SEWER CLEAN–OUT DETAIL PAVED AREAS	REVISION DATE: JULY 2018	Collier County	SHEET NO. WW–11
NTS			



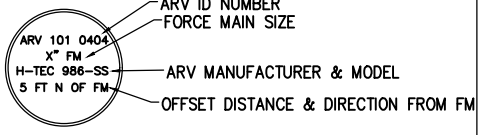
ELEVATION

SEWER CLEAN-OUT DETAIL NON PAVED AREAS	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. WW-12
NTS			



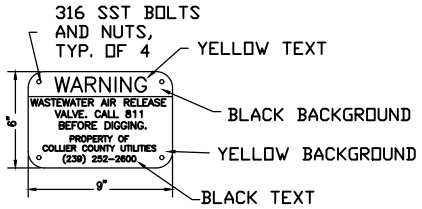
NOT TO SCALE

NOTE:
PROVIDE 3" DIAMETER BRASS DISC ANCHORED IN CONCRETE SLAB.



1 ARV BRASS DISC DETAIL
NOT TO SCALE

NOTE:
WARNING SIGN SHALL BE ATTACHED TO ENCLOSURE ANDSHALL BE FIBERGLASS.



2 WARNING SIGN DETAIL
NOT TO SCALE

MATERIAL		
ITEM	QUANT.	DESCRIPTION
1	1	VENTED ENCLOSURE, WATER PLUS H30 MODEL FOR 2"&3" ARVS, WATER PLUS H40 MODEL FOR ARVS ≥4"
2	1	AIR RELEASE VALVE, (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (2" AND 3" THR, ≥4" FLG)
3	1	SCH 80 PVC NIPPLE, LENGTH AS REQUIRED, THR X THR (2"& 3" ARV), 316 SST VAN STONE FLANGE (VSF) X 316 VSF (≥4" ARV)
4a	UP TO 3	2" OR 3" 316 SST BALL VALVE, FULL PORT, 316 SST HANDLE (THR)
4b	UP TO 3	4" - 8" PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (FLG)
5	UP TO 4	90° ELBOW, 316 SST (THR FOR 2" AND 3" ARVS, FLG FOR >4" ARVS)
6	2	SHORT NIPPLE, 316 SST, (THR BOTH ENDS FOR 2" AND 3" ARVS, FLG FOR >4" ARV)
7	2	316 SST PIPE, LENGTH AS REQUIRED, THR CONN FOR 2" AND 3", FLG CONN >4"
7a	2	2" PE 3408/3608 FOR 2" ARVS. 3" - 8" HDPE PIPE, PE 3608, DR 17 FOR ARVS 3" - 8".
8	1	DOUBLE STRAP TAPPING SADDLE, 316 SST WITH THREADED OUTLET FOR 2" & 3" ARV'S, DI TEE (MJ X MJ X FLANGE) FOR ARV'S >4"
9	2	4" & LARGER PIPE, D.I. OR PVC (DR-18)
10	1	1-1/2" CHECK VALVE, PVC, BY ARV MANUFACTURER
11	1	1-1/2" X 90° ELBOW, PVC SCH 80, BY ARV MANUFACTURER
12	1	CONCRETE SLAB FOR ENCLOSURES, 3000 PSI CONCRETE
13	1	COMPACTED FILL PER COLLIER COUNTY TYPICAL DETAIL, G-1
14	1	57 STONE
15	1	(2) #4 BARS CONTINUOUS & (4) #4 BARS DIAGONAL (2" MIN. COVER)
16	1	1-1/2" SCH 80 PVC, LENGTH AS REQUIRED
17	1	12" ALLIANCE METER BOX (ARV'S <4"), 18" ALLIANCE METER BOX (ARV'S >4"), BLACK

NOTES:
1. PROVIDE DARK GREEN REFLECTIVE MARKER ON CURB OR EDGE OF ROADWAY CLOSEST TO THE ARV.
2. PROVIDE 3'-0" RADIUS AROUND ARV ENCLOSURE CLEAR OF ALL LANDSCAPING FOR MAINTENANCE ACCESS.
3. PROVIDE 316 SST PIN ALLEN BOLT KEY SYSTEM WITH EACH ENCLOSURE.
4. THE THREADED OR FLANGED OUTLET SIZE OF THE ARV SHALL BE SIZED BY THE DESIGN ENGINEER. A MINIMUM DIAMETER OF 2-INCHES SHALL BE PROVIDED.
5. TAPPING SADDLE IS DEPICTED HOWEVER A TEE (DIA. OF FM X SIZE OF ARV) SHALL BE INSTALLED INSTEAD OF A TAPPING SADDLE FOR ARV'S >4".

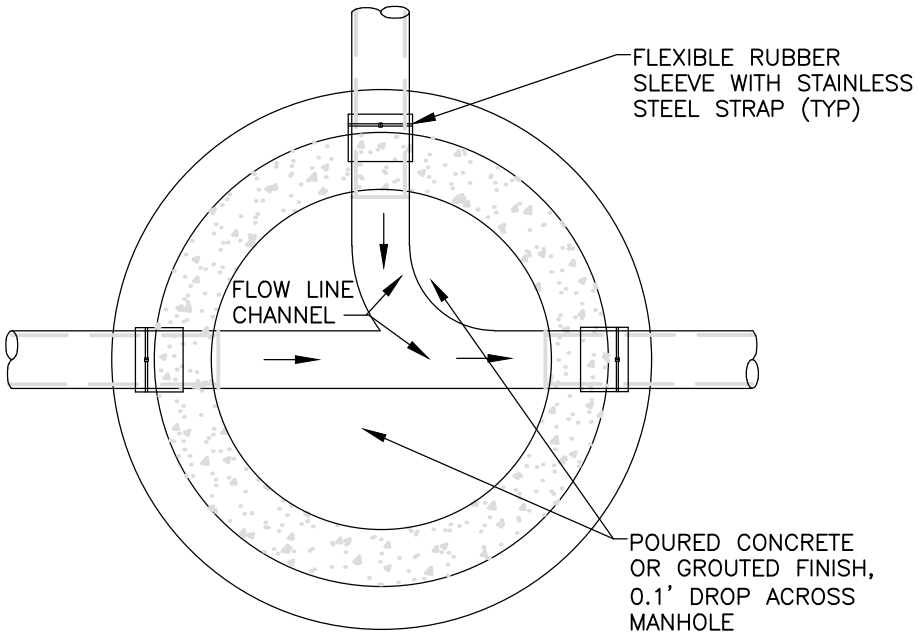
FORCE MAIN AIR RELEASE VALVE DETAIL

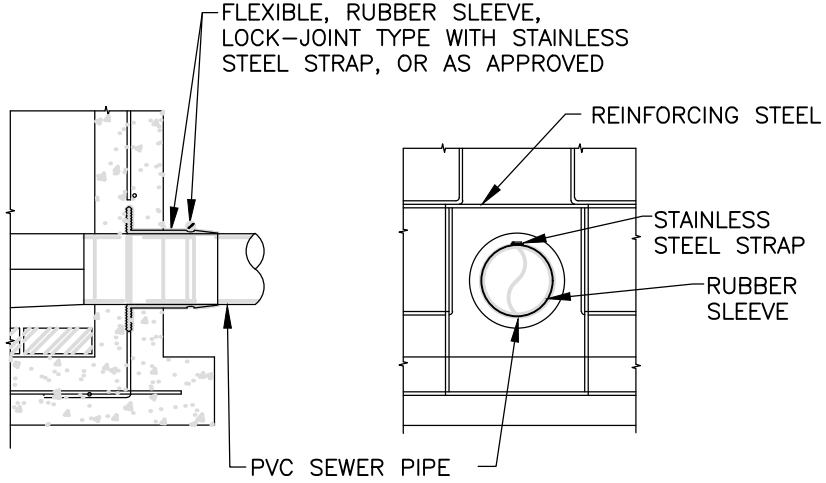
NTS

REVISION DATE:
JAN. 2015

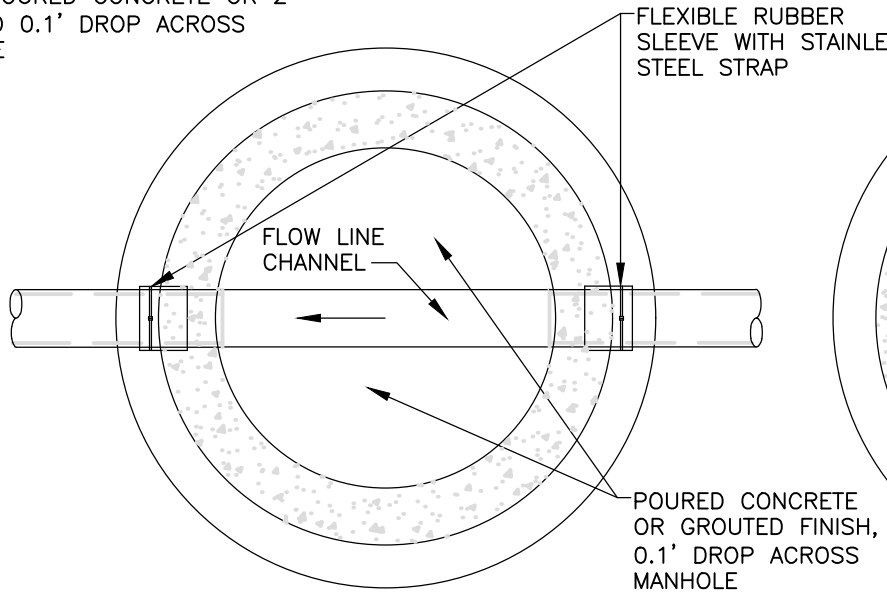
Collier County

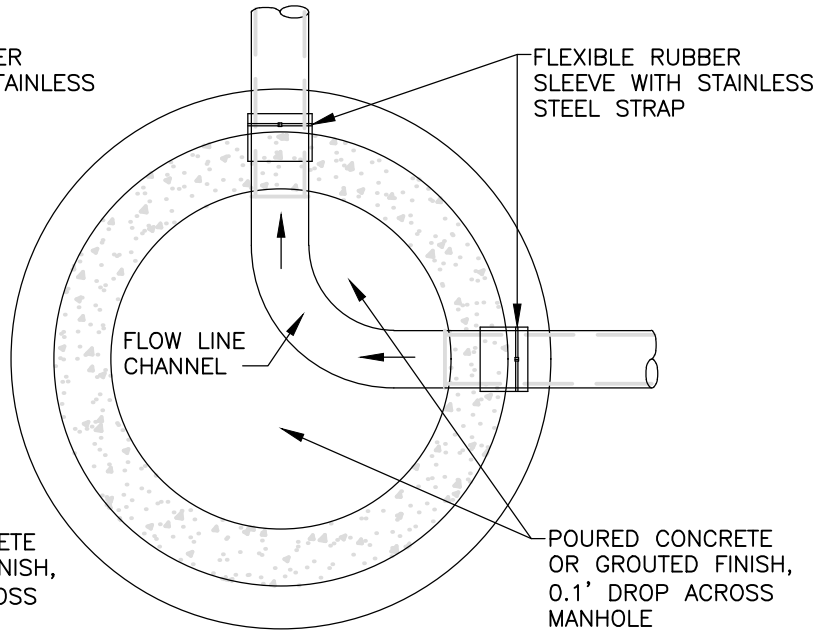
SHEET NO.
WW-13





FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED 0.1' DROP ACROSS MANHOLE





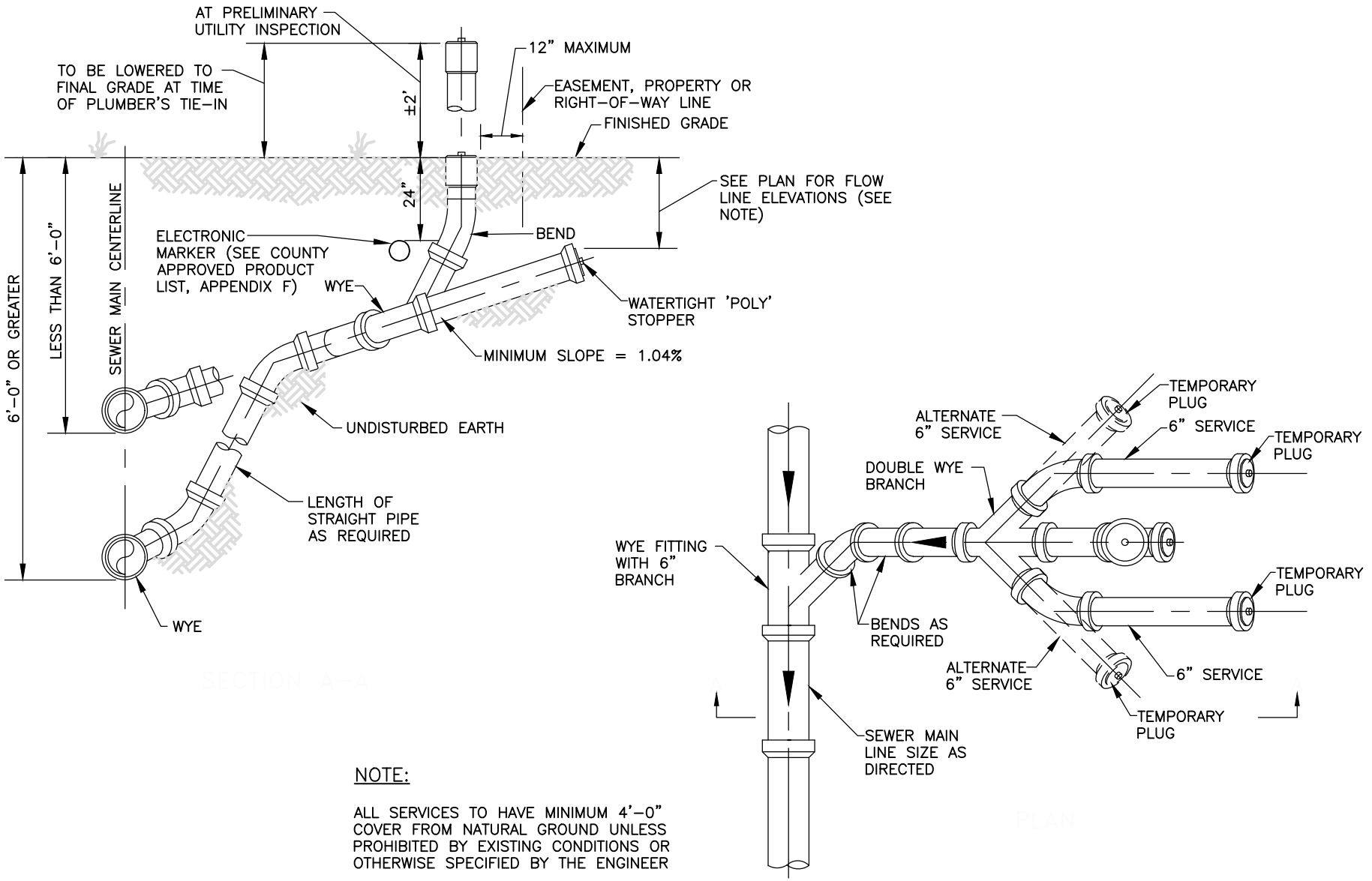
TYPICAL FLOW LINE CHANNELS DETAIL

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
WW–15



NOTE:

ALL SERVICES TO HAVE MINIMUM 4'-0" COVER FROM NATURAL GROUND UNLESS PROHIBITED BY EXISTING CONDITIONS OR OTHERWISE SPECIFIED BY THE ENGINEER

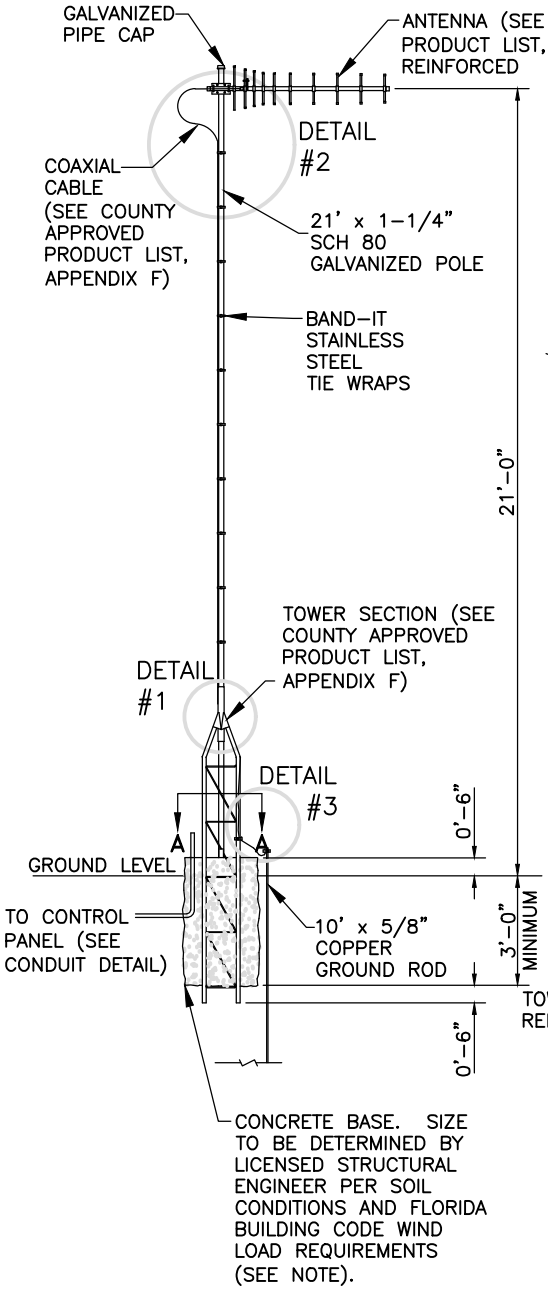
DOUBLE SEWER CLEAN-OUT DETAIL

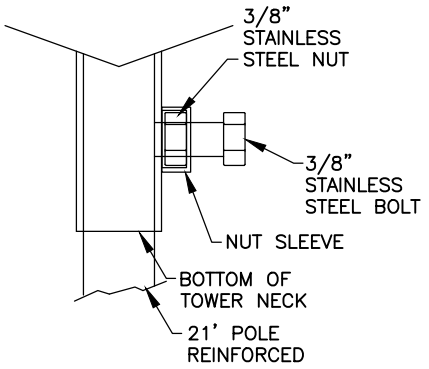
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REVISION DATE:
MAY 2009

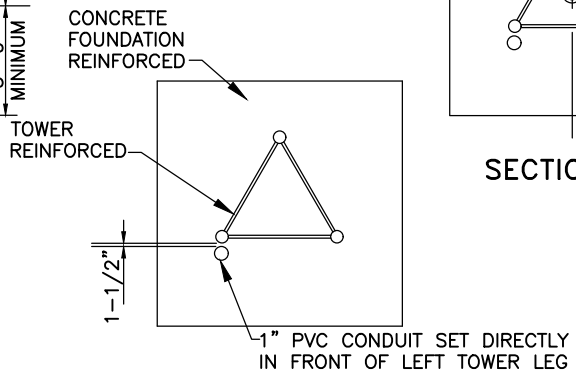
Collier County

SHEET NO.
WW-16

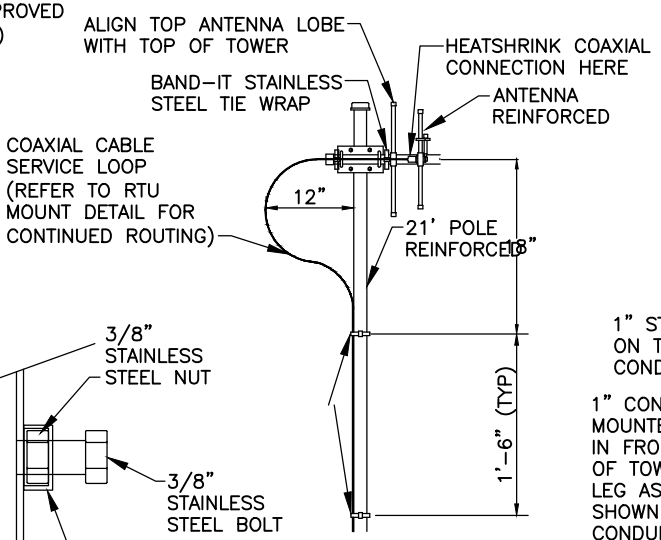




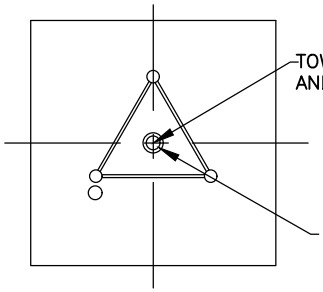
DETAIL #1
POLE SWIVEL BOLT
SIDE VIEW



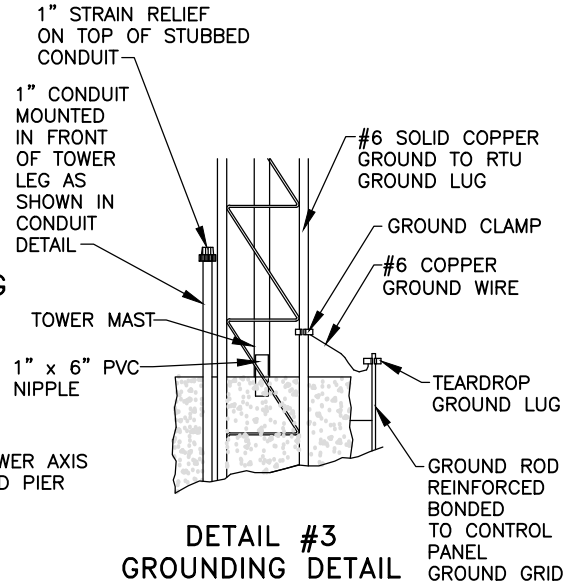
CONDUIT DETAIL TOP VIEW



DETAIL #2
COAXIAL MOUNTING
AND ROUTING



SECTION A-A



DETAIL #3
GROUNDING DETAIL

NOTES:

1. TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.
2. TELEMETRY NOT REQUIRED FOR PUMP STATIONS WITH PRIVATE OWNERSHIP AND MAINTENANCE.

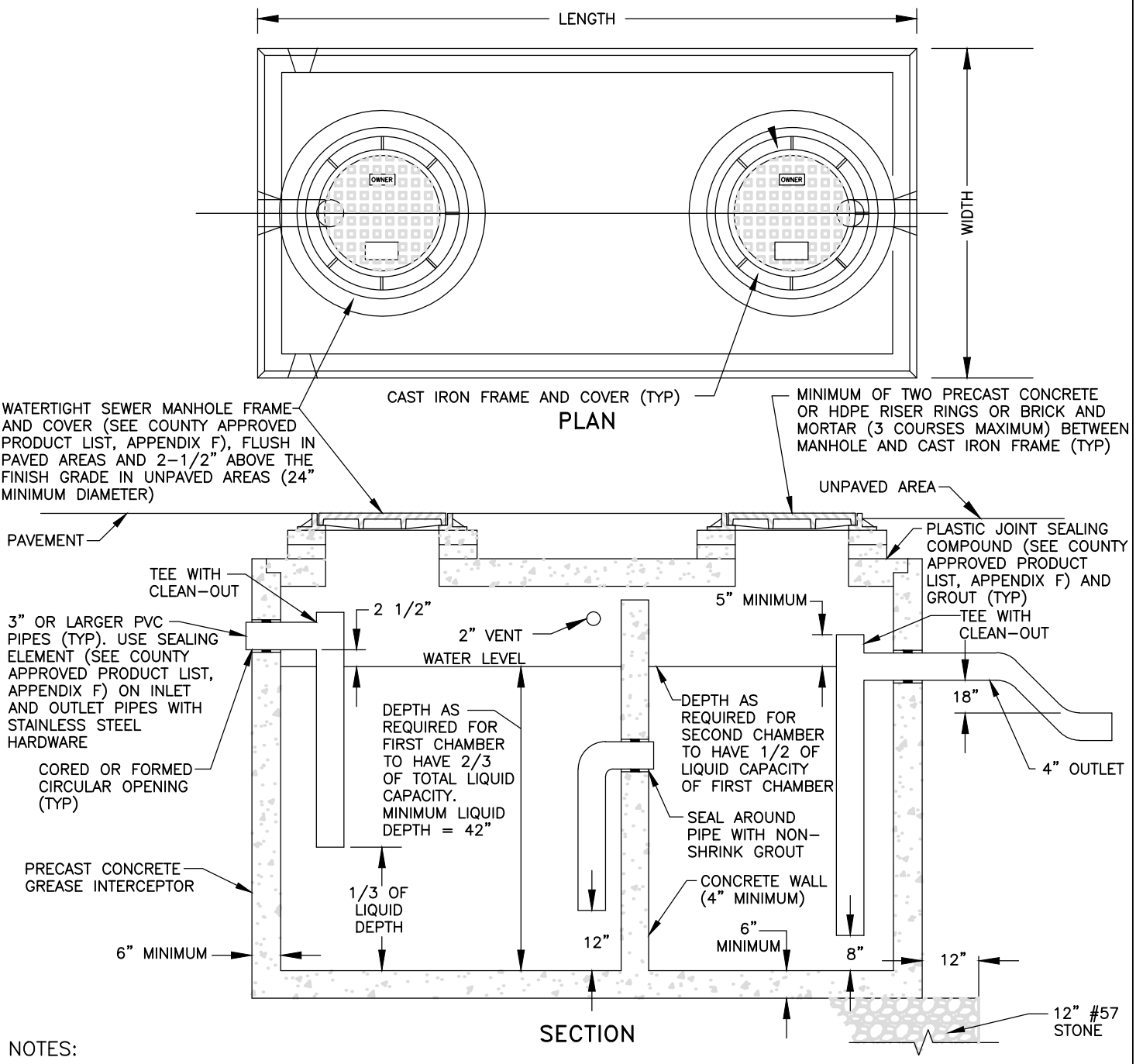
TELEMETRY ANTENNA MOUNT DETAIL

NTS

REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
WW-17



NOTES:

1. GREASE INTERCEPTOR SHALL COMPLY WITH STRUCTURAL REQUIREMENTS APPLICABLE TO SEPTIC TANKS EXCEPT THAT THE INLET INVERT SHALL DISCHARGE A MINIMUM 2–1/2 INCHES ABOVE THE LIQUID LEVEL LINE AND THE OUTLET PIPE SHALL HAVE A TEE WITH A MINIMUM DIAMETER OF FOUR (4) INCHES THAT EXTENDS TO WITHIN 8 INCHES OF THE BOTTOM OF THE TANK.
2. INTERCEPTOR MUST BE LOCATED SO AS TO PROVIDE EASY ACCESS FOR ROUTINE INSPECTION AND CLEANING.
3. WHERE A GREASE INTERCEPTOR IS REQUIRED, ONLY KITCHEN WASTEWATER SHALL FIRST PASS THROUGH THE INTERCEPTOR AND THEN BE DISCHARGED INTO THE FIRST COMPARTMENT OF A SEPTIC TANK OR OTHER APPROVED SYSTEM.
4. SIZING OF GREASE INTERCEPTORS SHALL BE BASED ON THE DETAIL WW–18A EQUATIONS. THE MINIMUM VOLUME OF ANY GREASE INTERCEPTOR SHALL BE 750 GALLONS AND THE MAXIMUM VOLUME OF A SINGLE GREASE INTERCEPTOR SHALL BE 1250 GALLONS. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE GREASE INTERCEPTOR IS GREATER THAN 1250 GALLONS, INSTALLATION OF GREASE TRAPS IN SERIES IS REQUIRED.
5. KEYED JOINT SEALED WITH BUTYL RUBBER.

GREASE INTERCEPTOR	REVISION DATE: AUGUST 2008	Collier County	SHEET NO. WW–18
NTS			

SIZING FORMULA FOR RESTAURANTS, COUNTRY CLUBS AND ASSISTED LIVING FACILITIES

(S) x (GS) x (HR/12) x LF = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

S = NUMBER OF SEATS IN DINING AREA.

GS = GALLONS OF WASTE WATER PER SEAT
(USE 25 GALLONS FOR RESTAURANTS WITH CHINA DISHES AND/OR AUTOMATIC DISHWASHER)
(USE 10 GALLONS FOR RESTAURANTS WITH PAPER OR BASKETS AND NO DISHWASHER)

HR = NUMBER OF HOURS RESTAURANT IS OPEN

LF = LOADING FACTOR
(USE 2.00 INTERSTATE HIGHWAY; 1.50 OTHER FREEWAYS; 1.25 RECREATIONAL AREA; 1.00 MAIN HIGHWAY; 0.75 OTHER HIGHWAY)

SIZING FORMULA FOR SCHOOLS AND OTHER ESTABLISHMENTS WITH COMMERCIAL KITCHENS (NO DISHWASHER)

(M) x (GM) x (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

M = MEALS PREPARED PER DAY

GM = GALLONS OF WASTE WATER PER MEAL
(USE 5 GALLONS)

LF = LOADING FACTOR
(USE 1.00 WITH DISHWASHING MACHINE AND 0.75 WITHOUT DISHWASHING MACHINE)

NO COMMERCIAL DISHWASHER, NO CHINA OR DISPOSAL CHINA ONLY CAPACITY OF GREASE TRAPS

TOTAL FLOW–THROUGH RATING (GPM)	GREASE RETENTION CAPACITY (POUNDS)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100

SECTION 4

APPENDICES

For the latest revisions to the Appendices visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 4

APPENDICES

Table of Contents

Appendix A	Utility Deviation Form
Appendix B	Water Meter Sizing Form
Appendix C	Final Waiver of Liens – Conveyance of Utilities Facilities to County
Appendix D	Utilities Conveyance Checklist
Appendix E	Vendor and Manufacturer Approval Application Form
Appendix F	County Approved Product List
Appendix G	Approved Backflow Devices
Appendix H	Basic User Application & Agreement for Delivery and Reuse of IQ Water

COLLIER COUNTY PUBLIC UTILITIES DEPARTMENT

ENGINEERING AND PROJECT MANAGEMENT DIVISION

3339 East Tamiami Trail
Suite 303
Naples, FL 34112
Phone: (239) 252-8836

Any request for a deviation from the Collier County Water-Sewer District Utilities Standards and Procedures must be submitted on the Utility Deviation Form and should include all required information for a faster and more efficient process. Please email your request to UtilityPlanning@colliercountyfl.gov.

Please maintain on deviation per form and select the appropriate type(s) of deviation (Wastewater, Water, IQ Water, or Grease Trap). Provide the associated land use application number assigned by the Growth Management Department. Ensure to select whether the deviation is on a privately owner or county owner system. Include a drawing that has the area(s) of interest highlighted for quick referencing.

Please include any and all equipment specification information, pressures and velocities of flows, or other pertinent documentation and a cover letter to give additional information that may not be addressed on the form.

For Grease Trap Deviations, please include a cover letter giving any relevant information regarding the kitchen and its use, a copy of the menu of what is to be cooked and served, and a floor plan of the kitchen and seating area.

Typically, Utility Deviation requests are processed within 5-10 business days. You will be notified by email of the outcome of your deviation request. If the deviation is rejected, a meeting may be requested with the appropriate Director and staff to discuss.

If you have any questions regarding this process, please call (239) 252-8836 or email your questions to UtilityPlanning@colliercountyfl.gov.

UTILITY DEVIATION FORM
Petitioners Request

Date:_____ ☐ **Wastewater** ☐ **Water** ☐ **IQ Water** ☐ **Grease Trap**

Land Use Application #_____ ☐ **Privately Owned** ☐ **County Owned**

Project Name: _____

Folio Number(s): _____

Petitioner's Name & Business Name: _____

_____

Business Address: _____

_____

Phone #: _____

Email: _____

REQUIRED INFORMATION

Cover Letter w/Pertinent Information

Site Drawings

Detail Specifications (include MFR Maint. Procedures for Grease Trap Deviations)

Menu & Seating (Only for Grease Trap Deviations)

Reason for Request: _____

_____

_____

How does this Request Differ from Ordinance: _____

_____

Impact of this Request of Affected Area:_____

_____

Impact of this Request on the Maintenance of the System: _____

_____

Explain Benefits Request Will Have to the Operation/Maintenance of the Collier County Utility System: _____

_____

Additional Comments: _____

_____

Collier County

Water Meter Sizing Form

One Form Per Meter

Preparer's Information:

Name ==========> _____

Title ==========> _____

Company=========> _____

Address ==========> _____

_____

Phone ==========> _____

Email Address =====> _____

Project Information:

Date ====> _____

Permit or AR Number _____

Name of Project ===> _____

Project Address ===> _____

Please Note:

1. All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development.

2. The Design Engineer/Architect must submit signed and sealed documentation supporting meter sizing. Sizing shall be based upon fixture flow values, as shown on the following page and the table on page 3, unless approved otherwise by Utility Deviation. If an increase in meter size is requested to accommodate for fire flow, the Engineer/Architect should check appropriate box below. A Utility Deviation will not be required for increasing meter size for fire flow requirements. For all meter sizes, the Engineer/Architect must consider all relevant factors before selecting the final meter size.

3. For remodeling projects this form must be submitted only if there is a net increase in fixture flow value.

This Section to be filled out by Engineer/Architect of Record:

Demand in accordance with the Fixture Flow Value Worksheet and the Table for Estimating Demand

_____ **GPM**

Meter Size Required: _____

Meter Size Requested: _____

Existing Meter Size: _____

If the meter size requested is larger than the meter size required per the table velow, please indicate the reason for the request by checking the appropriate box:

☐ **Fire Flow** ☐ **Other (Please attach Utility Deviation approval)**

_____

Type or Print Name of Engineer/Architect of Record for Project

_____

Signature of Engineer/Architect of Record for Project and Date

[Affix Engineering/Architect Seal Here]

Demand Range (GPM)	Meter Size
0 to 30	3/4"
30.1 to 50	1"
50.1 to 100	1 1/2"
100.1 to 160	2"
160.1 to 435	3"
435.1 to 750	4"
750.1 to 1600	6"
1600.1 to 2800	8"
2800.1 to 4200	10"

Demand ranges from AWWA M22 Table 6-1 Third Edition

Collier County

Fixture Flow Value Worksheet

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow Value

Fixture	Occupancy	Type of Supply Control	Load Values, in Water Supply Fixture Units (wsfu) Total		# of Fixtures Per Unit	Fixture Flow Value
Bathroom group	Private	Flush tank	3.6	x		=
Bathroom group	Private	Flushometer valve	8	x		=
Bathtub	Private	Faucet	1.4	x		=
Bathtub	Public	Faucet	4	x		=
Bidet	Private	Faucet	2	x		=
Combination fixture	Private	Faucet	3	x		=
Dishwashing machine	Private	Automatic	1.4	x		=
Drinking fountain	Offices, etc.	3/8″ valve	0.25	x		=
Kitchen sink	Private	Faucet	1.4	x		=
Kitchen sink	Hotel, restaurant	Faucet	4	x		=
Laundry trays (1 to 3)	Private	Faucet	1.4	x		=
Lavatory	Private	Faucet	0.7	x		=
Lavatory	Public	Faucet	2	x		=
Service sink	Offices, etc.	Faucet	3	x		=
Shower head	Public	Mixing valve	4	x		=
Shower head	Private	Mixing valve	1.4	x		=
Urinal	Public	1″ flushometervalve	10	x		=
Urinal	Public	3/4″ flushometervalve	5	x		=
Urinal	Public	Flush tank	3	x		=
Washing machine (8 lb)	Private	Automatic	1.4	x		=
Washing machine (8 lb)	Public	Automatic	3	x		=
Washing machine (15 lb)	Public	Automatic	4	x		=
Water closet	Private	Flushometer valve	6	x		=
Water closet	Private	Flush tank	2.2	x		=
Water closet	Public	Flushometer valve	10	x		=
Water closet	Public	Flush tank	5			=
Water closet	Public or private	Flushometer tank	2	x		=
For any fixtures not listed, submit manufacturer's data sheets and enter appropriate description and value:						
Other:				x		=
Other:				x		=
Other:				x		=
Other:				x		=
Other:				x		=

Total Fixture Value Per Unit =====>	
Number of Units with this Fixture Count =====>	
Grand Total of Fixture Flow Value (Per Unit Total x Number of Units) =====>**	

****Use total Fixture Flow Value on "Table for Estimating Demand" to estimate water meter demand.**

Fixture Flow Value worksheet from FBC 2023 edition

Collier County

Table for Estimating Demand

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow		SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH VALVES	
Load	**Demand**	**Load**	**Demand**
Fixture Flow Value	Gallons per minute	Fixture Flow Value	Gallons per minute
1	3.0	---	---
2	5.0	---	---
3	6.5	---	---
4	8.0	---	---
5	9.4	5	15.0
6	10.7	6	17.4
7	11.8	7	19.8
8	12.8	8	22.2
9	13.7	9	24.6
10	14.6	10	27.0
11	15.4	11	27.8
12	16.0	12	28.6
13	16.5	13	29.4
14	17.0	14	30.2
15	17.5	15	31.0
16	18.0	16	31.8
17	18.4	17	32.6
18	18.8	18	33.4
19	19.2	19	34.2
20	19.6	20	35.0
25	21.5	25	38.0
30	23.3	30	42.0
35	24.9	35	44.0
40	26.3	40	46.0
45	27.7	45	48.0
50	29.1	50	50.0
60	32.0	60	54.0
70	35.0	70	58.0
80	38.0	80	61.2
90	41.0	90	64.3
100	43.5	100	67.5
120	48.0	120	73.0
140	52.5	140	77.0
160	57.0	160	81.0
180	61.0	180	85.5
200	65.0	200	90.0
225	70.0	225	95.5
250	75.0	250	101.0
275	80.0	275	104.5
300	85.0	300	108.0
400	105.0	400	127.0
500	124.0	500	143.0
750	170.0	750	177.0
1,000	208.0	1,000	208.0
1,250	239.0	1,250	239.0
1,500	269.0	1,500	269.0
1,750	297.0	1,750	297.0
2,000	325.0	2,000	325.0
2,500	380.0	2,500	380.0
3,000	433.0	3,000	433.0
4,000	535.0	4,000	535.0
5,000	593.0	5,000	593.0

Table for estimating demand taken from Florida Building Code 2023 Edition

FINAL WAIVER OF LIENS -
CONVEYANCE OF UTILITY FACILITIES TO COUNTY

KNOW ALL MEN BY THESE PRESENTS, that for and in consideration in the amount of $_____ lawful money of United States of America, to me in hand paid, the receipt whereof of which is herby acknowledged, does hereby waive, release, remiss and relinquish any and all right to claim any lien(s) for work performed and/or for material furnished, and/or for any claim whatsoever with regard to utility facilities constructed in, over or under the below-described real property. The undersigned certifies to the County that the undersigned has all requisite authority to execute this Waiver for all intended purposes.

Every individual who, and each entity that, pursuant to the undersigned's agreement with regard to the subject utility facilities, has supplied or furnished service(s), labor, material(s) and/or supplies used in installation, construction, maintenance, repair, location, relocation, or otherwise, with regard to utility facilities thereby located in, on or over the real property described below, have been paid in full (or have been adequately bonded) whereby as to all such services, labor, materials and/or supplies there exist no claim(s) from any such individual or entity that will affect conveyance of good and marketable title to the utility facilities to Collier County and/or to the Collier County Water-Sewer District.

Legal description of the site where the subject utility facilities have been constructed or installed is _____
_____.

Signed: _____
Printed (or typed) Name

STATE OF FLORIDA)
COLLIER COUNTY)

The foregoing instrument was acknowledged before me this _____ day of _____, 200__ by _____, who is personally known to me OR who provided identification Type of identification produced: _____.

_____ My Commission Expires _____
Notary Public, State of Florida

08/26/03

Utilities Conveyance Checklist

POTABLE WATER, NON-POTABLE IRRIGATION WATER AND WASTEWATER FACILITIES ACCEPTANCE

Today's Date: _____

Project Name: _____

Original Project No. (AR/PL): _____ **Utility PL#:** _____

Submittal Requirements

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Final Utility Acceptance Application	
2.	☐	☐	☐	Addressing Checklist (ID number or Folio number of Property)	

Legal Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Attorney's Affidavit	
2.	☐	☐	☐	Owner's Affidavit	
3.	☐	☐	☐	Warranty Deed/Bill of Sale with Exhibit B per Utilities Standards and Procedures Ordinance Section 10.2.6	
4.	☐	☐	☐	Utilities Facilities Securities Subordination (required when any security interest in the utility facilities/systems is involved). UCC-1(s) can be subordinated by a Subordination or by use of UCC-3(s) if not released by Subordination.	
5.	☐	☐	☐	Deed of Utility Easement - Copy of last Deed that conveyed title of the Associated Real Property and Copy of all Utility Easements then being conveyed to the County, including legal description with Surveyor's Sketch of Easement. (Utility easements are not required provided all utility facilities then being conveyed are in public right-of way, are in then existing utility easements, or are in CUEs)	
6.	☐	☐	☐	Utilities Performance Security (UPS) 10% of **Total Cost** plus Final Obligations cash bond of not less than $4,000 (AR-5939 & above)	
7.	☐	☐	☐	Final Release of Lien from Utility Contractor for the system(s) or portion(s) thereof constructed	
8.	☐	☐	☐	Facilities Lease (when applicable)	

9. ☐ ☐ ☐ Facilities Lease (including Sub-Developer) use Form 10.1

Tests, Certifications and Supplemental Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Sewer Video of constructed gravity sewer (Sewer Report & Master Utility Sheet)	
2.	☐	☐	☐	Certification of pressure testing of wastewater force mains by Engineer of Record	
3.	☐	☐	☐	Certification of the infiltration/exfiltration tests for the sewer lines by Engineer of Record	
4.	☐	☐	☐	Coating certification from the manufacturer or a professional testing laboratory for all manholes, wet wells and valve vault.	
5.	☐	☐	☐	Lift station(s) start up report(s)	
6.	☐	☐	☐	Electrical Contractor's certification of Lift Station electric service wire sizing and voltage drop pursuant to National Electrical Code Specifications	
7.	☐	☐	☐	Start-up and successful testing of Data Flow telemetry equipment (AR-7936 & above)	
8.	☐	☐	☐	Certification of pressure testing of water and non-potable irrigation mains by Engineer of Record	
9.	☐	☐	☐	Letter by Engineer certifying that: • All water, non-potable irrigation and/or sewer facilities are located within the public right-of-way or dedicated easements • All the utilities system(s), or portion(s) thereof, has been constructed in accordance with County Ordinances and Regulations, including the required color for piping	
10.	☐	☐	☐	One year (1) Warranty on work performed and system(s) or portion(s) thereof installed by Utilities Contractor	
11.	☐	☐	☐	Engineer's Final Payment Confirmation	
12.	☐	☐	☐	DEP Certification and copy of General Permit for **WATER** facilities (including interim facilities, if applicable);	
13.	☐	☐	☐	DEP WATER Certification approval to be forwarded when received	

14.	☐	☐	☐	DEP Certification and copy of General Permit for **SEWER** facilities (including interim facilities, if applicable);	
15.	☐	☐	☐	DEP SEWER Certification approval to be forwarded when received	
16.	☐	☐	☐	DEP Certification and copy of General Permit for (RECLAIMED) **NON-POTABLE IRRIGATION WATER** facilities (including interim facilities, if applicable); In-service Letter to be forwarded when received	
17.	☐	☐	☐	Lab results on bacteriological tests for potable water mains	
18.	☐	☐	☐	Satisfactory Test Reports and Certification of backflow device by Certified Laboratory.	
19.	☐	☐	☐	Verification of Final Cost (Include materials **and** labor, misc.) Cost breakdown – Contributory Assets for County/Private Materials (materials **only**) **(i.e. detailed quantities, sizes, unit cost, total cost, etc)**	
20	☐	☐	☐	Letter from the Fire District regarding ownership and maintenance of fire hydrants	
21.	☐	☐	☐	Signed copy of field fire flow testing by the applicable Fire Control District	

Engineering Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	One (1) complete set of Record Drawings to include all utilities and all related underground work signed and sealed by the Engineer of Record for potable water, non-potable irrigation water and / or wastewater system(s) or portion(s) thereof	
2.	☐	☐	☐	One (1) computer-generated disk of Record Drawings in CAD and PDF format in accordance with Section 10.4: Record Drawings of the Utilities Standards and Procedures Ordinance	
3.	☐	☐	☐	Longitude and latitude shall appear on detail sheet. (AR-7936 & above)	

Office Use Only below this line

☐W ☐W/S ☐S ☐IRR

VENDOR AND MANUFACTURER APPROVAL APPLICATION FORM

Please prepare the completed Approval Application Form along with all requested information, and email all documents to the Public Utilities Engineering and Project Management Division as noted below. All documents must be in either PDF or WORD or EXCEL format. Other file formats will not be accepted. Faxes will not be accepted.

UtilityPlanning@colliercountyfl.gov

VENDOR AND MANUFACTURER APPROVAL APPLICATION FORM

Date: _____

A. Application Contact Name & Business:

_____

Address _____

Phone # _____ Fax # _____

Email address _____

B. Manufacturer of Product

_____

Address _____

Phone # _____ Fax # _____

Email address _____

C. Specific Location(s) of Product Manufacture and Assembly

_____

Address _____

Phone # _____ Fax # _____

Email address _____

D. Identify specific County Detail(s) or Specification(s) on which approval is sought.

_____

E. **Is the applicant the product manufacturer? If not, describe the relationship of the applicant to the manufacturer.**

Yes _____

No _____

_____

F. **Is the product available through more than one vendor? Describe who will provide sales and service to the County for the submitted product.**

Yes_____ No ____

_____

G. **Is the product is manufactured in whole or in part outside of the United States?**

Yes_____ No ____

H. **If the answer to Item G is Yes, attach copy of ISO 9001 Quality Control current certification certificates for the manufacturer and the point of manufacture.**

I. **How long has the specific product or service being proposed been on the market for public purchase?**

No. of Years _____

J. **In the case of applicators or installers, for how long has work been commenced and completed using the specific product or service being proposed?**

No. of Years _____

K. **Provide a product or service customer reference list that identifies the organization, location, contact person, email address, phone number, date of first installation, date of completion, number of products used, and the specific application of the product with each reference. Applicators and installers must have at least three references using the specific product or service being proposed.**

L. **Provide a list identifying the public utility departments or organizations that have approved your product. Preference should be given to utility departments within the state of Florida. The list must include a contact name, email address and phone number at each public utility.**

M. **Attach legible copies of pertinent product data sheets, shop drawings and performance data to assist with the County's review. All information must be submitted with the Application form. Clearly identify what product and product sizes are being proposed. Complete submittals are required with initial application, and supplemental submittals will not be accepted.**

N. **As applicable, provide copies of certifications that specific product being proposed meets the following standards:**

UL Approval attached **Yes_____ No _____**

FM Approval attached **Yes_____ No _____**

NSF 61 Approval attached **Yes_____ No _____**
(NSF 61 approval is mandatory for all products that may be in contact with potable water.)

O. **Summarize the advantages of the submitted product or service. Provide no more than one page of text.**

P. **Provide estimated unit cost for the submitted product or service.**

_____

Q. **Provide separate estimated unit costs for the operation and the maintenance of the submitted product or service.**

_____

R. **Based on the references identified above, identify the anticipated life of the submitted product or service before either replacement or major repair is needed.**

_____

S. **Explain benefits this application will have to the operation and maintenance of the Collier County Utility system:**

_____

_____

_____

The applicant hereby affirms the information provided with this Application Form is complete, accurate and current.

Submitted by _____

Signature _____

Firm name _____

Date _____

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Casing Spacer End Seals	Power Seal	EndSeal	Section 330523.16, Page 4, 3.1 B
Casing Spacer End Seals	Cascade Waterworks MFG Co.	CCES	Section 330523.16, Page 4, 3.1 B
Casing Spacers Stainless Steel	Power Seal	4810	Section 330523.16, Page 4, 3.1 BG-5
Casing Spacers Stainless Steel	Cascade Waterworks MFG Co.	CCS	Section 330523.16, Page 4, 3.1 B-5
Electronic Markers	3M Electronic Ball Marker	1423, 1424 & 1428	Section 1: 2.6.1, 3.1.4, 3.2.1/WW-10/WW-12/WW-16
Electronic Markers	OMNI MARKER	161, 162 & 168	Section 330518, Page 9, 3.2 O.2
Joint Restraint Devices	EBAA Iron Sales		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Romac Industries		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Sigma		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Star Pipe Products		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Ford Meter Box Company		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices, Push-On joints for push joint pipe	American Cast Iron Pipe Company	Flex-Ring & Lok-Ring	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	McWane Inc.	Super-Lock & TR Flex	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	U.S. Pipe		Section 330504, Page 7, F.3
Metalized Tape	Reef Industries, Inc. Houston, TX	Terra Tape	Section 330518, Page 9, O.1

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Metalized Tape	Proline Safety Products	Detectable Tape	Section 330518, Page 9, O.1
Rubber Gasket pipe	McWane Inc.	Long-Span Pipe	Section 330518, Page 10, Q.1
Rubber Gasket pipe	American Cast Iron Pipe Company	Flanged	Section 330518, Page 10, Q.1
Rubber Gasket pipe	US Pipe	Flanged	Section 330518, Page 10, Q.1
Single Sealed Gasket Push-on type joint	American Cast Iron Pipe Company	Fastite	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	U.S. Pipe	Tyton	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	McWane Inc.	Tyton	Section 330504, Page 10, 3.3.C
Two-part Coal tar Epoxy	Madewell Products Corp.	Madewell 1104	Section 330518, Page 6, 3.2 G.4

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Automatic Flushing Device, Ground Mounted	Mueller/Hydro-Guard	HG-1	W-2
Automatic Flushing Device, Ground Mounted	Kupferle Foundry Company	Eclipse #9400-WC	W-2
Automatic Flushing Device, Hydrant Mounted	Mueller/Hydro-Guard	HG-6	W-2
Automatic Flushing Device, Hydrant Mounted	Kupferle Foundry Company	Eclipse #9700	W-2
Backflow Preventer Assembly	See Approved Backflow Devices List, Appendix G		
Bushing	Ford	C18	W-6
Corporation Stops	Ford	F1100NL SERIES	W-6
Corporation Stops	Ford	FB1100NL SERIES	W-6
Corporation Stops	A.Y. McDonald	4104NL	W-5
Corporation Stops	A.Y. McDonald	4101 BF NL	W-5
Corporation Stops	Mueller	H10045N, H15008N	Section 331200, Page 2, 2.3 A.1
Corporation Stops	Mueller	H-10046N/ H-10046	W-5
Coupling	Ford	Model numbers vary by application	W-6
Coupling	A.Y. McDonald	Model numbers vary by application	W-6
Coupling	Mueller	Model numbers vary by application	W-6
Curb Stop	Ford	B43xxxW-NL	W-12
Curb Stop	A.Y. McDonald	76102-22	W-12
Curb Stop	Mueller	Mark II Oriseal H-15172N	Section 331200, Page 2, 2.3 A.1

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
HDPE Stab Fitting	Elster	Hydrosert	
Hydrant	American Darling	6-inch B-84-B	Section 331619, Page 2, 2.1 G
Hydrant	Clow	Medallion	Section 331619, Page 2, 2.1 G
Hydrant	Mueller	Centurion A-423	Section 331619, Page 2, 2.1 G
Meter Box	Carson	Fiberlyte FL12	W-12
Meter Box	Carson	Fiberlyte FL30	W-12
Meter Box	Oldcastle	Lid-FL12 GP (AMR)	W-12
Meter Box	Oldcastle	Box, FL12 T 12 (w/mouseholes)	W-12
Meter Box	Oldcastle	Unit, FL30 P	W-12
Meter Box	DFW	DFW1324XX-12-AF1PT MUE	W-12
Meter Box	DFW	DFW37F-12-AF1PT MUE	W-12
Meter Box	DFW	DFW1324F-12-AF1PT MUE	W-12
Meter, Fire Protection (3", 4", 6", 8")	Elster AMCO	evoQ4 Electromagnetic Meter	W-9/W-14
Meter, Fire Protection (3", 4", 6", 8", 10")	Neptune	HP Fire Service Turbine Meter	W-9/W-14
Meter, Fire Protection (3/4", 1", 1-1/2", 2")	Mueller Systems - Hersey	Residential Fire Meter	W
Meter, Fire Protection (4", 6", 8", 10")	Neptune	HP Protectus III Fire Service Meter	W-9/W-14
Meter, Potable Water	Neptune	Tru/Flo	W-13
Meter, Potable Water	Neptune	Mach 10	W-13
Pedestal Housing	Channel	CCWD Signature Series SPH	W-5
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4
Sampling Station	Kupferle Foundry Company	Eclipse 88	W-6
Sampling Station	Mueller Company	Safety Guard BOSS SMPL STA	W-6

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sampling Station	Mueller Company	2" BOSS-BSS0212CHANLCSR	W-6
Service Saddles (Brass)	Ford	F202B	Section 331200, Page 7, 2.3 G.1
Service Saddles (Brass)	Mueller	DR2 B	Section 331200, Page 7, 2.3 G.1
Service Saddles (PVC) Perm Bact Sample Point	Powerseal	P3401 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Saddles (PVC) Perm Bact Sample Point	Ford	S 90 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Wye	Ford	Y44-xxx-NL	W-12
Strainer, Flanged (Staff Use)	Mars	Z-plate	
Strainer, Flanged (Staff Use)	Neptune	Rilsan nylon-coated ductile iron	
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	W-12
Valve Box	Tyler/Union	461	Section 331200, Page 4, 2.3 B.2
Valve Box, Locking Cover	AMPro USA	LL562	Section 331200, Page 4, 2.3 B.2.
Valve Setter	Wilkins	WMJS	W-9A/W-11A
Valve, Air	Val-Matic	Model 801AS	W-11/W-14/W-16
Valve, Air Release	A.R.I.	D-040 (nylon), D-040 ST ST (SS)	W-5
Valve, Bacterial Sampling Station Line	Mueller	Mark II Oriseal	Section 331200, Page 3, 2.3 A.1
Valve, Ball	Ford		Section 331200, Page 3, 2.3 A.1
Valves and Appurtenances	American Darling		Section 331200 2.3 A
Valves and Appurtenances	A.Y. McDonald		Section 331200 2.3 A
Valves and Appurtenances	Clow		Section 331200 2.3 A
Valves and Appurtenances	Ford		Section 331200 2.3 A
Valves and Appurtenances	Kennedy		Section 331200 2.3 A
Valves and Appurtenances	Mueller		Section 331200 2.3 A
Valves and Appurtenances	U.S. Pipe		Section 331200 2.3 A

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
120VAC Surge Suppressor	Edco	HSP121	NP-E3
12VDC Power Supply	Allen Bradley	1606-XLS	NP-E3
12VDC Power Supply	Sola HD	SDN-P	NP-E3
12VDC Power Supply	PULS	Dimension - QS	NP-E3
24VDC Power Supply	Allen Bradley	1606-XLE	NP-E3
24VDC Power Supply	Sola HD	SDN-P	NP-E3
24VDC Power Supply	PULS	Dimension - QS	NP-E3
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	NP-E9
Back Pressure Sustaining Valve	Ames	No. 920	NP-1/NP-E2
Plate Strainer, Top Access	Mars		NP-1/NP-E2
Corporation Stops	Ford	FB 1100-NL/ FB 1100	NP-2
Corporation Stops	A.Y. McDonald	74704B	NP-2
Corporation Stops	A.Y. McDonald	74104NL/ 74104	NP-4
Corporation Stops	A.Y. McDonald	74101 BF NL/ 74101 BF	NP-4
Corporation Stops	Mueller	H-10046N/ H-10046	NP-4
Curb Stop	Ford	B43-444W-NL, Compression x Meter Swivel	NP-2
Data Radio	Integra	TR	NP-E3
Data Signal Line Surge Processor	Edco	PC642 Series	NP-E3
Geomembrane	GSE Environmental		Section 334713, Page 4, 1.6 A.1
Level Transducer	Wika		NP-E6

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Meter Box	Carson	Fiberlyte FL12	NP-2
Meter Box	Carson	Fiberlyte FL30	NP-2
Meter Box	Oldcastle	Lid-FL12 GP (AMR)	NP-2
Meter Box	Oldcastle	Box, FL12 T 12 (w/mouseholes)	NP-2
Meter Box	Oldcastle	Unit, FL30 P	NP-2
Meter Box	DFW	DFW1324XX-12-AF1PT MUE	NP-2
Meter Box	DFW	DFW37F-12-AF1PT MUE	NP-2
Meter Box	DFW	DFW1324F-12-AF1PT MUE	NP-2
Flow Meter, Magnetic			
Meter, Non-Potable Propeller			
Pedestal Housing	Endress+Hauser	W400	NP-1/NP-E2
Pedestal Housing	McCrometer	Water Specialties No. ML-04-X with 4-20 MA Output Transmitter, TR-16	NP-1/NP-E2
Pedestal Housing	Channel	CCWD Signature Series SPH14206C1B1L01	NP-4
Rain Gauge	Water Plus Corp	131632	NP-4
Service Wye	PenCell Plastics	AV142034HDHS001009	NP-4
Service Wye	ISCO	674	NP-E5
Service Wye	Ford	Y44-264-NL	NP-2
Surge Suppression	A.Y. McDonald	708YS22	NP-2
Surge Suppression	Mueller	P-15343N	NP-2
Surge Suppression, Main Service	Edco	SS65 Series	NP-E6/NP-E7
Tapping Saddle/ Hot taps	CITEL	TSP15M	NP-E6/NP-E7
Valve, Air Release	Lea	USP-M Series	NP-E5
Valve, Air Release	Powerseal	P3490MJ Series	NP-2

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
3) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
4) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, Air Release	A.R.I.	D-040	NP-4
Valve, Air Release	A.R.I.	D-040 SS	NP-4
Valve, Rising Stem Gate/ OS&Y	GA Industries	942SS	NP-4
Valve, V-Port Ball	GA Industries	Combination	Section 1 2.7/NP-1/NP-4/NP-E2
Valve, V-Port Ball - Motor (Actuator)	Rotork	IQTM	NP-E2
	American Flow Control	AFC-2500 SERIES	NP-1/NP-E2
	DeZurik	VPB - flanged, type 317 stainless, and Teflon seat and bearings	NP-1

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Access Frame (Pump Station)	U.S. Foundry	AHD	WW-7/WW-8
Access Hatch, Aluminum	Bilco	J-AL H20 (5-1/2" depth)	WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	Halliday	H1W (3-1/2" depth)	WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	U.S. Foundry	AHS (5" depth)	WW-8/WW-8A/WW-8B
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	Section 333200, Page 4, 2.1 J/WW-17
Biofiltration Odor Control System	Evoqua	Zabocs (pre-engineered)	Section 333200, Page 5, 2.1 P
Ceramic Epoxy Lining	Vulcan Painters	Protecto 401 Coating	Section 330504, Page 3, 2.1.B
Chimney Seal	Cretex		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Chimney Seal	Trelleborg		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Coaxial Cable	Data Flow Systems, Inc.	RTC 400	Section 333200, Page 2.1 J/WW-17
Diaphragm Seals	Ashcroft		Section 333313, Page 8, 2.2 G
Diaphragm Seals	Mansfield and Green	Type SB	Section 333313, Page 8, 2.2 G
Diaphragm Seals	Trerice		Section 333313, Page 8, 2.2 G
Flanged Adapter Connections	EBAA Iron Sales	E2100 SERIES	Section 333313, Page 8, 2.2 F.1.c.
Flanged Adapter Connections	Victaulic	Vic Flange Style 741	Section 333313, Page 8, 2.2 F.1.c.
Flow Meter	Endress-Hauser	Promag W400	Section 333313, Page 9, 2.2 M.1
Generator Receptacle and Angle Adapter	Crouse-Hinds	AR2042 with S22 option, and an AJA1 angle adaptor	WW-7/WW-9
Grass Covered Porous Pavement	Invisible Structures	Grasspave2	WW-8/WW-8A/WW-8B
Inflow Protector, Stainless Steel	Sewer Shield, Inc. Maitland, FL		Section 333913, Page 4, 2.2 K
Inflow Protector, Stainless Steel	Rainstopper LLC.		Section 333913, Page 4, 2.2 K
Inflow Protector, Stainless Steel	L.F. Manufacturing, Inc.		Section 333913, Page 4, 2.2 K

NOTES:
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If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Internal Protection	IET Systems	IET Coating System	Section 333913, Page 5, 3.1 F/Section 099723/WW-3/WW-4/WW-5/WW-7

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Internal Protection	Raven Lining Systems - Broken Arrow, OK	Raven 405	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Internal Protection	Kerneos - Chesapeake, VA	Sewpercoat Lining System	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Junction Box	Hoffman	A12106NFSS	WW-9
Lightning Arrestor	Square D	SDSA-1175 for 1-phase	Section 333200, Page 5, 2.1 O/WW-9
Lightning Arrestor	Square D	SDSA-3650 for 3-phase	Section 333200, Page 5, 2.1 O/WW-9
Liquid Level Regulators (Float Switch)	Roto-Float		WW-7/WW-8
Liquid Level Regulator (Float Switch)	Dura-Float	2900 Series B4	WW-7/WW-8
Pipe Interior Lining	Permox CTF	Ceramic Epoxy Lining	Section 330504, Page 3, 2.1 B
Plastic Joint Sealing Compound	Hamilton Kent, Toronto/Ontario, Canada	Kent-Seal	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Plastic Joint Sealing Compound	Henry	Ram-Nek	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Polymer Concrete Manholes	US Composite Pipe, Inc.		Section 034100, Page 5, 2.2 D
Polymer Concrete Manholes	Armorock		Section 034100, Page 5, 2.2 D
Power Distribution Blocks	Schneider (Square D)	Class 9080 Power Distribution Blocks	WW-9/WW-9A/WW-9B
Pump Control Panel	ECS		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Control Panel	Suncoast Hydraulic		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Controller	Data Flow Systems, Inc.	TCU	Section 333200, Page 3, 2.1 J
Riser Ring, HDPE/EPP	Ladtech/Cretex(EPP)	Riser Ring	Section 333913, Page 4, 2.2 L
Sealing Compound	Crouse-Hindz	Chico Sealing Compound	WW-9/WW-9A/WW-9B

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sealing Element	GPT	Link-Seal	Section 333313, Page 9, 2.2 I.1/WW-18
Sewage Pump	Flygt	N-Series	Section 333200, Page 2, 2.1 D
Sewer Clean-Out Rim and Cover	U.S. Foundry	7621	WW-11
Sewer Manhole Ring and Cover	U.S. Foundry		WW-3, WW-4, WW-5, WW-6, Section 333913
Sewer Manhole Frame and Covers	Pamrex		WW-5
Sewer Manhole Frame and Covers	U.S. Foundry	105M	WW-2
Sewer Manhole Frame and Covers	U.S. Foundry	420-C-ORS	Section 333913, Page 2, 2.1A/WW-3/WW-4/WW-5/WW-6/WW-18
Sleeve Type Couplings	Powerseal	STYLE 3501	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Dresser	Style 38	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Smith Blair	Style 413	Section 333313, Page 8, 2.2 F.1.d.
Tower	Rohn		WW-17
Valve Box	Brooks		WW-9
Valve, 3-Way Plug (Staff Use)	Milliken Valve Co.	Model M604	WW-7/WW-8
Valve, 3-Way Plug (Staff Use)	Dezurik	Model D202	WW-7/WW-8
Valve, Air Release	HTECH	2" SS MODEL # 8889860041	WW-13/Section 333313, Page 7, 2.2 D.11
Valve, Air Release	A.R.I.	D-025	WW-5/Section 333313, Page 7, 2.2 D.11
Valve, Check	Kennedy Valve Manufacturing Co.	MODEL 1106LW/106LW	WW-7/WW-8/Section 333313, Page 5, 2.2 C
Valve, Check	Mueller	A-2600, A2602	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	Milliken Valve Co.	8001	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	GA Industries	340-W	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	VSI Waterworks	CVIX AWWA C508	Section 333313

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
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Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, Duckbill (Staff Use)	Red Valve Co., Inc. Longwood, FL	"Tideflex"	WW-7
Valves, Plug	DeZurik	Model PEC & PEF (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	Milliken Valve Co.	Model M600 & M601 (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	Cam-Centric	55XX, 56XXF,57XXF, 58XXR, 59XXR (TN, N, TL, XF)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	VSI Waterworks	PVII & PVIF AWWA C517	Section 333313

Collier County Public Utilities Department
County Approved Contract List

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Contract #	Applicability
Epoxytech CPP Epoxy coating, equipment and services	Florida Service Painting, Inc.	23-8169	Water, Wastewater, and Irrigation Quality (IQ) Systems
Commodities and services for utility plant operations	John Mader Enterprises, Inc.	PB-421	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Division	Applicability
Teledyne ISCO Refrigerated Autosampler, sampler bottles, tubing, spare and replacement parts and services.	Accutech Instrumentation, Inc.	Wastewater	Wastewater Systems
Belt Press Dewatering Equipment & Services	Alfa Laval	Engineering & Project Management	Water Systems
McCrometer meters, repair, parts, and services	Avanti Inc.	Wastewater	Wastewater Systems
HOMA submersible sewage pumps and services	Barney's Pump Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
NOV/Moyno progressive cavity pumps and services	Carl Eric Johnson	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Flowserve vertical turbine pumps and services	Carter & Verplanck	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Chemtrac's HydroAct Residual Chlorine Analyzer	ChemTrac	Water	Water Systems
CROM utility storage tanks and services	CROM Coatings and Restorations (CCR)	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Contractor shall provide Supervisory Control and Data Acquisition equipment and software (SCADA) as well as technical support.	Data Flow Systems, Inc.	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Master Meter Flow Meter and software	Empire Pipe and Supply Company Inc.	Wastewater	Wastewater Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
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Item	Vendor	Division	Applicability
Promag Electromagnet Flow Meters, Analyzers, Level Transmitters, replacement parts, and service	Endress Hauser	Wastewater	Wastewater Systems
Aqua-Aerobic Systems Cloth Media, Traveling Bridge Filtration equipment, parts and services	EnviroSales of Florida, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
NozzTeq nozzles and services	Evervac Equipment	Wastewater	Wastewater Systems
Chemicals, components, services, etc.	Evoqua Water Technologies	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Centrifugal/Chopper/Conditioning Pumps and Services	FJ Nugent & Associates, Inc.	Wastewater	Wastewater Systems
Replacement parts, maintenance, and equipment.	Fluid Control Specialties, Inc (Rosemount)	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Rotork valve actuators, replacement parts and repair services.	Fluid Control Specialties, Inc (Rotork)	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Aeration Blower & Service	Gardner Denver Nash	Wastewater	Wastewater Systems
License, service, and support for the SCADA System	GE Digital LLC	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Siemens Level Sensor - Ultrasonic and services	Gilson Engineering Sales of Florida	Wastewater	Wastewater Systems
Service, and support for the SCADA System, including licensing for supporting applications	Gray Matter Systems	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

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Item	Vendor	Division	Applicability
Laboratory Equipment, Supplies, and Materials, Testing Services, etc.	Hach Company	Water	Equipment, Chemicals, & Services
Parts, Services, and Repairs for Sand Separator	HC Warner	Water	Water Systems
Screening and Screening Handling and services	Hydra Service Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Grit Removal System	Hydro International & Huber	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Laboratory parts, supplies, and services	IDEXX Distribution, Inc.	Wastewater	Laboratory Parts, Supplies, & Services
Valve Exercise / Operator and services	Illinois Tool Works dba E.H. WACHS	Water	Water Systems
Belt Press Parts and Services	Komline-Sanderson	Engineering & Project Management	Wastewater Systems
Service Agreement and Updates	Labworks, LLC	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
HF Scientific equipment, parts, and services	Lazenby & Associates, Inc.	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Lime Feed and Slaker system and services	Merrick Industries, Inc.	Water	Water Systems
Xylem- Sanitaire Diffused Aeration Equipment and UGSI Chemical Feed, Inc. Liquid Polymer Dosing System	Moss Kelley/MKI Services, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Grit Removal Equipment, Clarifiers parts, sludge thickener parts, and service	Ovivo USA, LLC	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
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Item	Vendor	Division	Applicability
Aqua Guard Self Cleaning Bar/Filter Screen	Parkson Corporation	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
New York Blower Odor Control Blowers and services	Pero Engineering & Sales Co.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
ASME pressure valves and replacement parts	Protec Arisawa	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
SCADA components, parts, panels, etc.	Rexel USA, Inc	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Service Agreement, Parts and Supplies	Seal Analytical, Inc.	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Seepex Progressive Cavity Pumps, and services	Tencarva/Hudson Pumps	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Service/ Repair of CO2 Tanks	TOMCO2 Systems	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telog Software, Pressure Sensor, Recorders and Services.	Trimble, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProMinent Equipment, Parts, and Services	TriNova Inc	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Trillium Flow Technologies Grit Pumping, Sludge Pumping, Grit Separation Equipment, and services	TSC-Jacobs South	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Component parts, equipment, software and support to maintain the Itron meter systems.	United Systems and Software Inc	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Division	Applicability
Limitorque Valve Actuators and Services	Valve & Actuation Service	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
ATI Analytical Products	Volition Controls Corp	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Internal Recycling Dry Pit Submersible Pumps, Repair/Replacement Parts, and services.	Xylem Water Solutions U.S.A.	Water/ Wastewater	Wastewater Systems

NOTES:
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Item	Vendor / Manufacturer	Model(s)	Applicability
Analog Control Module (ACM002)	Data Flow Systems, Inc.	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Data Flow Systems, Inc.	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Data Flow Systems, Inc.	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-01) AC 8DO, 4DI	Data Flow Systems, Inc.	DFS-00297-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-02) AC 4DO, 8DI	Data Flow Systems, Inc.	DFS-00297-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-03) AC/DC 8DO, 4DI (Requires the use of snubbers 007-0084)	Data Flow Systems, Inc.	DFS-00297-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-04) AC/DC 4DO, 8DI (AC Requires the use of snubbers 007-0084 / DC requires 006-0019)	Data Flow Systems, Inc.	DFS-00297-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-05) DC 8DO, 4DI	Data Flow Systems, Inc.	DFS-00297-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-06) DC 4DO, 8DI	Data Flow Systems, Inc.	DFS-00297-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Data Flow Systems, Inc.	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, 100W)	Data Flow Systems, Inc.	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Data Flow Systems, Inc.	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC001)	Data Flow Systems, Inc.	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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Item	Vendor / Manufacturer	Model(s)	Applicability
Programmable Logic Controller (PLC800) w/PMT	Data Flow Systems, Inc.	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
PLC Bypass Card (PBC001)	Data Flow Systems, Inc.	DFS-00309-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007-34 (VDR002-01, 217-220 MHz)	Data Flow Systems, Inc.	DFS-00513-008-34	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007 Board-Only (no radio, all TIM007 versions)	Data Flow Systems, Inc.	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01 (for TIM007-34, 217-220 MHz)	Data Flow Systems, Inc.	DFS-00530-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module - (NIM001)	Data Flow Systems, Inc.	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module (SIM001, 5 PORT)	Data Flow Systems, Inc.	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM001, 8 PORT)	Data Flow Systems, Inc.	DFS-00375-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (5-Port, Prosafe, -04 NSM & SIM)	Data Flow Systems, Inc.	002-0567	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (8-Port, Prosafe, -16 NSM)	Data Flow Systems, Inc.	002-0568	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Fiber Module - (NFM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Media Converter 10/100 (AT-MMC200/ST) This part is used on the FIM001 and NFM001	Data Flow Systems, Inc.	002-0566	Water, Wastewater, and Irrigation Quality (IQ) Systems
NFM Cable - For connecting extra NFM's in an HSS	Data Flow Systems, Inc.	002-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Network Cell-Router Module - (NCM001)	Data Flow Systems, Inc.	DFS-00375-008-15	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module (HSM003)	Data Flow Systems, Inc.	DFS-00543-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Assembly- includes: (1) Fiberglass Enclosure, (1) MBP202, (1) PSM003-1, (1) Polyphaser, (1) SPS00l, (1) RF Pigtail, (1) 2.6 aH Battery DEDUCT DFS-00349-008-04 for NO Tower Mount Brackets DEDUCT DFS-00392-008-01 for Network	Data Flow Systems, Inc.	DFS-00349-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 "CUT FOR PLC" includes: (1) Fiberglass Enclosure, (1) MBP202-3, (1) PSM003-1, (1) Polyphaser, (1) SPS00l, (1) RF Pigtail, (1) 2.6 aH Battery DEDUCT DFS-00349 008-04 for NO Tower Mount Brackets DEDUCT DFS-00392-008-01 for Network	Data Flow Systems, Inc.	DFS-00349-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 "Solar" Assembly- includes 18 X 16 Fiberglass Enclosure with backplate, MBP202-2, Solar PSM, Polyphaser Coaxial Surge Protector, RF Pigtail, & 12V 18Amp Battery DEDUCT DFS-00349-008-04 for NO Tower Mount Brackets	Data Flow Systems, Inc.	DFS-00349-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU204 w/MBP00l - includes: (1) 204 316SS NEMA 4X Enclosure, (1) MBP00l, (1) PSM003-1, (1) Polyphaser Coaxial Surge Protector, (1) SPS00l, (1) RF Pigtail, (1) 2.6 Ah Battery, (1) l0A Breaker. DEDUCT DFS-00392-008-01 for Network (NO Polyphaser/Pigtail) 16.5" Din-Rail space	Data Flow Systems, Inc.	DFS-00280-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP002 (the rest is same as 204 above)	Data Flow Systems, Inc.	DFS-00280-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP00l-3 for PLC (the rest is same as 204 above) Add PLC Backplane Switch Options	Data Flow Systems, Inc.	DFS-00280-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP00l-4 for FTU - includes: (1) 204 Enclosure, (1) MBP00l- 4, (1) PSM003-1, (2) Polyphaser Coaxial Surge Protector, (1) SPS00l, (2) RF Pigtail, (1) 2.6 Ah Battery	Data Flow Systems, Inc.	DFS-00280-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU210/216 - Special Quote Required from Systems Engineering	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Fiberglass Enclosure (MBP NOT INCLUDED) 14"h 12"w 811d	Data Flow Systems, Inc.	038-0053	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-01	Data Flow Systems, Inc.	DFS-00348-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU202 Modular Backplane, MBP202-02 (CUT FOR SOLAR)	Data Flow Systems, Inc.	DFS-00348-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-03 (CUT FOR PLC)	Data Flow Systems, Inc.	DFS-00348-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Aluminum Plate for 202 Enclosure 14x 12 (BP1412AL)	Data Flow Systems, Inc.	039-0135	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 Enclosure (MBP NOT INCLUDED) 15.5"h 23"w 7.S"d	Data Flow Systems, Inc.	DFS-00280-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-1) (for single backplane use)	Data Flow Systems, Inc.	DFS-00279-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-2) (2nd & 3rd for 210, 216)	Data Flow Systems, Inc.	DFS-00279-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-3) (for PLC use)	Data Flow Systems, Inc.	DFS-00279-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-4 for Solar Power Module SPM)	Data Flow Systems, Inc.	DFS-00279-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-5 for FTU - requires 2 RIMs)	Data Flow Systems, Inc.	DFS-00279-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TAC Pack Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00I) - No Radio, controller only (add P3 and P4 connectors for Mod bus application)	Data Flow Systems, Inc.	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TAC Pack TCU w/VDR002 (217-220 MHz)	Data Flow Systems, Inc.	DFS-00367-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 - NO RADIO, MODBUS CONFIG	Data Flow Systems, Inc.	DFS-00540-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 - NO RADIO, SERIAL FOR EXTERNAL RADIO	Data Flow Systems, Inc.	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800-IP - NETWORK INTERFACE (NO RADIO)	Data Flow Systems, Inc.	DFS-00540-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 w/VDR002 (217-220 MHz)	Data Flow Systems, Inc.	DFS-00540-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 w/DUAL COMMS (VDR002 217-220 MHz & NETWORK)	Data Flow Systems, Inc.	DFS-00540-008-31	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Basic Snap-In" Installation Kit - Includes: snap-in mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery.	Data Flow Systems, Inc.	DFS-00392-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Deluxe Snap-In" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS- Includes: snap-in mounting bracket, spring loaded connectors, Wago terminals for every wire termination, (1) EDCO DRS036 Analog Surge Protector, SPS00l, 10A Circuit Breaker, TFS, TFS.	Data Flow Systems, Inc.	DFS-00396-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU00l "Basic Front-Mount" Installation Kit- Includes dead-front mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00392-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Deluxe Front-Mount" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: dead-front mounting bracket, spring loaded connectors, Wago terminals for every wire termination, (1) EDCO DRS036 Analog Surge Protector, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00396-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU001 Harness Upgrade Kit for TCU800, Includes: 002-0596 USB, 002-0597 USB Cover, 019-0174 USB Lanyard, 016-0270 20 pin P3 Connector	Data Flow Systems, Inc.	DFS-00540-108-07	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 "Basic Snap-In" Installation Kit - Includes: snap-in mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-08	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 "Deluxe Snap-In" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: snap-in mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for every wire termination, (4) ASI Analog Surge Protectors, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 "Basic Front-Mount" Installation Kit - Includes dead-front mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase)	Data Flow Systems, Inc.	DFS-00552-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 "Deluxe Front-Mount" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: dead-front mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for every wire termination, (4) ASI Analog Surge Protectors, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 HARNESS 480V 3-PHASE UPGRADE KIT. (Use this 480V upgrade if purchasing a Deluxe Installation Kit)	Data Flow Systems, Inc.	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Pl,P2 Connector (Wire Enters Top, Snap-In, 24-Pin) Each	Data Flow Systems, Inc.	016-0154	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Pl,P2 Connector (Wire Enters Rear, Front Mount, 24-Pin) Each	Data Flow Systems, Inc.	016-0182	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l ONLY- P3 Connector (Configuration/ Address Board)	Data Flow Systems, Inc.	DFS-00391-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 ONLY- P3 Connector (Added 1/0)	Data Flow Systems, Inc.	016-0270	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU P4 Connector (RS-232 / R-S485) - Spring-Load Terminal (Not included with Installation Kits - Required for RIO and Modbus Interface)	Data Flow Systems, Inc.	016-0156	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU P4 Connector (RS-232 / R-S485) - Spring-Load Terminal (Not included with Installation Kits - Required for RIO and Modbus Interface) - FOR FRONT-MOUNTED TCU	Data Flow Systems, Inc.	016-0184	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Snap-in Mounting Bracket	Data Flow Systems, Inc.	DFS-00370-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (4.5") Bracket (Short), Snap-In Bracket Req'd For 6-8" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (8.75") Bracket (Medium), Snap-In Bracket Req'd For 10-12" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (12.25") Bracket (Tall), Snap-In Bracket Req'd For 14-18" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Accu-CT split-core current transformer (20A), ACTL-0750-020 (EACH)	Data Flow Systems, Inc.	008-0076	Water, Wastewater, and Irrigation Quality (IQ) Systems
Accu-CT split-core current transformer (50A), ACTL-0750-050 (EACH) NOTE: 50A is TCU800 default setting	Data Flow Systems, Inc.	008-0077	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Accu-CT split-core current transformer (lO0A), ACTL-0750-100 (EACH)	Data Flow Systems, Inc.	008-0078	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiberglass Enclosure Assembly for TAC Pack TCU Includes: (1) Fiberglass 18x16 Enclosure w/Backplate, (1) Snap-In Install Kit w/240V 3-Phase protector, Polyphaser & RF Pigtail. ADD 480V 3-PHASE KIT UPGRADE IF REQUIRED	Data Flow Systems, Inc.	DFS-00275-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
316 SS Enclosure Assembly for TAC Pack TCU Includes: (1) 316 SS 18x16 Enclosure, (1) Snap-In Install Kit w/240V 3- Phase protector, Polyphaser & RF Pigtail. ADD 480V 3-PHASE KIT UPGRADE IF REQUIRED	Data Flow Systems, Inc.	DFS-00275-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l Harness Upgrade Kit for TCU800, Includes: 002-0596 USB, 002-0597 USB Cover, 019-0174 USB Lanyard, 016-0270 20 pin P3 Connector	Data Flow Systems, Inc.	DFS-00540-108-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l SS Enclosure - ENCL ONLY 18"h 16"w l0"d	Data Flow Systems, Inc.	038-0012	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l Fiberglass Enclosure - ENCL ONLY 18"h 16"w 8"d	Data Flow Systems, Inc.	038-0051	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU00118x16 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Data Flow Systems, Inc.	039-0127	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 &TCU Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiberglass Enclosure Assembly for TCU800 (with radio) Includes: (1) Fiberglass 24Hx20W Enclosure w/Backplate, (1) Snap-In Install Kit w/Harness, 240V 3-Phase protector, 7aH battery, Polyphaser & RF Pigtail. ADD price of DFS-00393-008-03 480V 3-PHASE KIT IF REQUIRED	Data Flow Systems, Inc.	DFS-00552-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems
316 SS Enclosure Assembly for TCU800 (with radio) Includes: (1) 316 SS 24Hx20W Enclosure w/Backplate, (1) Snap-In Install Kit w/Harness, 240V 3-Phase protector, 7aH battery, Polyphaser & RF Pigtail. ADD price of DFS-00393-008-03 480V 3-PHASE KIT IF REQUIRED	Data Flow Systems, Inc.	DFS-00552-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 HARNESS RELAY ADDER (adds interposing relays for all outputs)	Data Flow Systems, Inc.	DFS-00552-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 SS Enclosure- ENCL ONLY 24"h 20"w lO"d	Data Flow Systems, Inc.	038-0197	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 Fiberglass Enclosure - ENCL ONLY 24"h 20"w l0"d	Data Flow Systems, Inc.	038-0206	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 24x20 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Data Flow Systems, Inc.	039-0337	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TCU Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
2.6 aH Battery (12V Battery w/Leads)	Data Flow Systems, Inc.	DFS-00363-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7 aH Battery 12V Battery w/Leads)	Data Flow Systems, Inc.	DFS-00363-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
18aH Battery (12V battery as used in RTU202 solar assembly) No leads - Universal Battery, Part# UB12180	Data Flow Systems, Inc.	023-0045	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Lead (battery-side for 2.6, 3.0 and 7.0 aH)	Data Flow Systems, Inc.	DFS-00165-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU204/202, 12"	Data Flow Systems, Inc.	DFS-00165-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU210, 36"	Data Flow Systems, Inc.	DFS-00165-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 48"	Data Flow Systems, Inc.	DFS-00165-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 72"	Data Flow Systems, Inc.	DFS-00165-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
10' Big-Ass Battery Cable Assembly (see Battery White Paper)	Data Flow Systems, Inc.	DFS-00501-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Shelf (for 2.6, 3.0 and 7.0 aH batteries only)	Data Flow Systems, Inc.	039-0018	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU Surge Protection Kit includes: the following: (1) Polyphaser Coaxial Surge Protector, (1) SPS001, (1) TFS.	Data Flow Systems, Inc.	DFS-00364-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Surge Protection Kit includes: (1) SPS001120V, (1) TFS, (1) TFS Install Kit for TCU (Add 3-Phase Surge Protector per below)	Data Flow Systems, Inc.	DFS-00364-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPS001, 120VAC Single-Phase Surge Protector	Data Flow Systems, Inc.	005-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 1-Phase Surge Protector {Ditek, UL LISTED) (Also 208VAC)	Data Flow Systems, Inc.	005-0120	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 3-Phase Surge Protector (Ditek, UL LISTED)	Data Flow Systems, Inc.	005-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector {Ditek, UL LISTED)	Data Flow Systems, Inc.	005-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector KIT (Ditek, UL LISTED)	Data Flow Systems, Inc.	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Kit- includes Polyphaser and RF Pigtail (specify length)	Data Flow Systems, Inc.	DFS-00392-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Coax Surge Protector (Standard, BS0LN-C2)	Data Flow Systems, Inc.	005-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco DRS-036 (DIN MOUNT ANALOG SURGE PROTECTOR)	Data Flow Systems, Inc.	022-0231	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PC-642C-036 {MODULE)	Data Flow Systems, Inc.	022-0056	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Edco PC-642C (BASE)	Data Flow Systems, Inc.	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (MODULE)	Data Flow Systems, Inc.	022-0129	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (BASE)	Data Flow Systems, Inc.	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems
API ANALOG LOOP ISOLATOR {API-4380-G-D)	Data Flow Systems, Inc.	022-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems
API OCTAL BASE (NDS-8)	Data Flow Systems, Inc.	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems
Zone Barrier CATS/CAT6 Network Surge Protector (Network RTU/TCU/HSS)	Data Flow Systems, Inc.	002-0584	Water, Wastewater, and Irrigation Quality (IQ) Systems
Transient Filter Shield - TFS00l-2	Data Flow Systems, Inc.	DFS-00306-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for TCU and TAC Pack TCU	Data Flow Systems, Inc.	DFS-00319-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for RTU2XX with PCM001	Data Flow Systems, Inc.	DFS-00319-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
10 Amp Breaker (Din Mount)	Data Flow Systems, Inc.	014-0010	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B Converter, RS-232 to RS-485	Data Flow Systems, Inc.	022-0340	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B RS485 Surge Protector (typical for TCU P4 / Modbus)	Data Flow Systems, Inc.	005-0165	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tripp-Lite DTEL2 "Inline" Telephone Line Surge Protector (replaces both Edco PCTEL MODULE & BASE)	Data Flow Systems, Inc.	002-0605	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Wago Operating Tool (Wago Bone)	Data Flow Systems, Inc.	026-0003	Water, Wastewater, and Irrigation Quality (IQ) Systems
1 Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
¼ Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
FUSE BLOCK, MIDGET, 3 POS,30A,600V (for 480V 3PH kit) (add fuses)	Data Flow Systems, Inc.	040-0044	Water, Wastewater, and Irrigation Quality (IQ) Systems
lA FUSE, MIDGET, TIME DELAY, 600 VAC, KTQ (for 480V 3PH kit)	Data Flow Systems, Inc.	040-0043	Water, Wastewater, and Irrigation Quality (IQ) Systems
47K RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
249 Ohm RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
l00K lW RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
200K 2W RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-08	Water, Wastewater, and Irrigation Quality (IQ) Systems
100K 1/2W,0.1% RESISTOR (for old "pre-2020" 480V 3PH kit)	Data Flow Systems, Inc.	DFS-00271-008-14	Water, Wastewater, and Irrigation Quality (IQ) Systems
49.9K RESISTOR 2 COND WAGO TERMINAL (for new 480V 3PH kit)	Data Flow Systems, Inc.	DFS-00271-008-24	Water, Wastewater, and Irrigation Quality (IQ) Systems
4 COND WAGO THRU BLOCK (feed through, 4 hole)	Data Flow Systems, Inc.	026-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
3 COND WAGO THRU BLOCK (feed through, 3 hole)	Data Flow Systems, Inc.	026-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 COND WAGO THRU BLOCK (feed through, 2 hole)	Data Flow Systems, Inc.	026-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (GREY)	Data Flow Systems, Inc.	026-0021	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (ORANGE)	Data Flow Systems, Inc.	026-0022	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO END STOP (Qty 50 in package)	Data Flow Systems, Inc.	026-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ADJACENT GREY	Data Flow Systems, Inc.	026-0034	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ALTERNATE GREY	Data Flow Systems, Inc.	026-0035	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 120VAC, SPDT	Data Flow Systems, Inc.	012-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 12VDC, SPDT	Data Flow Systems, Inc.	012-0064	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC RJ SLIM POWER RELAY BASE	Data Flow Systems, Inc.	012-0065	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 120 VAC COIL, DPDT (use 012-0019 base)	Data Flow Systems, Inc.	012-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 24 VDC COIL, DPDT (use 012-0019 base)	Data Flow Systems, Inc.	012-0023	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY BASE (NDS-8)	Data Flow Systems, Inc.	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
SNUBBER,0.lUF,47 OHM,1/2WATT	Data Flow Systems, Inc.	007-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
.375A, SLOW BLOW FUSE FOR TCU, 1.25"x.25"	Data Flow Systems, Inc.	040-0042	Water, Wastewater, and Irrigation Quality (IQ) Systems
WIN-RTU / PLC Test Kit- includes: (1) Resource CD, (1) RIM/ PLC Service Interface Cable (6'), (1) Serial Male to USB Male Adapter	Data Flow Systems, Inc.	DFS-00242-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU / PCU Test Kit - includes: (1) Resource CD, (1) TCU / PCU Service Interface Cable (6'), (1) Serial Male to USB Male Adapter	Data Flow Systems, Inc.	DFS-00242-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RETROFIT KIT, BIRD 4300-400 PEAK POWER (use with high speed TIM)	Data Flow Systems, Inc.	035-0037	Water, Wastewater, and Irrigation Quality (IQ) Systems
36" RG-58 cable w/BNC Connector (Watt Meter & Attenuator to radio)	Data Flow Systems, Inc.	DFS-00125-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIM/PLC Service Port Cable, 9-Pin Female "D" to PLC	Data Flow Systems, Inc.	DFS-00128-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7' TCU/PCU Service Port Cable, 9-Pin to Telephone Style	Data Flow Systems, Inc.	DFS-00128-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
GENDER CHANGER,25PIN FEMALE TO FEMALE	Data Flow Systems, Inc.	016-0020	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Panel Simulation Fixture (aka TCU Test Fixture/ TCU Demo Box)	Data Flow Systems, Inc.	DFS-00243-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTA209 -VHF (217-220 MHz) 9.2 db Yagi	Data Flow Systems, Inc.	DFS-00303-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
LAA217 - 217 MHz "0 dB" Grounded Antenna (Length: 68 inches)	Data Flow Systems, Inc.	DFS-00322-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA209 Dipole (4 lobes)- (217-220 MHz) (Telewave ANT220D6-9) - Assembled antenna cannot be shipped (requires DFS Delivery@ SQR) TOP-MOUNT ASSEMBLIES:DFS-00322-008-04: CTA209, 200MHZ, 9DB OFFSET (TOP) DFS-00322-008-07: CTA209, 200MHz, 9DB CARDIOID (20") (TOP) DFS-00322-008-11: CTA209, 200MHZ, 9DB BIDIRECTIONAL (TOP) SIDE-MOUNT ASSEMBLIES: DFS-00322-008-19: CTA209, 200MHz, 9DB OFFSET (SIDE) DFS-00322-008-20: CTA209, 200MHZ, 9DB CARDIOID (20") (SIDE) DFS-00322-008-21: CTA209,200MHZ, 9DB BIDIRECTIONAL (SIDE)	Data Flow Systems, Inc.	DFS-00322-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA206 Dipole (2 lobes)- (217-220 MHz) (Telewave ANT220D3) Assembled antenna cannot be shipped (requires DFS Delivery@ SQR)	Data Flow Systems, Inc.	DFS-00322-008-12 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA203 Dipole (1 lobe)-(217-220 MHz) (Telewave ANT220D)	Data Flow Systems, Inc.	005-0118 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Rubber Duck for 217-220 MHz - Antennex BEXB000BN NOTE: Connector type is BNC, may require a BNC to N-Type Adapter	Data Flow Systems, Inc.	005-0074	Water, Wastewater, and Irrigation Quality (IQ) Systems
BNC to N-Type Adapter (Female BNC to Male N-Type)	Data Flow Systems, Inc.	016-0059	Water, Wastewater, and Irrigation Quality (IQ) Systems
RF Pigtails (BNC to N-Type)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
811 RF Pigtail - (used in RTU202 and 204)	Data Flow Systems, Inc.	DFS-00125-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
20" RF Pigtail - (used in TAC Pack Enclosure)	Data Flow Systems, Inc.	DFS-00125-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
33" RF Pigtail - (used in RTU210)	Data Flow Systems, Inc.	DFS-00125-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
46" RF Pigtail - (used in large RTU panels & TCU control panels)	Data Flow Systems, Inc.	DFS-00125-008-12	Water, Wastewater, and Irrigation Quality (IQ) Systems
72" RF Pigtail - (used in large RTU panels & TCU control panels)	Data Flow Systems, Inc.	DFS-00125-008-18	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 Pre-assembled 23' with connectors	Data Flow Systems, Inc.	DFS-00316-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 (price per foot) LMR400-DB (500' Roll)	Data Flow Systems, Inc.	019-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 coax connectors (RFN-1006-3I) (crimp pin)	Data Flow Systems, Inc.	016-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 (price per foot) LMR600-DB	Data Flow Systems, Inc.	019-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
DFS RTC-600 N-Type Male coax connector (crimp pin) 3190-1268	Data Flow Systems, Inc.	016-0123	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 N-Type Female coax conn (unique, crimp pin) 3190-616	Data Flow Systems, Inc.	016-0147	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 9" coated SS cable tie (100 in bag)	Data Flow Systems, Inc.	020-0016	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 18" coated SS cable tie	Data Flow Systems, Inc.	020-0050	Water, Wastewater, and Irrigation Quality (IQ) Systems
1" Glue-Type Heat Shrink, LIST PRICE IS PER FOOT (comes in 4' lengths)	Data Flow Systems, Inc.	020-0001	Water, Wastewater, and Irrigation Quality (IQ) Systems
N-Type Barrel Connector (female-to-female)	Data Flow Systems, Inc.	016-0094	Water, Wastewater, and Irrigation Quality (IQ) Systems
Anatech Filter	Data Flow Systems, Inc.	005-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM00l) obsolete	Data Flow Systems, Inc.	DFS-00185-009-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM002)	Data Flow Systems, Inc.	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM00l) obsolete	Data Flow Systems, Inc.	DFS-00108-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Data Flow Systems, Inc.	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Data Flow Systems, Inc.	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00101-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM002) (obsolete)	Data Flow Systems, Inc.	DFS-00211-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Digital Control Module (DCM003-01, -03, -OS)	Data Flow Systems, Inc.	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-02, -04, -06)	Data Flow Systems, Inc.	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00100-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM002) (obsolete)	Data Flow Systems, Inc.	DFS-00285-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Data Flow Systems, Inc.	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM002, S0w) (obsolete)	Data Flow Systems, Inc.	DFS-00209-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, l00W)	Data Flow Systems, Inc.	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00260-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Data Flow Systems, Inc.	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC00l)	Data Flow Systems, Inc.	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC033)	Data Flow Systems, Inc.	DFS-00507-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC800) w/PMT	Data Flow Systems, Inc.	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-XX) (all versions)	Data Flow Systems, Inc.	DFS-00279-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane (all versions)	Data Flow Systems, Inc.	DFS-00348-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems

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RIM006 Module (no radio)	Data Flow Systems, Inc.	DFS-00295-008-26	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007 Board-Only (no radio, all TIM007 versions)	Data Flow Systems, Inc.	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Back Pack Radio (BPR) Board-Set (no radio)	Data Flow Systems, Inc.	DFS-00264-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01, -02, 217-220 2W Radio (for TIM or TCU)	Data Flow Systems, Inc.	024-0040	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-03, 450-470 2W Radio (for TIM or TCU)	Data Flow Systems, Inc.	024-0042	Water, Wastewater, and Irrigation Quality (IQ) Systems
Integrated Network Adapter (for TCU00I-IP)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
Integrated Network Adapter (for TCU800-IP)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
Pump Control Unit (PCU00I) (no radio)	Data Flow Systems, Inc.	DFS-00219-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00I) (no radio,IP,AD,C)	Data Flow Systems, Inc.	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU800) (no radio,IP,AD,C)	Data Flow Systems, Inc.	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module - (NIM00I)	Data Flow Systems, Inc.	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module - (SIM00I)	Data Flow Systems, Inc.	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM00I)	Data Flow Systems, Inc.	DFS-00375-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00I-10/100)	Data Flow Systems, Inc.	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Network Fiber Module- (NFM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module-HSM003 (STANDARD REPAIR)	Data Flow Systems, Inc.	DFS-00525-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE DRIVE - REPAIR ADDER)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE PROCESSOR- REPAIR ADDER)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-128 Input/ Output Device	Data Flow Systems, Inc.	DFS-00398-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-032 Input/ Output Device	Data Flow Systems, Inc.	DFS-00408-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS Hybrid Biological Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM Carbon Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
LOPRO Chemical Scrubber Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
BTF Bio-trickling Odor Control Scrubbers	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide Plus 71	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide AE	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Odophos	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Odophos Plus	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Ferric Sulfate (9%)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
50% Hydrogen Peroxide	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VX-456 (Bulk Tanker)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VX-456 (Tote)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Aktivox (Full Truck)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Aktivox (Partial Load)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Perox Pus	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Alkaqen AO	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-30 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-42 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-54 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-4000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-5000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems

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ZABOCS-6000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7010	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7012	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7015	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7018	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7020	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7025	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-8025	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0150	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0200	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0250	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0300	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0350	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems

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RJMC-0400	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0450	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0500	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb P60 Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb P60 Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb 36C Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb 36C Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS C20 (coconut based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS C30 (coconut based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM (coal based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM (coal based) Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Biofilter Nutrient 8-2-8 (5-Drum Quantity)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Biofilter Nutrient 8-2-8 (5-Gallon Minimum)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioglas Media	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Acrulog 0-50 ppm Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acrulog 0-200 ppm Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq 0-1000 ppm Loqqer	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
LRSS-2 Sampling System	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Sinqle Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Two Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Three Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
DiCom Perimeter Monitor	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Differential Pressure Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq IPX Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq PPB Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Dilution Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloa NH3 Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Shelter	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Calibration Gas Kit	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Rotork valve actuators, replacement parts and repair services	Fluid Control Specialties, LLC (Rotork)		Water, Wastewater, and Irrigation Quality (IQ) Systems
Process & Lab instruments & accessories	Hach Company		Equipment, Chemicals, & Services
Chemistries, reagents, and solutions	Hach Company		Equipment, Chemicals, & Services
Service contracts	Hach Company		Equipment, Chemicals, & Services
Hach Samplers	Hach Company		Equipment, Chemicals, & Services
Belt Filter Press equipment, parts and services	Komline- Sanderson		Wastewater Systems
MTOL+ IR 0-100 AUTO CLN	Lazenby & Associates	28052	Water, Wastewater, and Irrigation Quality (IQ) Systems
MTOL+ WL 0-100 AUTO CLN	Lazenby & Associates	28053	Water, Wastewater, and Irrigation Quality (IQ) Systems
FLOW THRU ASSY, MICRO 200/M-TOL	Lazenby & Associates	50125	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP ASSY I/R MTOL	Lazenby & Associates	21396S	Water, Wastewater, and Irrigation Quality (IQ) Systems
DESICCANT REFILL FOR MTOL/M200	Lazenby & Associates	21555R	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP ASSY WT/LT MTOL	Lazenby & Associates	24082S	Water, Wastewater, and Irrigation Quality (IQ) Systems
STILLING CHAMBER	Lazenby & Associates	20106	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE AUTO CLN TOL3 & 4	Lazenby & Associates	24166S	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
KIT TUBING, VALVE, FTGS M200TOL	Lazenby & Associates	21062	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL KIT.02,1,10 NTU MTOL LR	Lazenby & Associates	H-39950	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL KIT.02,10,100 NTU TOL3 H/P	Lazenby & Associates	39953	Water, Wastewater, and Irrigation Quality (IQ) Systems
CALKIT 02,10,1000 M100/TOL H/P	Lazenby & Associates	39957	Water, Wastewater, and Irrigation Quality (IQ) Systems
PRESSURE REGULATOR MTOL	Lazenby & Associates	24306S	Water, Wastewater, and Irrigation Quality (IQ) Systems
KIT MTOL+ EASY MOUNT ADAPTER PLATE	Lazenby & Associates	28157	Water, Wastewater, and Irrigation Quality (IQ) Systems
O-RING & SEAL KIT	Lazenby & Associates	28168S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE FLOW THRU 28MM 3/PK	Lazenby & Associates	50036	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPANNER WRENCH	Lazenby & Associates	50122S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CORD POWER SET OF 2 120/240V	Lazenby & Associates	20779S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT JCT BOX POWER SUPL	Lazenby & Associates	24017S	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC SERVICE MODULE MTOL+ WL	Lazenby & Associates	02853	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC SERVICE MODULE MTOL+ IR	Lazenby & Associates	02852	Water, Wastewater, and Irrigation Quality (IQ) Systems
KEYPAD KIT	Lazenby & Associates	29240S	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
M100+ WL LAB TURBIDIMETER 0-4000	Lazenby & Associates	28060	Water, Wastewater, and Irrigation Quality (IQ) Systems
M100+ IR LAB TURBIDIMETER 0-4000	Lazenby & Associates	28061	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProCal Calibration Kit (0-4000 NTU), W/L	Lazenby & Associates	39940	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProCal Calibration Kit (0-4000 NTU), IR	Lazenby & Associates	39941	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT LAMP ASSEMBLY, W/L	Lazenby & Associates	24082S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT LAMP ASSEMBLY, IR	Lazenby & Associates	21396S	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP MD FOR MICRO 100/1000 WL	Lazenby & Associates	19972	Water, Wastewater, and Irrigation Quality (IQ) Systems
KIT TUBING, VALVE, FTGS M200TOL	Lazenby & Associates	21062	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE SAMPLE 28MM 3/PK	Lazenby & Associates	50051	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE SAMPLE 28MM 10/PK	Lazenby & Associates	50052	Water, Wastewater, and Irrigation Quality (IQ) Systems
Kit, Formazin Stock Solution	Lazenby & Associates	50040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 1LT HF PRIMARY	Lazenby & Associates	53070	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 125ML HF PRIMARY	Lazenby & Associates	53090	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 1LT HF PRIMARY	Lazenby & Associates	53030	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
STD, 4 NTU 1LT HF PRIMARY	Lazenby & Associates	53040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.5 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53120	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53130	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 125ML HF PRIMARY	Lazenby & Associates	53140	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.1 NTU 125ML HF PRIMARY	Lazenby & Associates	53380	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 5.0 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53420	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD, 10 NTU 1LT HF PRIMARY	Lazenby & Associates	53000	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 1LT HF PRIMARY	Lazenby & Associates	53030	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 4 NTU 1LT HF PRIMARY	Lazenby & Associates	53040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 1LT HF PRIMARY	Lazenby & Associates	53050	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 20 NTU 1LT HF PRIMARY	Lazenby & Associates	53060	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 1LT HF PRIMARY	Lazenby & Associates	53070	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 1LT HF PRIMARY	Lazenby & Associates	53080	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.5 NTU 1LT HF PRIMARY	Lazenby & Associates	53170	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
STD, 5.0 NTU 1LT HF PRIMARY	Lazenby & Associates	53180	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 500ML HF PRIMARY	Lazenby & Associates	53240	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 2.0 NTU 500ML HF PRIMARY	Lazenby & Associates	53250	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 10 NTU 500ML HF PRIMARY	Lazenby & Associates	53260	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 50 NTU 1 LITER HF PRIMARY	Lazenby & Associates	53280	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.02 NTU 1GL HF PRIMARY	Lazenby & Associates	53290	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 10 NTU 1GL HF PRIMARY	Lazenby & Associates	53300	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 1GL HF PRIMARY	Lazenby & Associates	53310	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 500ML HF PRIM	Lazenby & Associates	53340	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 20 NTU 1GL HF PRIMARY	Lazenby & Associates	53370	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 500ML HF PRIM	Lazenby & Associates	53390	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 500ML HF PRIM	Lazenby & Associates	53400	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD.10000NTU WL HF PRO CAL	Lazenby & Associates	39938	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD.10000NTU IR HF PRO CAL	Lazenby & Associates	39939	Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
CAL STANDARD 4000 NTU PRO CAL	Lazenby & Associates	53410	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD 100 NTU, 125ML HF PRIMARY	Lazenby & Associates	39824	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD 10 NTU, 125ML HF PRIMARY	Lazenby & Associates	39825	Water, Wastewater, and Irrigation Quality (IQ) Systems
39845+M-TPW PORTABLE TURB W	Lazenby & Associates	20000	Water, Wastewater, and Irrigation Quality (IQ) Systems
39845+M-TPI PORTABLE TURB	Lazenby & Associates	20008	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE MICROTPI 3 PK	Lazenby & Associates	19856	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL SET POCKET TPI/TPW HF POL	Lazenby & Associates	39845	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL3 IR	Lazenby & Associates	02056	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL4 W/L	Lazenby & Associates	02063	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL 5 W/L	Lazenby & Associates	04060	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPANNER WRENCH	Lazenby & Associates	50122S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE STAND	Lazenby & Associates	19981	Water, Wastewater, and Irrigation Quality (IQ) Systems
CORD POWER SET OF 2 120/240V	Lazenby & Associates	20779S	Water, Wastewater, and Irrigation Quality (IQ) Systems
TUBING,BLK TYG R3400 50FT ROLL	Lazenby & Associates	21201S	Water, Wastewater, and Irrigation Quality (IQ) Systems

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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
LAMP MODULE IR M100	Lazenby & Associates	22423S	Water, Wastewater, and Irrigation Quality (IQ) Systems
FLOW THRU ASSY NYLON TOL/ACCUV	Lazenby & Associates	24165S	Water, Wastewater, and Irrigation Quality (IQ) Systems
PRESSURE REGULATOR MTOL	Lazenby & Associates	24306S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT JCT BOX POWER SUPL	Lazenby & Associates	24017S	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP MD FOR MICRO 1000 IR	Lazenby & Associates	24547S	Water, Wastewater, and Irrigation Quality (IQ) Systems
DETECTOR ASSY LAMP TOL REPLACE	Lazenby & Associates	28332S	Water, Wastewater, and Irrigation Quality (IQ) Systems
PLC Hardware - ControlLogix, CompactLogix	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Micro Control System	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
I/O Devices	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Operator Interface- Panelview Plus, Versa views, Power monitors, Optix, ASEM Cmptrs & Mntrs	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Monitoring Equipment	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Low Voltage Drives & Medium Voltage Drive Parts	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Industrial Controls	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Ethernet Switches Stratix Family	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems

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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
Drives & Accessories	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
End of Life Products (EOL)	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Software	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Custom Support Services & Equipment	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Refrigerated Autosampler Products and Services	Teledyne ISCO		Wastewater Systems
67 l 2FR Refrigerated Sampler (120 V AC, 60 Hz).	Teledyne ISCO	68-6710-072	Wastewater Systems
1-bottle Configuration.	Teledyne ISCO	68-6700-038	Wastewater Systems
3/8-inch ID x 25 ft. long vinyl suction line with standard weighted polypropylene strainer. Includes tubing coupler.	Teledyne ISCO	60-9004-379	Wastewater Systems
Temperature Sensor	Teledyne ISCO	60-9004-226	Wastewater Systems
Evaporator Sensor	Teledyne ISCO	60-9004-240	Wastewater Systems
BLZZRD Package with 14 x 950ml poly bottle configuration and 3/8-inch ID x 25 ft. long vinyl suction line standard weighted polypropylene strainer	Teledyne ISCO	68-2960-028	Wastewater Systems
BLZZRD 14-bottle configuration. Includes 14 polypropylene 950-mL bottles with caps, two discharge tubes, bottle carrier and adapter.	Teledyne ISCO	68-2960-020	Wastewater Systems

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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
BLZZRD 2.5-gal (IO liter) glass bottle with PTFE lined caps	Teledyne ISCO	68-2960-021	Wastewater Systems
2.5-gallon (9.5-liter) glass round bottle with PTFE lined cap	Teledyne ISCO	68-2700-005	Wastewater Systems
BLZZRD Mobility Kit	Teledyne ISCO	60-2974-048	Wastewater Systems
3/8-inch vinyl suction line - 500 ft.	Teledyne ISCO	68-1680-059	Wastewater Systems
Discharge tubing for 5800/4700 and 6700 Series/Avalanche Sampler, pump tubing for 3800 series, GLS, and Glacier Samplers	Teledyne ISCO	60-6700-047	Wastewater Systems
Tubing coupler, 3/8 inch. One-piece, clampless coupler made of stainless steel.	Teledyne ISCO	60-3709-002	Wastewater Systems
3/8-inch stainless steel strainer, low flow.	Teledyne ISCO	69-2903-138	Wastewater Systems
Distributer arm	Teledyne ISCO	60-2974-025	Wastewater Systems
Model 913 High-Capacity Power Pack. Converts 120 V AC, 50/60 Hz to 12 VDC	Teledyne ISCO	60-1684-088	Wastewater Systems
Model 934 Nickel-Cadmium Battery. Rechargeable, 12 VDC, 4 amp-hours	Teledyne ISCO	60-1684-040	Wastewater Systems
Flygt Pumps	Xylem Water Solutions U.S.A.		Wastewater Systems
Flygt Parts	Xylem Water Solutions U.S.A.		Wastewater Systems

Approved Backflow Devices

VENDOR	SIZE	MODEL NO.	TYPE	USE
Ames / Watts	3/4" - 2"	LF4000B / LF009	RP	Residential or commercial potable water locations
Watts	3/4" - 2"	LF919	RP	Residential or commercial potable water locations
Wilkins	3/4" - 2"	975XL	RP	Residential or commercial potable water locations
Ames / Watts	2.5" - 10"	C400 / 957	RP	Large size meter - potable water for commercial or residential applications
Watts	2.5" - 10"	LF909	RP	Large size meter - potable water for commercial or residential applications
Wilkins	2.5" - 10"	375 or 375AST	RP	Large size meter - potable water for commercial or residential applications
Ames	3/4" - 2"	LF4000B	RP	Combo services: fire and domestic lines
Watts	3/4" - 2"	LF009	RP	Combo services: fire and domestic lines
Wilkins	3/4" - 2"	975XL	RP	Combo services: fire and domestic lines
Ames Colt	2.5" - 10"	C400 (w/OSY)	RP	Combo services: fire and domestic lines
Watts	2.5" - 10"	LF909 (w/OSY)	RP	Combo services: fire and domestic lines
Wilkins	2.5" - 10"	375 or 375AST (w/OSY)	RP	Combo services: fire and domestic lines
Ames	2"	3000B	DCDA	Fire Lines - Standard
Watts	2" - 3"	007DCDA	DCDA	Fire Lines - Standard
Wilkins	2"	950XLTDA	DCDA	Fire Lines - Standard
Ames	2.5" - 10"	C300/M300	DCDA	Fire Lines - Standard
Watts	3" - 10"	709DCDA	DCDA	Fire Lines - Standard
Wilkins	2.5" - 12"	350DA or 350ASTDA	DCDA	Fire Lines - Standard
Wilkins	4" - 10"	450DA or 450STDA (N-Shape)	DCDA	Fire Lines - Standard

Note: All fire line Backflow Devices shall be UL or FM approved for fire service installation. Above is a small list, others may be used if requirements are met and information is provided

Collier County

Appendix H

Basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water

1. Property & Customer Information

Property Owner Name:	Date:
Mailing Address:	Phone Number:
Service Address:	Email Address:
Section_____Township_____Range_____	Folio (Parcel) Number:
Total Property Acres:	Acres irrigated by IQ Water only:

2. Irrigation Information

Total Number of Zones:

Each Zones Gallons per Minute-Use another sheet if necessary		
Zone1 =	Zone 6 =	Zone 11 =
Zone 2 =	Zone 7 =	Zone 12 =
Zone 3 =	Zone 8 =	Zone 13 =
Zone 4 =	Zone 9 =	Zone 14 =
Zone 5 =	Zone 10 =	Zone 15 =
Maximum number of zones running at once =		

3. Do you have a backflow prevention device installed on your potable (drinking) water line?

Yes	No	Unknown

4. For what purpose are you using IQ Water? Please select all that apply.

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)
	Single Family Home landscape irrigation
	Cooling Tower
	Other, please specify_____

5. How many total individual dwelling units will this serve? Please enter a number or N/A. A single family home = 1, a condo with 20 units = 20

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)

6. What is your estimated average and maximum IQ Water usage in gallons per day?

_____

I,_____, (property owner) have read, understand, and shall abide Collier County Ordinance, No. 2013-48 as amended; Collier County Ordinance No. 1997-33, as amended; Ordinance No. 2001-73, as amended, the Federal, State, and local laws, rules, and regulations that pertain to the use of IQ Water.

I understand that due to the composition of IQ water, it may not be suitable for the irrigation of certain susceptible vegetation, and I agree that the District will not be held liable for damages that may occur to susceptible vegetation or any damages that may occur due to the uses of IQ Water, and agree to defend and hold harmless the Collier County Water-Sewer District (District) from all claims and judgments arising therefrom against the District by any person. It is further agreed that submission of this application does not ensure IQ water delivery and the Owner further agrees that the County shall not be liable to the Owner for any damages or expenses incurred by the Owner as a result of the District's failure to deliver IQ Water.

It is further agreed that District employees or authorized agents shall have the right to enter the applicant's property served by the District with IQ Water to inspect the IQ Water System and shall have the right to discontinue IQ Water service should any infraction exist.

Sign and return the completed application, an 8.5"X11" drawing of property detailing desired meter location, and the Legal Property Description to: Reuse Manager, 4370 Mercantile Ave, Naples, FL 34104.

Printed Name:_____Signed:_____Date:_____

Frequently Asked Questions

1. Where can I find the applicable Ordinances? **www.municode.com**
2. Where can I find my Legal Property Description? On your deed which may be found at **www.collierappraiser.com**
3. Where can I find applicable State laws regarding IQ/reclaimed water? **www.dep.state.fl.us/water/reuse**
4. Where do I find billing information? **www.colliercountyfl.gov**
5. How do I report IQ water, potable water, or sewer issues? **Call (239) 252-2600 for IQ water and wastewater and (239) 252-6245 for potable water.**
6. What are irrigated acres? **The acres that are irrigated, you can calculate irrigated acres by subtracting non irrigated areas such as ponds, mulched areas, etc; from the site's pervious acres.**

For District Use Only

Service Level:	Bulk	Pressurized	Pressurized & Distributed
User Type:	Major User	Basic User	
Base Charge:	Allocation Based	Meter Based Charge	

Peak GPM for proposed system_____ Minimum Meter Size Required_____
Existing Service Tap/Tap Fee $_____ Existing Customer_____
Meter Hang Fee $_____ Total Fees $_____
Approved by:_____ Date:_____
Notes:_____
_____
_____

RESOLUTION NO. 2025 - _____

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF COLLIER COUNTY, FLORIDA, AS THE GOVERNING BODY OF COLLIER COUNTY, FLORIDA AND EX-OFFICIO GOVERNING BOARD OF THE COLLIER COUNTY WATER-SEWER DISTRICT, APPROVING AMENDMENTS TO THE COLLIER COUNTY WATER-SEWER DISTRICT'S UTILITIES STANDARDS MANUAL, WHICH IS AN INTEGRAL PART OF COLLIER COUNTY ORDINANCE NO. 2004-31, AS AMENDED, KNOWN AS THE COLLIER COUNTY UTILITIES STANDARDS AND PROCEDURES ORDINANCE, WHICH IS CODIFIED IN CHAPTER 134, ARTICLE III OF THE CODE OF LAWS AND ORDINANCES; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, on May 11, 2004, as Agenda Item No. 8.D, the Board of County Commissioners as the Ex Officio Governing Board of the Water-Sewer District ("Board") concurrently adopted Collier County Ordinance No. 2004-31, entitled the Collier County Utilities Standards and Procedures Ordinance (the "Ordinance"), and the Collier County Water-Sewer District Utilities Standards Manual ("Manual"), including all of the Manual's exhibits, and

WHEREAS Ordinance No. 2004-31 is codified in Chapter 134, Article III of the Collier County Code of Laws and Ordinances; and

WHEREAS, since the 2004 adoption of the Manual it has become necessary to make updates that reflect current standards in design and preparation of plans and specifications for all utilities construction projects; and

WHEREAS, after input from stakeholders, staff has recommended that the Board adopt this Resolution to approve amendments to the Manual as identified in the attached Exhibit "A"; and

WHEREAS, Section 134-61 of the Code of Laws and Ordinances requires the Manual to be amended by Resolution of the Board under the scheduled public hearings or the summary agenda section; and

WHEREAS, it is in the interest of the health, safety, and welfare that this Resolution be adopted.

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NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF COLLIER COUNTY, FLORIDA, AS THE GOVERNING BODY OF COLLIER COUNTY, FLORIDA AND EX-OFFICIO GOVERNING BOARD OF THE COLLIER COUNTY WATER-SEWER DISTRICT, that:

The amendment of the Collier County Water-Sewer District Utilities Standards Manual as provided in attached Exhibit "A" is hereby approved and shall immediately take effect.

This Resolution adopted after motion, second and majority vote, this 14th day of January 2025.

BOARD OF COUNTY COMMISSIONERS
COLLIER COUNTY, FLORIDA, AS THE GOVERNING BODY OF COLLIER COUNTY, FLORIDA AND EX-OFFICIO GOVERNING BOARD OF THE COLLIER COUNTY WATER-SEWER DISTRICT

ATTEST:
CRYSTAL K. KINZEL, CLERK

By: _____
Deputy Clerk

By: _____
Burt L. Saunders, Chairman

Approved as to Form and Legality:

_____
Derek D. Perry
Assistant County Attorney

Attendance Roster – Date: October 29, 2024

DSAC – Utilities Subcommittee

Must have (3) members for a quorum

Committee Members	
Name	**Signature**
Blair Foley:	
Mario Valle:	
Chris Mitchell:	
John English:	

Staff Members	
Matthew McLean, Public Utilities, Division Director	
Derek Perry, Assistant County Attorney	
Anthony Stolts, Public Utilities, Supervisor – Project Management	
Drew Cody Public Utilities, Supervisor – Project Management	
Stephen Sarabia, Public Utilities, Project Manager II	
Claudia Vargas, Public Utilities, Project Manager I	
Jesse Komorny, Public Utilities, Manager – Meter Services	
Rey Torres Fuentes, Operations Support Specialist I	

Attendance Roster – Date: October 29, 2024

DSAC – Utilities Subcommittee

Public Sign-in Sheet

Please Print

NAME	REPRESENTING	PHONE NO.
Jared Mellein – Consultant	Bowman Engineering	239- 254-2000
David Schmitt – Consultant	Bowman Engineering	239-254-2000
MARIO VALE-DSAC	DSAC	

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
Section 1 – Design Criteria				
1	3.3	Wastewater pump stations	Revised section 3.3 Wastewater Pump Stations. Added section 3.3.1 Private Pump Stations.	None
Section 2 - Ordinances				
2	Sec. 134-60(e)	Utilities conveyance policies and procedures	Revision made to section clarifying minimum bacteriological test time for different sizes of water mains being placed in service.	None
3	Sec. 134-57(c)	Policies and standards	Scrivener's error. Changed sub-title of Sec. 134-57 (g) to (c).	None
4	Sec. 134-57(e)	Utility Easement	Revised language to indicate privately owned utilities are not allowed within a CUE.	None
Section 3 - Technical Specifications				
5	Introduction		Added third paragraph to 'introduction' explaining PE responsibilities.	None
6	017839	Project Record Drawings	Added notes m and n to part (3.2 B.6) identifying that m) meter boxes and n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric ad communication cables shall be depicted from source to County asset found in associated rights-of-way and utility easements be included on record drawings.	None
7	221336	Diesel Backup Pump	Add sections 1.1 B, 2.5A, and 2.5B on platform requirements.	$10,000 - $30,000 Depending on site
8	263213.13	Standby Diesel Generators	Add sections 1.01.A.12, 2.05A, 2.05B, and 2.05C on platform requirements.	$10,000 - $30,000 Depending on site

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
9	330518	Laying and jointing buried pipelines	Changed language in Part 3.2 A.2. to increase vertical dip tolerance from 1.5" to 1.0".	None
10	331619	Hydrants	Revised section 3.1 A to indicate that hydrant clearance shall be based upon manufacturers recommendations.	None
11	312316	Excavation – Earth and Rock	Revised section 1.4 Site Conditions (C.2 and C.3). Inserted new sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
12	020500	Connections to existing systems	Revised section 1.3 General Requirements (F.2 and F.3). Inserted new sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
13	330502	High Density Polyethylene (HDPE) Pipe and Fittings	Revised section 2.1A eliminating PE3408 and added PE4710. Revised section 2.1F eliminating PE3408 and added PE4710. Removed cell classification 345434C and 345434E and added cell classifications 445574C and 445574E.	None
14	333200	Pump Stations	Added language to 1.1 SCOPE OF WORK 'FOR COUNTY PUMP STATIONS'. Added language to 1.1.A. This section includes the following items for 'COUNTY owned and operated pump stations:'	None
15	333200	Pump Stations	Add section 1.2 'Scope of work for Private Grinder Pump Stations	None
16	333200	Pump Stations	Add language to 1.1F to include gates.	None
17	333200	Pump Stations	Added communications (1.1G.) note requesting letter of availability	None
18	333200	Pump Stations	Add sections 1.1 H, 2.1 R, and 2.1 S on platform requirements.	$10,000 - $30,000 Depending on site

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
19	333200	Pump Stations	Add 'For County Pump Stations' to section 2.1 heading.	None
20	333200	Pump Stations	Revised section 2.1 J. Added language for 2-Watt digital radio. Added pump controller type to be utilized.	$15,000 approx. cost to install fiber at a pump station
21	333200	Pump Stations	Added section 2.2 'Materials for Private Pump Stations'. Added section 3.1 'Installation'.	None
22	409500	Fiber-Optic Communication Standards	New Fiber-Optic Communication Standards (a detailed electrical review has not been performed for this draft).	None
Section 4 - Utilities Detail Drawings				
23	G-10	Pipe Restraint Schedule	The detail was modified to include a restrained pipe length table for vertical bends.	None
24	W-3	Fire Hydrant Detail	Replaced FH connection point range (MIN 18", MAX 24") with note 'Height of the hydrant was set based upon manufacturers recommendation'.	None
25	W-3	Fire Hydrant Detail	Added distance from EOP/Curb to fire hydrant based on rural or urban area.	None
26	W-6	Permanent Bacterial Sample Point Detail	Brass models added to approved product list. Stainless steel removed.	Potential cost savings
27	W-12	Typical short and long side water service meter setting detail for connection to water main	Temporary construction fence graphic added around the water meter boxes, with note referencing 'Note 8' on Detail W-12A. Revised meter callout to 'AMI/AMR meter'.	$200/installation
28	W-12A	Service connection sizing chart and notes	Added note # 8 to Equipment Specifications, calling out temporary construction fence installation.	$200/installation

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
29	W-13	3” and over potable water meter assembly detail	Added note # 9 to Equipment Specifications including maintenance access in County CUE or R/W.	None
30	W-14	4” and over potable water fire and domestic meter assembly detail	Added note #10 to Equipment Specifications including maintenance access in County CUE or R/W.	None
31	WW-3	Precast reinforced concrete manhole detail	Removed rebar callouts on MH side and base slab. Replaced with ASTM callouts. Added min slab thicknesses notes.	None
32	WW-4	Shallow manhole detail	Removed rebar callouts on MH side and base slab. Replaced with ASTM callouts. Added min slab thicknesses notes.	None
33	WW-5	Drop manhole detail	Removed rebar callouts on MH side and base slab. Replaced with ASTM callouts. Added min slab thicknesses notes.	None
34	WW-6	Manhole ring and cover detail	Updated new required manhole dimensions.	None
35	WW-6	Manhole ring and cover detail	Added note to call out for ring and cover models.	None
36	WW-7	Pump Station Detail - Profile	Note # 3 for access door was modified by adding, ‘(Opposite discharge piping)’.	None
37	WW-7	Pump Station Detail - Profile	Note # 4 was modified by adding the sentence ‘No spacers permitted between check and plug valves’.	None
38	WW-7	Pump Station Detail - Profile	Note # 7 was modified by adding the sentence ‘RAM-NEK may be used lieu of o-ring rubber gaskets (see specification section 034100)’.	None
39	WW-7	Pump Station Detail - Profile	Note #7 was modified by adding the sentence, ‘Pump Station wetwell shall be designed by a Florida Professional Engineer and signed and sealed shop drawings shall be submitted.’	None. Already a requirement

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
40	WW-7	Pump Station Detail - Profile	Note # 8 was modified by adding the text 'with external weight/lever'.	None
41	WW-7	Pump Station Detail - Profile	Added reference to plan sheets under profile callout 'Section A-A'.	None
42	WW-7	Pump Station Detail - Profile	Removed rebar callouts for base slab and top slab. Added note, 'Wall reinforcing per ASTM C-478. Added note, 'Top slab, 8" min thickness'. Revised footer dimension to 'A+32" min'.	None
43	WW-7D	Private Grinder Pump Station Detail	Detail to be added to current County detail set.	None
44	WW-8	Pump Station Detail - Plan	Note # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
45	WW-8	Pump Station Detail - Plan	Note # 8 was modified by adding the text "with external weight/lever".	None
46	WW-8	Pump Station Detail - Plan	Note # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
47	WW-8	Pump Station Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top.	Potential cost savings
48	WW-8	Pump Station Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
49	WW-8	Pump Station Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
50	WW-8A	Community Pump Station with Generator Detail - Plan	Note # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
51	WW-8A	Community Pump Station with Generator Detail - Plan	Note # 7 was added: "Fiber-optic handhole: See technical details specification 409500, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install fiber at a pump station
52	WW-8A	Community Pump Station with Generator Detail - Plan	Note # 8 was modified by adding the text "with external weight/lever".	None
53	WW-8A	Community Pump Station with Generator Detail - Plan	Note # 10 was added: "IT telecommunications panel: See technical specification 409500 and detail G-12, where applicable". IT telecommunications graphic added to the detail.	$15,000 approx. cost to install fiber at a pump station
54	WW-8A	Community Pump Station with Generator Detail - Plan	Note # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
55	WW-8A	Community Pump Station with Generator Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top.	Potential cost savings
56	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
57	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
58	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note # 2 was added: "Fiber-optic handhole: See technical details specification 409500, where applicable".	$15,000 approx. cost to install fiber at a pump station

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
59	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note # 4 was modified by adding the sentence “No spacers permitted between check and plug valves”.	None
60	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note # 7 was added: “Fiber-optic handhole: See technical details specification 409500, where applicable”. Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install fiber at a pump station
61	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note # 8 was modified by adding the text “with external weight/lever”.	None
62	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note # 14 was modified by adding the sentence “Single door panels to open away from wetwell”.	None
64	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt.	Potential cost savings
65	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	An additional concrete post was added to the control panel.	Approx. $500
66	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to Dimension Table, ‘(To be completed by EOR)’.	None
67	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
68	WW-9	Pump Station Control Panel Detail	Note # 3 was modified by adding the sentence “Single door panels to open away from wetwell”.	None
69	WW-9	Pump Station Control Panel Detail	Added callout to detail: ‘Square D Powerblocks to be installed in j-box’.	$50/pump station
70	WW-9	Pump Station Control Panel Detail	Note # 9 was added: “Side panel penetrations are acceptable with the use of Myers Hubs”.	$250.00/Hub (Only used when necessary)

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
71	WW-9	Pump Station Control Panel Detail	Note # 10 was added: “Phase monitor to be installed parallel with FPL meter (on FPL side)”.	$100-$350/Monitor (Prices vary with voltages)
72	WW-9	Pump Station Control Panel Detail	Note # 11 was added: “CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings”.	$50/pump station
73	WW-9	Pump Station Control Panel Detail	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”.	None
74	WW-9	Pump Station Control Panel Detail	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workman like manor”.	None
75	WW-9	Pump Station Control Panel Detail	Pump controls conduit graphic brought forward ‘in front of’ panel controls conduit on detail.	None
76	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 3 was modified by adding the sentence “Single door panels to open away from wetwell”.	None
77	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	An additional concrete post graphic was added to the panel.	None
78	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Added callout to detail: ‘Square D Powerblocks to be utilized in j-box’.	$50/pump station
79	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 8 was added: “Side panel penetrations are acceptable with the use of Myers Hubs”	$250.00/Hub (Only used when necessary)

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
80	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 9 was added: “Phase monitor to be installed parallel with FPL meter (on FPL side)”.	$100-$350/Monitor (Prices vary with voltages)
81	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 10 was added: “CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings”.	$50/pump station
82	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
83	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
84	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workman like manor”.	None
85	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Pump controls conduit graphic brought forward ‘in front of’ panel controls conduit on detail.	None
86	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 3 was modified by adding the sentence “Single door panels to open away from wetwell”.	None

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Item	Sub-Section I Detail		Revision Summary	Fiscal Impact to Developer (Approx.)
87	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	An additional concrete post graphic was added to the panel.	None
88	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Added callout to detail: 'Square D Powerblocks to be utilized in j-box'.	$50/pump station
89	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 8 was added: "Side panel penetrations are acceptable with the use of Myers Hubs"	$250.00/Hub (Only used when necessary)
90	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 9 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
91	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 10 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station
92	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 11 was added: "Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage".	Fire Extinguisher Class C – Approx. $500

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93	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
94	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workman like manor”.	None
95	G-12	IT Fiber-Optic Telecommunications	New Detail	$15,000 approx. cost to install fiber at a pump station
96	Various Details – Title Block Addition		Collier County title block added to details: G-1, G-4, G-5, G-6, G-10, NP-E1, NP-E2, NP-E3, NP-E4, NP-E5, NP-E6, NP-E7, NP-E8, NP-E9, W-5, W-6, W-11A, W-16, WW-1, WW-4, WW-5, WW-6, WW-10, WW-15, WW-16, WW-17, WW-18, WW-18A.	None
Section 5 – Appendices				
97	Appendix B	Water Meter Sizing Form	The demand range table on the Water meter sizing form (pg.1) was updated and taken from AWWA M22 Table 6-1 (Third Edition). The flow ranges for 3/4", 1”, 1 ½”, and 2” meter sizes are flow ranges for positive displacement meters. The flow ranges for 3”, 4”, 6”, 8” and 10” meter sizes are flow ranges for turbine class II meters. (This table can vary depending on meter type). The fixture flow value worksheet (pg.2) was updated and taken from the Florida Building Code (2023 Edition).	None
98	Appendix F	Approved Products List	• Appendix F was revised to include new products that are to be placed on the approved product list.	None

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99	Appendix G	Approved Backflow Devices	• Added LF to models that are used in residential service and available in both Lead Free and Not Lead Free • Changed 4000B-LBV (less ball valve) to 4000B so all models in that section are comparable and include ball valves • Deleted 4000B-FP since it is not available lead free and this section serves residential requiring lead free • Deleted OSY on 975XL since it is not available lead free – All models in that section would include ball valves – No one offers a lead free ¾" – 2" OSY valve • Changed Wilkins model number to include bypass 950XLTDA – All models in this section are not lead free since these are dedicated Fire Lines – This is allowable – All models shown are standard w/OSY valves • Added large diameter stainless models	None
100	Appendix H	IQ User Application and Agreement	Basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water	None

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DESIGN CRITERIA

Minimum cover for force mains shall be 30 inches. Maximum cover shall be 48 inches after final project grading is complete except when dipping under conflicts in which case the force main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less. The design engineer shall strive to minimize the number and frequency of dips (maintaining a horizontal run line through intermittent grade changes, by deviation). An air release valve is required at all dips. Engineers should evaluate possibilities of lowering storm drainage piping or dipping potable water and non-potable irrigation water main to avoid dips in the force main.

When force mains are interconnected with a gravity sewer system, for transmission purposes through that system, interconnection shall be as shown in the Utility Standard Drawings. No force main laterals shall be core bored into manholes.

3.2.3 Valves

All connections of privately-owned and maintained wastewater force mains to the Wastewater Department's force mains shall be connected through a check valve housed in a structure as shown in the Utilities Detail Drawings which shall allow performance of required maintenance, and shall be owned and maintained by the property owner.

Sufficient plug valves shall be provided to allow for zone isolation of wastewater transmission areas in order to limit the impact of line breaks. In-line plug valves shall be provided at no greater than 1,000 foot intervals per COUNTY requirements.

3.2.4 Force Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a valve and cap/plug.

3.2.5 Air Release Assemblies

Air release assemblies shall be provided at all high points and on the upstream side of conflict crossings at which the force main passes under the conflict (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. Air valves (see County Approved Product List, Appendix F) utilized on raw sewage facilities shall be designed and manufactured specifically for use with domestic sewage. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, "Air-Release, Air Vacuum, and Combination Air Valves". When installed, the air valve shall be provided with a shut-off valve to allow isolation and removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

3.3 Wastewater Pump Stations

Wastewater pump stations shall be designed and constructed in accordance with FDEP regulatory requirements, Section 2 Technical Specifications, National Electrical Code (NEC) Requirements, and Section 3 Utilities Detail Drawings.

Pump Station wetwells shall be designed to withstand flotation forces with the assumption that the structures are empty and ground/flood water elevation is at the top of the structures. The design shall consider the potential for damage or interruption of operation due to flooding. Pump

station structures and electrical and mechanical equipment shall be designed to be protected from physical damage by the 100-year flood event. Pump stations shall be designed to remain fully operational and accessible during the 25-year flood event. Pump stations shall be designed to avoid operational problems from the accumulation of grit.

Pump stations shall be designed to be readily accessible by maintenance vehicles, including pumper trucks, during all weather conditions. Pump stations shall be designed and located on the site to minimize adverse effects from odors, noise, and lighting. Pump stations shall be located on the site to have a minimum separation of 20 feet from the edge of the CUE for the pump station to edge of a body of water and 15 feet from the edge of the CUE for the pump station to a residential structure (including appurtenances).

The effective volume of wet wells shall be based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycling time. Pump stations requiring a pump motor of twenty horsepower or greater shall operate by a VFD (variable frequency drive) that varies the operating speed of the pump based on wet well water levels. Pump stations shall have a compacted earth berm on three sides with 3:1 slopes to divert liquid toward the ROW. Top of berm shall be 12 inches wide and six inches higher than back of curb (with curb) or edge of pavement (without curb). Minimum berm height shall be six inches.

Emergency pumping capability shall be provided for all pump stations. A pump station that is connected directly to the County transmission force main from a development (Community Pump Station) and any pump station that receives flow from one or more upstream pump stations or discharges through a force main 12 inches or larger (see FAC 62-604.400 (2)(a)1) shall have uninterrupted pumping capability (standby Diesel pump or generator) with three days of fuel storage (compliant with Technical Specification 263213) and a concrete pad for a future odor control system.

Alternatively, emergency pumping capability may be achieved by connecting the pump station to at least two independent utility substations, each capable of starting and operating the pump station at its rated capacity. Regardless of the type of emergency standby system provided, a force main riser with rapid connection capabilities and appropriate valving shall be provided for connecting a portable pump. All pump stations shall conform to these standards and shall be conveyed to the Collier County Water-Sewer District in accordance with the utilities conveyance policies and procedures outlined in the Collier County Utilities Standards and Procedures Ordinance (Ord. No. 2004-31 as amended), unless approved for private ownership and maintenance by Deviation and in accordance with Section 3.3.1 below.

All pump stations shall be protected from lightning and transient voltage surges.
All pump stations shall be located at least 100 feet from a public drinking water supply well and 75 feet from a private drinking water well. The design and siting of new private pumping stations shall minimize adverse effects resulting from odors, noise, and lighting.

All pump stations shall have water available to them. Available water means a water main is accessible in the adjacent ROW or CUE.

Landscaping is not required, per these standards, to be installed around wastewater pump stations. If landscaping is provided, it shall be maintained by the developer, homeowners association, or land owner and shall NOT be located in the CUE. Landscaping, if provided, shall be located as to not block access or interfere with operations. If plant material dies, it is the

responsibility of the landscaping owner to replace it. The landscaping shall be maintained to not block telemetry antenna line of site.

3.3.1 Private Pump Stations

~~Pump stations with flows less than 80 gpm and which do not~~ Private pump stations shall not receive flow from any other pump station and shall only serve one property parcel. All private pump stations may be privately monitored and maintained by deviation. ~~may be privately owned and maintained.~~ All new private pump stations shall be grinder pump stations. Positive or semi-positive displacement grinder pumps equipped with thermal overload protection shall be standard on all private grinder pump stations. All new private pump stations shall conform to the design criteria specified in Subsection 3.3 above, unless otherwise specified in this subsection, and shall be configured to facilitate routine maintenance without entering the wet well.

Except in the case of a simplex station serving a single-family residence, private pump stations shall have multiple pumps capable of handling peak flow with one pump out of service. Peak flow shall be calculated as the peak hour flow (per Part 3) divided by a factor of 0.7. This is based on peak hour flow typically being around 70 percent of the peak flow over a briefer (approximately 15-minute) time period[1]. Where possible, pumps shall be selected so that the design operating range is within ten percent (10%) (on a flow basis) of the maximum efficiency point identified by the manufacturer. Otherwise, the pump model that would operate closest to its maximum efficiency point should be selected based on the average head condition.

Design flow shall be calculated in accordance with Part 3, except that average daily flow for a residential project shall be determined from Table I in paragraph 62-6.008(1)(b), F.A.C., based on the number of bedrooms and building area. An assumption of 350 gallons per day per residential unit shall be used if bedroom count and building area are unknown.

The table below defines volumetric terms used in this subsection based on the demarcating design elevations (e.g., storage volume is between the pump on and alarm elevations):

<table>
<tr><th>Elevation</th><th colspan="2">Terms</th></tr>
<tr><td rowspan="2">Top/Overflow</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Reserve Volume</td><td rowspan="3">Reserve Capacity</td></tr>
<tr><td>Alarm</td></tr>
<tr><td rowspan="2">Storage Volume</td><td rowspan="2">On</td></tr>
<tr><td rowspan="2">Effective Volume</td></tr>
<tr><td rowspan="2">Off</td><td rowspan="2"></td></tr>
<tr><td></td></tr>
</table>

Residential private pump stations shall have a sufficient combination of storage volume and pump rate to avoid an alarm condition during a peak flow of 46 gallons over a 2-minute period, which represents simultaneous discharge from a bathtub and clothes washer with a high probability of occurrence[2], assuming the basin level is at the pump on elevation just prior to the peak flow occurring.

Non-residential private pump stations shall be designed for simultaneous discharge from

[1] Water Pollution Control Federation. (1986). *Alternative Sewer Systems* (Manual of Practice No. FD-12, Facilities Development).
[2] American Society of Civil Engineers. (1969). *Combined Sewer Separation Using Pressure Sewers* (FWPCA Report ORD-4).

multiple plumbing fixtures as determined by the plumbing system designer. Check pump station capacity using the equation, Q = (V-S)/t, where Q is the minimum pump discharge rate (gpm), V is the volume of peak flow (gal), S is storage volume (gal), and t is the time window (duration) of peak flow (minutes).

The minimum storage volume required to attenuate peak flows is 25 gallons. In no case shall the pump rate be less than 5 to 10 gpm, depending on the storage volume. If the storage volume is 25 gallons, the minimum for attenuation, the pump rate shall be no less than 10 gpm. For storage volumes equal to or greater than 50 gallons, the pump rate shall be no less than 5 gpm. Interpolate the minimum pump rate accordingly if the storage volume is between 25 and 50 gallons.

In-ground installation of a grinder pump station may require a ballast or concrete anchor of proper dimensions and weight to counteract the buoyant forces exerted on the station. Designers of privately-owned pump stations shall adhere to the manufacturer's guidelines and sound engineering practice for counteracting buoyancy.

Unless a standby power generator is connected to the pump station, every private pump station shall have a standard generator receptacle (see Appendix F) and a minimum reserve capacity of half the average daily flow volume, but no less than 50 gallons, as contingency for a power outage or equipment malfunction.

In instances where the reserve capacity (i.e., volume above the pump-on elevation) is less than double the peak hour flow, the private pump station shall be furnished with an external pump-out connection.

New private pumping stations shall be enclosed with a fence or otherwise designed with appropriate features to prohibit the entry of animals and unauthorized persons.

All private pump stations connected with the County's wastewater collection system are required to be inspected, maintained, and repaired on a routine basis. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rules, and regulations to perform preventive maintenance and respond to any service interruption. In accordance with 62-604.400(2)(d), F.A.C., the operator's emergency telephone number shall be displayed on an unobstructed sign made of durable, weather-resistant material and posted at a location visible to the public.

3.4 Connections to Collier County Facilities

Connections to existing COUNTY wastewater mains shall be constructed as described in the Technical Specifications and shown in the Utilities Detail Drawings. These details shall apply to all connections to existing systems.

All projects shall be designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water mains passing through or coming into contact with any part of a sewer manhole.

3.5 Tests and Inspections

Tests and inspections of all wastewater systems or portion(s) thereof shall be performed in accordance with the Technical Specifications before acceptance of the systems or portions thereof by Collier County.

ORDINANCES

ORDINANCE NO. 2018 - 3 6

AN ORDINANCE AMENDING COLLIER COUNTY ORDINANCE NO. 2004-31, AS AMENDED, KNOWN AS THE COLLIER COUNTY UTILITIES STANDARDS AND PROCEDURES ORDINANCE, AS CODIFIED IN SECTIONS 134-51 THROUGH 134-64 OF THE CODE OF LAWS AND ORDINANCES, TO UPDATE THE REGULATIONS GOVERNING THE INSTALLATION OF SUSTAINABLE AND SAFE UTILITIES INFRASTRUCTURE WITIDN THE COUNTY; PROVIDING FOR CONFLICT AND SEVERABILITY; PROVIDING FOR INCLUSION IN THE CODE OF LAWS AND ORDINANCES; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, on May 11, 2004, the Board of County Commissioners, Ex Officio the Governing Board of the Collier County Water-Sewer District, concurrently adopted Collier County Ordinance No. 2004-31, known as the Collier County Utilities Standards and Procedures Ordinance, together with the Utilities Standards Manual, including all of the Manual's exhibits. These documents provide County procedures and guidelines for the design, construction and repair of both privately constructed and County constructed utility systems in Collier County; and

WHEREAS, on May 8, 2018, the Board accepted an update to the After-Action Report provided during the Board's November 7, 2017 Workshop regarding the effects of Hurricane Irma, in which staff proposed updating both the Utilities Standards Manual and the Collier County Utilities Standards and Procedures Ordinance to ensure greater resiliency in construction; and

WHEREAS, the Board wishes to update the Collier County Utilities Standards and Procedures Ordinance to ensure greater resiliency in construction to better protect the citizens of Collier County during extreme weather events.

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF COLLIER COUNTY, FLORIDA, AS THE GOVERNING BODY OF COLLIER COUNTY FLORIDA AND EX-OFFICIO GOVERNING BOARD OF THE COLLIER COUNTY WATER-SEWER DISTRICT, that

SECTION ONE: The following Sections of Ordinance No. 2004-31, as amended, and codified in Chapter 134, Article III, **of the Code of Laws and Ordinances are amended as follows:**

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Sec. 134-57. Policies and standards.

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(~~g~~ c) Utility easement.

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(1) ~~Privately-owned utilities may be allowed within a CUE, subject to prior approval by the engineering review services division director (county engineer) or designee with coordination with the transportation services division and/or the public utilities department, and provided that such privately-owned utility does not hinder operation and/or maintenance and/or repair activities and does not create an unnecessary financial burden to the rate payers of the district~~. Privately owned utilities are not allowed within a CUE. Aboveground improvements such as, but not limited to, paved parking, decorative walls and/or landscaping may be permitted to be installed within a CUE by the grantor, its successors or assigns. However, all costs and expenses of any and all repairs, replacements, maintenance and restorations of all such improvements shall be the sole financial responsibility of the grantor, its successors or assigns. These cost obligations shall be clearly stated on the approved plans, record drawings, and, if applicable, in the homeowners' association documents but failure to state such obligations shall not affect these obligations.

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Sec. 134-60. Utilities conveyance policies and procedures.

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(e) *Bacterial analysis.* Bacterial analyses shall be required for all new potable and raw water transmission and distribution systems or portion(s) thereof to be constructed. Bacteriological samples for potable and raw water system construction shall be performed prior to preliminary acceptance of the system(s) or portion(s) thereof. All such analyses shall be performed by the water division laboratory at no cost to the county or the district, with test results submitted in writing to the engineering review services division director (county engineer) or designee before 30 days of being placed in service for transmission and/or distribution lines. All potable water piping up to and including 8-inches in diameter shall pass bacteriological test within sixty (60) days of being placed in service. All potable water piping greater than 8-inches shall pass bacteriological tests within forty-five (45) days of being placed in service. The public utilities department shall not process meter installations until bacterial tests have been satisfactorily completed and submitted, and the division has received the FDEP placement in service approval letter or other FDEP written approval. The developer shall be responsible for coordinating all aspects of submission of necessary test results and/or State approvals for placement in service of the potable water system(s) or portion(s) thereof.

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USM SECTIONS

INTRODUCTION

This Manual has been established by action of the Board of County Commissioners and is authorized by County Ordinance 2004-31, as amended.

This Utilities Standards Manual has been prepared to guide the design, construction, and asset management of potable water, non-potable irrigation water, and wastewater system extensions to Collier County Water-Sewer District (COUNTY) utilities; the Manual applies to utilities in new developments in the County, as well as County Projects involving utilities.

The following standards shall be included in the design and preparation of plans and specifications for all utilities construction projects for Collier County, including utilities and services connected to the COUNTY's utilities systems or constructed for future transfer of ownership to the COUNTY. These standards are provided for uniformity in utilities construction within Collier County, and represent MINIMUM standards acceptable to the COUNTY. The Engineer of Record shall review these MINIMUM standards for applicability and acceptance for the proposed construction project. Where necessary, additional design features shall be provided to prevent system failures, severe damage to other property or serious injury to persons. The Engineer of Record shall be responsible for the specific project under their control.

Not all specification details may apply to an individual project; however, approval of utilities construction within Collier County will require conformance to applicable requirements of these specifications. Approval of any deviation from the specifications must be obtained utilizing the appropriate form included in Appendix A, Utility Deviation Form.

NOTE: Go to https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual for the latest revisions to the Utilities Standards Manual.

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SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

Requirements for preparation, maintenance and submittal of project record documents. The Contractor's attention is specifically directed to Part 3.2.B. of this Section, which requires use of a Florida licensed surveyor to sign and seal all record drawings.

1.2 RELATED SECTIONS

A. Section 014500 – Quality Control

B. Section 022100 – Lines and Grades

1.3 SUBMITTALS

A. General: Provide all submittals as specified.

B. At Contract close out, three (3) sets of signed and sealed Record Drawings for the potable water OR non-potable irrigation water OR wastewater systems to be conveyed shall be submitted to the County or District. If potable water AND wastewater, AND/OR non-potable irrigation water systems or portion(s) thereof are being conveyed, five (5) sets of signed and sealed Record Drawings shall be submitted to the County.

C. Provide electronic submittal as specified in Part 3.02.B of this Section.

1.4 REQUIREMENTS (For County Capital Projects Only)

Contractor shall maintain at the site for the County one record copy of:

A. Drawings
B. Specifications
C. Addenda
D. Change orders and other modifications to the Contract
E. Design Engineer’s field orders or written instructions
F. Approved shop drawings, working drawings and samples
G. Field test records

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Project record documents shall be stored in Contractor's field office or other location approved by the County apart from documents used for construction

B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Make documents and samples available at all times for inspection by the County.

3.2 RECORDING

A. General

1. Record Drawings shall accurately depict the constructed configuration of all potable water, non-potable irrigation water and/or wastewater systems or portion(s) thereof. All revisions to County staff approved construction drawings shall be precisely identified and illustrated on the Record Drawings. All Record Drawings of utility systems or portion(s) thereof that are not being conveyed to the Board shall bear, on the cover sheet, a prominently displayed DISCLAIMER, in bold lettering at least one-quarter (1/4) inch high, stating: "All on-site potable water, non-potable irrigation and/or wastewater systems shall be owned, operated and maintained by the private owner(s) and/or the master condominium/homeowners' association, successors or assigns" (or other comparable private ownership).
2. Label each document "PROJECT RECORD" or similar text in neat, large printed letters.
3. Survey information can be obtained as needed by the use of 2-inch PVC labeled pipes installed over underground improvements by the contractor during construction. This method is an adequate process for obtaining record information.
4. Record information in red ink.

B. Record Drawings

1. The Record Drawings require signed and sealed as-built information, including above and below ground improvements including underground piping, valves and ductbanks, by a Florida Licensed Land Surveyor.
2. The Record Drawings shall identify the entity that provided the record data.
3. Drawings shall be referenced to and tie-in with the state plane coordinate system, with a Florida East Projection, and a North American Datum 1983/1990 (NAD 83/90 datum), and with United States Survey Feet (USFEET) units, and North American Vertical Datum 1988 (NAVD 88), as established by a registered Florida surveyor and mapper.

4. Files shall be also submitted in two digital file formats, specifically Drawing File (DWG) format in AutoCAD Release 2004 or later version as well as PDF format (latest version).
5. Record drawings shall be submitted to the County staff within 60 days of the final construction completion date.
6. The following items shall be accurately depicted in vertical and horizontal directions on the Record Drawings:

    a) All associated rights-of-way and utility easements whether shown on the Contract Drawings, found during construction or added during the Work.

    b) Sewer system inverts, pipe slopes, manhole rims and run lengths.

    c) Sewer lateral locations stationed from the nearest downstream manhole.

    d) Sewer main stub extension inverts at both ends, pipe slope, run length and location.

    e) Tie-ins to all valves, air release assemblies, fire hydrants, manholes, blowoffs, etc.

    f) Top elevations of treatment plant structures and tanks.

    g) Manhole center for sanitary sewers and storm sewers as related to utility improvements.

    h) Pipe changes in direction or slope.

    i) Buried valves, tees and fittings.

    j) Pipe invert, or centerline, elevations at crossing with other pipe.

    k) Invert, or centerline, elevations and coordinates of existing exposed pipe at crossing with underground pipe installed under this project.

    l) Other horizontal and vertical record data pertinent to completed Work.

    m) Water meter box locations

    n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables shall be depicted from source to County asset found in associated rights-of-way and utility easements.

7. Each pipe elevation shall be clearly identified as to whether it is top of pipe, centerline of pipe or invert of pipe.
8. For County Capital Projects only, Record Drawings shall indicate all deviations from Contract Drawings including:

    a) Field changes.

    b) Changes made by Change Order.

    c) Details, utilities, piping or structures not on original Contract Drawings.

    d) Equipment and piping relocations.

C. Specifications and Addenda (For County Capital Projects Only)

Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or Change Order.

D. Shop Drawings (For County Capital Projects Only)

1. Keep one copy of the final, approved shop drawing with the Record Documents.
2. Record documents should include all shop drawing information submitted. Additional information submitted during the review process should be filed with the appropriate submittal.

END OF SECTION

SECTION 221336

DIESEL BACKUP PUMP

PART 1 GENERAL

1.1 SCOPE

A. Requirements for providing a permanently installed automatically starting pump station back-up pumpset.

B. Elevated platforms shall be provided where necessary to provide access to the diesel backup pump for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 GENERAL

A. The specifications herein state the minimum requirements of Collier County (the Owner). All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Owner may consider as “irregular” or “non-responsive”, any bid not prepared and submitted in accordance with the bid documents and specification, or any bid lacking sufficient technical literature to enable the Owner to make a reasonable determination of compliance to the specification. It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (exception yes or no) will cause the proposal to be rejected, without review, as “non-responsive”. All variances, exceptions, and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.

B. INTERPRETATIONS: In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specifications documents or any part thereof. Every request for each a consideration shall be made in writing to the Owner. Based upon such inquiry, the Owner may choose to issue an Addendum in accordance with local public contract laws.

C. GENERAL SPECIFICATIONS: Units described shall be new, unused, and of the current year’s production. The style of pump being bid must be in production for a minimum of 5 years (include users list). Unit shall be of the latest design and in current production completely serviced, ready for work and shall include all standard and optional equipment as specified herein. All bidders must have demonstrated the unit they are bidding, prior to bid date.

D. Bidders must have a fully stocked parts and service facility within 50 miles of the project site. The Owner shall have the right to inspect the office and shall be the sole judge of its adequacy to fulfill this requirement.

E. Bidders, on request of the Owner, must be prepared to review their specifications with the Owner and must, if requested, also be prepared to provide a unit for tangible evaluation purposes only. These services, if needed, are considered as part of the bidder's proposal and will be provided without cost or obligation to the Owner.

1.3 SYSTEM DESCRIPTION

A. The pumpset specified in this section will be used to pump wastewater from a Collier County pumping station (PS).

B. Pump shall be fitted with a fully automatic priming system capable of repeated priming from a completely dry pump casing.

C. The complete pump set shall be supplied by the pump manufacturer.

D. The pump offered shall be the manufacturer's standard production model. It shall have been in continuous use by municipal and industrial owners for a minimum of five years. A list of five user contacts including contact names and telephone numbers shall be provided with the bid submittal. Failure to supply a verifiable users list will be cause for rejection of the bid.

1.4 DESIGN REQUIREMENTS

1.4.1 All design requirements listed below must be clearly displayed on performance pump curves. These performance pump curves shall be based on testing standards established by the hydraulic institute.

DESIGN REQUIREMENTS	
OPERATING SPEED (MAXIMUM) (RPM)	
MAXIMUM SOLIDS HANDLING SIZE (INCHES)	
IMPELLER DIAMETER (INCHES)	
SUCTION SIZE (INCHES)	
DISCHARGE SIZE (INCHES)	
PRIMARY DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT PRIMARY DUTY POINT (FEET)	
MINUMUM EFFICENCY AT MAX DUTY POINT	
SECOND DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT SECOND DUTY POINT (FEET)	
MIMIMUM EFICENCY AT SECOND DUTY POINT	

1.5 REFERENCES

1. ANSI B16.1 - Standard for Cast Iron Pipe Flanges and Flanged Fittings.

PART 2 PRODUCTS

2.1 PRE-APPROVED ACCEPTABLE MANUFACTURERS:

1. GODWIN PUMPS OF AMERICA
2. THOMPSON PUMP & MANUFACTURING CO, INC.

A. All manufacturers shall be ISO 9001: 2008 certified. Certificates shall be made available to Collier County upon request. Bids will be accepted for consideration on any make and model that meets the requirements of the project specifications, as interpreted by the Owner. If a product proposed does not meet the requirements of this specification, the Contractor shall provide a unit which does, at no additional cost to the Owner. The Owner shall have the final decision on which products do and which products do not meet the project specifications.

2.2 EQUIPMENT

A. PUMPS: The pumps used in the diesel backup pump system shall be supplied directly by the manufacturer, not by a distributor. The pump itself and the diesel backup pump system as a whole shall come from a single manufacturer. “Packagers” of systems which incorporate pumps from a separate manufacturer to fabricate diesel backup pump systems shall not be allowed.

B. CASING, SUCTION COVER, SEPARATION TANK: Pump castings shall be cast iron or ductile iron with a minimum pressure rating of 100 psi. The pump casing shall be constructed so that the suction flow path is in axial alignment with the impeller eye. There shall be no turns, chambers, obstructions or straightening vanes between the suction line and the impeller. The pump casing shall be complete with a removable port for inspecting impeller/cut water area.

C. IMPELLERS: The pump impeller shall meet the criteria of one of the following:

1. An open, three-bladed, (or 2-bladed) non-clog type with pump-out vanes on the back shroud and fabricated from hardened cast- chromium steel construction (or other material to meet minimum Brinell Hardness 340 HB).

2. A high efficiency non-clog type, 2-vane, enclosed design with full front and rear shrouds, containing back pumpout vanes, constructed of high grade 65-45-12 ductile iron and capable of passing a 3” spherical solid.

D. WEARPLATES/WEAR RINGS: Shall be fully be replaceable, fabricated of cast iron. Wear plate/wear ring clearances shall have no relationship to the ability of the pump to achieve a prime.

E. BEARINGS AND SHAFTS: Pump shall be fitted with a bearing bracket to contain the shaft and bearings. Bearings shall be tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points. Minimum ISO L_{10} bearing life to be 100,000 hours. Impeller shafts shall be fabricated of high strength alloy steel, accurately machined, polished, and of sufficient size to transmit full driver output without excessive flexing or stress.

F. SEALS: Pump shall be capable of running dry, with no damage, for periods up to twenty-four hours. The pump seals shall be the requirements of one of the following:

1. Seal shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 87 psi. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. All metal parts shall be of stainless steel. Elastomers shall be Viton.

2. Pump seal shall be an inside-mounted, self-cleaning John Crane type 2 component style mechanical seal with tungsten carbide rotating and silicon carbide stationary faces with Viton elastomers and stainless steel spring and hardware.

G. PUMP SUCTION AND DISCHARGE FLANGES: Shall be cast iron ANSI (B16.1) Class 150, raised faced.

H. PUMP GASKETS: Shall be compressed fiber and/or Teflon.

I. PUMP O RINGS: Shall be Buna-N.

J. PRIMING SYSTEM: Pump shall be fitted with a fully automatic priming system incorporating a air compressor, venturi (with lifetime warranty), priming chamber, and discharge check valve assembly. The compressor shall be installed on the engine auxiliary drive and shall be gear driven, lubricated and cooled from the engine. Installed system design shall prevent any carryover of the pumping fluid onto the ground. Priming system may require additional drainage pipelines to be constructed to re-circulate pumping fluid back to sump area. The pump must be capable of running totally dry for periods up to 24 hours, then re-priming and returning to normal pumping volumes. Pump and priming system is capable of priming the pump from a completely dry pump casing. The pump shall be capable of static suction lifts to 28 vertical feet, at sea level. It shall also be capable of operation using extended suction lines, and pump shall be capable of priming and re-priming without any user intervention. Equipment acceptance shall be contingent upon the pump's ability to run continuously at full speed in a completely dry condition. The engineer may require a demonstration. Priming systems that incorporate the use of a positive displacement diaphragms OR oil-cooled vacuum pumps will not be accepted.

K. CHECK VALVE: The priming system shall include a discharge check valve to prevent pulling air through the discharge line during priming and prevent in-line return of flow when the pump is shut off. Non-return check valve shall be constructed of cast iron with Nitrile rubber and shall be field replaceable. Check valve shall be vacuum-tested by the factory, and test results shall be provided.

L. DRIVE UNIT: The drive unit shall be a diesel water-cooled engine. The engine shall drive the pump by use of direct-connected intermediate drive plate. Starter shall be twelve-volt electric. Low oil pressure safety shutdown, high temperature shutdown, tachometer, and hour-meter shall be integrated into engine control panel. Battery shall have 180-amp hour rating. A certified continuous-duty engine curve shall be supplied to the owner/engineer.

M. GOVERNOR: Governor shall be an electronic or mechanical type. Engine speed shall be adjustable to operate the pump between maximum and minimum design operation speeds in manual mode. See section 2.3 for Automatic mode.

N. FUEL SOURCE: Integral skid fuel tank capacity shall be sufficient to provide at least seventy-two (72) hours of continuous operation at full load. The minimum tank size shall be 150 gallons and the maximum tank size shall be 550 gallons. The engine shall be capable of operating satisfactorily on a commercial grade of distilled No. 2 fuel oil.

O. EXHAUST: Exhaust system shall include a hospital grade muffler housed in a separate chamber within the enclosure. All exhaust piping and manifolds shall be encased in fitted acoustic blankets. They shall be constructed of high-density fiberglass material with waterproof jacketing.

P. SOUND ATTENUATED ENCLOSURE: The entire unit including the pump and engine shall be completely enclosed in a lockable enclosure. The enclosure shall be constructed with a modular galvanized steel frame and galvaneel panels. Acoustical material shall be installed as required to reduce pump and engine noise. Maximum sound ratings for specific pump sizes are shown in the table below. These sounds rating shall be the maximum dBA rating measured at 7 meters @ both duty points specified.

Pump Outlet Size	Maximum Sound Rating Allowed
4”	68 dBA
6”	70 dBA
8”	72 dBA
10”	72 dBA
12”	72 dBA

Q. Units not meeting this requirement shall not be considered. The enclosure shall be removable for easy access to the engine / pump for maintenance and repair. The enclosure doors shall all be equipped with latches that are keyed alike. For maintenance and service needs, the enclosure sides shall have hinged doors for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters. The enclosure shall be coated in epoxy based primer and paint to a total dry film thickness of 5 mils.

R. UL LISTED SKID BASE

1. The pump base tank shall be a UL-142 approved double wall design constructed in accordance with Flammable and Combustible Liquids Code, NFPA 30; The Standard for Installation and use of Stationary Combustible Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110. Pumps installed within 25 feet of a building shall be equipped with UL-2085 fire resistant fuel tanks. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

2. The tank design shall be a Closed Top Dike Pump Base Tank. It shall be of double

wall construction having a primary tank to contain the diesel fuel, held within another tank or dike, which is intended to collect and contain any accidental leakage from the primary fuel tank. The completed base tank assembly is to incorporate pump mounting locations and must be able to support four times the rated load.

3. The primary tank shall be designed to withstand normal and emergency internal pressures and external loads. It shall be capable of withstanding internal air pressures of 3 to 5 psig without showing signs of excessive or permanent distortion and 25 psig hydrostatic pressures without evidence of rupture or leakage.

4. The primary and secondary tanks or dike shall have venting provisions to prevent the development of vacuum or pressure capable of distorting them as a result of the atmospheric temperature changes or while emptying or filling. The vent shall also permit the relief of internal pressures caused by exposure to fires. The vent size shall be determined by using the calculated wetted surface area in square feet (the top is excluded) in conjunction with venting capacity table 10.1of UL-142. The tank's vent shall also be equipped with a coupling device and shall be located to facilitate connection to a vent piping system. The dike's vent may be an opening for venting directly to the atmosphere and protection from the entrance of natural elements or debris shall be provided.

5. The primary and outer tanks are to be constructed of 304 stainless steel, 7 gauge minimum. Internal baffles or reinforcement plates shall be located on a maximum of 24 inch centers in tanks up to 60 inch width and on a maximum of 19.5 inch centers in tanks over 60 inch width. At least one baffle shall separate the fuel suction pipe from the fuel return line.

6. The outer tank is to be constructed in a manner to be able to support four times the wet load of the pump and housing. The entire load is to be carried by the outer tank so no load or vibration stress is placed on the primary tank. If the pump base tank is wider than the pump set to be supported, structural rails are to be incorporated to span the width of the base tank so that the load is transferred to the side rails of the tank. Vertical reinforcements shall be welded to the outer sides of the secondary tank or dike at a maximum of 45 inch centers on tanks up to 30 inches high and on 24 inch centers on tanks greater than 30 inches high. At least one vertical reinforcement shall be positioned adjacent to each mounting hole location. Provide level monitoring and interstitial space leak monitoring.

7. Both primary and secondary tanks shall be fitted with the proper welded pipe fittings to accommodate the requirements for the fill port and normal and emergency venting.

8. The completed assembly is to be cleaned with a heated pressure wash followed by a chromium free post treatment to ensure proper paint adhesion. The tank assembly is to be painted with an epoxy ester primer and high quality polyurethane enamel with a minimum dry film thickness of 3.5 mils.

9. All tanks shall be tested in accordance with **NFPA 30 TO INCLUDE ON SITE**

TIGHTNESS TESTING in accordance with NFPA 30 Section 21.5. This requirement shall not apply to portable trailer mounted diesel pumps.

10. Manufacturing and testing of this system shall be performed within the scope of Underwriters Laboratories, Inc. "Standard for Safety UL 142.", or UL 2085, as applicable. A UL label shall be permanently attached to the tank system showing the following information:

    i. The registered UL mark and the name: Underwriters Laboratories, Inc.
    ii. A control number and the word "listed"
    iii. The product's name as identified by Underwriters Laboratories Inc.
    iv. The serial number assigned by Underwriters Laboratories, Inc.
    v. Other manufacturer's information may also be included.

S. PORTABLE TRAILER (FOR TRAILER MOUNTED UNITS ONLY):

1. The complete pump set shall be factory mounted on a highway trailer meeting NHTSA, DOT Part 571 standards 108, 119 and 120.

2. Trailers with loads of 5,000 pounds or less with fuel tank filled, shall have a flat bed, single axle, two 15-inch wheels with 6-ply tires. Axle ratings shall be a minimum of 5,000 pounds.

    i. Trailers with loads from 5,000 to 10,000 pounds with fuel tank filled, shall have a flat bed, 2-axle, four 15-inch or 16-inch wheels with 10-ply tires. Axle rating shall be a minimum of 10,000 pounds.
    ii. Trailers above shall have following accessories. Ring and pintal hitch including safety chain and fasteners, electric brakes shall be provided on all wheels, and all required ICC lights such as tail, brake, direction signals, license holder and light, etc., shall be provided; jacks and sand shoes for front and rear corners shall be provided so that unit can be completely supported.
    iii. The diesel backup pump engine shall be balanced mounted on trailer. All necessary service and checkout of diesel backup pump set shall be performed prior to delivery.

T. FACTORY PAINTING: Pump, engine, and base shall be shop primed and finish painted at the place of manufacturer.

2. 3 AUTOMATIC STARTING CONTROL SYSTEM

A. The engine control panel shall be provided in a NEMA 3R enclosure mounted on rubber isolators to reduce vibration, equipped with a factory installed microprocessor-based controller designed to start/stop the engine at a signal supplied by high and low level floats or a 4-20 mA transducer.

B. The control system shall be able to start/stop the engine a via a signal supplied by a primary level transducer and back-up high and low level floats for redundant automatic operation.

C. ENGINE / PUMP CONTROL SPECIFICATIONS

1. The engine shall be started, stopped, and controlled by a digital controller. The controller shall be weather proof enclosed, and contain an external weatherproof 12-position keypad accessible without the need to remove or open any protective cover or enclosure. It shall be designed to start/stop the engine based on relay contact closure provided by others. The controller shall provide the following functions without modification, factory recalibration, or change of chips or boards, by simply accessing the keypad:

D. The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, and maintain complete weather-tight sealing of the controller.

E. In automatic mode, the unit shall conserve energy and go to "sleep".

F. The controller shall function interchangeably from remote contact closure, as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.

G. The start function can be programmed to provide two separate functions each day for seven days (i.e. a start, exercise cycle on two separate days at different times and for a varying length of time all via the keypad).

H. Manual-Automatic Button:

1. In Manual Mode, manual "Start" button starts engine and runs until "Stop" or "Off" button is depressed or an emergency shutdown occurs.

2. In Automatic Mode, start/stop sequencing is initiated by a signal from a digital input.

I. The controller shall integrate the engine safety shut-off for low and high oil temperature, and provide over-speed protection.

J. The controller shall include standard, field-adjustable parameters for engine cycle crank timer, and shutdown time delay.

K. The controller shall have only one circuit board with eight built-in relays. Three (3) of the relays shall be programmable to output desired parameter on display and to be used as dry-contacts for communication with Collier County's SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software. Relays will monitor the following:

1. Low Battery Charge
2. Low Fuel Level (Less than 25 gallons)
3. Diesel Pump Engine Start

L. Standard components shall consist of one of the following set ups:

1. (24) Digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form “C” relays, (1) RS232 port, (1) RS485 port, (1) RS232/RS485 port, (1) J1939 port, and (1) 64X128 pixel full graphic LCD display with backlight.

2. (8) Digital inputs, (5) analog inputs, (8) digital outputs, (1) RS232 port, (1) RS485 port, (1) J1939 port, (76) selectable features, (32) alarm event history.

M. The industrially-hardened Controller shall withstand vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature range of 4° to 176°F (-20° to 80°C) and an operating humidity range of 0-95% non-condensing.

2.4 OPTIONS

A. FULLY AUTOMATIC TRICKLE CHARGER: The unit shall include a fully automatic trickle charger powered by 6-amps, 115 VAC.

B. LIGHT: The unit shall include a single switch operated 12VDC light within the enclosure.

C. FLOATS: The unit shall be supplied with one (1) float assembly including two (2) N/O floats which shall integrate with the engine control panel via a single multi-pin plug.

D. LEVEL TRANSDUCER: The unit shall be supplied with (1) one Teflon diaphragm sewage compatible level transducer assembly including a single 4-20 mA level transducer with leveling guard (0-15 psig), which shall integrate with the engine control panel via a single multi-pin plug.

E. AUTO THROTTLE: The unit/s shall include one (1) automatic throttle controller integrated into (1) relays in the electronic engine control panel. The auto-throttle control panel combination shall allow the pump to ramp up to the target RPM given a start command and ramp down to idle given a stop command via the 4-20 mA level transducer

F. DC / AC INVERTOR: The unit/s shall include one (1) 12VDC to 110VAC volt single-phase inverter, 1750 watts, mounted inside enclosure, single 15-amp GFI outlet, and one (1) fusible link.

2.5 ACCESS PLATFORM

A. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

B. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.1 MANUFACTURERS SERVICES

A. The manufacturer shall furnish the services of a competent factory representative to do the following:

1. The complete pump set shall be factory tested according to ANSI/HI 1.6¬1994 by a certified quality technician. The pump shall be sound tested according to ISO 3744, ANSI/HI9.4 and CPB Sound Level Measurement Standard.

2. Instruct the Owner's operating personnel in the proper operation and maintenance of the

system for a period of not less than one-half day.

3.2 TOOLS AND SPARE PARTS

A. The manufacturer shall furnish the following on delivery of the pumping system;

1. A recommended list of spare parts.

2. Two (2) replacement mechanical seals

3. An Operations and Maintenance manual for the pump and engine.

4. A fuel polishing system capable of below 1 micron filtration equipped with a fuel-water separator and 12V DC fuel pump rated at 40 GPH minimum. The system shall be a standard commercial or industrial off the shelf unit intended for portable use of diesel fuel polishing. The fuel polishing system shall include 6 spare filters and an operations and maintenance manuals.

3.3 WARRANTY

A. The manufacturer shall furnish the following to the owner:

1. A copy of the engine manufacturer's parts and labor warranty.

2. A 3-year Parts and Labor Warranty issued by the manufacturer on the Diesel Pump System. This warranty must cover all pump parts.

3. The venturi shall have a minimum five (5) year warranty to include parts and labor.

SECTION 263213.13

STANDBY DIESEL GENERATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Extent of diesel generator set work as indicated by Drawings and Schedules, and is hereby defined to include, but not by way of limitation:
   1. Diesel engine.
   2. Electrical generator.
   3. Engine starting system.
   4. Batteries.
   5. Instrument control panel.
   6. Sound Attenuating Enclosure.
   7. Sub-Base Fuel Tanks.
   8. Exhaust silencer.
   9. Wall thimble.
   10. Additional accessories.
   11. Automatic transfer switch (ATS).
   12. Access platform and stairs.

B. Types of generator sets required include:
   1. Permanent Diesel Engine-driven Generator.

1.02 SUBMITTALS

A. Shop Drawings: Submit in accordance with Section 013400, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
   1. Product Data: Submit manufacturer's data on diesel engine-driven generator sets and components.
      a. Generator dimensions.
      b. Generator weight.
      c. Generator rating.
      d. Alternator rating.
      e. Generator Starting System Data:
         1) Battery size and ratings.
         2) Charging system capacity.
         3) Battery heater data.
         4) Battery warranty.
      f. Generator Control Panel Data:
         1) Layout.
         2) Wiring diagrams.
         3) Control interconnection.
         4) Instrumentation.
      g. Exhaust System Data:
         1) Muffler size.
         2) Decibel reduction curve.

3) Fuel system data.

h. Cooling System Data:
   1) Radiator capacity.
   2) Cooling reduction capacity

i. Enclosure Data:
   1) Materials.
   2) Size.
   3) Assembly/disassembly instructions.
   4) Door locations.
   5) Noise reduction.
   6) Color.

j. Sub-Base Fuel Tank:
   1) Capacity.
   2) Fuel usage calculations.
   3) Coating.

k. ATS Data:
   1) Enclosure Material.
   2) Dimensions.
   3) Factory test report.

l. Warranty data.

m. Accessory and miscellaneous equipment.

2. Wiring Diagrams: Submit wiring diagrams for diesel engine-driven generator units showing connections to electrical power panels, feeders, and ancillary equipment. Differentiate between portions of wiring that are manufacturer installed and portions that are field installed.
3. Agreement to Maintain: Prior to time of final acceptance, Installer shall submit 4 copies of an agreement for continued service and maintenance of diesel engine-driven generator sets for OWNER's possible acceptance. Offer terms and conditions for furnishing parts and providing continued testing and servicing, including replacement of materials and equipment, for 1-year period with option for renewal of Agreement by OWNER.
4. Certifications: Provide diesel engine-driven generator sets certified test record of the following final production testing:
   a. Single-step load pickup.
   b. Transient and steady-state governing.
   c. Safety shutdown device testing.
   d. Voltage regulation.
   e. Rated power.
   f. Maximum power.
   g. Provide certified test record prior to engine-driven generator set being shipped from factory to Project location.
5. Spare Parts Data: Submit a list of spare parts for the equipment specified.
6. Operating and Maintenance Instruction Manuals:
   a. Operating instruction manuals outlining step-by-step procedures required for system startup and operation.
   b. Manufacturer's name, model number, service manual parts list.
   c. Brief description of equipment and basic operating features.
   d. Maintenance instruction manuals outlining maintenance procedures.

e. Troubleshooting guide listing possible breakdown and repairs.
f. Point-to-point connection wiring diagram for the system.
g. Performance Test Reports: Upon completion of installed system, submit in booklet form all shop and field tests performed to prove compliance with specified performance criteria.
h. Provide OWNER with two (2) electronic copies of O&M manuals on CD's.

1.03 QUALITY ASSURANCE

A. Codes and Standards:
1. NFPA Compliance: Comply with applicable requirements of NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 99, "Standard for Health Care Facilities," and NFPA 101, "Code for Safety to Life from Fire in Buildings and Structures."
2. UL Compliance: UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," UL 2200, "Standard for Safety for Stationary Engine Generator Assemblies," rated 600 volts or less. UL 1008, "Automatic Transfer Switches," and UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors." Provide transfer switches and components which are UL listed and labeled.
3. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NE MA MG1, "Motors and Generators," and MG2, "Safety and Use of Electric Motors and Generators." NEMA Standards Pub/Nos. ICS 2, "Industrial Control Devices, Controllers and Assemblies," ICS 6 and 250, pertaining to transfer switches.
4. IEEE Compliance: Comply with applicable portions of IEEE Standard 446, "IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications."

B. Submittal information shall be generated from a representative located within Collier County who has knowledge of Local and State code requirements.
C. Warranty: Submit in accordance with requirements of Section 01740, warranties covering the items included under this Section. Unit shall be provided with a full comprehensive warranty of 5 years or 1500 running hours from date of ENGINEER's acceptance. Response time shall be a maximum of 3 hours. Provide label on inside of generator with description of warranty period and contact information.

1.04 DELIVERY, STORAGE AND HANDLING
A. Manufactured material shall be adequately packed to prevent damage during shipping, handling, storage and erection. Material shipped to site shall have approval of OWNER prior to shipping. All shipped material shall be packed in a container properly marked for identification. Blocks and padding shall be used to prevent movement.
B. CONTRACTOR shall inspect the material prior to removing it from carrier. If damage is observed, CONTRACTOR shall immediately notify carrier so that a claim can be made. If no such notice is given, material shall be assumed to be in undamaged condition, any subsequent damage that occurs to the equipment shall be the responsibility of CONTRACTOR.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:
   1. Standby Diesel Generator Sets:
      a. Caterpillar.
      b. Cummins.
   2. Automatic Transfer Switches:
      a. Caterpillar.
      b. Cummins

2.02 GENERATOR SETS

A. Except as otherwise indicated, provide manufacturer's standard diesel engine-driven generator set and auxiliary equipment as indicated by published product information, and as required for a complete installation. Generator set shall be rated to continuously power the total accumulated load and starting load shown on Schedule at 100 degrees F ambient temperature and at altitude where installed.

B. Diesel Engine: Provide a 4-cycle, compression ignition type engine for operation on a commercial grade of petroleum fuel oil such as No. 2 fuel oil. Engine operating speed shall not exceed 1,800 rpm and shall be controlled by a governor to maintain alternator frequency within plus or minus 3 Hertz of 60 hertz from no load to full load. Frequency shall recover to steady-state tolerance within 5 seconds after application of 90 percent rated load.

C. Starting System: Provide engine-generator unit with 12- or 24-volt, negative ground, starting system including positive engagement solenoid shift-starting motor, batteries, and 35-ampere, or greater, automatic battery charging alternator with solid-state voltage regulator. Mount batteries in a plastic- or epoxy-coated metal platform near the starter but not on the generator and coat battery terminals with an anti-oxidant. Generator sets rated 150 kW or less shall have a battery rated 650 amperes cold cranking at 0 degree F and 170 minutes reserve capacity by SAE Standard J-537. Larger generators shall have a battery rated either 220 ampere-hours or 900 amperes cold cranking, and 430 minutes reserve capacity. Batteries shall have a 12-month full warranty and 60-month prorated warranty.

D. Battery Charger: Provide a solid-state, current limiting, float-type SENS model #NRG22-10-RC battery charger with 10-ampere minimum capacity. Charger shall operate from 120-volt AC single phase, 60 hertz power and shall automatically keep batteries at full charge. Equip charger with ammeter and voltmeter. Battery charger shall be located within the generator enclosure.

E. Alternator: Provide a single bearing brushless, self-excited alternator with inherently regulated rotating rectifier exciter system or a revolving field design with a temperature compensated solid-state voltage regulator. Connect the alternator housing directly to the

engine flywheel housing. Couple the alternator rotor directly to engine flywheel with a semi-flexible steel disk coupling.

1. Provide windings with Class F insulation with epoxy impregnation and fungus-resistant coating. Temperature rise shall be as defined in NEMA Standard MG1-22.40.
2. The alternator shall be capable of starting load given for site with 35 percent maximum instantaneous voltage dip. Instantaneous voltage dip shall only be 20 percent when there is a VFD. Recovery to stable equation within plus or minus 5 percent of rated voltage shall occur within 3 seconds.

F. Engine Cooling Radiator: Provide a complete engine cooling system equipped with a radiator and blower type fan sized to maintain safe operation, 190 degrees F engine outlet water temperature at 100 degrees F maximum ambient temperature. The engine cooling system shall be filled with a solution of 50 percent ethylene glycol.

G. Instrument Control Panel: Provide engine-generator unit with engine oil-pressure and water-temperature indicators, reset circuit breaker, static voltage regulator, voltage-adjusting rheostat, voltmeter, ammeter with phase selector switch with an OFF position, and with running time indicator and frequency meters. Select circuitry of plug-in design capable of quick replacement, and capable of accepting a plug-in device which allows maintenance to test control panel performance without operating the engine.

1. Provide a cranking limiter to open starting circuit in 45 to 90 seconds if engine has not started within that time or after a series of 3 or more cranking intervals separated by 2 or more rest periods.
2. Provide engine safety devices to shut unit down on high engine temperature, low oil pressure, overspeed, and overcrank. Provide, for each of these conditions, an alarm light and an unpowered, normally open contact for remote use. Provide an audible alarm with silence switch which is activated by any alarm condition. Provide additional unpowered, normally open contact for remote use that indicates general generator alarm. General alarm contact will be for any alarms associated with the generator and not pre-assigned to a specific alarm. Sacrificing a specific alarm in order to receive the general alarm contact is not acceptable.
3. Provide a relay with 2 normally open and 2 normally closed contacts rated 5A at 120 volts AC and which is energized when unit is running. Wire these contacts to terminal strips for remote use.
4. Provide a RUN-OFF-AUTO switch. In AUTO position unit shall start when a remote contact closes and stop when contact opens. In RUN position unit shall start and run until OFF position is selected.
5. Mount instrument control panel on unit such that it is isolated from generator set vibration.

2.03 PERMANENT ENGINE-GENERATOR SET ACCESSORIES

A. Enclosure Design: Generator set shall be provided with a skin tight outdoor enclosure. Enclosure roof and side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. Side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. The Side Walls shall be complete with necessary access doors and ventilating louvers. There shall be at least 2 access doors on each side of enclosure and

one at the generator control panel for access to the controls. Doors shall be capable of full-range of motion. CONTRACTOR shall coordinate final location of generator to accommodate door swings. Any changes due to generator clearances shall be at the expense of the CONTRACTOR. Doors shall be hung on full-length piano hinge assembly. All hinge hardware shall be stainless steel. Finish paint shall be powder-coated over epoxy primer. Doors shall be equipped with handles. Louvers shall be stationary type and shall be arranged to provide adequate protection against rainfall at 15 degrees from vertical. Air of intake louvers shall be sized so not to exceed .5 inches of water column while providing the required genset cooling and combustion air flow. Enclosure shall be of bolted formed panel type construction. Exhaust shall be provided within the enclosure unless otherwise directed by the ENGINEER. Roof shall have sufficient strength to support an exhaust silencer. Enclosure shall be large enough to fully enclose all components necessary to the system. All doors shall be capable of being locked or have provisions for padlocks. Door hardware shall be stainless steel.

1. All raceway and conduits within the enclosure shall be sealed-tight flexible conduit or rigid aluminum or galvanized steel with malleable iron boxes and compression type fittings as appropriate for the raceways used under NEC. EMT and flex or “Greenfield” conduits are not acceptable.
2. When this outdoor enclosure is specified, the temperature specifications for unit shall be 0 degrees F to 120 degrees F with ambient air at radiator intake being 100 degrees F maximum.
3. Modular enclosures shall comply with DCA, Florida Building Code and have a minimum sustained wind rating of 150 MPH.
4. The CONTRACTOR is responsible for verifying the impact rating requirements under Florida Building Code and shall provide a generator enclosure in compliance to these standards.
5. Consult the ENGINEER prior to bid when generator is located within any “Zone 4 impact area under FBC”.
6. Enclosure shall match footprint of sub base fuel tank.

B. Sound Attenuation: Enclosure shall be insulated to attenuate sound and include sound attenuating features that direct radiant cooling air in a route to minimize ambient noise when generator is running.

C. Operational noise shall not exceed 75 dBA at 23 feet (in Free Field Conditions). Additional sound attenuation references or limitations may be required. See drawings for additional details. If generator is located within 50 feet of a commercial or residential unit, then operational noise shall not exceed 55 dBA.

D. Source dBA and sound attenuation shall be as measured and defined under ANSI S12.34-1998 and SIO 3744 as applicable. Additional local codes and standards may apply for generator operational noise. The CONTRACTOR is responsible for compliance to all local standards without change order or additional payment.

E. Fuel System: Provide unit with a UL142 compliant double-wall skid base type integral fuel tank that is “skid” mounted, unless otherwise directed by the ENGINEER’s drawings or addenda. Tank capacity shall be a maximumum of 550 gross volume gallons. The

tank capacity shall be calculated assuming the tank is 90% full and based on the generator running at full load/speed continuously for three (3) days.

F. The ENGINEER has projected fuel use estimates using equipment listed as the basis of design. The CONTRACTOR is responsible for providing the manufacturer's fuel usage calculations with submittal documents for ENGINEER's review.

G. The fuel tank shall be furnished with UL142 and FDEP required accessories to include a fuel site gauge, normal and emergency vents and fuel cap having padlocking provisions. All necessary fuel supply and return line shall be furnished pre-assembled to unit. The Fuel Tank shall meet all applicable State and local standards for the volume of fuel the tank will hold.

H. Sub base fuel tank size shall be provided and sized as shown on the contract documents and within the specifications.

I. Sub base fuel tank shall not allow pooling or ponding of water on top once generator is mounted on top.

J. Tank shall be made by a manufacturer with minimum of (10) ten years' experience in the design and construction of UL Listed, FDEP and NFPA compliant sub base fuel tanks. Manufacturer of the fuel tank must be approved and registered with the State of Florida, and have their required "EQ" file number on the supplied fuel tank. The installing CONTRACTOR is responsible for supplying fuel for the field testing.

K. The fuel tank shall be mounted under the generator skid rails, consisting of a dual wall design constructed to UL142 and standards applicable to this application under FS-62-762, NFPA 30, NFPA 37 and NFPA 110. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

L. Sub base fuel tank shall be rectangular in shape and include reinforced steel box channel for generator support.

M. Both the inner and outer tanks shall be constructed of 304 stainless steel.

N. The outer wall shall be prepared before & after primer. Prime with one coat of epoxy primer to a thickness of 12-15 mils (DFT). Outer wall finish coat shall be a high gloss, black, UV blocking epoxy primer applied to a minimum thickness of 3.5 mils (DFT). All welds and fasteners connecting the generator skid base to the fuel tank shall be similarly primed and finished. Primers shall not be electrostatically or powder applied. Primers shall be hand applied & dried in a drying booth.

O. Fuel tank shall be equipped with a magnetic liquid level fuel gauge as manufactured by Rochester Gauges, Inc. Fuel tank level shall be output as a 4-20mA signal from the generator control panel.

P. Sub base fuel tank shall have a 4 point lifting system in place when shipped to the site. It shall be the responsibility of the Generator manufacturer to recommend a lifting system along with instructions for the CONTRACTOR on site.

Q. Sub base tank testing shall consist of primary and secondary tank containment basin and shall be pressurized at 3-5 psi and leak checked to ensure integrity of sub base weld seams per UL-142 standards. A copy of this report shall accompany close-out documents. Fuel containment basin shall be sized as a minimum of 110% of the tank capacity to prevent escape of fuel into the environment in the event of a tank rupture. Provide a fuel containment basin leak detector switch.

R. The sub base tank fittings shall include the following:
   1. Appropriately sized NPT fuel supply.
   2. Fuel return fitting
   3. 2” NPT for normal vent
   4. NPT for emergency vent, sized as appropriate
   5. 2” NPT for manual fill.
   6. NPT for level gauge, sized as appropriate.
   7. 3/8” NPT basin drain
   8. 2” NPT for level alarm.
   9. NPT fitting for leak detection alarm

S. Coolant Heater: Provide engine coolant heater that operates from 120-volt AC single phase, 60 hertz power with thermostatic controls to maintain engine coolant at proper temperature to fulfill start-up requirements of NFPA 99.

T. Inlet and Exhaust Systems: Silencers and exhaust ducting to silencers shall be self-supporting when assembled. Provide all necessary supporting members for ductwork between silencer and outlet. Provide all required cutting as shown on Drawings and noted herein. The unit shall be complete with raincap. All exhaust duct shall be Schedule 10 steel pipe, minimum. Inlet silencer and filter to be self-supporting. Provide necessary supports for all intake ductwork. All intake ducts shall be Schedule 10 steel pipe, minimum.
   1. Provide a silencer which meets sound standards of a critical area. Silencer shall provide attenuation (input to output) of 25 dB or greater at frequencies of 125 hertz to 8 kilohertz. A curve shall be submitted with Shop Drawings showing attenuation (input to output) in dB versus frequency. Curve shall be on manufacturer's standard data sheet or from an independent test lab. A spiral or bellows-type flexible section of pipe shall be installed in the exhaust line between the muffler and engine manifold connection. An insulated thimble section shall be provided where exhaust line passes through roof or wall. Exhaust lines shall be pitched and a condensation trap provided at non-draining low points in line.

U. Circuit Breaker: A generator power circuit breaker shall be installed as a manual load circuit interrupter and an automatic overload and short circuit protection device.
   1. The circuit breaker shall be a solid-state trip type for all sizes rated 200 amps continuous and larger. Solid-state trip shall include Long-time, Short-time, and Instantaneous. Ground fault trip required on breakers 1,000 amps and above.

2. 100% ratings under UL shall be required as noted on ENGINEER's drawings.
3. AIC rating for generator power circuit breaker shall meet or exceed that of the upstream service entrance rating.
4. Generator power circuit breaker shall be UL listed as short circuit, service entrance rated device under UL and NEC.
5. Trip settings for all breakers shall be selected for the rating of the generator power circuit as indicated on Drawings.
6. Provide breaker and alternator trip curves in the submittal. Show coordination of curves for equipment provided.

V. Provide protective relays to protect the generator system/alternator.

W. Alternator protection equipment as basis of design shall be equal to "Amp Sentry" protection by Cummins Power Generation with the following features: Over current and short-circuit shut down - Over current warning -Single and three phase fault regulation - Over and under voltage shut down - *Over and under frequency shut down - Overload warning with alarm contact - Reverse power and reverse* Var shut down - Excitation fault. Equipment other than basis of design is subject to ENGINEER's approval. Provide full submittal and comparison data for ENGINEER's review on equipment as provided.

X. Any pump station requiring a generator shall also have a generator receptacle located on the pump control panel for a portable generator, coordinate exact model with OWNER.

2.04 AUTOMATIC TRANSFER SWITCHES

A. Automatic Transfer Switch: UL listed and 600 volt-rated with amperage rating shown on Drawings and shall be the mechanically held, electrically operated type rated for continuous duty in an unventilated sheet metal enclosure.

B. Switch shall be double throw, with an off position, having electrical operated normal-emergency positions inherently interlocked mechanically, and with main contacts mechanically attached to a common shaft. Main contacts shall be silver alloy wiping-action type. They shall be protected by arcing contacts.

C. Heavy duty emergency pushbuttons shall be provided. Emergency pushbuttons shall reset when pulled out.

D. Switch and Relay Contacts, Coils, Springs, and Control Elements: Removable from front of transfer switch without removal of the switch panels from enclosure and without disconnection of drive linkages or power conductors. Sensing and control relays shall be continuous duty industrial control type with 600 volt, 10 amp rated contacts.

E. Transfer switch internal wiring shall be composed of pre-manufactured harnesses that are permanently marked for source and destination. Harnesses shall be connected to the control system by means of locking disconnect plug(s), to allow the control system

to be easily disconnected and serviced without disconnecting power from the transfer switch mechanism.

F. Power transfer switch shall be provided with flame retardant transparent covers to allow viewing of switch contact operation but prevent direct contact with components that could be operating at line voltage levels.

G. Transfer switches that are designated on the drawings as 3-pole shall be provided with a neutral bus and lugs. The neutral bus shall be sized to carry 100% of the current designated on the switch rating.

H. Field control connections shall be made on a common terminal block that is clearly and permanently labeled.

I. Upon drop in normal voltage of 83-85 percent of rated voltage, and after an override delay of 3 seconds nominal, switch shall start generator and transfer the load to emergency source, provided emergency source voltage and frequency are 90 percent of rated or higher.

J. Upon return of normal source voltage for 5 seconds nominal, to 92-95 percent of rated, switch shall retransfer load to normal source after a minimum transfer time or if emergency source fails. Provide a 5- to 60-second adjustable time delay to maintain transfer switch in the "Off" position during transfer to either source.

K. Sensing relays shall operate without contact chatter or false response when voltage is slowly varied to dropout and pickup levels.

L. Four auxiliary contacts shall be provided: Two for transfer switch position indicating use, and two auxiliary contacts, one N.O. and one N.C. to operate after completion of the 3-second override delay for starting generator. All auxiliary contacts shall be 600 volt, 10 amp continuous rating.

M. Operator Panel. Each transfer switch shall be provided with a control panel to allow the operator to view the status and control operation of the transfer switch. The operator panel shall be a sealed membrane panel rated NEMA 3R/IP53 or better (regardless of enclosure rating) that is permanently labeled for switch and control functions. The operator panel shall be provided with the following features and capabilities:
   1. High intensity LED lamps to indicate the source that the load is connected to (source 1 or source 2); and which source(s) are available. Source available LED indicators shall operate from the control microprocessor to indicate the true condition of the sources as sensed by the control
   2. High intensity LED lamps to indicate that the transfer switch is “not in auto” (due to control being disabled or due to bypass switch (when used) enabled or in operation) and “Test/Exercise Active” to indicate that the control system is testing or exercising the generator set.
   3. “OVERRIDE” pushbutton to cause the transfer switch to bypass any active time delays for start, transfer, and retransfer and immediately proceed with its next logical operation.

4. “TEST” pushbutton to initiate a preprogrammed test sequence for the generator set and transfer switch. The transfer switch shall be programmable for test with load or test without load.
5. “RESET/LAMP TEST” pushbutton that will clear any faults present in the control, or simultaneously test all lamps on the panel by lighting them.
6. The control system shall continuously log information on the number of hours each source has been connected to the load, the number of times transferred, and the total number of times each source has failed. This information shall be available via a PC-based service tool and an operator display panel.
7. Vacuum fluorescent alphanumeric display panel with push-button navigation switches. The display shall be clearly visible in both bright (sunlight) and no light conditions. It shall be visible over an angle of at least 120 degrees. The Alphanumeric display panel shall be capable of providing the following functions and capabilities:
    a. Display source condition information, including AC voltage for each phase of normal and emergency source, frequency of each source. Voltage for all three phases shall be displayed on a single screen for easy viewing of voltage balance. Line to neutral voltages shall be displayed for 4-wire systems.
    b. Display source status, to indicate source is connected or not connected.
    c. Display load data, including 3-phase AC voltage, 3-phase AC current, frequency, KW, KVA, and power factor. Voltage and current data for all phases shall be displayed on a single screen.
    d. The display panel shall allow the operator to view and make the following adjustments in the control system, after entering an access code:
        1) Set nominal voltage and frequency for the transfer switch.
        2) Adjust voltage and frequency sensor operation set points.
        3) Set up time clock functions.
        4) Set up load sequence functions.
        5) Enable or disable control functions in the transfer switch, including program transition.
        6) Set up exercise and load test operation conditions, as well as normal system time delays for transfer time, time delay start, stop, transfer, and retransfer.
    e. Display Real time Clock data, including date, and time in hours, minutes, and seconds. The real time clock shall incorporate provisions for automatic daylight savings time and leap year adjustments. The control shall also log total operating hours for the control system.
    f. Display service history for the transfer switch. Display source connected hours, to indicate the total number of hours connected to each source. Display number of times transferred, and total number of times each source has failed.
    g. Display fault history on the transfer switch, including condition, and date and time of fault. Faults to include controller checksum error, low controller DC voltage, ATS fail to close on transfer, ATS fail to close on retransfer, battery charger malfunction, network battery voltage low, and network communications error.

N. The transfer switch control system shall be configurable in the field for any operating voltage level up to 600VAC. Provide RMS voltage sensing and metering that is accurate to within plus or minus 1% of nominal voltage level. Frequency sensing shall be accurate to within plus or minus 0.2%. Voltage sensing shall be monitored based on the normal

voltage at the site. Systems that utilize voltage monitoring based on standard voltage conditions that are not field configurable are not acceptable.

O. Transfer switch voltage sensors shall be close differential type, providing source availability information to the control system based on the following functions:
   1. Monitoring all phases of the normal service (source 1) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of normal voltage level).
   2. Monitoring all phases of the emergency service (source 2) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of pickup voltage level).
   3. Monitoring all phases of the normal service (source 1) and emergency service (source 2) for loss of a single phase.

P. The transfer switch shall be configurable to control the operation time from source to source (program transition operation). The control system shall be capable of enabling or disabling this feature, and adjusting the time period to a specific value. The transfer switch shall incorporate adjustable time delays for generator set start (adjustable in a range from 0-15 seconds); transfer (adjustable in a range from 0-120 seconds); retransfer (adjustable in a range from 0-30 minutes); and generator stop (cooldown) (adjustable in a range of 0-30 minutes).

Q. The transfer switch shall be configurable to accept a relay contact signal and a network signal from an external device to prevent transfer to the generator service.

R. The control system shall be designed and prototype tested for operation in ambient temperatures from -40C to +70C. It shall be designed and tested to comply with the requirements of the noted voltage and RFI/EMI standards.

S. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs, and relays on all outputs, to provide optimum protection from line voltage surges, RFI and EMI.

T. Enclosures shall be UL listed. The enclosure shall provide wire bend space in compliance to the latest version of NFPA70. The cabinet door shall include permanently mounted key type latches.

U. Transfer switch equipment shall be provided in a NEMA 4X enclosure.

V. The enclosure shall provide code-required wire bend space at point of entry as shown on the drawings. Manual operating handles and all control switches (other than key-operated switches) shall be accessible to authorized personnel only by opening the key-locking cabinet door. Transfer switches with manual operating handles and/or non key-operated control switches located on outside of cabinet do not meet this specification and are not acceptable.

W. Transfer switch normally connects an energized utility power source (source 1) to loads and a generator set (source 2) to the loads when normal source fails. The normal

position of the transfer switch is source 1 (connected to the utility), and no start signal is supplied to the genset.

X. Generator Set Exercise (Test) With Load Mode. The control system shall be configurable to test the generator set under load. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate to connect the loads to the generator set by opening the normal source contacts, and closing the alternate source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   5. The generator set shall operate connected to the load for the duration of the exercise period. If the generator set fails during this period, the transfer switch shall automatically reconnect the generator set to the normal service.
   6. On completion of the exercise period, the transfer switch shall operate to connect the loads to the normal source by opening the alternate source contacts, and closing the normal source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   7. The transfer switch shall operate the generator set unloaded for a cooldown period, and then remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Y. Generator Set Exercise (Test) Without Load Mode. The control system shall be configurable to test the generator set without transfer switch load connected. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate the generator set unloaded for the duration of the exercise period.
   5. At the completion of the exercise period, the transfer switch shall remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Z. Factory Testing. The transfer switch manufacturer shall perform a complete operational test on the transfer switch prior to shipping from the factory. A certified test report shall be provided to OWNER & ENGINEER upon delivery of generator. Test process shall include calibration of voltage sensors.

AA. The manufacturer of the transfer switch and generator set shall maintain service parts inventory at a central location (within 50 miles of the city) which is accessible to the service location 24 hours per day, 365 days.

BB. The transfer switch shall be serviced by a local service organization that is trained and factory certified in both generator set and transfer switch service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

CC. The manufacturer shall maintain model and serial number records of each transfer switch provided for at least 20 years.

DD. Accessory devices shall be provided as follows:

1. Time delay to override harmless power dips and outages. (Inverse time characteristic with voltage.)
2. Test switch.
3. Auxiliary contacts (as specified herein).
4. Selector relay (as specified herein).
5. Lockout relay (sensitive to voltage and frequency).
6. Full phase protection with nominal 75-80 percent dropout and 92-95 percent pickup on phase relay.
7. Adjustable time delay on retransfer to normal source. Minimum retransfer of 2 minutes and maximum of 25 minutes. Built-in circuitry to nullify the retransfer time delay if the emergency source fails and the normal source is available.
8. Adjustable (10-20 minutes) time delay for running generator unloaded after transfer for cool down.
9. Adjustable time delay or delays (5 to 60 seconds) for holding transfer switch in the "Off" position when switching from standby source to normal and normal source to standby.
10. Engine starting contact.
11. A selector switch shall permit generator to be exercised with or without load.

2.05 ACCESS PLATFORM

A. Elevated platforms shall be provided where necessary to provide access to the generator for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

B. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered

Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

C. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.01 INSTALLATION OF DIESEL ENGINE-DRIVEN GENERATOR SETS

A. Install diesel engine-driven generator units as indicated, in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that engine-generator units fulfill requirements. Comply with NFPA and NEMA standards pertaining to installation of engine-generator sets and accessories.

B. Coordinate with other work, including raceways, electrical boxes and fittings, fuel tanks, piping, and accessories, as necessary to interface installation of engine generator equipment work with other work.

C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B, and the National Electrical Code.

D. Install units on steel spring type vibration isolators fastened to an inertia base in accordance with manufacturer's instructions.

E. Connect fuel piping to generator equipment as indicated, and comply with manufacturer's installation instructions.

3.02 GROUNDING

A. Provide equipment grounding connections for diesel engine-driven generator unit and automatic transfer switch as indicated. Connect generator equipment ground to ground ring around generator pad. Ground ring shall have a minimum of four (4) 5/8” x 20’ copper-clad ground rods. Connect ground ring to sites counterpoise. Connections to ground ring, counterpoise and ground rods shall be exothermically welded. Add additional ground rings as required to meet five (5) ohm (or less) specified resistance. Tighten connections to comply with tightening torques specified in UL Standard 486A to ensure permanent and effective grounding.

3.03 FIELD QUALITY CONTROL

A. Start-up Testing:
   1. Engage local equipment manufacturer's representative to perform start-up and building load tests upon completion of installation, with ENGINEER in attendance; provide certified test record. Tests are to include the following:
      a. Check fuel, lubricating oil, and antifreeze in liquid-cooled models for conformity to manufacturer's recommendations under environmental conditions present.
      b. Test prior to cranking engine for proper operation, accessories that normally function while the set is in a standby mode. Accessories include: alternator strip heater, engine coolant heater, and battery charger.
      c. Check, during start-up test mode, for exhaust leaks, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage, and phase rotation.
      d. Test, by means of simulated power outage, automatic start-up by remote-automatic starting, transfer of load, and automatic shutdown. Prior to this test, adjust for proper system coordination, transfer switch timers. After installation inspection and fine adjustments have been completed, the Generator set shall be connected to resistive type load banks, matching the full rated output of this installed generator set.

1) A four (4) hour 100% resistive load bank test, matching the full rated output of this installed generator set, is to be performed after installation in the presence of the ENGINEER, OWNER, and any required Authority. Coordinate with ENGINEER, OWNER, and any required Authority for appropriate test date and time. During this load bank test, monitor the engine temperature, oil pressure, battery charge level, generator voltage, amperes, and frequency. Voltage dip will be observed with a recording oscilloscope furnished by supplier for this test only. Voltage dip is defined as the peak-to-peak voltage minimum, at starting compared to the average peak-to-peak voltage with the starting load running. The difference shall be less than 25 percent of the running P-P voltage.
2) Provide a test of safeties and transfer under NFPA-110 criteria.
3) Provide all tests in the presence of an OWNER representative.
Upon completion of installation and testing, demonstrate capability and compliance of system with requirements. Where possible, correct malfunctioning units at Site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting. Initial testing and retesting to be at no cost to OWNER.

3.04 QUALITY ASSURANCE

A. Commissioning and Qualifications shall be performed by Manufacturer's authorized and factory certified trained for installation of units personnel.

B. Maintenance Proximity: The commissioning and selling manufacturer office location shall not be more than two hours' normal travel time from the project site.

C. Access to Service & Parts: Manufacturer for the Generator shall maintain a full operational facility, with service, parts and distribution center within 50 miles of the Project Site. A ‘sales office’ will not qualify as a service & parts facility. A “dealer” that buys product from a Factory Distributor does not qualify.

D. Manufacturer’s Qualifications: The manufacturer shall be in the business of manufacturing power generation systems under ISO-9001 certification process for over 10 years. The manufacturer shall employ service, engineering, and parts staff within a factory-owned or authorized service center, within 50 miles of Project site.

E. When an “upfitter” is used for a fuel tank or generator enclosure, the manufacturer shall be located in the same state as the Project Site.

F. Upfitters shall provide their UL Listing number on all documentation of compliance. UL as an “assembly” under the generator manufacturer’s main UL Listing is not acceptable.

G. cUL (or other) listing or compliance shall not be accepted in lieu of UL listing and label.

H. Manufacturer Service Qualifications: The generator manufacturer shall have a service center within a 2-hour driving distance from the project site. This service center shall have engineering, application support, on-site rental, start-up, commissioning, and

replacement parts and labor for the maintenance and repair of the same brand of power generation system equipment as supplied on the Project.

I. Source Limitations: Obtain all equipment under this section through one source as practical and possible under the limitations of the manufacturer’s ability to provide equipment.

J. The equipment under this Section must be sold to the installer or the OWNER by an entity operating from within the project State.

K. The equipment under this Section must be installed by a CONTRACTOR operating from offices located within the Project state.

L. Equipment under this section shall be provided by a single manufacturer, so as to provide only one source of warranty and responsibility whenever possible.

M. Generator engine, alternator, and generator controller shall be provided by a single manufacturer exceptions must be noted in submittal. The ENGINEER reserves the right to reject exceptions based on the equipment used as the basis of design in comparison.

3.05 PERSONNEL TRAINING

A. Building Operating Personnel Training: Train OWNER's building personnel in procedures for starting-up, testing, and operating diesel engine-driven generator sets. In addition, train OWNER's personnel in periodic maintenance of batteries.

END OF SECTION

SECTION 330518

LAYING AND JOINTING BURIED PIPELINES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Installation of all underground pipelines. Provide pipeline materials, coatings and linings as specified and pipe of the types, sizes and classes shown or specified.

1. Use proper and suitable tools and appliances for the safe and convenient cutting, handling, and laying of the pipe and fittings.

2. Use suitable fittings where shown and at connections or where grade or alignment changes require offsets greater than those recommended and approved.

3. Lay all underground pipelines not supported on piles or concrete cradle in select fill bedding material.

4. Close off all lines with bulkheads when pipe laying is not in progress.

B. Related Work Specified in Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 312316 – Excavation - Earth and Rock

4. Section 312319 – Groundwater Control for Open Excavation

5. Section 312323 – Backfilling

6. Section 330502 – High Density Polyethylene (HDPE) Pipe and Fittings

7. Section 330503 - Polyvinyl Chloride (PVC) Pipe and Fittings

8. Section 330504 - Ductile Iron Pipe (DIP) and Fittings

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 2774 - Practice for Underground Installation of Thermoplastic Pressure Piping

2. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

3. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60000 psi Tensile

4. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, C25, 125, 250, 800

5. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges

6. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

7. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe With Threaded Flanges

8. Uni-Bell - Handbook of PVC Pipe

9. Collier County - Utilities Standards and Procedures Ordinance

1.3 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all products and materials as specified in Division 1 and as follows:

B. Transportation and Delivery: Take every precaution to prevent injury to the pipe during transportation and delivery to the site.

C. Loading and Unloading: Take extreme care in loading and unloading the pipe and fittings.

1. Work slowly with skids or suitable power equipment, and keep pipe under perfect control at all times.

2. Under no condition is the pipe to be dropped, bumped, dragged, pushed, or moved in any way that will cause damage to the pipe or coating.

D. Sling: When handling the pipe with a crane, use a suitable sling around the pipe.

1. Under no condition pass the sling through the pipe. Interior of pipe is to be kept free of dirt and foreign matter at all times.

2. Use a nylon canvas type sling or other material designed to prevent damage to the pipe and coating.

3. When handling reinforced concrete pipe or uncoated steel or ductile iron pipe, steel cables, chain or like slings are acceptable.

E. Damaged Piping: If in the process of transportation, handling, or laying, any pipe or fitting is damaged, replace or repair such pipe or pipes.

F. Blocking and Stakes: Provide suitable blocking and stakes installed to prevent pipe from rolling.

1. Obtain approval for the type of blocking and stakes, and the method of installation.

G. Storage for Gaskets: Store gaskets for pipe joints in a cool place and protect gaskets from light, sunlight, heat, oil, or grease until installed. Store gaskets in a sealed container (such as a vented drum). When long-term storage with exposure to direct sunlight is unavoidable, PVC pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excessive heat accumulation (Uni-Bell PVC Handbook).

1. Do not use any gaskets showing signs of cracking, weathering or other deterioration.

2. Do not use gasket material stored in excess of six months without approval.

1.4 FIELD CONDITIONS

A. Repair of Sanitary Sewers and Services: Rebed, in compacted select fill material, sanitary sewers which cross over the new pipe or which cross under the new pipe with less than 12 inches clear vertical separation. Compact the bedding to densities required for new pipeline construction and extend bedding below the sewer to undisturbed earth. Reconstruct sewers damaged by pipeline construction.

1. Furnish and install all materials and do all work necessary for the reconstruction or repairs of sanitary sewers and services.

2. Provide pipe for reconstruction of sanitary sewers and services meeting the appropriate specification requirements.

3. Provide pipe of the same size as the existing sewer or when the same size is not available, use the next larger size of pipe. Obtain approval of joints made between new pipe and existing pipe.

PART 2 PRODUCTS

A. The materials allowed for buried sewer pipes are PVC, HDPE or Ductile Iron Pipe.

PART 3 EXECUTION

3.1 PREPARATION

A. Dry Trench Bottoms: Lay pipe only in dry trenches having a stable bottom.

1. Where groundwater is encountered, make every effort to obtain a dry trench bottom in accordance with Section 312319.

2. Perform trench excavation and backfill in accordance with Sections 312316 and 312323.

3.2 INSTALLATION

A. General: Install all piping in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1. Where pipe joint deflections are used, do not exceed 80 percent of the maximum deflection limits shown in AWWA C600. Gravity systems shall contain no joint deflection.

1. Arrange miscellaneous pipelines, which are shown in diagram form on the Plans, clear of other pipelines and equipment.

2. Gravity systems shall not contain vertical dips greater than one ~~and a half~~ inch~~es~~ ~~(1.5")~~ (1.0").

B. Code Requirements: Provide pipeline installations complying with AWWA C600 for iron pipe, AWWA Manual M11 for steel pipe, ASTM D 2774 for thermoplastic pressure piping, and as modified or supplemented by the Specifications.

C. Pipe Laying - General:

1. Thoroughly inspect all pipe for damage and cleanliness. If found to be defective, tag, remove and replace pipe with satisfactory pipe or fittings at no additional charge to COUNTY.

2. Generally, lay all pipe with bells pointing ahead.

3. Carefully place all pipe, pipe fittings, valves and hydrants into trench by means of a derrick, ropes or other suitable tools or equipment in such a manner as to prevent damage and check for alignment and grade.

4. Make adjustments to bring pipe to line and grade by scraping away or filling in select fill material under the body of the pipe.

5. Wedging or blocking up the pipe barrel is not permitted.

6. Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely shove the pipe home.

7. As the work progresses, clean the interior of pipelines of all dirt and superfluous materials of every description.

8. Keep all lines absolutely clean during construction.

9. Lay pipelines accurately to line and grade.

10. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other material from entering the pipe.

D. Pipe Laying - Trenches:

1. Carefully lay all pipelines in trench excavations piece by piece using suitable tools or equipment on select fill bedding (refer to Utilities Standards and Procedures Ordinance, Section 9.1.2), concrete cradle or other foundations as shown, specified or ordered in writing. Prevent damage to materials, protective coatings and linings.

2. Do not dump or drop pipe or pipe materials into trench.

3. Properly secure the pipe against movement and make the pipe joints in the excavation as required.

4. Carefully grade and compact pipe bedding.

5. Bell Holes:

a. Cut out bell holes for each joint as required to permit the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length.

b. Thoroughly tamp bell holes full of select fill material following the making of each joint to provide adequate support to the pipe throughout its entire length.

E. Other Foundations: Install pipelines laid on other types of foundations as specified for such other foundations or as ordered in writing.

F. Field Cuts of Pipelines: For shorter than standard pipe lengths, make field cuts in a manner producing a cut square and perpendicular to the pipe axis. Remove any sharp, rough edges which otherwise might injure the gasket.

G. Procedure for sealing cut ends and repairing field damaged areas of polyethylene lined pipe and fittings is as follows:

1. Remove burrs caused by field cutting of ends or handling damage and smooth out edge of polyethylene lining if made rough by field cutting or handling damage.

2. Remove oil or lubricant used during field cutting operations.

3. Areas of loose lining associated with field cutting operation must be removed and exposed metal cleaned by sanding or scraping. For larger areas, remove loose lining and dirt, then roughen bare pipe surface by scratching or gouging with a small chisel to provide an anchor pattern for the epoxy. It is recommended that the polyethylene lining be stripped back by chiseling, cutting, or scraping about 1 inch to 2 inches into well adhered lined area before patching. This ensures that all areas of undercutting have been removed. Be sure to roughen an overlap of 1 inch to 2 inches of polyethylene lining in area to be epoxy coated. This roughening should be done with a rough grade emery paper (40 grit), rasp, or small chisel. Avoid honing, buffing, or wire brushing since these tend to make surface to be repaired too smooth for good adhesion.

4. With area to be sealed or repaired clean and suitably roughened, apply a thick coat of a two-part coal tar epoxy (see County Approved Product List, Appendix F). The heavy coat of epoxy must be worked into the scratched surface by brushing. Mixing and application procedure for the epoxy must follow the epoxy manufacturer's instructions.

5. It is important that the entire freshly cut, exposed metal surface of the cut pipe be coated. To ensure proper sealing, overlap at least 1 inch of the roughened polyethylene lining with this two-part epoxy system.

H. Ductile Iron Pipe Mechanical Joints:

1. Assembly: In making up mechanical joints, center the spigot in the bell.

   a. With a wire brush just prior to assembly of the joint thoroughly brush 8 inches outside of spigot and inside of bell with which the rubber gasket comes in contact. Remove all oil, grit, tar (other than standard coating) and other foreign matter from joint.

   b. Brush lubricant over the gasket just prior to installation. (Note: There is only one rubber gasket size for each diameter of pipe.)

   c. Press the gasket into place within the bell and move the gland into position, bolts inserted, and the nuts tightened finger tight.

   d. Tighten the nuts with a torque wrench so that the gland is brought up toward the pipe evenly. Torque wrenches shall be set as specified in AWWA C111. Spanner type wrenches not longer than specified in

AWWA C111 may be used with the permission of County Manager or designee.

e. Tighten all nuts 180 degrees apart alternately in order to produce equal pressure on all parts of the gland.

2. Torques: Apply the following range of bolt torques:

Size Inches	Range of Torque - ft. lbs
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

3. Remaking of Joints: If effective sealing is not obtained at the maximum torque listed above, disassemble and reassemble the joint after thorough cleaning.

I. Ductile Iron Pipe Rubber Gasket Joints:

1. Assembly: In making up the rubber gasket joint, brush the gasket seat in the socket thoroughly with a wire brush and wipe the gasket with a cloth.

a. Place the gasket in the socket with the large round end entering first so that the groove fits over the bead in the seat.

b. Apply a thin film of lubricant (AWWA C600) to the inside surface of the gasket that will come in contact with the entering pipe.

c. Brush the plain end of the pipe to be entered thoroughly with a wire brush and place it in alignment with the bell of the pipe to which it is to be joined.

d. Exert sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket to make the joint.

2. Positioning: Before proceeding with backfilling, feel completely around the joint using a feeler gauge to confirm that the gasket is in its proper position.

a. If the gasket can be felt out of position, withdraw the pipe and examine the gasket for cuts or breaks.

b. If the gasket has been damaged, replace it with a new one before re-installing the pipe.

3. Optional Mechanical Joints: Use mechanical joint fittings that meet the requirements of Section 330504 with the rubber gasket joint pipe when specified or when rubber gasket fittings are not available.

J. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed, and in connections built into pipelines where adjoining pipelines or structures have not been completed and are not ready to be connected.

1. Remove bulkheads encountered in connecting sewers or structures included in this Contract, or in pipelines or structures previously built, when they are no longer needed or when ordered.

K. Temporary Blow-Off Assembly: Dead-end water lines shall be temporarily ended with a blow-off as shown in Collier County Standard Details. After full bore flush replace with a fire hydrant meeting the requirements of Section 331619.

L. Sleeve Type Couplings: For sleeve type couplings, equally tighten diametrically opposite bolts on the connection so that the gaskets will be brought up evenly all around the pipe.

1. Torque Wrenches: Do the final tightening with torque wrenches set for the torque recommended by the coupling manufacturer.

M. Concrete Encasement: Concrete encasement shall be constructed in accordance with Collier County Standard Details when:

1. A potable water main crosses at a depth that provides less than 18 inches clear distance from sewer lines in which case a Deviation Form request should be completed. Encase the sewer main unless specifically approved by Collier County Utilities. Encasement shall extend a minimum 10 feet on each side of the point of crossing. Pressure test both pipelines to 150 psi after the concrete has properly cured.

2. A water main running parallel to a sewer line provides less than 10 feet separation from sewer lines, in which case a Deviation Form Request needs to be completed. Encase the sewer main unless specifically approved by Collier County Utilities.

3. The ENGINEER has ordered the line encased. NO POTABLE WATER MAIN SHALL BE ENCASED IN CONCRETE UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY MANAGER OR DESIGNEE.

The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

N. Valve Box Setting: Install valve boxes vertical and concentric with the valve stem.

1. Adjust valve-box to final grade at the time designated by the County Manager or designee.

2. Build a collar, as shown in the standard details, 18 inches by 18 inches by 6 inches or 24 inch diameter round by 6 inches flush to grade of top of box. Similar collar shall be poured flush with grade and top of unpaved areas.

3. Satisfactorily reset any valve box that is moved from its original position, preventing the operation of the valve.

4. Replace any valve box that has been damaged.

O. Identification:

1. Metallized Warning Tape: For DIP and PVC pipe (other than gravity sewer pipe and laterals) to be installed, 3-inch detectable marking tape, of appropriate color and appropriate warning statement, shall be placed along the entire pipe length. In all cases, marking tape shall be installed two feet (2') below grade or one-half the pipe's bury, whichever is less, during backfill operations (refer to Utilities Standards Manual Section 1 – 1.1 and 2.2.1). All PVC pipe, PVC fittings, and identification tape shall be color-coded per Collier County Standards. HDPE pipe installed by horizontal directional drilling will not be required to be marked with metalized warning tape.

2. Electronic Markers (see County Approved Product List, Appendix F): Install electronic markers twenty-four inches (24") below final grade, above pipe, at all bends or changes in alignment and every two hundred and fifty feet (250') along the pipe between bends.

P. Separation From Other Pipe Systems:

1. Parallel Water and Sewer or Non-Potable Lines: Sanitary sewer lines, storm sewers or force mains shall be separated from water mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. Non-potable, reclaimed or reuse water mains shall be separated from water mains, gravity sewers or force mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 5 feet center to center or 3 feet outside to outside. When this standard cannot be maintained, the sewer line shall be concrete encased for a distance of 10 feet each way from the water line and any other conduit, with a minimum vertical clearance of 12 inches being provided at all times. See Section 1 - Design Criteria, Subsection 1.2.3.

2. Crossing Water and Sewer or Non-Potable Lines: Water mains crossing over a sewer or non-potable water line shall be (bottom of water main to top of sewer) separated by at least 18 inches unless local conditions or barriers

prevent an 18 inch vertical separation. All crossings with vertical clearance less than 18 inches shall be made using sewer pipe thickness Class 200 AWWA C900 PVC pipe, and water pipe of Class 51 Ductile iron pipe, for a distance of 10 feet on each side of the crossing. The gravity sewer pipe in these locations shall be backfilled with USCS Class I bedding stone to a height of 6 inches above the crown of the pipe. When water mains cross under a sewer, both mains shall be constructed of C900 Class 200 PVC pipe with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing with no intermediate joints. Additionally, a section of water main pipe shall be centered at the point of crossing. See Section 1 – Design Criteria, Subsection 1.3.

Q. Aerial Crossings:

1. Pipes spanning elevated pier crossings shall be flanged ductile iron Pressure Class 350 pipe conforming to AWWA C115, C150 & C151. Pipe spanning on piers spaced further apart than normal pipe length of 18 or 20 ft. shall be multiple length pipe with interior flanged joints with a rubber gasket pipe (see County Approved Product List, Appendix F). The pipe wall thickness and flanged joints shall be designed to safely span the elevated piers under working pressure without exceeding the allowable stresses and conform to AWWA C150. Limit pipe deflection at center of span with pipe full of water to 1/720 of span length. Provide expansion joints for between above ground and below ground wastewater lines.

2. Flanges shall conform to AWWA C150 and C115. All bolts and nuts used in aerial crossings shall be 304 stainless steel. Gaskets shall be full faced or recessed "O-Ring" type to prevent leaks in pipe under stress in the aerial crossing.

3. Outside surface of all pipe, flanges or spool pieces shall be shop coated with zinc primer, High Build Epoxy protective coat and a finish coat of polyurethane high gloss. Color shall be Federal Safety Blue for potable water mains and Pantone Purple 522 C for non-potable irrigation water mains.

4. Install operating valves or other flow regulating devices on each shoreline or at a safe distance from each shoreline to prevent discharge in the event the line is damaged.

5. Install supports for all joints in pipes utilized for aerial crossings and to prevent overturning and settlement. Expansion jointing is specified between above ground and below ground sewers and force mains.

3.3 FIELD QUALITY CONTROL

A. Testing: Test pipelines in accordance with Section 022501.

1. Test valves in place, as far as practicable, and correct any defects in valves or connections.

2. Gravity Sewer Lines: Test in accordance with Section 022501

B. Inspection: Clean, inspect, and examine each piece of pipe and each fitting and special for defects before it is installed.

1. Cut away any lumps or projections on the face of the spigot end or the shoulder.

2. Do not use any cracked, broken, or defective pieces in the work.

3. If any defective piece should be discovered after having been installed, remove and replace this piece with a sound piece in a satisfactory manner at no increase in Contract Amount.

3.4 CLEANING

A. General: Thoroughly clean all pipe before it is laid and keep it clean until it is accepted in the completed work.

B. Removal of Materials: Exercise special care to avoid leaving bits of wood, dirt, and other foreign particles in the pipe. If any particles are discovered before the final acceptance of the work, remove and clean the pipe.

3.5 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water in accordance with Section 025400.

END OF SECTION

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SECTION 331619

HYDRANTS

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Furnish and install fire hydrants where shown on the Drawings or directed by the ENGINEER.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 033100 – Concrete for Non-Plant Work

B. Section 331200 – Water Valves and Appurtenances

1.3 QUALITY ASSURANCE

A. Install hydrants to meet current requirements of Collier County Utilities.

B. Provide manufacturer's certificate those products meet or exceed minimum requirements as specified.

1.4 SUBMITTALS

A. Submit manufacturer's certificates on conformance.

B. Shop Drawings: Submit manufacturer's drawings and data sheets for material to be supplied under this Section. Indicate sizes and types to be installed.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. During loading, transportation and unloading, exercise care to prevent damage to materials.

B. Handling: Fire hydrants should be unloaded carefully. The hydrant should be carefully lowered from the truck to the ground, not dropped. Only hoists and slings with adequate load capacity to handle the weight of the hydrant shall be used.

C. Storage: Hydrants should be stored in the fully closed position to prevent entry of foreign material that could cause damage to the seating surfaces. Whenever practical, hydrants should be stored indoors. If outside storage is required, means should be provided to protect the operating mechanism. In outside storage, parts and flanges should be protected from the weather and foreign materials.

PART 2 PRODUCTS

2.1 FIRE HYDRANTS

A. Fire hydrants shall be of the dry barrel, compression type conforming to AWWA C502 “Standard for Dry-Barrel Fire Hydrants” and additional requirements as set forth herein.

B. Hydrant shall have break away upper sections capable of ready replacement without loss in the event of traffic damage. Each hydrant shall have a 6" bottom inlet connection and valve opening at least 5-1/4 inches in diameter. Hydrants shall have a national standard pentagon 1.5 inch, point to flat operating nut and turn to the left (counter clockwise) to open. Each hydrant shall be fitted with one 4-1/2-inch pumper connection and two 2-1/2 inch hose connections, both having threads that conform to the Fire Division Standard for the area. Hose caps shall be chained (unless specified without by appropriate fire control district) to the hydrant barrel and fitted with nuts similar to the hydrant operating nuts. Each hydrant shall have a barrel of sufficient length to bring the bottom of the 6" pipe connection 3 feet below the surface of the finished ground. Each hydrant shall have breakaway flanges and be made in at least two sections bolted together. All interior working parts of the hydrant shall be removable from the top of the hydrant to allow repairs without removing the hydrant barrel after it has been installed. Hydrants shall have renewable O-ring stem seals. Hydrant barrels shall be painted AWWA Safety Yellow (lead free) or as specified by appropriate fire control district. They shall be designed for a working pressure of 150 psi.

C. Hydrant shall have no drain ports. If ports exist, they shall be plugged with a threaded plug.

D. Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stops shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir with O-ring seals.

E. Hydrants shall be designated for 150 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drain shall function and there shall be no leakage into the bonnet.

F. Hydrants shall be of the years manufacture when construction commenced.

G. Acceptable models, see Appendix F, County Approved Product List.

PART 3 EXECUTION

3.1 INSTALLATION

A. Set hydrants plumb and in true alignment with mains. Utilize restrained joints as shown in the Collier County Standard Details. Carefully backfill around hydrants so as not to disturb the hydrant and thoroughly compact backfill so as to support the hydrant securely. The hydrants ~~shall have 18-inch~~ clearance measured from finish grade to the center of pumper connection shall be based upon manufacturers recommendations.

B. Hydrants shall be located a minimum of 4 feet from the curb in urban areas, and a minimum of 14 feet from the edge of pavement in rural areas, and in accordance with local Fire Department requirements. A gate valve shall be provided at the connection to the main as shown in the Standard Details.

C. Hydrants requiring a lead to cross a roadway shall have a valve on both sides of the road. The valve nearest the hydrant must be within 20 feet of the hydrant. This requirement is not applicable to privately owned and operated water distribution systems.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 312316

EXCAVATION - EARTH AND ROCK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for performing opencut excavations to the widths and depths necessary for constructing structures and pipelines, including excavation of any material necessary for any purpose pertinent to the construction of the Work.

B. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 033100 – Concrete, Masonry, Mortar and Grout

3. Section 312319 – Groundwater Control for Open Cut Excavation

4. Section 312323 – Backfilling

5. Section 314000 – Shoring, Sheeting and Bracing

1.2 DEFINITIONS

A. Earth: "Earth" includes all materials which, in the opinion of the ENGINEER, do not require blasting, barring, wedging or special impact tools for their removal from their original beds, and removal of which can be completed using standard excavating equipment. Specifically excluded are all ledge and bedrock and boulders or pieces of masonry larger than one cubic yard in volume.

B. Rock: "Rock" includes all materials which, in the opinion of the ENGINEER, require blasting, barring, wedging and/or special impact tools such as jack hammers, sledges, chisels, or similar devices specifically designed for use in cutting or breaking rock for removal from their original beds and which have compressive strengths in their natural undisturbed state in excess of 300 psi. Boulders or masonry larger than one cubic yard in volume are classed as rock excavation.

1.3 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Engage the services of a Professional Engineer who is registered in the State of Florida to design all cofferdam and sheeting and bracing systems which the CONTRACTOR feels necessary for the execution of his work. Submit to the ENGINEER a signed statement that he has been employed by the CONTRACTOR to design all sheeting and bracing systems. After the systems have been installed, furnish to the ENGINEER an additional signed statement that the cofferdams and sheeting and bracing systems have been installed in accordance with his design.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.4 SITE CONDITIONS

A. Geotechnical Investigation: A geotechnical investigation may have been prepared by the COUNTY and ENGINEER in preparing the Contract Documents.

1. The geotechnical investigation report may be examined for what ever value it may be considered to be worth. However, this information is not guaranteed as to its accuracy or completeness.

2. The geotechnical investigation report is not part of the Contract Documents.

B. Actual Conditions: Make any geotechnical investigations deemed necessary to determine actual site conditions.

C. Underground Utilities and Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities. Any and all variations from this order must be the Water or Wastewater Department.

2. Before commencement of any excavation at road crossings or any boring or any drilling, the contractor shall mark the proposed run alignment with white paint or flags. Subsequent to placement of the white markings, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit ~~www.callsunshine.com~~ www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. ~~and verified by Collier County Locate Department personnel before performing work~~. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any

other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. ~~numeric pager at 239-890-0809~~. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits. ~~delay or denial of permit~~.

4. The contractor must comply with all provisions of Florida Statute 556, the Underground Facility Damage Prevention and Safety Act.

D. Quality and Quantity: Make any other investigations and determinations necessary to determine the quality and quantities of earth and rock and the methods to be used to excavate these materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

A. Clearing: Clear opencut excavation sites of obstructions preparatory to excavation. Clearing in accordance with Section 017416, includes removal and disposal of vegetation, trees, stumps, roots and bushes, except those specified to be protected during trench excavation.

B. Banks: Shore or slope banks to the angle of repose to prevent slides or cave-ins in accordance with Section 314000.

C. Safety: Whenever an excavation site or trench is left unattended by the CONTRACTOR or when an area is not within 100 feet of observation by the CONTRACTOR, the excavation site or trench shall be filled and/or, at the County's Manager or designee discretion, protected by other means to prevent accidental or unauthorized entry. Include barricades and other protection devices requested by the ENGINEER or County Manager or designee, including temporary fencing, snow fencing, or temporary "structure" tape. Such safety items shall not relieve the CONTRACTOR of any site safety requirements or liabilities established by Federal, State and local laws and agencies, including OSHA, but is intended as additional safety measures to protect the general public.

D. Hazardous Materials: If encountered, take care of hazardous materials not specifically shown or noted in accordance with Section 015000.

E. During excavation and any site work, take storm water pollution prevention measures to ensure that water quality criteria are not violated in the receiving water body and all state and local regulatory requirements are met.

3.2 STRUCTURE EXCAVATION

A. Excavation Size: Provide excavations of sufficient size and only of sufficient size to permit the Work to be economically and properly constructed in the manner and of the size specified.

B. Excavation Shape: Shape and dimension the bottom of the excavation in earth or rock to the shape and dimensions of the underside of the structure or drainage blanket wherever the nature of the excavated material permits.

C. Compaction: Before placing foundation slabs, footings or backfill, proof roll the bottom of the excavations to detect soft spots.

1. For accessible areas, proof roll with a ten wheel tandem axle dump truck loaded to at least 15 tons or similarly loaded construction equipment.

2. For small areas, proof roll with a smooth-faced steel roller filled with water or sand, or compact with a mechanical tamper.

3. Make one complete coverage, with overlap, of the area.

4. Overexcavate soft zones and replace with compacted select fill.

3.3 TRENCH EXCAVATION

A. Preparation: Properly brace and protect trees, shrubs, poles and other structures which are to be preserved. Unless shown or specified otherwise, preserve all trees and large shrubs. Hold damage to the root structure to a minimum. Small shrubs may be preserved or replaced with equivalent specimens.

B. Adequate Space: Keep the width of trenches to a minimum, however provide adequate space for workers to place, joint and backfill the pipe properly.

1. The minimum width of the trench shall be equal to at least 3.5 feet or the outside diameter of the pipe at the joint plus 8-inches for unsheeted trench or 12 inches for sheeted trench, whichever is greater. Conform the trench walls to OSHA Regulations.

2. In sheeted trenches, measure the clear width of the trench at the level of the top of the pipe to the inside of the sheeting.

C. Depth:

1. Excavate trenches to a minimum depth of 8 inches, but not more than 12 inches, below the bottom of the pipe so that bedding material can be placed in the bottom of the trench and shaped to provide a continuous, firm bearing for pipe barrels and bells.

2. Standard trench grade shall be defined as the bottom surface of the utility to be constructed or placed within the trench. Trench grade for utilities in rock or other non-cushioning material shall be defined as additional undercuts backfilled with crushed stone compacted in 6-inch lifts, below the standard 8-inches minimum trench undercut. Backfill excavation below trench grade not ordered in writing by the ENGINEER with acceptable Class I, II or III embedment material to trench grade and compact to density equal to native soil.

D. Unstable or Unsuitable Materials: If unstable or unsuitable material is exposed at the level of the bottom of the trench excavation, excavate the material in accordance with the subsection headed "Authorized Additional Excavation".

1. Remove material for the full width of the trench and to the depth required to reach suitable foundation material.

2. When in the judgment of the ENGINEER the unstable or unsuitable material extends to an excessive depth, the ENGINEER may advise, in writing, the need for stabilization of the trench bottom with additional select fill material, crushed stone, washed shell, gravel mat or the need to provide firm support for the pipe or electrical duct by other suitable methods.

3. Crushed stone, washed shell and gravel shall be as specified in Section 312323.

4. Payment for such trench stabilization will be made under the appropriate Contract Items or where no such items exist, as a change in the Work.

E. Length of Excavation: Keep the open excavated trench preceding the pipe laying operation and the unfilled trench, with pipe in place, to a minimum length which causes the least disturbance. Provide ladders for a means of exit from the trench as required by applicable safety and health regulations.

F. Excavated Material: Neatly deposit excavated material to be used for backfill at the sides of the trenches where space is available. Where stockpiling of excavated material is required, obtain the sites to be used and maintain operations to provide for natural drainage and not present an unsightly appearance.

G. Water: Allow no water to rise in the trench excavation until sufficient backfill has been placed to prevent pipe flotation. Provide trench dewatering in accordance with Section 312319.

3.4 EXCAVATION FOR JACKING AND AUGERING

A. Jacking and Augering Requirements: Allow adequate length in jacking pits to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Provide sufficient pit width to allow ample working space on each side of the jacking frame. Allow sufficient pit depth such that the invert of the pipe, when placed on the guide frame, will be at the elevation desired for the completed line. Tightly sheet the pit and keep it dry at all times.

3.5 ROCK EXCAVATION

A. Rock Excavation: Excavate rock within the boundary lines and grades as shown, specified or required.

1. Rock removed from the excavation becomes the property of the CONTRACTOR. Transport and dispose of excavated rock at an off site disposal location. Obtain the off site disposal location.

2. Remove all shattered rock and loose pieces.

B. Structure Depths: For cast-in-place structures, excavate the rock only to the bottom of the structure, foundation slab, or drainage blanket.

C. Trench Width: Maintain a minimum clear width of the trench at the level of the top of the pipe of the outside diameter of the pipe barrel plus 2 feet, unless otherwise approved.

D. Trench Depth: For trench excavation, in which pipelines are to be placed, excavate the rock to a minimum depth of 8 inches below the bottom of the pipe or duct encasement. Provide a cushion of sand or suitable crushed rock. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material in the appropriate Contract Items.

E. Manhole Depths: For manhole excavation, excavate the rock to a minimum depth of 8 inches below the bottom of the manhole base for pipelines 24 inches in diameter and larger and 6 inches below the bottom manhole base for pipelines less than 24 inches in diameter. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material for manhole bases in the appropriate Contract Items.

F. Over-excavated Space: Refill the excavated space in rock below structures, pipelines, conduits and manholes, which exceeds the specified depths with 2,500 psi concrete, crushed stone, washed shell, or other material as directed. Include refilling of over-excavated space in rock as part of the rock excavation.

G. Other Requirements: Follow, where applicable, the requirements of the subsections on "Trench Excavation" and "Structure Excavation".

H. Payment: No additional payment will be made for rock excavation.

3.6 FINISHED EXCAVATION

A. Finish: Provide a reasonably smooth finished surface for all excavations, which is uniformly compacted and free from irregular surface changes.

B. Finish Methods: Provide a degree of finish that is ordinarily obtainable from blade-grade operations and in accordance with Section 312323.

3.7 PROTECTION

A. Traffic and Erosion: Protect newly graded areas from traffic and from erosion.

B. Repair: Repair any settlement or washing away that may occur from any cause, prior to acceptance. Re-establish grades to the required elevations and slopes.

C. It shall be the CONTRACTOR’s responsibility to acquaint himself with all existing conditions and to locate all structures and utilities along the proposed utility alignment in order to avoid conflicts. Where actual conflicts are unavoidable, coordinate work with the facility owner and perform work so as to cause as little interference as possible with the service rendered by the facility disturbed in accordance with Section 020500. Repair and/or replace facilities or structures damaged in the prosecution of the work immediately, in conformance with current standard practices of the industry, or according to the direction of the owner of such facility, at the CONTRACTOR’s expense.

D. Other Requirements: Conduct all Work in accordance with the environmental protection requirements specified in Division 1.

3.8 AUTHORIZED ADDITIONAL EXCAVATION

A. Additional Excavation: Carry the excavation to such additional depth and width as authorized in writing, for the following reasons:

1. In case the materials encountered at the elevations shown are not suitable.

2. In case it is found desirable or necessary to go to an additional depth, or to an additional depth and width.

B. Refill Materials: Refill such excavated space with either authorized 2500 psi concrete or compacted select fill material, in compliance with the applicable provisions of Section 312323.

C. Compaction: Compact fill materials to avoid future settlement. As a minimum, backfill layers shall not exceed 6-inches in thickness for the full trench width and compaction shall equal 95% of maximum density, or 98% if under paved area of roadway, as determined by using ASTM D 1557. Perform compaction density tests at all such backfill areas with spacing not to exceed 100 feet apart and on each 6-inch compacted layer.

D. Payment: Additional earth excavations so authorized and concrete or select fill materials authorized for filling such additional excavation and compaction of select fill materials will be paid for under the appropriate Contract Items or where no such items exist, as a change in the Work.

3.9 UNAUTHORIZED EXCAVATION

A. Stability: Refill any excavation carried beyond or below the lines and grades shown, except as specified in the subsection headed "Authorized Additional Excavation", with such material and in such manner as may be approved in order to provide for the stability of the various structures.

B. Refill Materials: Refill spaces beneath all manholes, structures, pipelines, or conduits excavated without authority with 2500 psi concrete or compacted select fill material, as approved.

C. Payment: Refill for unauthorized excavation will not be measured and no payment will be made therefor.

3.10 SEGREGATION STORAGE AND DISPOSAL OF MATERIAL

A. Stockpiling Suitable Materials: Stockpile topsoil suitable for final grading and landscaping and excavated material suitable for backfilling or embankments separately on the site in approved locations.

B. Stockpile Locations: Store excavated and other material a sufficient distance away from the edge of any excavation to prevent its falling or sliding back into the excavation and to prevent collapse of the wall of the excavation. Provide not less than 2 feet clear space between the top of any stockpile and other material and the edge of any excavation.

C. Excess Materials: Be responsible for transport and disposal of surplus excavated material and excavated material unsuitable for backfilling or embankments at an off site disposal location secured by the CONTRACTOR.

3.11 REMOVAL OF WATER

A. Water Removal: At all times during the excavation period and until completion and acceptance of the WORK at final inspection, provide ample means and equipment with which to remove promptly and dispose of properly all water entering any excavation or other parts of the WORK.

B. Dry Excavations: Keep the excavation dry, in accordance with Section 312319.

C. Water Contact: Allow no water to rise over or come in contact with masonry and concrete until the concrete and mortar have attained a set and, in any event, not sooner than 12 hours after placing the masonry or concrete.

D. Discharge of Water: Dispose of water pumped or drained from the Work in a safe and suitable manner without damage to adjacent property or streets or to other work under construction.

E. Protection: Provide adequate protection for water discharged onto streets. Protect the street surface at the point of discharge.

F. Sanitary Sewers: Discharge no water into sanitary sewers.

G. Storm Sewers: Discharge no water containing settleable solids into storm sewers.

H. Repair: Promptly repair any and all damage caused by dewatering the Work.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 020500

CONNECTIONS TO EXISTING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Submittals

C. Scheduling of Shutdown

1.2 RELATED SECTIONS

A. Section 011000 – Summary of Work

B. Section 015000 – Construction Facilities and Temporary Controls

C. Section 015526 – Traffic Regulations and Public Safety

D. Section 320117 – Pavement Repair and Restoration

1.3 GENERAL REQUIREMENTS

A. Be responsible for all connection to existing systems, cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

B. Coordination: Before connection is performed, verify and provide for any pipe restraint that may be required for the new connection. Perform all cutting, fitting or patching of the Work that may be required to make the several parts thereof join in accordance with the Contract Documents. Perform restoration with competent workmen skilled in the trade.

C. If changes to a “looped” water distribution system occurring during construction result in dead ends to any new or relocated water mains, connect such dead

ends to the nearest water main. In cases where no nearby water main is available, provide a flushing device in coordination with the COUNTY at no additional cost to the COUNTY.

D. Improperly Timed Work: Perform all cutting and patching required to install improperly timed work, to remove samples of installed materials for testing, and to provide for alteration of existing facilities or for the installation of new Work in the existing construction.

E. Limitations: Except when the cutting or removal of existing construction is specified or indicated, do not undertake any cutting or demolition, which may affect the structural stability of the Work or existing facilities without the ENGINEER's concurrence.

F. Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities (in accordance with pipe separation criteria located in the Design Criteria section). Any and all variations from this order must be approved by the Water or Wastewater Department.

2. **Before commencement of any excavation, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call, in accordance with State Statute Chapter 556 "Underground Facility Damage Prevention and Safety", after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit ~~www.callsunshine.com~~ www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.**

3. All lines in conflict must be physically located by the contractor Any conflict shall be reported to the utility and Collier County Public Utilities. ~~and verified by Collier County Locate Department personnel before performing work~~. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any other information concerning locates, please call the Locate Department at 239- 252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. ~~numeric pager at 239-890-0809~~. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits. ~~delay or denial of permit~~.

1.4 SUBMITTALS

A. Submit a written request to the ENGINEER well in advance of executing any cutting or alteration which affects:

1. Work of the COUNTY or any separate contractor.

2. Structural value or integrity of any element of the project or work.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Include in request:

1. Identification of the work.

2. Description of affected work.

3. The necessity for cutting, alteration or excavation.

4. Effect on work of the COUNTY or any separate contract, or on structural or weatherproof integrity of work.

5. Description of proposed work:

a. Scope of cutting, patching, alteration, or excavation.

b. Trades who will execute the work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate contractor whose work will be affected.

C. SUBMIT WRITTEN NOTICE TO THE ENGINEER DESIGNATING THE DATE AND THE TIME THE WORK WILL BE UNCOVERED.

1.5 SCHEDULING OF SHUTDOWN

A. Connections to Existing Facilities: If any connections, replacement, or other work

requiring the shutdown of an existing facility is necessary, schedule such work at times when the impact on the COUNTY's normal operation is minimal. If shutdown involves the water distribution or transmission system, provide notice to the COUNTY Water Department at least two (2) weeks prior to the proposed shutdown, including date, time and anticipated length of interruption of service. Overtime, night and weekend work without additional compensation from the COUNTY, may be required to make these connections, especially if the connections are made at times other than those specified. The connection of new or existing pipelines is prohibited from starting until CONTRACTOR assures that the system can receive the new flow.

B. Interruptions of Service: Perform cut-ins into lines at a time approved in writing by the County Manager or designee. Whenever it is required to turn off valves which may interrupt the water supply of residents or businesses, notify all concerned parties or agencies with personal contact, door hangers or written notice at least forty-eight (48) hours in advance of such cut-off, after having obtained the approval of the County Manager or designee. Provide a copy of the written notice to the Water Distribution Section by fax. ONLY COUNTY PERSONNEL MAY OPERATE COUNTY-OWNED VALVES. Maintain water service to existing connections during construction, under any and all conditions and at no additional cost to the COUNTY. Thoroughly clean and swab all pipe and fittings for cut-ins with a concentrated solution of calcium hypochlorite.

C. Request for Water System Shutdowns: When plans call for connection to existing water distribution facilities or the CONTRACTOR plans to shut down existing utilities or where damage to such facilities is likely in order to complete construction of items under this contract, furnish the County Manager or designee with a written request for connection. The COUNTY Water Distribution Section will identify the locations of all water valves needed to isolate the point of connection in the event that the existing facilities are damaged while making the connection. Identify in the request means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

D. Request for Wastewater Diversion: Submit a request for each diversion necessary during construction to the County Manager or designee and the ENGINEER sufficiently in advance of any required diversion. Identify in the request the valves, bypass piping, portable pumper trucks or any other means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of projects, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of the work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with work until the ENGINEER has provided further instructions.

3.2 PREPARATION

A. In cases where service to utility customers is interrupted, provide adequate equipment with backup onsite to assure prompt restoration of service.

B. Provide adequate temporary support as necessary to assure structural value or integrity or affected portion of work.

C. Provide devices and methods to protect other portions of project from damage.

D. Provide protection from elements for that portion of the project that may be exposed by cutting and patching work, and maintain excavations free from water.

E. Material Removal: Cut and remove all materials to the extent shown or as required to complete the work. Remove materials in a careful manner with no damage to adjacent facilities. Remove materials that are not salvageable from the site.

3.3 PERFORMANCE

A. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. Restore work, which has been cut or removed; install new products to provide completed work in accord with requirements of contract documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

3.4 PAVEMENT RESTORATION

A. Restore all pavement or roadway surfaces in accordance with Section 320117 – Pavement Repair and Restoration.

B. Restore, replace or rebuild existing street paving, including underdrains, if any are encountered, where damaged, using the same type of construction as was in the original. Be responsible for restoring all such work, including subgrade, base courses, curb and gutter or other appurtenances where present. The County Manager or designee will obtain the permits listed in the Contract Documents. Obtain and pay for at CONTRACTOR’s expense any additional local or other governmental permits as may be required for the opening of streets and be satisfied as to any requirements other than those herein set forth which may effect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

C. This section does not describe the construction of new road surfaces or the complete resurfacing of existing pavements.

D. In all cases, the CONTRACTOR will be required to maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract for a period of 12 months after the acceptance of the Contract, including the removal and replacement of such work wherever surface depressions or underlying cavities result from settlement of trench backfill.

E. Perform all the final resurfacing or repaving of streets or roads, over the excavations made and be responsible for relaying paving surfaces of roads that have failed or been damaged at any time before the termination of the maintenance period on account of work done by him. Resurface or repave over any tunnel jacking, or boring excavation that settles or breaks the surface, repave to the satisfaction of the County Manager or designee and at the CONTRACTOR's expense. Conform backfilling of trenches and the preparation of subgrades to the requirements of excavation and backfilling of pipeline trenches.

F. Where pipeline construction crosses paved streets, driveways or sidewalks, the CONTRACTOR may elect, at no additional cost to the COUNTY, to place the pipe by the jacking and boring, horizontal direction drilling, or tunneling method in lieu of cutting and patching of the paved surfaces. Such work shall be accomplished in accordance with all applicable sections of the Contract Documents.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330502

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to install High Density Polyethylene (HDPE) pressure pipe, fittings, and appurtenances as shown on the Drawings and specified in the Contract Documents.

B. High Density Polyethylene (HDPE) – Collier County Utilities has the option of approving the use of HDPE for pipeline crossings of roadways, ditches, canals, and environmentally sensitive lands. HDPE mains shall have the same equivalent internal diameter and equivalent pressure class rating as the corresponding PVC pipe, unless otherwise approved by the County Manager or designee. For all roadway crossings requiring casing pipe, a steel or DR 11 HDPE casing pipe must be provided. The Department of Transportation having jurisdiction of said road and right-of-way must grant specific approval.

1.2 REFERENCED STANDARDS

A. All standard specifications, i.e., Federal, ANSI, ASTM, etc., made a portion of these Specifications by reference, shall be the latest edition and revision thereof.

1.3 QUALIFICATIONS

A. Furnish all HDPE pipe, fittings, and appurtenances by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the items to be furnished.

1.4 SUBMITTALS

A. Submit to the ENGINEER, a list of materials to be furnished, the names of the suppliers, and the appropriate shop drawings for all HDPE pipe and fittings.

B. Submit the pipe manufacturer's certification of compliance with the applicable sections of the Specifications.

C. Submit shop drawings showing installation method and the proposed method and specialized equipment to be used.

1.5 INSPECTIONS AND TESTS

A. All work shall be inspected by the County Manager or designee who shall have the authority to halt construction if, in his opinion, these specifications or standard construction practices are not being followed. Whenever any portion of these specifications is violated, the County Manager or designee, may order further construction to cease until all deficiencies are corrected.

1.6 WARRANTY AND ACCEPTANCE

A. Warrant all work to be free from defects in workmanship and materials for a period of one year from the date of completion of all construction. If work meets these specifications, a letter of acceptance, subject to the one year warranty period, shall be given at the time of completion. A final acceptance letter shall be given upon final inspection at the end of the one year warranty period, provided the work still complies with these specifications. In the event deficiencies are discovered during the warranty period, the CONTRACTOR shall correct them without additional charge to the COUNTY before final acceptance. During the warranty period, the ENGINEER will determine if warranty repairs or replacement work shall be performed by the CONTRACTOR. The decision of the ENGINEER shall be binding upon the CONTRACTOR.

B. Installer Certification for The CONTRACTOR installing thermal butt fused HDPE pipe.

PART 2 PRODUCTS

2.1 POLYETHYLENE PIPE AND FITTINGS

A. Provide polyethylene pressure pipe manufactured from ~~PE3408~~ PE4710 polyethylene meeting AWWA C906 standards. When specified by the ENGINEER on the construction drawings, as an alternate to PVC, HDPE (ductile iron pipe sized) piping can be used for buried applications. Iron pipe sized (IPS) HDPE piping can be used for below-ground applications as determined by the ENGINEER.

B. The diameter of DR 11 HDPE casing pipe provided for roadway crossings or other purposes shall conform to the following.

For HDPE pressure carrier pipes, casing spacers are not required when HDPE DR11 (or DR17 for 42” to 54” or DR21 for 63”) casing is used. The casing inside diameter shall be a minimum of two inches larger than the carrier pipe’s outside diameter.

C. HDPE to HDPE pipe connections shall be by thermal butt fusion. Thermal fusion shall be accomplished in accordance with the pipe manufacturer and fusion equipment supplier specifications. The CONTRACTOR installing thermal butt

fused HDPE pipe shall be certified in this type of work and have a minimum of five years experience performing this type of work. The CONTRACTOR shall provide certification to the Engineer of Record, who will provide the Engineering Review Services Department with the certification.

D. Qualification of Manufacturer: The Manufacturer shall have manufacturing and quality control facilities capable of producing and assuring the quality of the pipe and fittings required by these specifications. The Manufacturer's production facilities shall be open for inspection by the County Manager or designee. Qualified manufacturers shall be approved by the County Manager or designee.

E. See the County Approved Product List, Appendix F, for manufacturers that are qualified. Products from other manufacturers proposed for the work must receive approval from the County Manager or designee prior to ordering.

F. Materials: Materials used for the manufacture of polyethylene pipe and fittings shall be ~~PE3408~~ PE4710 high density polyethylene meeting cell classification 445574C ~~345434C~~ or 445574E ~~345434E~~ per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting manufacturer in PPI (Plastics Pipe Institute) TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

G. Polyethylene Pipe: Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter or ASTM D3035, Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, (from pipe) dimensions and either quick burst or ring tensile strength (equipment permitting).

H. Color Identification: HDPE must have at least three equally spaced horizontal colored marking stripes. Permanent identification of piping service shall be provided by adhering to the following colors.

Blue – potable water (Underground HDPE pipe shall be one of the following:

a. Solid-wall blue pipe;
b. Co-extruded blue external skin; or
c. White or black pipe with blue stripes incorporated into, or applied to, the pipe wall.

White – raw water
Green – wastewater, sewage
Pantone Purple – non-potable irrigation, reclaimed or reuse water

I. Polyethylene Fittings and Custom Fabrications: Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Pressure de-rated fabricated fittings are prohibited.

J. Molded Fittings: Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the tests required under ASTM D3261.

K. X-Ray Inspection: The Manufacturer shall submit samples from each molded fittings production lot to x-ray inspection for voids, and shall certify that voids were not found.

L. Fabricated Fittings: Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16” IPS and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets. Part drawings shall be submitted for the approval of the ENGINEER.

M. Polyethylene Flange Adapters: Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasketless sealing, or to restrain the gasket against blow-out.

N. Back-up Rings and Flange Bolts: Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. The lap joint flange bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

2.2 MANUFACTURER’S QUALITY CONTROL

A. The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rate, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer’s Quality Control. Incoming materials shall be approved by Quality Control before processing into finished goods. Outgoing materials shall be checked for:

1. Outside diameter, wall thickness, and eccentricity as per ASTM D2122 at a frequency of at least once/hour or once/coil, whichever is less frequent.

2. Out of Roundness at frequency of at least once/hour or once/coil, whichever is less frequent.

3. Straightness, inside and outside surface finish, markings and end cuts shall be visually inspected as per ASTM F714 on every length of pipe.

B. Quality Control shall verify production checks and test for:

1. Density as per ASTM D1505 at a frequency of at least once per extrusion lot.

2. Melt Index as per ASTM D1238 at a frequency of at least once per extrusion lot.

3. Carbon content as per ASTM D1603 at a frequency of at least once per day per extrusion line.

4. Quick burst pressure (sizes thru 4-inch) as per ASTM D1599 at a frequency of at least once per day per line.

5. Ring Tensile Strength (sizes above 4-inch equipment permitting) as per ASTM D2290 at a frequency of at least once per day per line.

6. ESCR (size permitting) as per ASTM F1248 at a frequency of at least once per extrusion lot.

C. X-ray inspection shall be used to inspect molded fittings for voids, and knit line strength shall be tested. All fabricated fittings shall be inspected for joint quality and alignment.

2.3 COMPLIANCE TESTS

A. In case of conflict with Manufacturer's certifications, the CONTRACTOR, ENGINEER, or County Manager or designee may request re-testing by the manufacturer or have re-tests performed by an outside testing service. All re-testing shall be at the requestor's expense, and shall be performed in accordance with the Specifications.

B. Installation shall be in accordance with Manufacturer's recommendations and this specification. All necessary precautions shall be taken to ensure a safe working environment in accordance with the applicable codes and standards.

PART 3 EXECUTION

3.1 INSTALLATION OF HIGH DENSITY POLYETHYLENE PRESSURE PIPE AND FITTINGS

A. Install all high density polyethylene (HDPE) pressure pipe by direct bury, directional bore, or a method approved by the COUNTY or ENGINEER prior to construction. If directional bore is used, or if directed by the County Manager or designee or ENGINEER, surround the entire area of construction by silt barriers.

Install all high density polyethylene pressure pipe and fittings in accordance with Manufacturer's recommendations, and this specification. Take all necessary precautions to ensure a safe working environment in accordance with the applicable codes and standards.

3.2 HEAT FUSION JOINING

A. Make joints between plain end pipes and fittings by butt fusion, and joints between the main and saddle branch fittings by using saddle fusion using only procedures that are recommended by the pipe and fitting Manufacturer. Ensure that persons making heat fusion joints have received training and certification for heat fusion in the Manufacturer's recommended procedure. Maintain records of trained personnel, and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

3.3 MECHANICAL JOINING

A. HDPE pipe and fittings shall be fused together by heat welding when possible. HDPE pipe and fittings may be joined together or to other materials by means of flanged connections with back-up rings, by mechanical joint adapter with glands, or mechanical couplings designed for joining HDPE pipe or for joining HDPE pipe to another material. A stainless steel sleeve insert shall be used with a mechanical coupling. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins.

3.4 BRANCH CONNECTIONS

A. Make branch connections to the main with saddle fittings or tees. Saddle fuse polyethylene saddle fittings to the main pipe.

3.5 EXCAVATION

A. Excavate trenches in conformance to this specification, the plans and drawings, or as authorized in writing by the County Manager or designee, and in accordance

with all applicable codes. Remove excess groundwater. Where necessary, shore or reinforce trench walls.

3.6 LARGE DIAMETER FABRICATED FITTINGS

A. Butt fuse fabricated directional fittings 16" IPS and larger to the end of a pipe. Make up the flanged directional outlet connections in the trench.

3.7 MECHANCIAL JOINT AND FLANGE INSTALLATION

A. Install mechanical joints and flange connections in accordance with the Manufacturer's recommended procedure. Center and align flange faces to each other before assembling and tightening bolts. Do not use the flange bolts to draw the flanges into alignment. Lubricate bolt threads, and fit flat washers under the flange nuts. Tighten bolts evenly according to the tightening pattern and torque step recommendations of the Manufacturer. At least one hour after initial assembly, re-tighten flange connections following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be 100 ft-lbs or less as recommended by the Manufacturer.

3.8 FOUNDATION AND BEDDING

A. Lay pipe on grade and on a stable foundation. Remove unstable or mucky trench bottom soils, and install a 6-inch foundation or bedding of compacted Class I material to pipe bottom grade. Remove excess groundwater from the trench before laying the foundation or bedding and the pipe. A trench cut in rock or stony soil shall be excavated to 6 inches below pipe bottom grade, and brought back to grade with compacted Class I bedding. Remove all ledge rock, boulders, and large stones.

3.9 PIPE HANDLING

A. When lifting with slings, use only wide fabric choker slings to lift, move, or lower pipe and fittings. Do not use wire rope or chain. Slings shall be of sufficient capacity for the load, and shall be inspected before use. Do not use worn or defective equipment.

3.10 TESTING

A. Hydrostatic Pressure Testing: Pressure test and flush HDPE pipes after swabbing in accordance with Section 022501 and 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333200

PUMP STATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK FOR COUNTY PUMP STATIONS

A. This section includes the following items for COUNTY owned and operated pump stations: wet wells, access covers, pumps, wet well equipment, valves, emergency bypasses, pump control panels, pump controller, antenna subsystem, disconnects, electric meters, electric service, pump wiring, lightning arrestors, and odor control systems.

B. Conform all pump stations to the specifications, Utilities Detail Drawings, and latest National Electrical Code (NEC) requirements.

C. When a pump station has a peak design flow coming into the station greater than 500 gpm, contact Public Utilities Planning and Project Management Department for specifications.

D. For systems eligible to be taken over by the COUNTY, provide enough room to operate and maintain all water and wastewater systems in a simple and non-awkward manner. If a pump station pump needs to be replaced, provide enough room for the COUNTY to readily remove the pump, and to do so without interfering with traffic. To be eligible for conveyance to the COUNTY, the pump station easement area must be designed to 30'X30', or twice the depth of the wet well by twice the depth of the wet well, whichever is larger, as defined in the Collier County Standards and Procedures Ordinance, Subsection 7.7(c), as amended or superseded.

E. Schedule required COUNTY inspections of (1) pump station installation prior to cover-up and (2) pump station start-up.

F. Install all fencing and gates around the pump station in accordance with Section 323113.

G. Communications: When proposing fiber-optic connectivity at pump stations, a letter of availability shall be requested to the COUNTY for review and approval.

H. Elevated platforms shall be provided where necessary to provide access to wet wells, pump station control panels, electrical devices and panels, generators, and bypass equipment. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 SCOPE OF WORK FOR PRIVATE GRINDER PUMP STATIONS

A. This section includes the following items for privately owned and operated grinder pump stations: wet wells, pumps, impeller, valves, level control, alarm, well equipment, pump control panels, pump controller, disconnects, and sloping requirements for private pump stations.

B. All maintenance tasks for private grinder pump stations must be possible without entry into the grinder pump station per 29 CFR 1910.146 (OSHA Permit-Required Confined Spaces).

C. The grinder pump station shall be free from electrical and fire hazards as required for functionality in a residential environment. The completed assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. (UL) to be safe and appropriate for the intended use. UL listing of components of the grinder pump station, or third-party testing to UL standard is not acceptable.

D. All private grinder pump stations shall bear the seal of NSF International to show that station meets accepted standards for plumbing equipment in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications.

E. Private pump service sewers shall conform to applicable parts of the Florida Building Code and the COUNTY's Design Criteria. Where the COUNTY's standards are more restrictive than the Florida Building Code, the COUNTY's standards shall prevail.

F. Private pump station force main connections must follow the COUNTY's requirements for testing.

G. Schedule required COUNTY inspections of (1) testing of force main connection prior to cover-up and (2) pump station start-up.

H. Prior to the start-up inspection, the following documentation must be furnished to the COUNTY via electronic mail or a secure electronic file transfer service:

1. As-built drawing (in both PDF and DWG formats) showing the completed pump station and force main locations, sizes, materials, and elevations along with the location of all valves, the pump-out connection, the control panel, and the generator receptacle on the property and

2. A pump test curve from the pump manufacturer.

PART 2 EQUIPMENT

2.1 MATERIALS FOR COUNTY PUMP STATIONS

A. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

B. Wet Well: The concrete structure shall consist of precast, reinforced sections conforming to ASTM C76 and/or ASTM C478. 8-foot diameter wet wells shall have a minimum wall thickness of 8 inches. Wall thickness for larger wet wells shall conform to ASTM standards for wall thickness, but shall not be less than 8 inches in any case. The minimum inside diameter for all wet wells eligible to be owned and maintained by Collier County shall be 8 feet. As a deviation, a 6-foot

diameter wet well can be utilized if the ENGINEER can demonstrate that the wet well is sufficient hydraulically and the developer can demonstrate that the pump station shall be used for the perpetual and exclusive use of that development. For pump stations that will not be owned and maintained by Collier County, the ENGINEER shall set the design specifications for the wet well, provided such design does not in any way endanger the health, safety and/or welfare of the public. Base riser section shall be monolithically cast with the base slab. All concrete shall utilize Type 2 cement and have a minimum compressive strength of 4000 psi at 28 days. On new construction, if more than one hole is abandoned and required to be cemented in, provide a new wet well barrel section. Reinforcing steel for all wet well structures should be sized by the unit manufacturer and verified by the ENGINEER. All connections to the wet well for gravity sewer piping shall be equal to those for manholes as described in Section 333913. Factory double coat all exterior surfaces with an acceptable bituminous or epoxy sealer a minimum of 18 mils thick. Seal all riser joints utilizing plastic joint sealing compound (see County Approved Product List, Appendix F). Reinforcement and top slab thickness shall be specified by the design ENGINEER for H-20 loadings in all cases. Minimum reinforced slab thickness shall be 8 inches. Typical standards for wet wells are available in the Collier County Standard Details. The ENGINEER shall be responsible for designing all wet well structures to overcome buoyancy forces exerted on the installed structure. Coat all wet well interiors with an acceptable field applied internal protection (see County Approved Product List, Appendix F) in accordance with Section 099723.

C. Above-Ground Valves and Piping: Above-ground valves and piping must be positioned so that it does not lie above any gravity sewer line entering the wet well, unless field conditions dictate otherwise and the COUNTY has granted prior approval. Typical above-ground valves and piping standards are shown in the Collier County Standard Details. All valve and flange bolting shall be Type 316 stainless steel.

D. Pumps: Sewage pumps (see County Approved Product List, Appendix F) shall be of the submersible type suitable for operation in sewage of temperature not exceeding 115 degrees Fahrenheit. Pump head curves and design specifications for each application proposed shall be submitted for review and approval within the ENGINEER's hydraulic design report. All pumps shall be three-phase unless approved by a Utility Deviation Form. At least one (1) pump in each wet well shall be equipped with an opening in the volute with a bolted cover for a mix-flush system (see County Approved Product List, Appendix F).

E. Access Covers: Access covers for pump station wet wells shall be above the 100-year flood elevation unless the structure is located within a documented velocity and tidal flood zone, and elevation differentials prohibit such installation. In such cases, watertight access covers shall be utilized. The ENGINEER shall provide shop drawings of such access covers for review and approval by THE County Manager or designee prior to use. Access covers shall be constructed of diamond plate aluminum sheets and aluminum structural members. All access covers shall be attached to aluminum angle frames with stainless steel hinges and fasteners. Angle frames shall be firmly anchored into the top concrete slab of the structure.

All access covers shall be equipped with a ratchet-type restraint mechanism to prevent accidental closing of the cover and torsion bar or spring assist type openers. Assist openers shall be manufactured of stainless steel. Access covers shall be designed for H-20 loadings.

F. Wet Well Equipment: All pump discharge piping shall be HDPE pipe and shall be in conformance with pipe utilized for wastewater force mains. All fittings shall be HDPE fused, flange/flange, or Uni-Flange connections. All nuts, bolts, fasteners, brackets, pump guide rails and other hardware located inside the wet well shall be 316 stainless steel. A pump out with a screened vent shall be provided on all installations, with the pipe extended through the wet well lid (see details). Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wetwells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present shall comply with the National Electrical Code (NEC) requirements for Class I Group D, Division 1 locations. Electrical equipment located in wet wells shall be suitable for use under corrosive conditions.

G. Valves: Discharge piping for each pump shall be equipped with a weighted check valve and plug valve. A tee with an isolation plug valve, equipped with a quick coupling (see County Approved Product List, Appendix F), shall be provided for a means of emergency bypass access to the wastewater force main. Valves shall be supported by stainless steel pipe supports.

H. Emergency Bypass: A 4-inch emergency bypass connection shall be provided down-stream from the in-line discharge piping valves. The connection shall be readily accessible and be equipped with a plug-type isolation valve and 4-inch male camlock type quick coupling and cap.

I. Pump Control Panel (see County Approved Product List, Appendix F): Panel enclosure construction shall be equal to a NEMA 4X stainless steel with 3-point latch where required and utilize stainless steel. When possible, panel door shall open away from wetwell and not towards wetwell hatch to ensure safety during maintenance of wetwell and panel. To ensure proper installation of control panel, contact the Wastewater Division prior to rough-in or installation of control panel, for a pre-construction meeting with respective Wastewater Collections personnel. Control panels shall be mounted on two 6-inch by 6-inch precast concrete posts. All mounting bars, nuts, bolts, etc. shall be stainless steel. A 110/120-volt (110V) receptacle shall be provided inside the control panel for pump stations that have outdoor control panels. Ground fault interruption (GFI) protection shall be provided for all outdoor outlets.

J. Pump Controller: Provide a pump control panel (see County Approved Product List, Appendix F) including a telemetry control unit (TCU) for pump controlling purposes. At a minimum, the TCU shall include an integrated 2-Watt digital radio with and Ethernet module for dual communications capability, an 18-amp-hour back-up battery, a manufacturer's prefabricated wire harness, all manufacturer recommended surge protection, and suitable devices for measuring wastewater flow. The TCU shall incorporate three on-board fail-safe HOA switches and

Triplex/Duplex/Simplex configurable operation mode. An on-board 240 or 460 VAC three-phase monitor shall be provided. The Alarm light and bell shall be activated by the TCU and the external push-button alarm silence switch shall be wired into the TCU. The TCU shall incorporate an on-board 4- by 20- character LCD display for elapsed runtime of each pump. During the automatic sequence, the pumps shall be controlled in an alternate mode. Pump controller shall be Data Flow Systems model TCU800 with features listed above.

K. Antenna Subsystem: Provide a high gain antenna (see County Approved Product List, Appendix F) for use to transmit and receive TCU data to and from the COUNTY's existing SCADA server. Antenna shall utilize all welded-aluminum elements. Element connections utilizing nuts and bolts are not acceptable. Antenna shall have a single radiator element connected to a type N female connector. Antenna shall be supported on a mast/pole and have DC grounding for lightning protection. Antenna mounting hardware shall be made of stainless steel. Antenna shall meet or exceed the quality, reliability and performance of the RTA series as provided by Data Flow Systems, Inc. Antenna mast/pole shall be a 21foot by 1.25 inch SCH80 galvanized pole. Mounting of the antenna mast/pole shall be in accordance with all applicable local and state building codes as they pertain to structural strength and wind velocity requirements. Tower shall meet or exceed the quality and reliability of the 25G manufactured by Rohn. Coaxial cable shall be RTC 400 as supplied by Data Flow Systems, Inc. Type N connectors shall be utilized at both ends of the coax. Type N connectors shall be sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink tubing. Coaxial cable shall be secured to the mast/pole with E.V.A.-coated 316 stainless steel cable ties. Cable ties shall meet or exceed the quality, reliability and performance of AE112 cable ties manufactured by Band-It. For pump stations to be conveyed to the County, a startup and successful testing of Data Flow telemetry equipment by Data Flow representatives and County Wastewater Collections instrumentation and telemetry representatives is required prior to County acceptance. After initial startup, for pump stations to be conveyed to the County, the latitude and longitude of pump stations shall be provided.

L. Disconnect: A circuit breaker disconnect shall be provided to isolate the pump control panel. Disconnect shall be installed on the service line between the electric meter and control panel and shall be lockable in the "ON" or "OFF" position. Disconnects shall be housed in a NEMA 4X, stainless steel enclosure or better.

M. Electric Meter: The electric meter servicing the pump station shall be located adjacent to the pump control panel, and shall be located and wired to service only the pump station facility.

N. Electric Service: All underground electric services shall be fully conduited in 2-inch diameter Schedule 80 PVC pipe from the power company source point to the pump control panel. The maximum length of the electric service from the power company transformer to the pump control panel shall be 200 feet. One spare conduit shall be provided and terminated in the meter. Only copper service wire shall be utilized. Sizing of the service wire shall be verified with the power company and the

extent and location of the service shall be indicated on the record drawings. The CONTRACTOR shall certify that the voltage drop across the service does not exceed five percent (5%) of the power company's line voltage at full load start-up of the pump station pumps. All pump stations shall have minimum 100-amp service. All electrical components shall be located within the COUNTY right-of-way or County Utility Easement (CUE).

O. Pump Wiring: Power wiring for each pump, from the control panel to the wet well shall be conduited in separate 2-inch diameter Schedule 80 PVC pipe and an appropriately sized water-tight fitting with separate strain relief shall be installed on each line. A spare parallel 2-inch PVC pipe conduit from the panel to the wet well shall be provided. All wire shall be stranded THHN or MTW copper wire. The pump motor cords shall be flexible and serviceable under conditions of extreme usage. Total of angle bends shall be 180 degrees or less. All conduits between wetwell and control panel shall not exceed a total of 180 degrees of bends per run. All service conduits shall be 2" Schedule 80 PVC except where noted. The pump motor cords shall be flexible and have an appropriate amount of slack.

P. Lightning Arrestors: All pump stations shall be equipped with lightning arrestor(s) (see County Approved Product List, Appendix F). The lightning arrestor shall be installed externally on the load side of the disconnect, between the disconnect and the main breaker. The penetration through the disconnect must be made below the working mechanism of the disconnect.

Q. Odor Control Systems for Community Pump Stations: Furnish and install an 8'X11' concrete slab for potential future odor control system. A Pre-Engineered Biofiltration Odor Control System shall be furnished if required by the engineer of record.

R. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

S. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

2.2 MATERIALS FOR PRIVATE PUMP STATIONS

A. All private grinder pump stations shall conform to the requirements specified in Section 2.1 above, unless otherwise stated in this section.

B. Pumps: Private pump stations shall be constructed using progressive cavity, non-clogging, non-jamming, positive or semi-positive displacement grinder pump(s) capable of operating at a negative total dynamic head (TDH) equipped with thermal overload protection. Grinder pumps shall be capable of grinding all material typically found in domestic or commercial wastewater to a fine slurry that will pass through the pump, 1-1/4-inch NPT discharge piping and downstream appurtenances.

C. Impeller: The grinder impeller shall be a one-piece, rotating type cutter wheel constructed from hardened 4140 steel. The cutter teeth shall be treated and hardened to 56 to 60 Rockwell C. The shredder ring shall be stationary type with a staggered tooth pattern and made of white cast iron per ASTM A532(1B).

D. Valves: In addition to valve requirements described in Section 2.1, an anti-siphon valve shall be integral with the grinder pump station pump. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the grinder pump station discharge piping. The check valve will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow.

E. Level Control: Level sensing control for private grinder pump stations shall be a non-fouling type with no moving parts in contact with the wastewater.

F. Alarms: All grinder pump station shall be equipped with a high level audible and visual warning alarm to notify the residential or commercial property owner(s) of a high wet well level.

G. Wet Well: The wet-well basin for all grinder pump stations shall be constructed from any watertight material suitable for light commercial applications, such as high-density polyethylene (HDPE), polyethylene (PE), or glass-fiber reinforced polyester (FRP). FRP wet wells must conform to ASTM D3753. All grinder pump station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure. The grinder pump station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable. No secondary welding of the wet well basin or cover will be accepted. The wet well shall be vented to the atmosphere.

H. Wet Well Equipment: Pumps and all electrical devices, components, and connections inside the wet well shall be explosion proof.

I. Anti-Siphon/Check Valve: All private grinder pump stations shall be equipped with a factory installed, gravity operated flapper-type integral check valve and anti-siphon valve built into the stainless-steel discharge piping, per Section 2.1 and Section 2.2. valve requirements.

J. Pump Control Panel: All electrical elements for private grinder pump stations shall be furnished pre-wired and housed in a NEMA 4X enclosure. In a flood zone, a NEMA 6P

enclosure is required if the control panel is mounted less than a foot above the base flood elevation. A NEMA Control circuit shall be 115 volts. The door of the control box shall be hinged of the dead type with locking hasp and suitable accessories to allow wall mounting. Motor shall be activated by a magnetic type contactor and protected by a UL-listed electrical monitoring system against damaging high current or low voltage conditions. An automatic reset, integral thermal overload protector shall protect the motor against excessive heat. The sensor shall reset automatically when the motor cools. An alarm test switch, HOA switch, run light, auto/off switch, and overload reset button shall be supplied inside the control box. A terminal strip with box type connections shall be supplied to make all power and control connections. All terminals shall be marked for easy identification. A ground terminal strip shall also be provided and labeled.

K. Disconnect: The grinder pump station shall be equipped with a factory-installed NEMA 6P electrical quick disconnect for all power and control functions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Finished grade shall be 1 inch to 4 inches below the bottom of the lid and shall slope away from the wet well.

B. Fill grinder pump stations with water prior to backfill compaction to prevent deformation of the basin wall and follow all other manufacturer's installation instructions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 409500

FIBER-OPTIC COMMUNICATION STANDARDS

PART 1 GENERAL

1.1 OVERVIEW

A. The standards herein pertain to all work associated with the procurement, installation, configuration, and testing of fiber-optic communications and associated infrastructure for County installations.

B. All contractors and subcontractors selected to perform fiber-optic communications work for the County shall adhere to the standards described in this document.

C. Additional requirements may be defined in engineering plans related to the fiber-optic communications work performed. In the event of a conflict, the most stringent requirement shall be followed. In the event of a conflict where the most stringent requirement cannot be resolved, Contractor shall inform County in writing identifying the discrepancy for final direction.

1.2 DEFINITIONS

A. Common Abbreviations

1. Amps: Ampere.
2. ANSI: American National Standards Institute.
3. ASTM: American Society for Testing and Materials.
4. AWG: American Wire Gauge.
5. CCITD: Collier County Information Technology Department.
6. CFR: Code of Federal Regulations.
7. dB: Decibel.
8. EIA: Electronic Industries Alliance.
9. FDEP: Florida Department of Environmental Protection.
10. HASB: High Airspeed Blowing.
11. HDPE: High Density Polyethylene.
12. IT: Information Technology.
13. km: Kilometer.
14. lbs: Pounds.
15. m: Meter.
16. N: Newton.

17. NEC: National Electric Code.
18. NEMA: National Electrical Manufacturers Association.
19. NESC: National Electrical Safety Code.
20. nm: Nanometer.
21. OSHA: Occupational Safety and Health Administration.
22. OTDR: Optical Time Domain Reflectometer.
23. PVC: Polyvinyl Chloride.
24. RCDD: Registered Communications Distribution Designer.
25. RUS: United States Rural Utilities Service.
26. SC: Subscriber Connection.
27. SDR: Standard Dimension Ratio.
28. SMF: Single Mode Fiber.
29. SRM: Standard Route Marker.
30. TIA: Telecommunications Industry Association.
31. UV: Ultraviolet.
32. VAC: Volts Alternating Current.
33. WGU: Wire Grounding Unit.

1.3 COORDINATION ACTIVITIES

A. Work involving the installation of fiber-optic cabling and equipment will interface with equipment provided by Others including, but not limited to, the following:
   1. Mounting of the IT Telecommunications Panel
      a. The IT telecommunications panel shall be mounted to an equipment rack at the installation site. Refer to County Utility Detail G-12.

B. Contractor shall determine all interface and installation requirements at the site prior to procurement and delivery and coordinate as required with County.

C. Permitting:
   1. Contractor is responsible for determining and obtaining all necessary permits for the work being performed, including, but not limited to:
      a. Stormwater.
      b. Utilities.
      c. Right-of-way.
      d. Canal crossings [South Florida Water Management District].
      e. FDEP.
   2. Contractor is responsible for all permitting fees.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:

1. Contractor shall be firms, corporations, individuals, or partnerships normally engaged in the deployment, maintenance, and repairs of fiber-optics at the municipal, county or state level.
2. Contractor shall have one or more of the following certifications
    a. Registered Communications Distribution Designer (RCDD)
    b. IMSA Fiber Optics for Traffic Stem Technician 2
    c. IMSA Traffic Signal Technician Level 2
    d. IMSA Traffic Signal Technician Level 3
3. Contractor shall have a minimum of 5 years of experience performing fiber-optic communications work based on the relevant scope definition category or categories above.

PART 2 PRODUCTS

2.1 GENERAL

A. Each subsection below specifies the minimum requirements for each type of product. Contractor shall adhere to product requirements below unless otherwise approved by County in writing.

2.2 FIBER-OPTIC CABLE

A. General: Provide all-dielectric, dry-filled, loose-tube, dispersion-unshifted, single-mode fiber (SMF) with low water peak, gel free, and suitable for underground (i.e., in conduit) and aerial outside plant installation. All fiber optic cable shall be splice-compatible with existing dispersion-unshifted SMF and require no electronic equipment for dispersion compensation between new and existing fiber. Ensure that all components that comprise a single length of cable are continuous and of the same material. Furnish only commercial off-the-shelf materials, equipment, and components.

B. Optical Fibers:

1. Ensure that the optical fibers used in the cable meet or exceed the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) TIA/EIA-492-CAAB specification, the U.S. Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900, and International Telecommunication Union ITU-T G.652.D requirements. Use only optical fibers meeting the additional requirements as follows:
    a. Optical:
        1) Cabled Fiber Attenuation:
            a) 1310 nm; Less than or equal to 0.35 dB/km.
            b) 1550 nm; Less than or equal to 0.25 dB/km.
        2) Point Discontinuity:
            a) 1310 nm; Less than or equal to 0.05 dB/km.
            b) 1550 nm; Less than or equal to 0.05 dB/km.

2. Ensure that all fiber in the buffer tube is usable fiber that complies with attenuation requirements. Ensure that fibers do not adhere to each other. Ensure that the fiber is free of surface imperfections and inclusions. Ensure that all fiber optic core glass is from the same manufacturer.

C. Buffer Tubes: Ensure that the fiber optic cable includes loose buffer tubes that isolate internal optical fibers from outside forces and provide protection from physical damage as well as water ingress and migration. Ensure that buffer tubes provide freedom of movement for internal optical fibers. Ensure buffer tubes allow for expansion and contraction of the cable without damage to internal optical fiber. Ensure that fiber does not adhere to the inside of the tube. Ensure that buffer tubes permit intentional scoring and breakout without damage to the fiber. Ensure that each fiber optic cable buffer tube contains 12 fibers per tube.

D. Color Code:

1. Ensure that the marking and color-coding of the fibers and buffer tubes conforms to the TIA-598-D standard.
2. Ensure that colors are permanent and stable during temperature cycling, and not subject to fading or smearing onto each other or into the water-blocking material. Ensure that fibers are colored with UV curable inks that remain clearly distinguishable as the intended color.

E. Strength Member: Ensure that the fiber optic cable contains a dielectric central and outside elements that prevent buckling of the cable and provide tensile strength. Ensure that the fiber optic cable can withstand a pulling tension of 600 lbs. without damage to any components of the fiber optic cable.

F. Outer Jacket:

1. Mark the jacket with the cable manufacturer’s name, fiber type, fiber count, date of manufacture”, and the sequential cable lengths marked in feet. All fiber-optic cabling shall have a stripe, yellow in color, along the entire length of the cable, and shall be marked "Collier County BCC IT" at three-foot intervals. Provide legible marking with contrasting color to that of the cable jacket.

G. Performance:

1. Bend radius: Ensure that the fiber optic cable is capable of withstanding a minimum unloaded bend radius of 10 times the cable diameter and a minimum loaded bend radius of 20 times the cable diameter when loaded to pulling tension of 600 pounds. Test the cable as required in the TIA -455-33B standard. Ensure that bending the fiber optic cable up to the minimum bend radius does not affect the optical characteristics of the fiber.

2. Cable Strength: Ensure that the fiber optic cable is capable of withstanding a pulling tension of 600 pounds during installation without increasing the fiber attenuation more than 0.8 dB/mile and without changing other optical fiber characteristics after the tensile load is removed. Ensure that optical fiber is proof-tested by the fiber manufacturer at a minimum of 100 kilo pounds per square inch. Ensure that the cable will withstand 25 impact cycles and the change in attenuation does not exceed 0.2 dB at 1550 nm when tested according to the requirements as detailed in the TIA -455-25D standard. Ensure that the change in attenuation will not exceed 0.15 dB during loading at 1550 nm, and that no fiber displays a measurable change in attenuation after load removal.

2.3 FIBER-OPTIC CONNECTION HARDWARE

A. General: Ensure that all splice enclosures, organizers, cable end preparation tools, and procedures are compatible with the fiber optic cable, and are approved by the County in writing.

B. Splice Enclosures:

1. Contain all optical fiber splices within a splice enclosure. Ensure that the enclosures provide storage for splices, fiber, and buffer tubes. Ensure that the splice enclosure restores the mechanical and environmental integrity of the fiber optic cable, encases the sheath opening in the cable, and organizes and stores optical fiber. Ensure all hinges and latching devices are stainless steel. Ensure that the enclosure is airtight and prevents water intrusion. Ensure that the splice enclosure can accommodate pressurization and has the ability to be reentered without requiring specialized tools or equipment. Ensure that the enclosure provides fiber and splice organizers including splice trays and strain relief.
2. Ensure that splice enclosures are hermetically sealed to protect internal components from environmental hazards such as moisture, insects, and UV light. Fiber optic splice enclosures shall also:
3. Comply with the Telcordia Technologies' GR-771-CORE standard and all applicable NEC requirements.
4. Provide space for future expansion equal to 100% of the initial utilization.
5. Provide fiber optic cable penetration end caps to accommodate a minimum installation of two trunk fiber optic cables and two fiber optic drop cables. Ensure that the enclosure end caps are factory-drilled to the proper diameter to accept and seal the fiber optic cable entries. Ensure that the cable entry locations can accommodate an assortment of cables with outside diameters ranging from 0.45 inches to 0.55

inches, plus 10%, without jeopardizing the waterproof characteristics of the enclosure.

C. Splice Trays: Ensure that splice trays are securely attached and accessible and provide sufficient storage for the fiber cable. Ensure splice trays provide access to individual fibers without disrupting other fibers in the tray. Ensure that splice trays hold the buffer tubes rigidly in place and provide protection for fusion splices. Ensure that the raceway accommodates the minimum bend radius of the fiber. Ensure that splice trays allow visible inspection of the fiber. Ensure that splice trays include a cover with a locking mechanism to hold it in place.

D. Cable Terminations:

1. Use Type SC connectors for all new network installations. Ensure that all connectors include a ceramic ferrule and provide a strain relief mechanism when installed on a single fiber cable that contains strength elements. Ensure that the optical fiber within the body of all connectors is mechanically isolated from cable tension, bending, and twisting.

E. Pre-Terminated Connector Assemblies: Ensure that pre-terminated cable assemblies consist of fiber optic cables with factory-installed connectors on one end of the cable and an un-terminated optical fiber on the other. Ensure that the pre-terminated connector assemblies are installed with fusion splices. Ensure that all buffer tubes and fibers are protected once the attachment of pre-terminated connector assemblies is complete.

F. Buffer Tube Fan-Out Kits: Ensure that a buffer tube fan-out kit is installed when fiber optic cables are terminated. Use a kit compatible with the fiber optic cable being terminated and that is color-coded to match the optical fiber color scheme. Ensure that the buffer tube fan-out kit supports 12 fiber strands.

G. Patch Panels:

1. Ensure that the patch panel is compatible with the fiber optic cable being terminated and color coded to match the optical fiber color scheme. Ensure that the patch panel has a minimum of 12 SC-type panel connectors unless otherwise shown in the Plans. Ensure that the patch panel dimensions do not exceed 14 inches x 6 inches x 4 inches for fiber counts of twelve or less. Ensure the patch panel is suitable for mounting within an approved cabinet at the field device location. Ensure patch panels are sized to accommodate specified coupler housings and maintain sufficient bend radius for cables. Ensure the patch panel is sized to occupy the minimum space required for capacity.
2. Connector Panels:

a. Ensure that the connector panel provides 12 SC-type, bulkhead-mount coupling connectors. Ensure that each coupling connector allows connection of a cable terminated on one side of the panel to a cable on the opposite side.

2.4 IT TELECOMMUNICATIONS PANEL

A. General:
   1. Function: Receive incoming fiber-optic cable at installation site from County network.
   2. Major parts include fiber-optic patch panel, network cabling, and accessories.

B. Enclosure Specifications:
   1. Manufacturers and Products:
      a. American Products; AP Minifort Model AM-462418-24RU.
      b. No substitutions.
   2. Panel Size:
      a. Include mounting bracket accessory from panel manufacturer for installation.
      b. Increase panel size if and as needed to accommodate additional network equipment or to increase heat dissipation to reach an internal steady-state operating temperature below the maximum operating temperature of all contained equipment.
   3. Provide ground bar inside enclosure.
   4. All conduit penetrations shall be made through the bottom face of the enclosure. Side or top penetrations are not acceptable.
   5. Include quad 120 VAC power receptacle gang box inside enclosure.
   6. Enclosure shall include a standard rack for mounting of rack-mounted equipment.

2.5 CONDUIT

A. Materials of Construction: Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:

- High Density Polyethylene (HDPE):
  - For use outside site boundaries, such as roadside pull boxes and splice enclosures.
- HDPE Standard Dimension Ratio (SDR) 13.5: ASTM F2160, NEMA TC-7
- All HDPE conduit shall be orange in color.
- Schedule 80 PVC:
  - For use inside site boundary for interconnection of fiber-optic equipment and to on-site fiber-optic handholes, pull boxes, and splice enclosures.

B. Locate Wire: Ensure that locate wire is a single copper solid conductor with a minimum gauge of No. 12 AWG with blue shielding. Ensure locate wire is insulated using a 45-millimeter minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

C. Locate Wire Grounding: Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:

1. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.
2. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.
3. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation.
4. The WGU system meets the minimum standards listed below for surge protection:
    a. Surge Element: Three-element maximum duty fail-safe gas tube.
    b. Rating: 40,000 Amp surge capacity (single-cycle, 8 by 20 microsecond waveform).
    c. Life: Minimum 1,000 surges (1000 Amps to ground).
    d. Insulation Resistance: 1,000 megohm minimum at 100 volts of direct current.
    e. Clamp Voltages:
        1) Impulse at 100 volts per microsecond.
        2) Direct Current: 300 to 500 volts.

D. Route Markers:

1. Ensure Standard Route Marker (SRM) is a rigid, three-sided driven post used for location and notification purposes only.
2. Ensure that each SRM is labeled and identified as a County IT fiber optic cable marker unless otherwise shown in the Plans. The labels must include the contact information for the Collier County IT department, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.
3. Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made

from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.

4. Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.
5. Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.
6. Ensure that SRMs installed at the minimum 2-foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

2.6 PULL AND SPLICE BOXES

A. General:

1. The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.
2. Ensure in-ground boxes have an open bottom design.

B. Marking:

1. The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, and bonded with adhesive material suitable for outdoor applications.
   a. Mark application as “COMMUNICATIONS”
   b. Manufacturer’s name or logo.

C. Dimensions:

1. For fiber optic cable applications, pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 18 inches deep shall be provided.
2. Rectangular splice boxes with nominal cover dimensions of 30 inches wide by 48 inches long or larger and no less than 18 inches deep shall be provided.

D. Fabrication:

1. Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.
2. Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.
3. The box construction shall be an ANSI Tier 22 Quazite brand enclosure.

PART 3 EXECUTION

3.1 PREPARATION

A. Conduit:
   1. Ensure installed conduit system conforms to fiber-optic system requirements, including:
      a. Conduits: Size and number.
      b. Access Holes, Handholes, and Pull Boxes: Location and size, to ensure cables may be installed without exceeding manufacturer's limitations.
      c. Outlet Boxes: Size to coordinate with outlet cover plates for adequate volume and bend radius.
   2. Expansion Plugs: Seal conduit to stop ingress of water and grit with fabricated expansion plugs.
   3. Ensure duct bank, conduit, and other confined routing is free and clear of debris before cable placement.

3.2 SOURCE QUALITY CONTROL

A. Cable End Sealing: Ensure that fiber optic cable ends are capped or sealed to prevent the entry of moisture during shipping, handling, storage, and installation. Equip one end of the fiber optic cable with flexible pulling eyes.

B. Protective Wrap: Ensure that the fiber optic cable is shipped and stored with a protective wrap or other approved mechanical reel protection device over the outer turns of the fiber optic cable on each reel. Ensure that the wrap is weather resistant and protects the cable reel from environmental hazards. Ensure that the cable reel remains wrapped until cable is to be installed.

C. Packaging, Shipping and Receiving: Ensure that the packaging and delivery of fiber optic cable reels comply with the following minimum requirements:

1. Ensure cable is shipped on reels of marked continuous length.
2. Ensure each cable is shipped on a separate, strongly constructed reel designed to prevent damage to the cable during shipment and installation.
3. Ensure each reel has a minimum of 6 feet on each end of the cable available for testing.
4. Ensure that all fiber optic cable is continuous and free from damage.
5. Ensure no point discontinuities greater than 0.1 dB per reel.
6. Ensure satisfactory transmission loss test results as required by the TIA-455-61-A standard.
7. Ensure that the manufacturer submits the date of manufacture; product and serial numbers; cable data, including the reel length; refraction index; the project name and location; type of fiber and quantity of strands used; technical product data sheets; and reel numbers.

D. Manufacturer Testing and Certification: Submit documentation of all factory tests performed by the manufacturer for all fiber optic cable, splicing material, cable terminations, and patch panels as requested by the County.

3.3 INSTALLATION

A. Fiber-Optic Cable Installation:
   1. Install all materials and equipment according to the latest version of the manufacturer's installation procedures. Ensure that all materials and installation practices are in accordance with the applicable OSHA requirements as found in 29 CFR Part 1926, Safety and Health Standards for Construction. In addition, perform the following:
      a. Ensure conduit and innerduct is clean and free from damage prior to installing fiber optic cable.
      b. Document the sequential cable length markings at each splice box and pull box wall that the cable passes through and include the information with the as-built documentation.
   2. Provide all incidental parts needed to complete the installation as necessary for a complete and properly operating system.
   3. Cable Identification:
      a. All fiber cable shall be striped with a yellow color along the entire length of the cable.
      b. A cable tag with permanent ink shall denote "COLLIER COUNTY BCC IT FIBER-OPTIC CABLE" shall be affixed on the cable at every 3-foot interval.
   4. Pulling:
      a. Install the fiber optic cable by hand or by using a mechanical pulling machine. If a mechanical pulling machine is used, equip the machine with a monitored or recording tension meter.

Ensure that at no time the manufacturer's recommended maximum pulling tension is exceeded. Ensure that the central strength member and aramid yarn are attached directly to the pulling eye during cable pulling. Use pulling attachments to ensure that the optical and mechanical characteristics are not degraded during the fiber optic cable installation.

b. Ensure that excess cable is coiled in a figure eight and fed manually when pulling through pull boxes and splice boxes by hand. If pulleys and sheaves will be used to mechanically pull through pull boxes and splice boxes, ensure that the cable will never be pulled through a radius less than the manufacturer's minimum bend radius. Use large diameter wheels, pulling sheaves, and cable guides to maintain the appropriate bend radius. Provide tension monitoring at all times during the pulling operation. Ensure that cable pulling lubricant used during installation is recommended by the optical fiber cable manufacturer.

5. Blowing: Use either the high airspeed blowing (HASB) method or the piston method. When using the HASB method, ensure that the volume of air passing through the conduit does not exceed 600 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive. When using the piston method, ensure that the volume of air passing through the conduit does not exceed 300 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive.
6. Slack Cable Storage: Provide and store fiber optic cable at each pull box and splice box to allow for future splices, additions, or repairs to the fiber network. Store the fiber optic cable without twisting or bending the cable below the minimum bend radius.
   a. Store a total of 200 feet of fiber optic backbone cable in splice boxes, with 100 feet of cable on each side of the cable splice point.
   b. Store a minimum of 100 feet of fiber optic drop cable in splice boxes.
   c. Store 100 feet of spare fiber optic cable in pull boxes.
7. Fiber Optic Connection - Splicing:
   a. Perform all optical fiber splicing using the fusion splicing technique, and according to the latest version of the manufacturer's cable installation procedures, industry accepted installation standards, codes, and practices. Ensure that all splices match fiber and buffer tube colors.
   b. Ensure that splice loss does not exceed a maximum of 0.05 dB per splice as measured on the fusion splice machine when splicing newly installed fibers together. Ensure that splice loss does not exceed a maximum of 0.1 dB per splice as measured

on the fusion splice machine when splicing newly installed fibers to existing fibers.

c. Where a fiber cable is to be accessed for lateral or drop signal insertion, only open the buffer tube containing the fiber to be accessed and only cut the actual fiber to be accessed. If a fiber end is not intended for use, cut the fiber to a length equal to that of the fiber to be used and neatly lay it into the splice tray.

d. Treat any fibers exposed during splicing with a protective coating and place in a protective sleeve or housing to protect the fiber from damage or contaminants. Neatly store all splice enclosures within a splice box.

8. Splice Plan: Submit a splice plan showing the location and configuration of splices in the system for approval by the County. Perform all splicing according to the splice plan. Document each splice location and identify the source and destination of each fiber in each splice tray. Document all fiber colors and buffer jacket colors used during installation and develop a sequential fiber numbering plan as required in the TIA -598-D standard for color-coding in the documentation.

9. Splice Equipment: Use a fusion splice machine to splice all optical fiber. Ensure that splice equipment is new from the factory, or equipment has been serviced and certified by the factory or its authorized representative within the previous 12 months from the commencement of its use. Ensure that the calibration certificate is maintained in the splicing equipment case or provided electronically when requested. Clean all splicing equipment and calibrate according to the manufacturer's recommendations prior to each splicing session at each location.

B. Cable Termination Installation: Ensure that cables, buffer tubes, or strands are neatly routed, secured, and terminated in a patch panel in coordination with the County. Ensure all cable termination points include documentation regarding the identification, route, and function of each fiber installed at that location. Ensure that a copy of this information is placed alongside the installed equipment (for instance, in a document pouch or drawer within a field cabinet).

C. Patch Panel Installation: Ensure that patch panels are neatly installed and secured in a weather-proof enclosure.

D. Conduit Installation:

1. Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Standard Plans. Construct conduit runs as straight as possible. Mark the location of the conduit system

with route markers every 1,000 feet and at every pull box and splice box. Ensure that all route markers used are new and consistent in appearance.

2. Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.
3. Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.
4. Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.
5. Install the conduit system so the fiber optic cable maintains the minimum bend radius. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Coupling method and material to be in compliance with manufacturer's installation guidelines.
6. Conduit Terminations:
    a. Where conduit enters a box, fitting, or other enclosure, provide a bushing or adapter (end bell, conduit adapter, etc.) to protect the conductor or cable from abrasion unless the box, fitting, or enclosure provides equivalent protection.
    b. For conduit to be encased in concrete, wrap with tape, or otherwise protect all terminations to prevent the entrance of concrete.
    c. Connect new underground conduits to existing underground conduits with a pull box.
    d. Seal conduits terminating in a pull box or junction box with a moisture resistant sealant.
7. Restoration of Trench Areas: Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.
8. Above-Ground Installation
    a. Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration.
    b. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5-foot centers.
9. Elbow Curvature:
    a. For 2-inch conduit, the radius of curvature of the centerline of any bend shall not be less than 9.5 inches.

E. Fiber-Optic Cable Locate Wire:
   1. Installation:
      a. Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. When conduit is placed by trenching, bury locate wire along the centerline of the top outer surface of installed conduit.
      b. Do not run locate wires into field cabinets. Terminate locate wires at the following locations or as shown on the Plans, nearest pull box to a field cabinet, nearest pull box to a building, and splice box locations. Ensure that wire termination occurs in a pull box.
      c. Install WGUs in pull boxes and splice boxes as shown in the Plans. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.
   2. Testing: Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system. Perform continuity tests and insulation resistance tests on all locate wires. Replace, or repair defective locate wire at no additional cost.

F. Route Markers:
   1. Install route markers for new fiber optic cable installations, replace route markers as shown in the Plans, and ensure the following:
      a. Markers are plumb and level and the notification information is clearly visible when viewed from the side facing the roadway.
      b. Markers are set within the right of way.
      c. Markers are placed at a one-foot offset from the conduit system.
      d. The top of the marker post is a minimum of five feet and maximum of six feet above the finish grade
      e. Place marker at each pull box location.
      f. Markers are installed on both sides of a stream, river, or other water crossing, and on both sides of aboveground attachments such as bridges and walls.
   2. Remove and replace all marker posts damaged during installation at no additional cost. Provide as-built documentation at the completion of installation that includes location of all installed route markers and correlates the marker to the fiber optic infrastructure that it signifies.

G. Pull and Splice Boxes:
   1. Do not install power and communication cables in the same box.

2. Install pull and splice boxes in accordance with Plans. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Prior to installation, pour in a bed of pea rock or crushed stone at least one foot deep, with horizontal dimensions four inches longer than the width and length of the pull box. The pull or splice box installation shall be placed so that the inside edge of the box rests entirely on a gravel bed. Do not install pull or splice boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without exceeding the cable bend radius.
3. Provide conductive metal ground rod that is at least 5/8 inches in diameter and 48 inches long. Ground rod shall be installed vertically within three inches of the inside edge of the pull or splice box, with at least 10 inches of the rod exposed above the gravel base.
4. Placement and Spacing: Pull boxes shall be spaced a maximum of 1,000 feet apart, and within 20 feet of either side of a roadway, and within 10 linear feet of any fiber optics termination point. The County agency shall reserve sole determination whether spacing of pull boxes shall be less or more than the standard 1,000 feet apart.
5. Relocation of Pull and Splice Boxes:
    a. Relocation of pull and splice boxes shall consist of removing an existing box and installing the box at the location shown in the Plans. Restore the area of the box removal and relocation to the condition of the adjacent area. The costs for restoration will be included in the Contract unit price of the relocation.
    b. Boxes damaged due to the Contractor's operations must be replaced by the Contractor at no cost to the County. Replacement boxes must be of the same material and size of the existing box, unless directed otherwise by the CCITD.

3.4 FIELD QUALITY CONTROL

A. Installation Testing:
    1. General:
        a. Notify the CCITD of cable testing at least 14 calendar days in advance. Submit the testing procedures to the CCITD staff for approval prior to commencement of testing. Perform all tests at 1310 nm and 1550 nm wavelengths, and include the last calibration date of all test equipment with the test parameters set on the equipment in the test documentation. Ensure that the last calibration date of all test equipment is within the last 12 months and that the calibration certificate is maintained in the test equipment case or provided electronically when requested. Test all installed fibers (terminated and un-terminated) using

methods identified in this Section. All tests must be conducted with a launch box.

b. Fibers containing splices or fibers terminated on both ends must be bidirectionally tested.

c. Present the results of the optical time domain reflectometer (OTDR) testing (i.e., traces for each fiber) and a loss table showing details for each splice and termination tested to the CCITD in an approved electronic format. Ensure all OTDR testing complies with the EIA/TIA-455-61 standard.

2. OTDR Attenuation Testing: Perform testing on all fibers to ensure that attenuation does not exceed allowable loss (0.35 dB/km for 1310 nm wavelength, 0.25 dB/km for 1550 nm wavelength, plus 0.5 dB for any connectors and 0.1 dB for splices). Repair or replace cable sections exceeding allowable attenuation at no cost to the County.

3. OTDR Tracing: Test all fibers with an OTDR at wavelengths of 1310 and 1550 nm.

4. Splice Loss Testing: Ensure that the splice loss for a SMF fusion splice does not exceed a maximum bidirectional average of 0.1 dB per splice when measured using an OTDR. Repair or replace splices that exceed allowable attenuation at no cost to the County.

5. Connector Loss Testing**:** Ensure that the attenuation in the connector at each termination panel and its associated splice does not exceed 0.6 dB when measured using an OTDR. Repair or replace connectors exceeding allowable attenuation at no cost to the County.

B. Fiber Optic Cable Locator: Locate and mark all existing County owned or maintained fiber optic facilities within project limits prior to performing any subsurface work. Locate and mark as necessary to ensure that all fiber optic facilities are located and visibly marked at all times.

C. Fiber-Optic Cable Warranty: Ensure that the fiber optic cable, the splice enclosures, and terminations have a manufacturer's warranty covering defects for a minimum of two years from the date of final acceptance. Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

D. Pull and Splice Box Warranty: Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance. Ensure the warranty includes providing replacements, within 30 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

E. Documentation and Closeout

1. Within ten (10) days following successful installation and testing of the fiber-optic communication work, Contractor shall provide the County both printed and electronic copies of as-built network drawings.
2. At minimum, as-builts shall contain:
    a. Network block diagrams, identifying endpoints for fiber termination, number of fiber strands and cables, and topology layout.
    b. Updated site plan of each affected installation site identifying location of the IT telecommunications cabinet, in addition to pull boxes and handhole locations at the installation and interconnecting conduit.
    c. Updated overall site plan identifying the fiber-optic cable installation for the entire project, including all interconnecting segments between installations or other endpoint locations. Overall site plant shall include all pull boxes, splice vaults, handholes, and fiber cable lengths.
    d. As-built plans shall additionally be provided as converted Google Earth and Visio formats for County use.

END OF SECTION

DETAILS

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET							
	VERTICAL BENDS							
	90°		45°		22–1/2°		11–1/4°	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
4	60	24	25	10	12	5	6	3
6	85	34	35	14	17	7	9	3
8	110	43	45	18	22	9	11	9
10	133	52	55	21	27	10	13	5
12	155	60	64	25	31	12	15	6
16	198	76	82	31	40	15	20	8
18	218	83	90	35	44	17	22	8
20	238	90	98	37	47	18	23	9
24	277	104	115	43	55	21	27	10
30	330	122	136	51	66	24	33	12
36	379	139	156	57	75	28	38	14

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET				
	HORIZONTAL BENDS				DEAD ENDS (2)
	90°	45°	22–1/2°	11–1/4°	
4	23	9	5	2	55
6	32	13	6	3	77
8	40	17	8	4	100
10	48	20	10	5	120
12	56	23	11	6	141
16	71	29	14	7	181
18	77	32	15	8	200
20	84	35	17	8	218
24	96	40	19	10	253
30	112	47	22	11	303
36	127	53	25	13	350

NOTES:

1. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.

2. ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS. WITH RESTRAINT ON BOTH SIDES OF THE VALVE.

3. RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.

4. RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).

5. THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

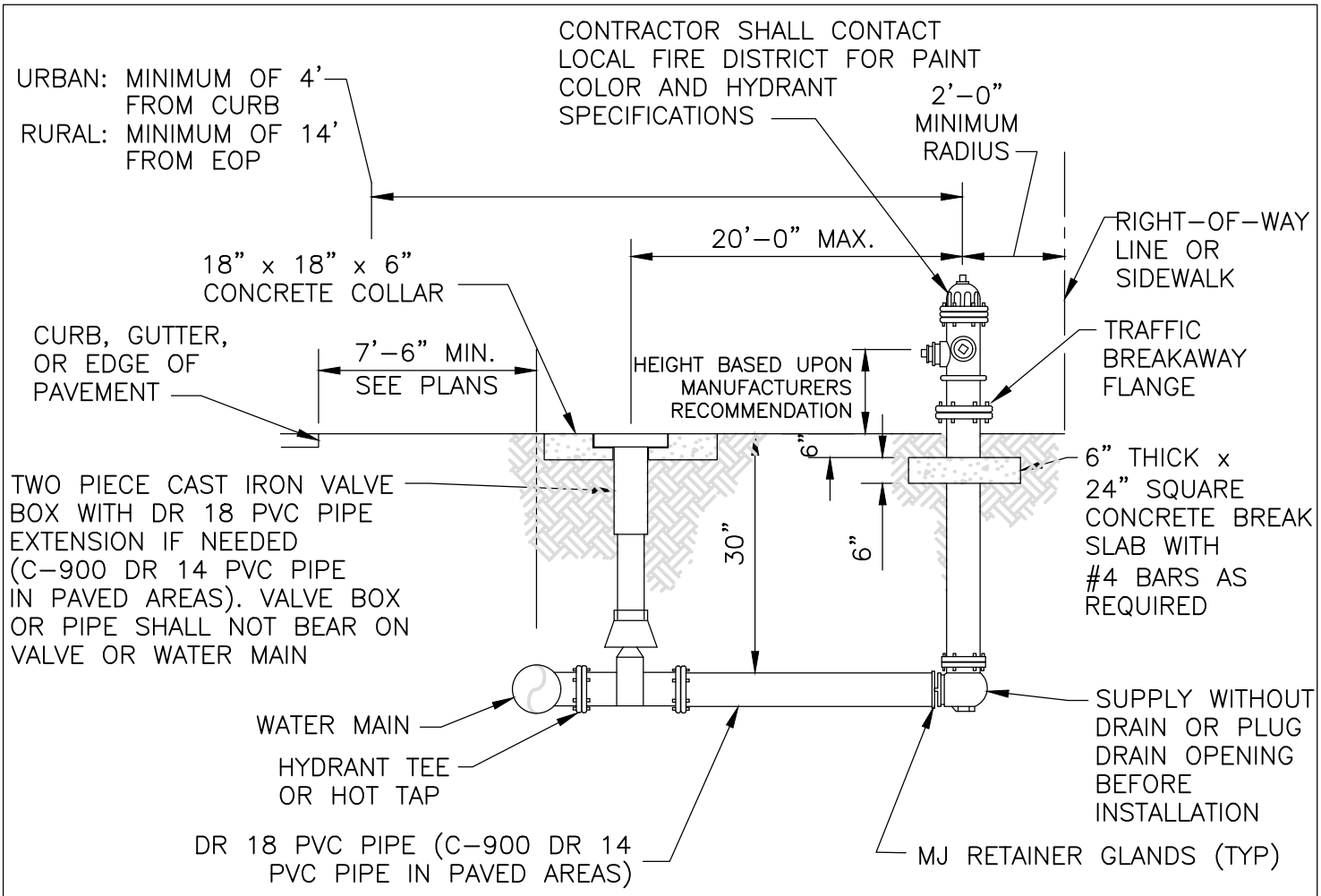
PIPE RESTRAINT SCHEDULE

NTS

REVISION DATE:
MARCH 2024

Collier County

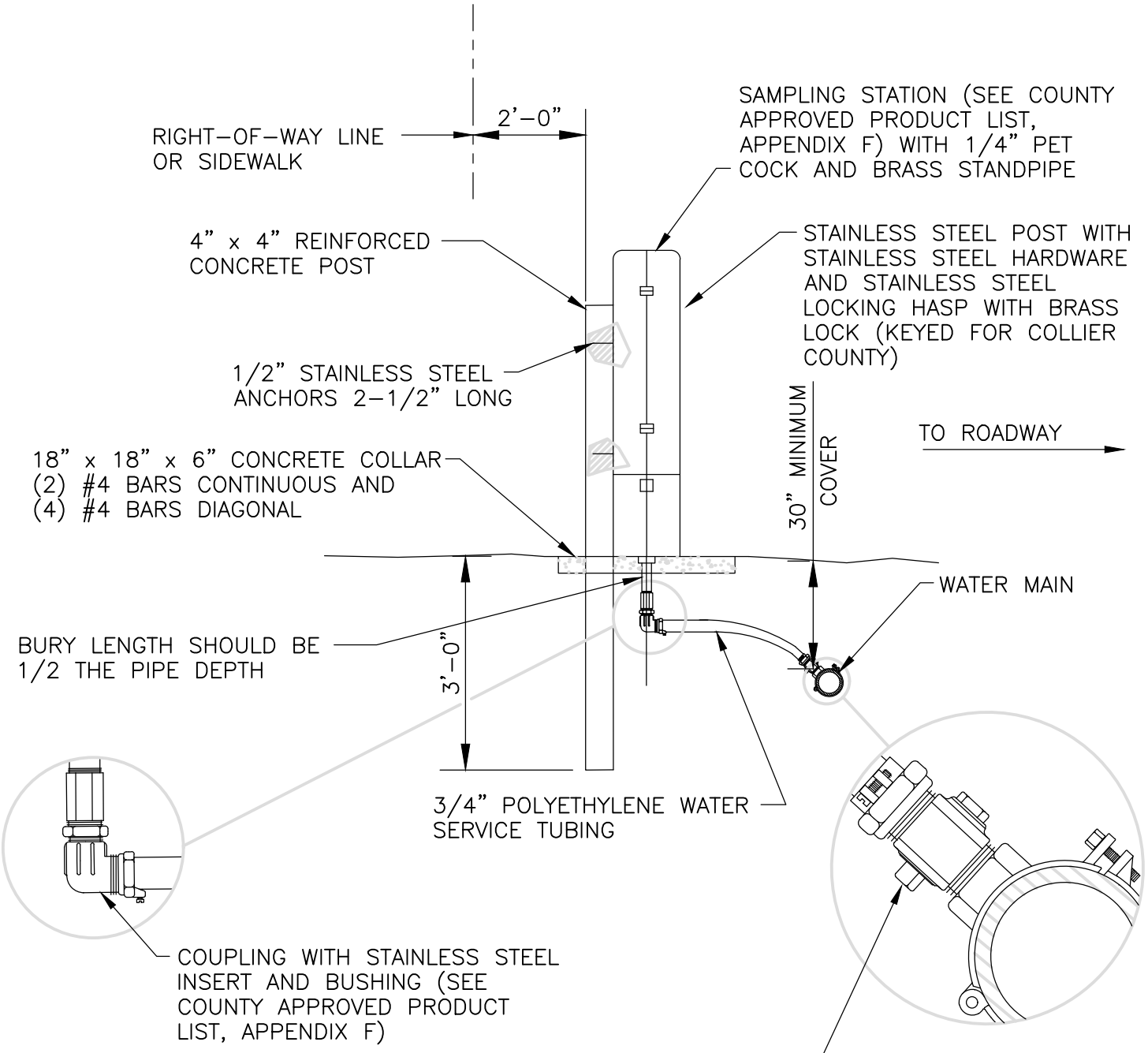
SHEET NO.
G–10



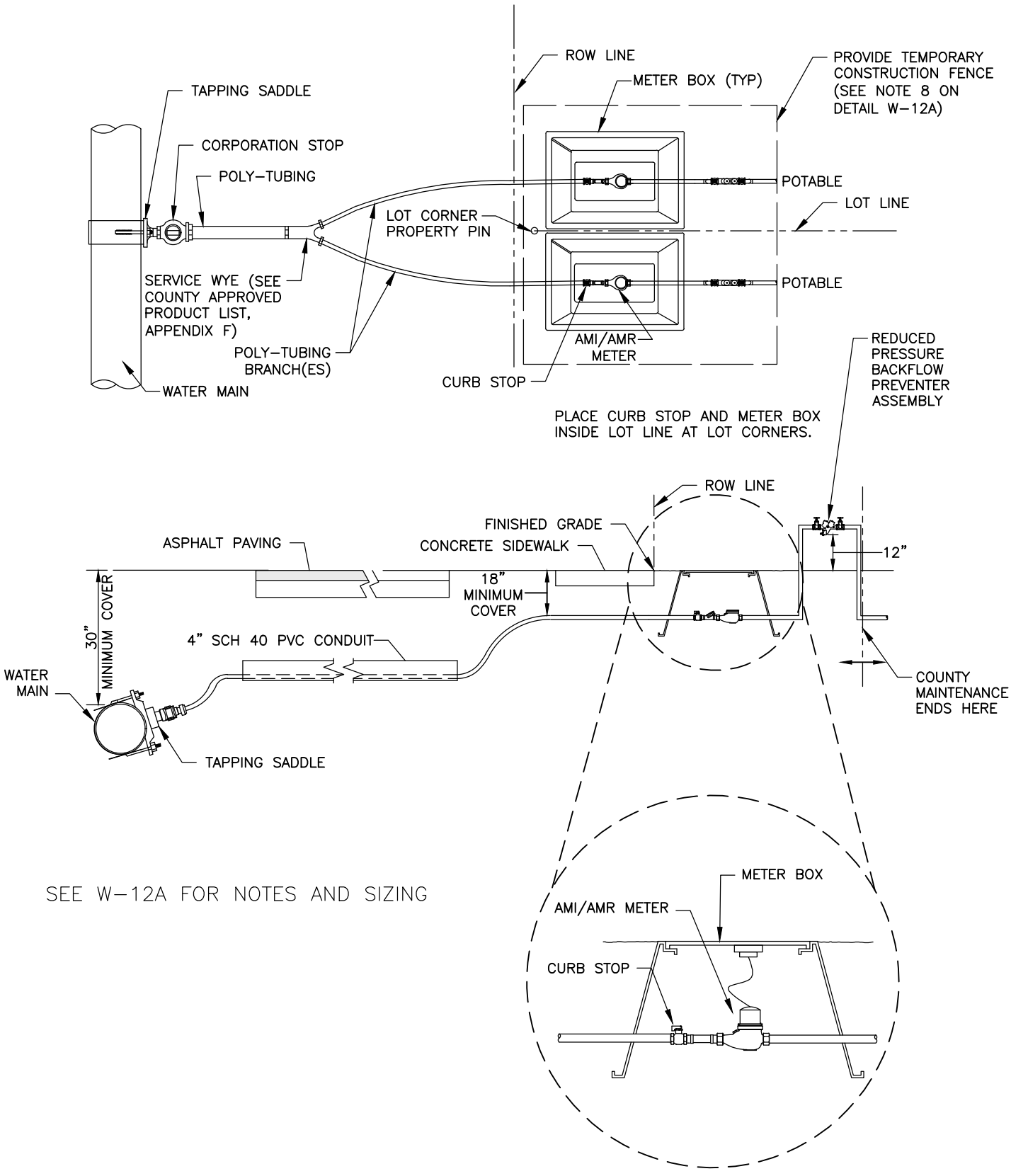
NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5-1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C-502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

FIRE HYDRANT DETAIL	REVISION DATE: MARCH 2024	Collier County	SHEET NO. W-3
NTS			



PERMANENT BACTERIAL SAMPLE POINT DETAIL	REVISION DATE: AUGUST 2008	Collier County	SHEET NO. W–6
NTS			



SEE W-12A FOR NOTES AND SIZING

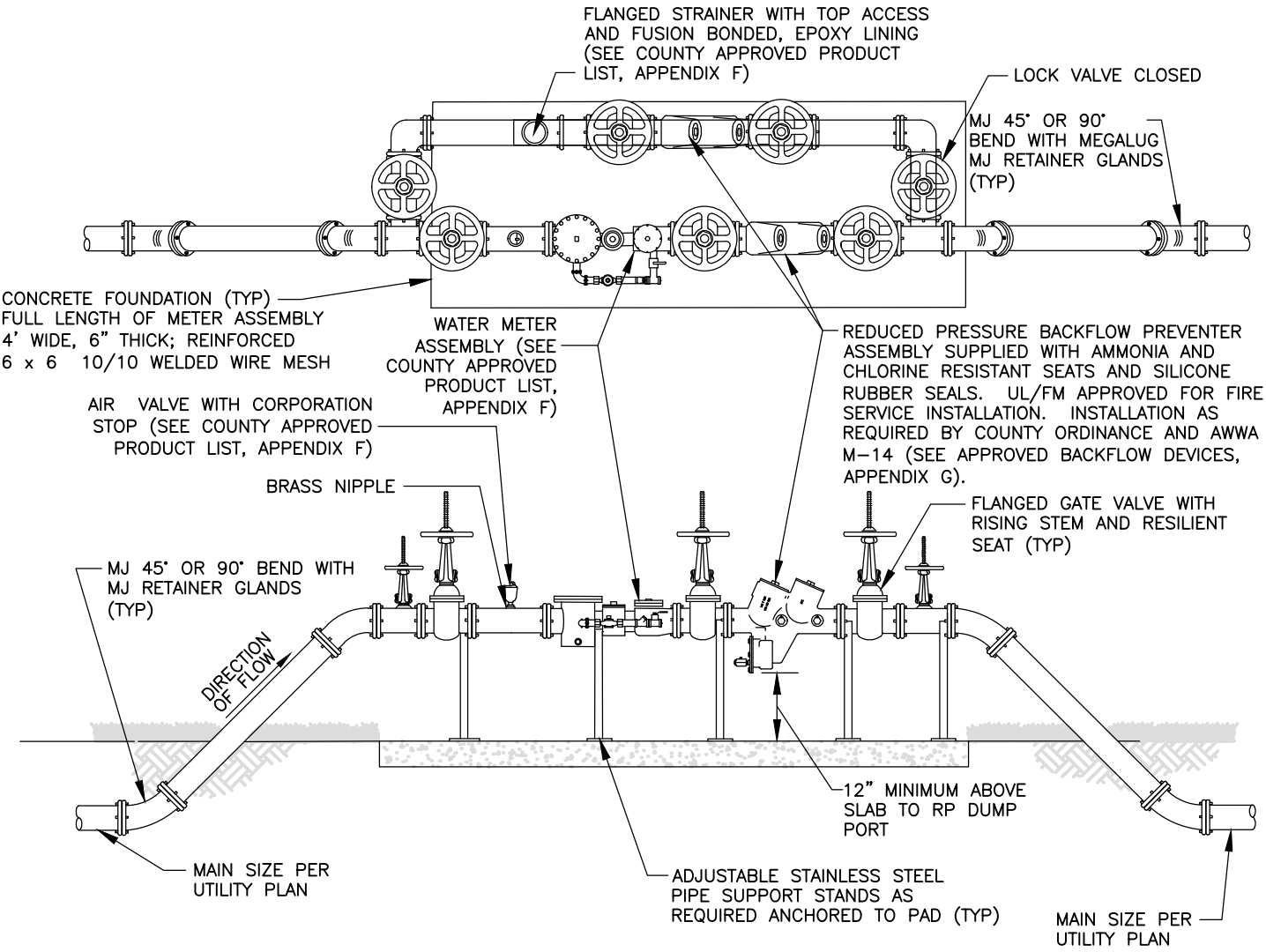
TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN	REVISION DATE: MARCH 2024	Collier County	SHEET NO. W-12
NTS			

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	$1-\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	$1-\frac{1}{2}$"	1"
1" METER	$1-\frac{1}{2}$"	(2) 1" METERS	$1-\frac{1}{2}$"	1"
$1-\frac{1}{2}$" METER	$1-\frac{1}{2}$"			
2" METER	2"			

NOTES:

1. $1-\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C-901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.
8. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AT WATER METER SETTINGS UNTIL BUILDING CERTIFICATE OF OCCUPANCY OR INSTALLATION OF SOD. FENCE TO BE 3' IN HEIGHT AND OFFSET 3' FROM ASSEMBLY.

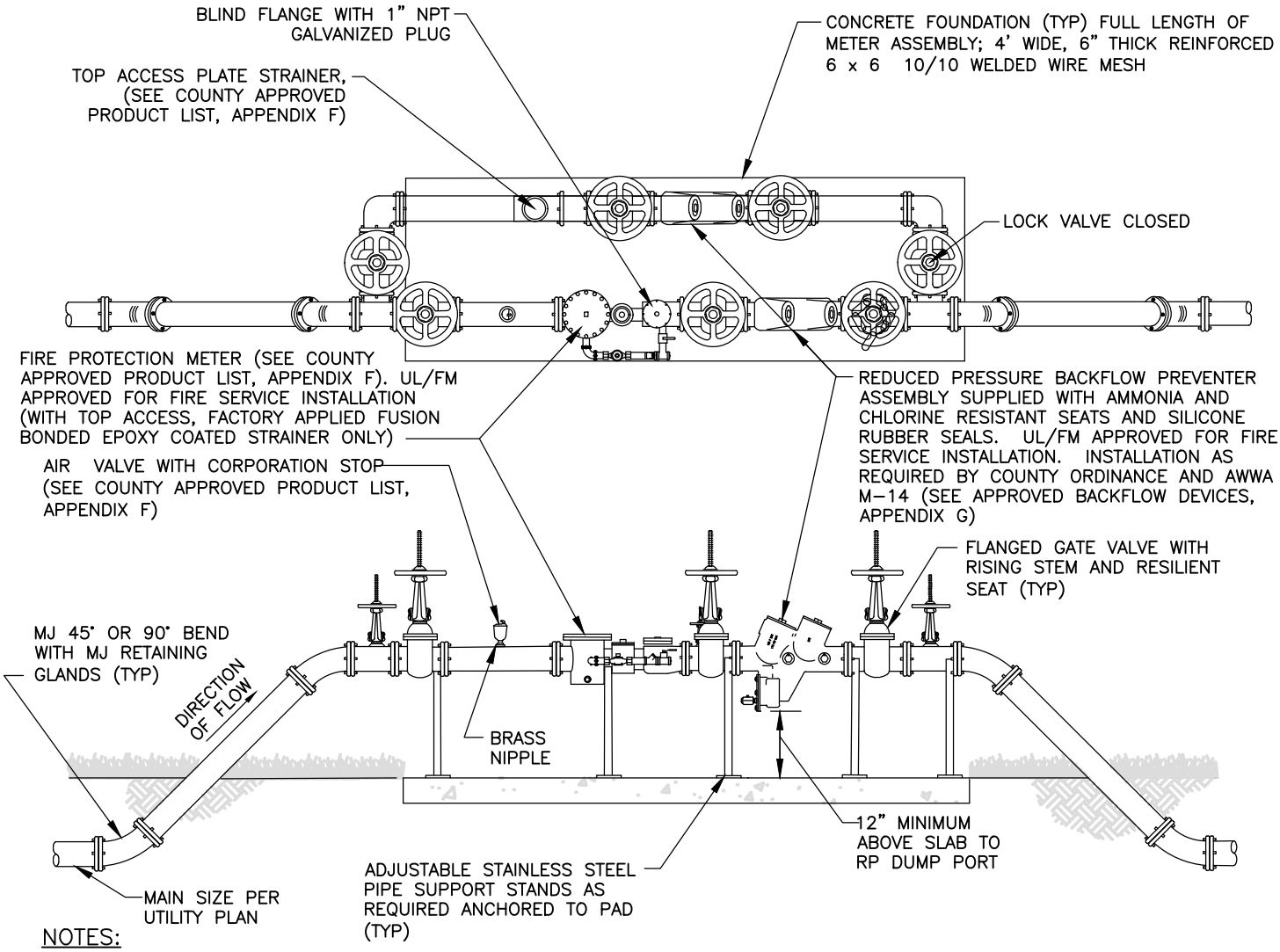
SERVICE CONNECTION SIZING CHART AND NOTES	REVISION DATE: MARCH 2024	Collier County	SHEET NO. W-12A
NTS			



NOTES:

1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE ONLY.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW UNITS SHALL BE TESTED BY CERTIFIED BACKFLOW TECHNICIAN WITH TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT FOR CERTIFICATION AND APPROVAL.
6. COUNTY WILL REQUIRE DEDICATION OF ALL MATERIALS AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY WATER MAIN.
7. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION).

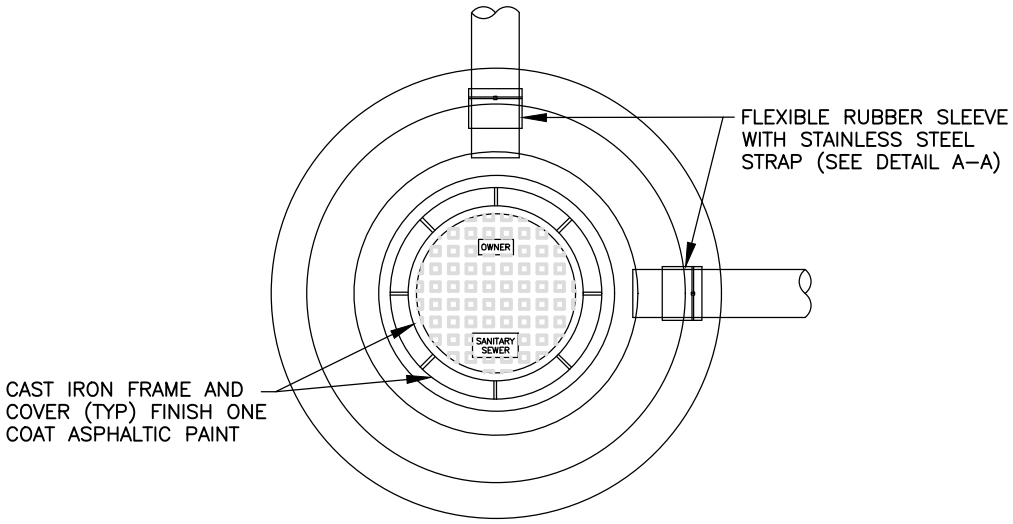
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL	REVISION DATE: MARCH 2024	Collier County	SHEET NO. W-13
NTS			



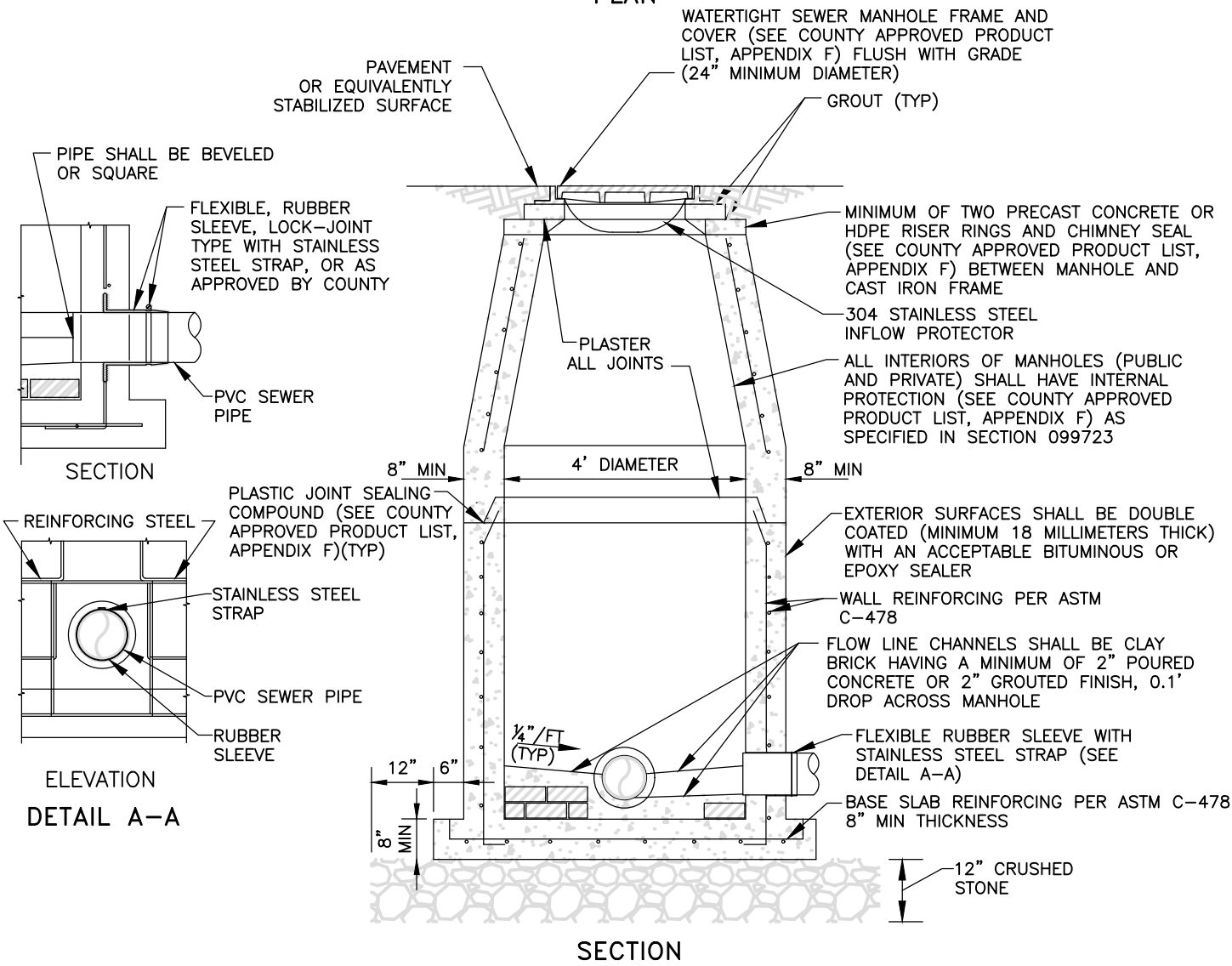
NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. COUNTY REQUIRES DEDICATION OF ALL ABOVE GROUND MATERIAL AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY MAIN.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION),

4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL	REVISION DATE: FEBRUARY 2024	Collier County	SHEET NO. W-14
NTS			



PLAN



SECTION

ELEVATION

DETAIL A–A

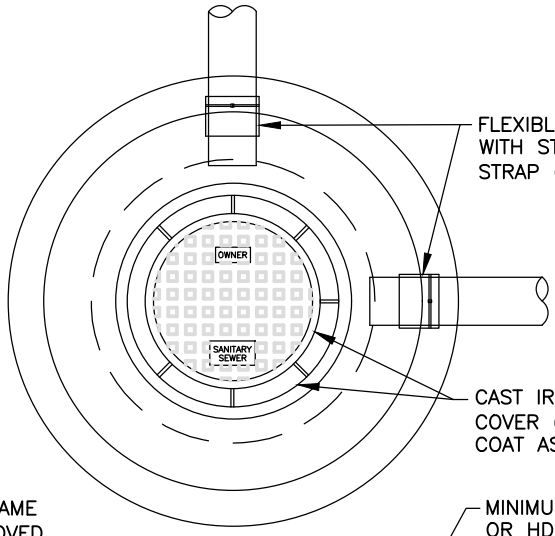
PRECAST REINFORCED CONCRETE MANHOLE DETAIL

NTS

REVISION DATE: MARCH 2024

Collier County

SHEET NO. WW–3



FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

CAST IRON FRAME AND COVER (TYP) FINISH ONE COAT ASPHALTIC PAINT

PLAN

WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH WITH GRADE (24" MINIMUM DIAMETER)

MINIMUM OF TWO PRECAST CONCRETE OR HDPE RISER RINGS AND CHIMNEY SEAL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) BETWEEN MANHOLE AND CAST IRON FRAME

PAVEMENT

304 STAINLESS STEEL INFLOW PROTECTORS

GROUT (TYP)

TOP SLAB REINFORCING PER ASTM C–478. MIN 8" THICK.

PLASTIC JOINT SEALING COMPOUND (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) KEYED (TYP)

ALL INTERIORS OF MANHOLES (PUBLIC AND PRIVATE) SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AS SPECIFIED IN SECTION 099723

EXTERIOR SURFACES SHALL BE DOUBLE COATED (MINIMUM 18 MILLIMETERS THICK) WITH AN ACCEPTABLE BITUMINOUS OR EPOXY SEALER

WALL REINFORCING PER ASTM C–478

4' DIAMETER

FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED FINISH, 0.1' DROP ACROSS MANHOLE

FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

¼"/FT (TYP)

BASE SLAB REINFORCING PER ASTM C–478 8" MIN THICKNESS

12" CRUSHED STONE

8" MIN

VARIES

8" 12' 24" 12" 8"

12" 6"

8" MIN

SECTION

PIPE SHALL BE BEVELED OR SQUARE

FLEXIBLE, RUBBER SLEEVE, LOCK–JOINT TYPE WITH STAINLESS STEEL STRAP, OR AS APPROVED BY COUNTY

PVC SEWER PIPE

SECTION

REINFORCING STEEL

STAINLESS STEEL STRAP

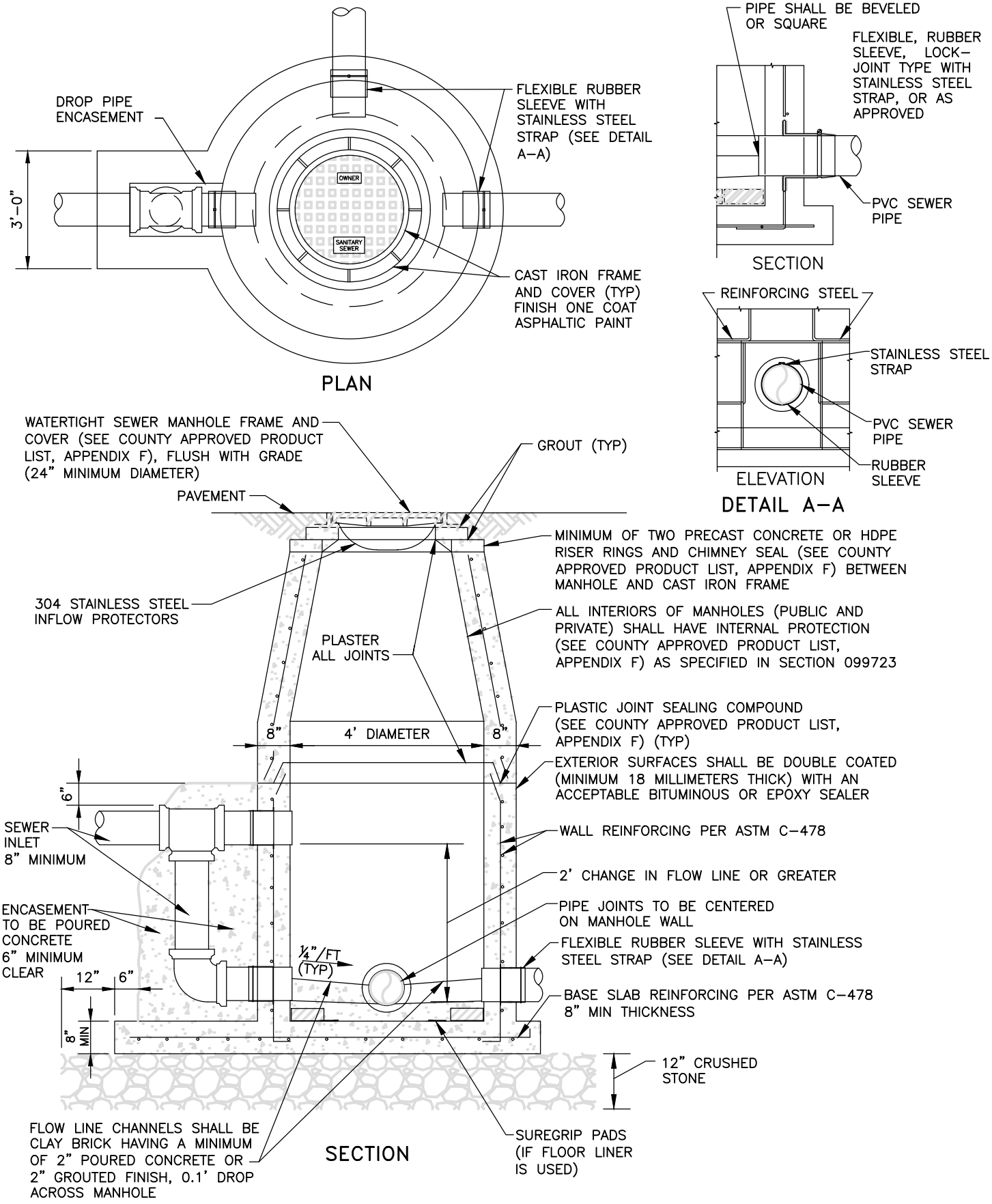
PVC SEWER PIPE

RUBBER SLEEVE

ELEVATION

DETAIL A–A

SHALLOW MANHOLE DETAIL	REVISION DATE: MARCH 2024	Collier County	SHEET NO. WW–4
NTS			



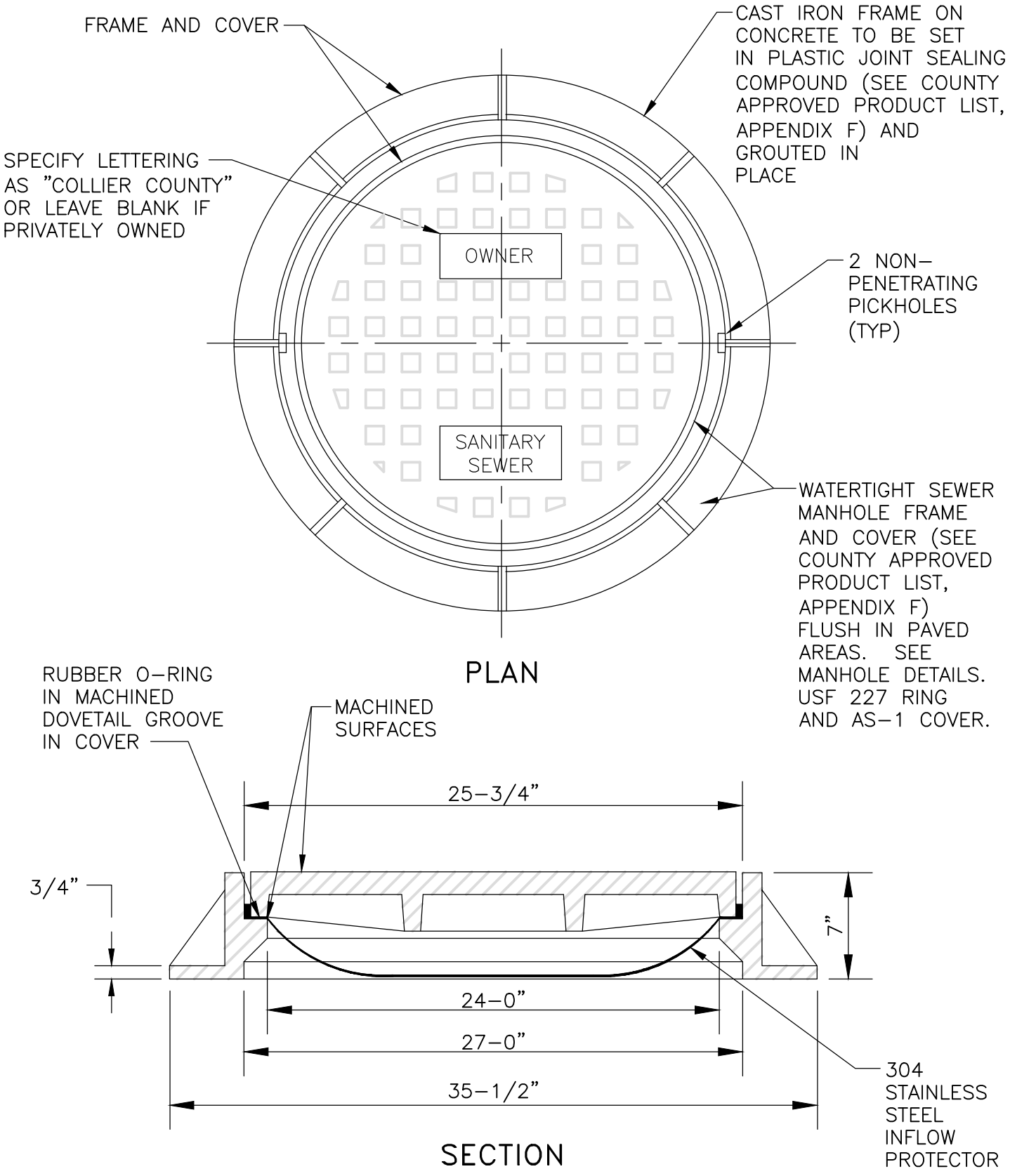
DROP MANHOLE DETAIL

NTS

REVISION DATE:
MARCH 2024

Collier County

SHEET NO.
WW–5



MANHOLE RING AND COVER DETAIL

NTS

REVISION DATE: MARCH 2024

Collier County

SHEET NO. WW-6

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

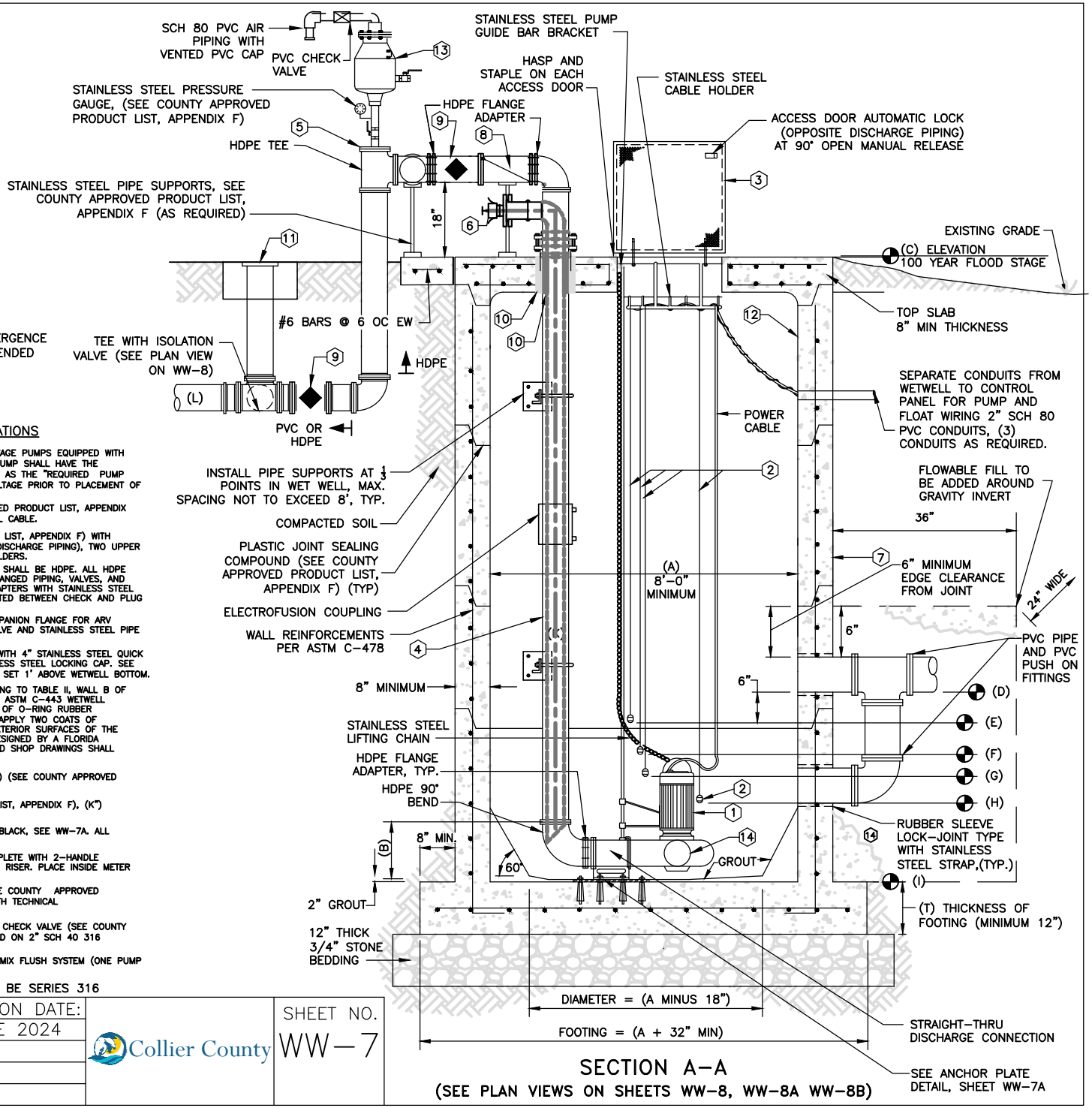
*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER (OPPOSITE DISCHARGE PIPING), TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76. O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. RAM-NEK MAY BE USED IN LIEU OF O-RING RUBBER GASKETS (SEE SPECIFICATION SECTION 034100). APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL. PUMP STATION WET WELL SHALL BE DESIGNED BY A FLORIDA PROFESSIONAL ENGINEER AND SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



PUMP STATION DETAIL - PROFILE

NTS

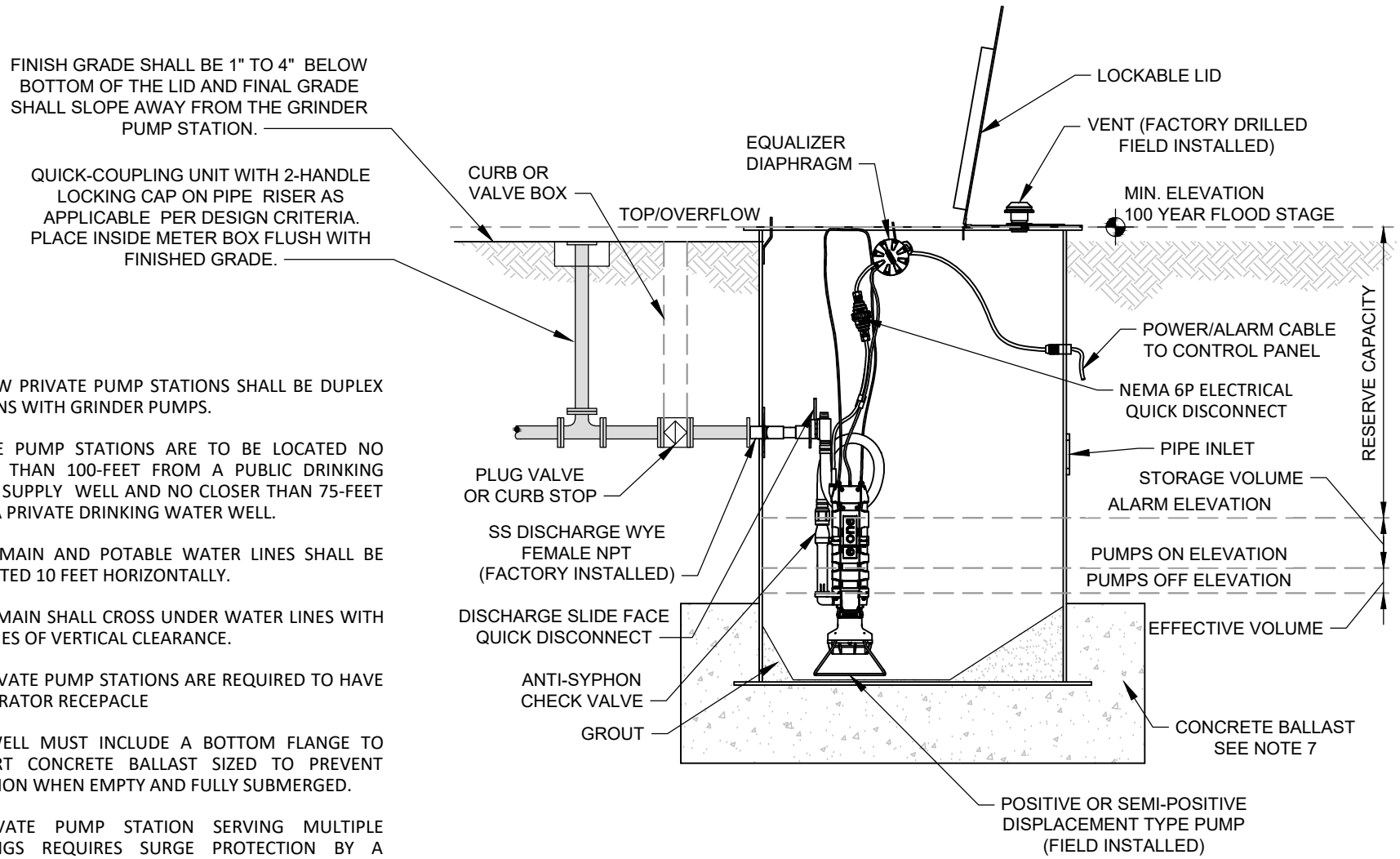
REVISION DATE: JUNE 2024

Collier County

SHEET NO. WW-7

SECTION A-A

(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPACLE
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

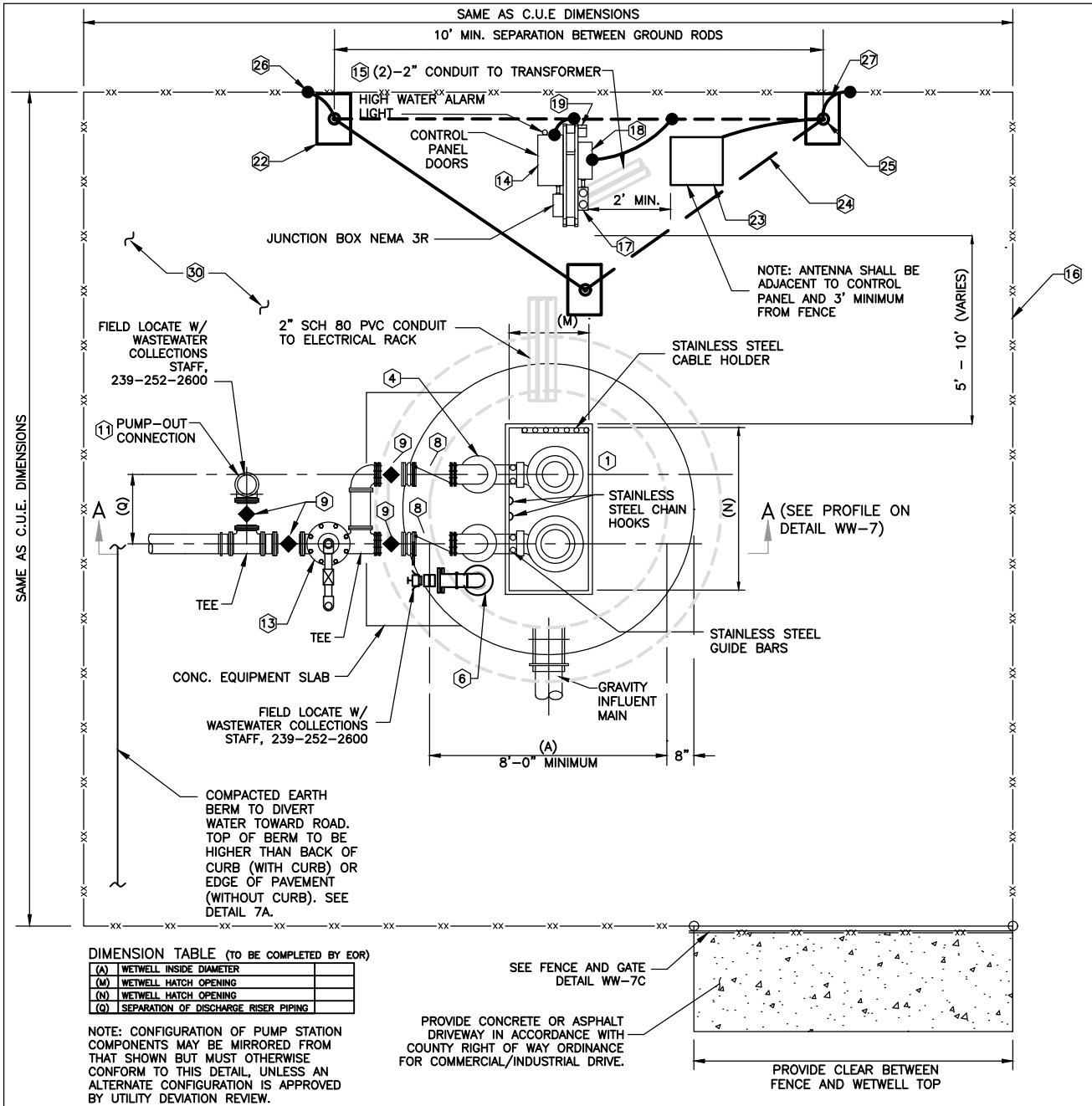
PRIVATE GRINDER PUMP STATION DETAIL

NTS

REVISION DATE:
JUNE 2024

Collier County

SHEET NO.
WW-7D



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK–CONNECT COUPLING UNIT WITH 2–HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW–7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK–COUPLING UNIT COMPLETE WITH 2–HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW–9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)–252–2600. SEE DETAIL WW–9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW–17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW–17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER–CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

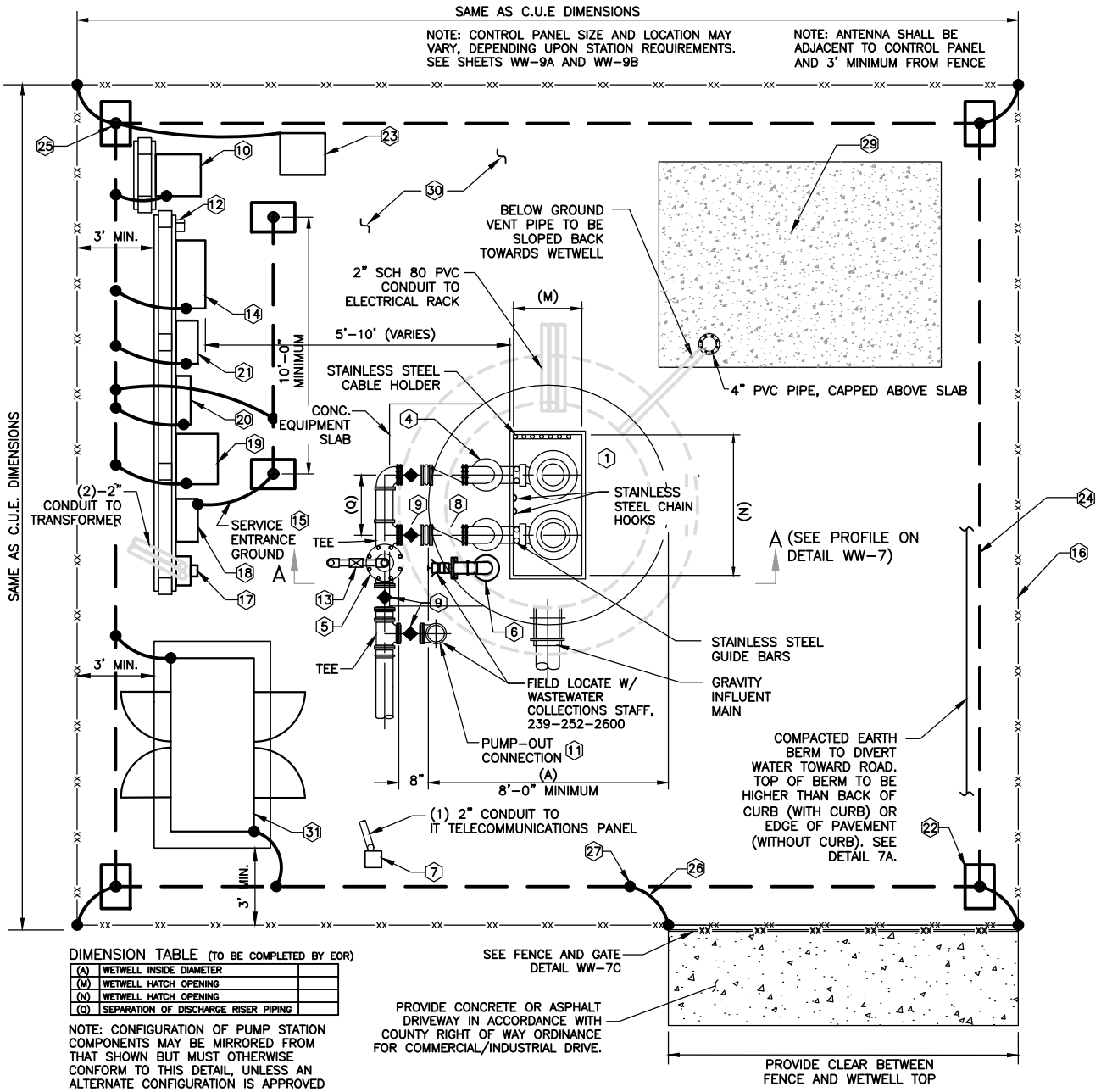
PUMP STATION DETAIL – PLAN

NTS

REVISION DATE: MARCH 2024

Collier County

SHEET NO. WW–8



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

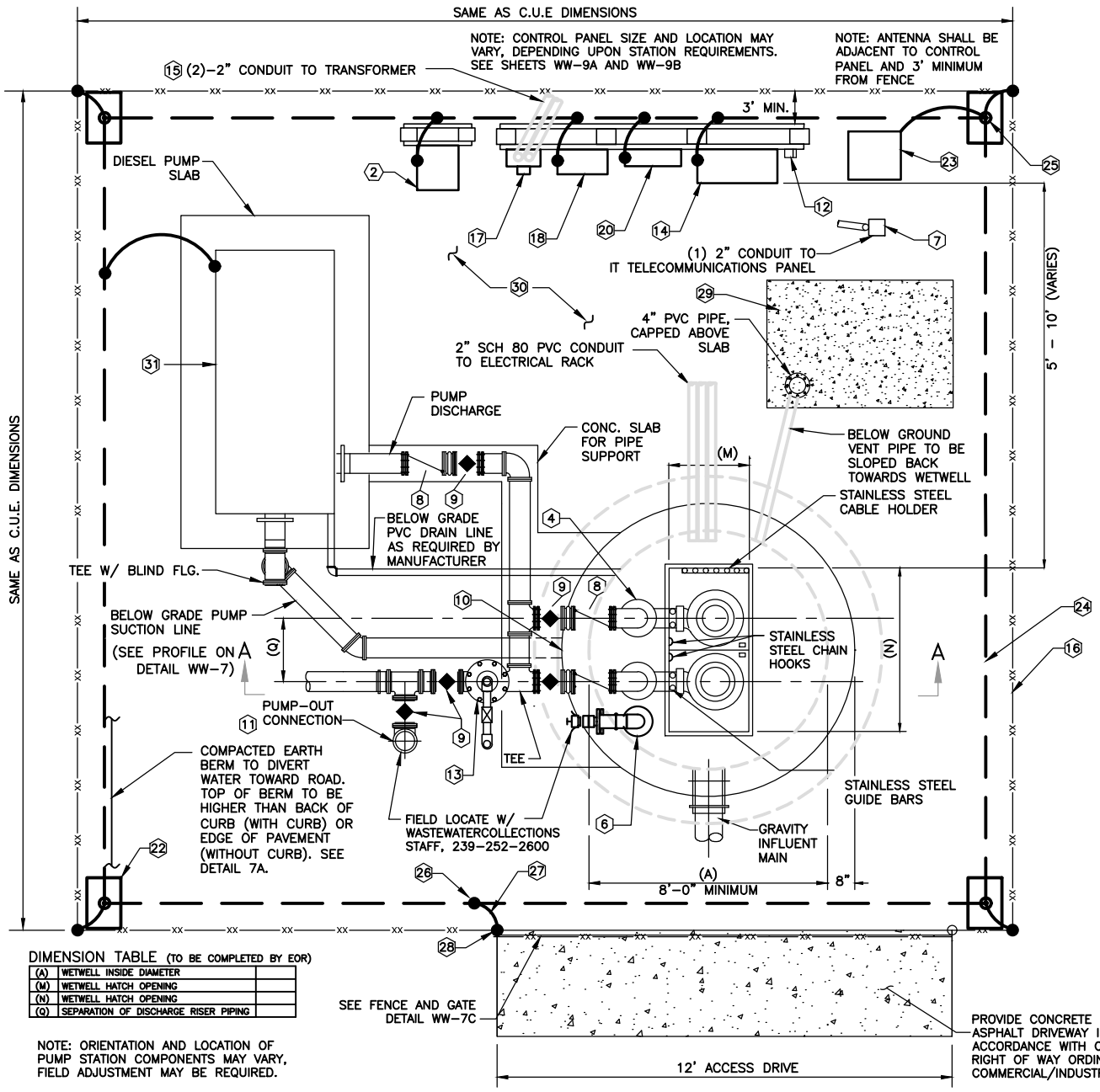
COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

NTS

REVISION DATE: MARCH 2024

Collier County

SHEET NO. WW-8A



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. NOT USED
20. 120V PANELBOARD / MINI POWER ZONE AS REQUIRED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STAND-BY DIESEL PUMP WITH INTEGRATED FUEL TANK AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 221336.

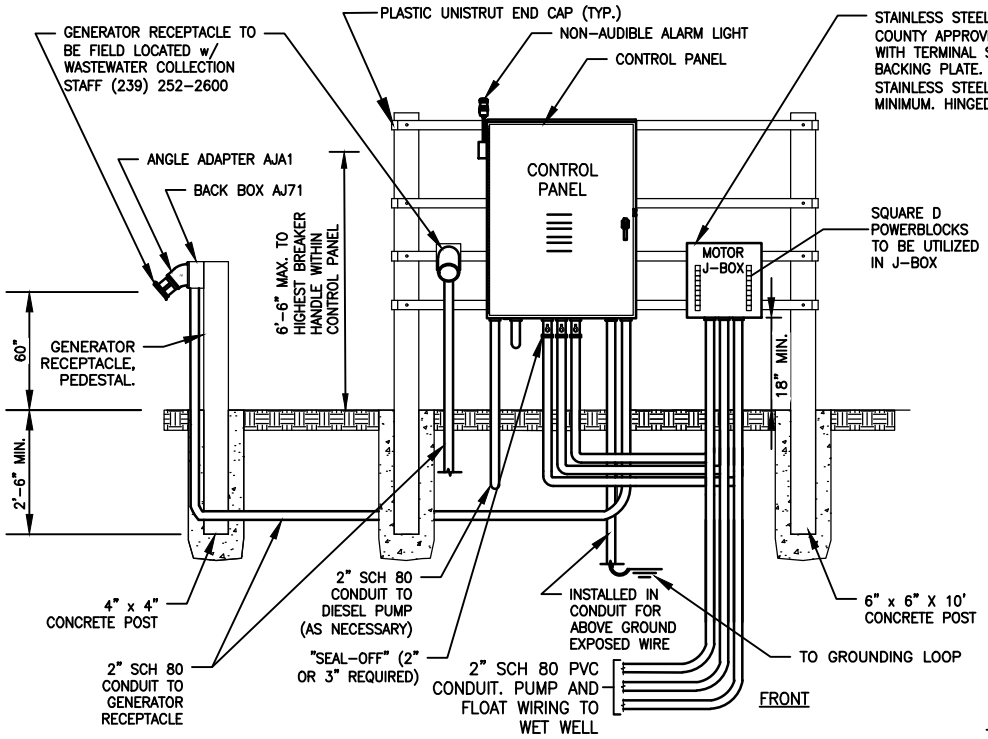
COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JUNE 2024

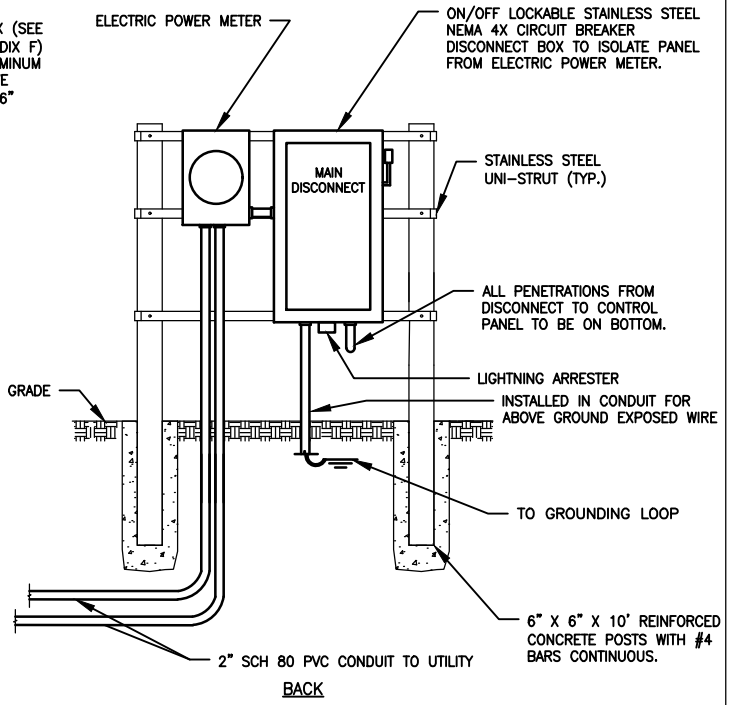
Collier County

SHEET NO. WW-8B



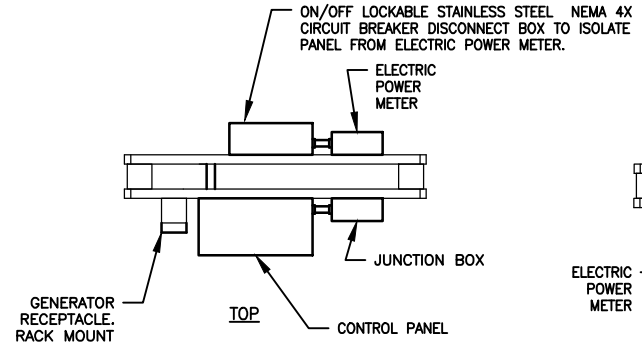
PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION

SCALE: 1" = 4'-0"



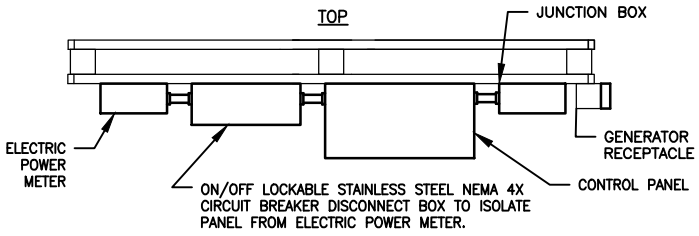
PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION

SCALE: 1" = 4'-0"



PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW

SCALE: 1" = 4'-0"



SINGLE SIDE ALTERNATE - PLAN VIEW

SCALE: 1" = 4'-0"

NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
8. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600
9. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
10. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
11. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMAN LIKE MANOR.

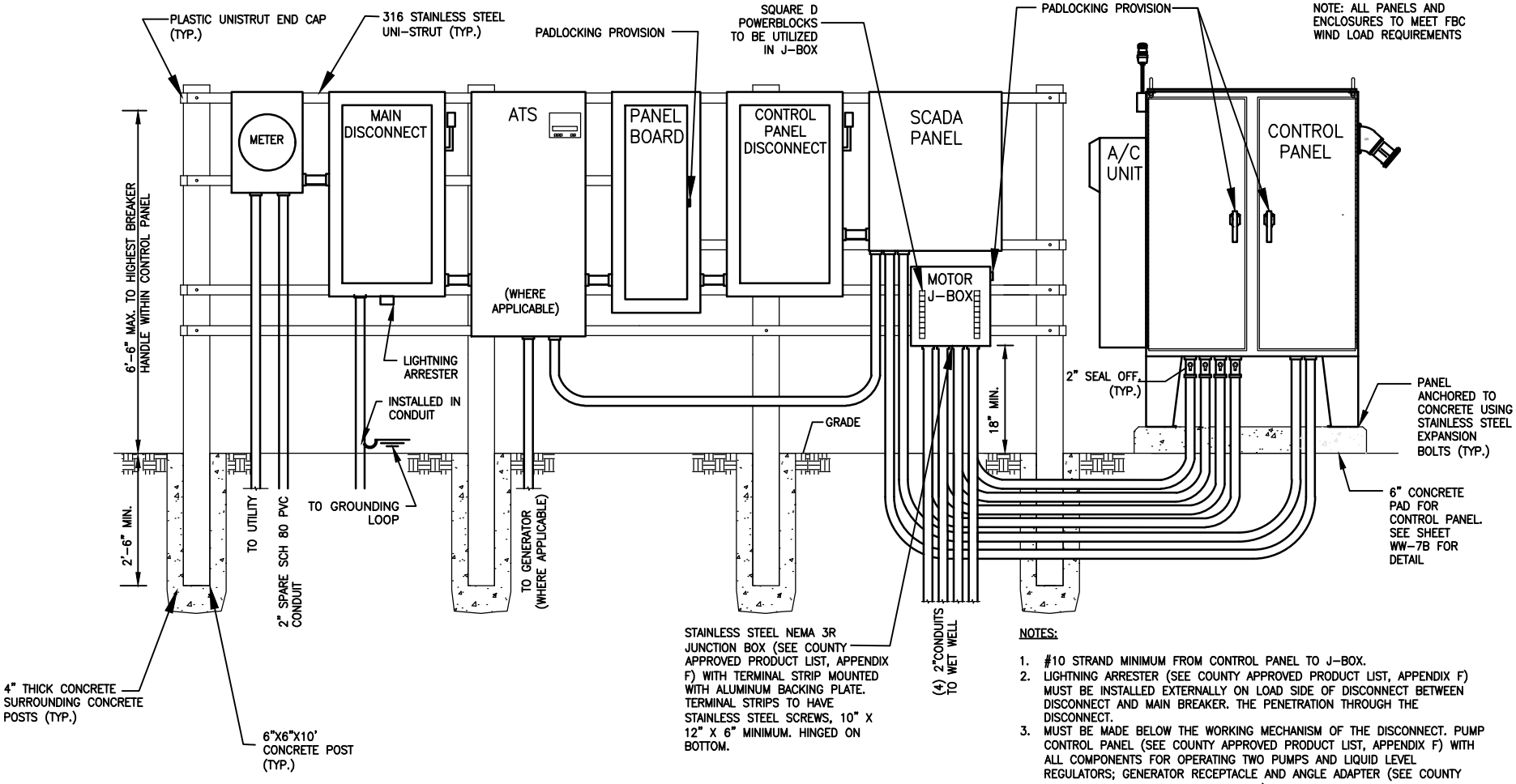
PUMP STATION CONTROL PANEL DETAIL

NTS

REVISION DATE:
MARCH 2024

Collier County

SHEET NO.
WW-9



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT.
3. MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMAN LIKE MANOR.

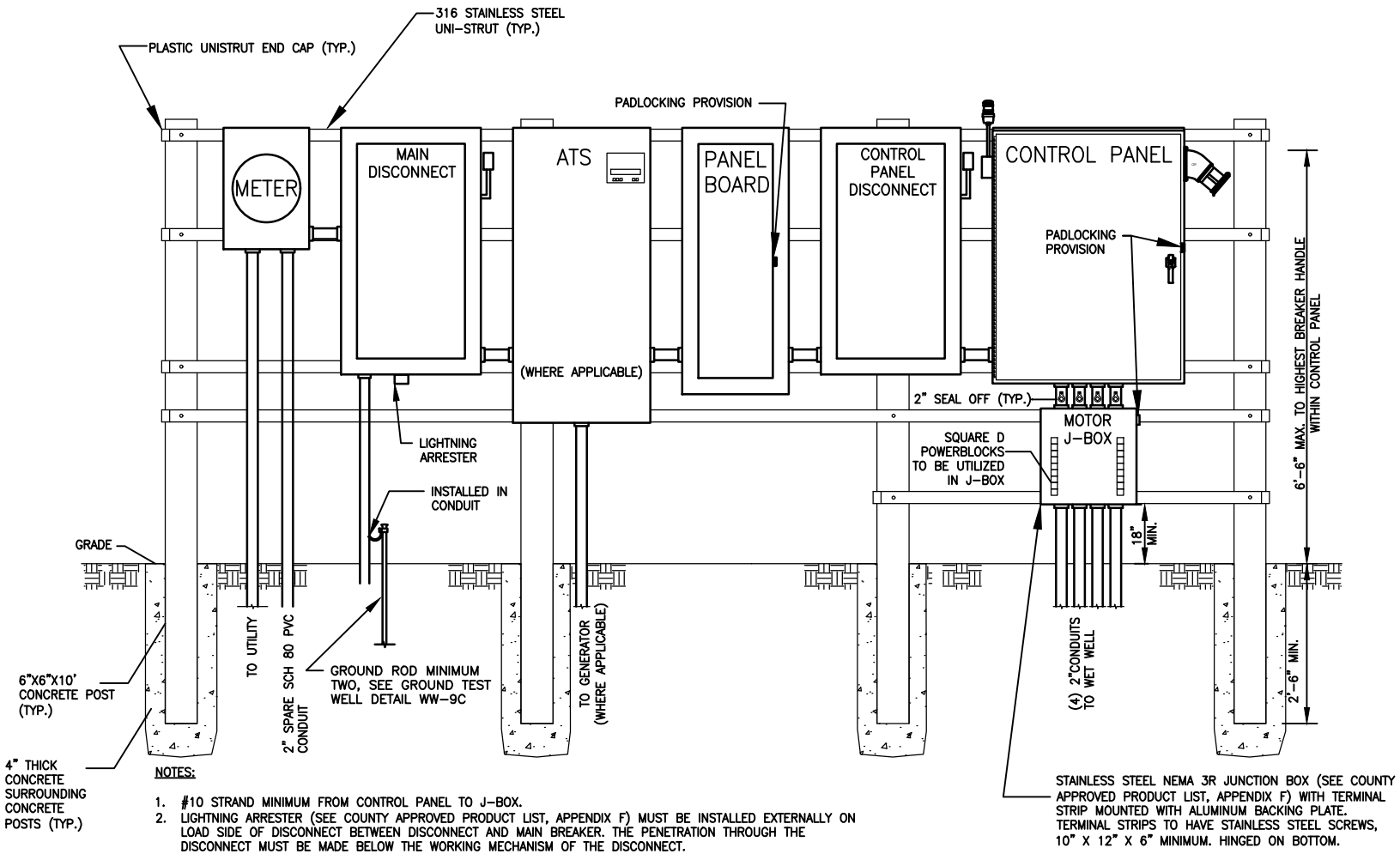
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

NTS

REVISION DATE:
MARCH 2024

Collier County

SHEET NO. WW-9A



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMAN LIKE MANOR.

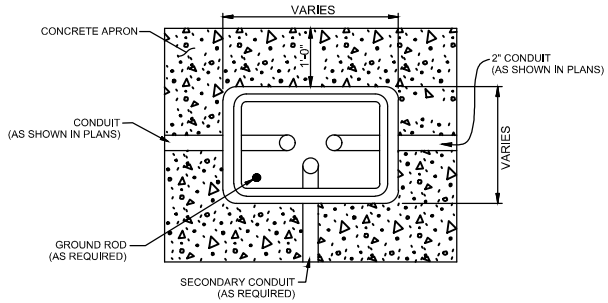
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH GENERATOR

NTS

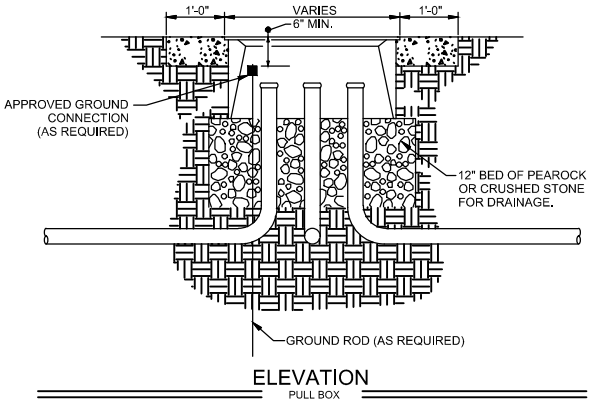
REVISION DATE:
MARCH 2024

Collier County

SHEET NO.
WW-9B



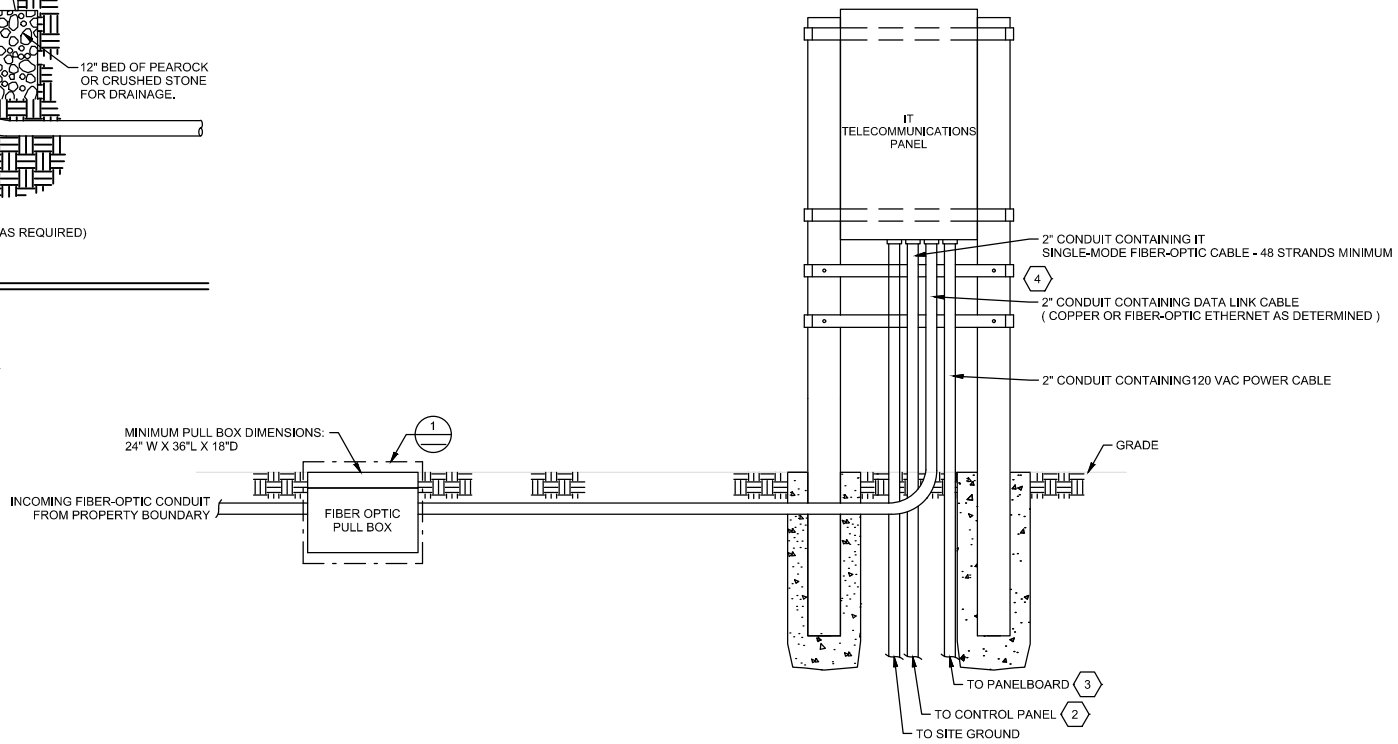
PLAN



1 DETAIL

EQUIPMENT SPECIFICATIONS

MARK	
1	DRAWING NOT TO SCALE.
2	CONTROL PANEL LOCATION AND CONFIGURATION VARIES. REFER TO COUNTY DETAILS WW-8, WW-8A, AND WW-8B FOR DETAILS.
3	120VAC PANELBOARD LOCATED ON EQUIPMENT RACK WITH OTHER PANELS NOT SHOWN. REFER TO COUNTY DETAIL WW-9A FOR COMPLETE EQUIPMENT RACK LAYOUT AND ADDITIONAL PANELBOARD REQUIREMENTS.
4	ALL TELECOMMUNICATIONS CONDUIT ENTERING SITE FROM STATION SIDE HANDHOLE SHALL BE SCH 80 PVC UNLESS OTHERWISE NOTED.
5	REFER TO COUNTY SPECIFICATIONS FOR DETAILED REQUIREMENTS ON MATERIALS OF CONSTRUCTION AND INSTALLATION METHODS.



IT FIBER-OPTIC TELECOMMUNICATIONS DETAIL

NTS

REVISION DATE:
JUNE 2024

Collier County

SHEET NO.
G-12

APPENDIX B

Collier County

Water Meter Sizing Form

One Form Per Meter

Preparer's Information:

Name ==========> _____

Title ==========> _____

Company=========> _____

Address ==========> _____

_____

Phone ==========> _____

Email Address =====> _____

Project Information:

Date ====> _____

Permit or AR Number _____

Name of Project ===> _____

Project Address ===> _____

Please Note:

1. All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development.

2. The Design Engineer/Architect must submit signed and sealed documentation supporting meter sizing. Sizing shall be based upon fixture flow values, as shown on the following page and the table on page 3, unless approved otherwise by Utility Deviation. If an increase in meter size is requested to accommodate for fire flow, the Engineer/Architect should check appropriate box below. A Utility Deviation will not be required for increasing meter size for fire flow requirements. For all meter sizes, the Engineer/Architect must consider all relevant factors before selecting the final meter size.

3. For remodeling projects this form must be submitted only if there is a net increase in fixture flow value.

This Section to be filled out by Engineer/Architect of Record:

Demand in accordance with the Fixture Flow Value Worksheet and the Table for Estimating Demand

_____ **GPM**

Meter Size Required: _____

Meter Size Requested: _____

Existing Meter Size: _____

If the meter size requested is larger than the meter size required per the table velow, please indicate the reason for the request by checking the appropriate box:

☐ **Fire Flow** ☐ **Other (Please attach Utility Deviation approval)**

_____

Type or Print Name of Engineer/Architect of Record for Project

_____

Signature of Engineer/Architect of Record for Project and Date
[Affix Engineering/Architect Stamp Here]

Demand Range (GPM)	Meter Size
0 to 30	3/4"
30.1 to 50	1"
50.1 to 100	1 1/2"
100.1 to 160	2"
160.1 to 435	3"
435.1 to 750	4"
750.1 to 1600	6"
1600.1 to 2800	8"
2800.1 to 4200	10"

Demand ranges from AWWA M22 Table 6-1 Third Edition

Collier County

Fixture Flow Value Worksheet

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow Value

Fixture	Occupancy	Type of Supply Control	Load Values, in Water Supply Fixture Units (wsfu) Total		# of Fixtures Per Unit		Fixture Flow Value
Bathroom group	Private	Flush tank	3.6	x		=	
Bathroom group	Private	Flushometer valve	8	x		=	
Bathtub	Private	Faucet	1.4	x		=	
Bathtub	Public	Faucet	4	x		=	
Bidet	Private	Faucet	2	x		=	
Combination fixture	Private	Faucet	3	x		=	
Dishwashing machine	Private	Automatic	1.4	x		=	
Drinking fountain	Offices, etc.	3/8″ valve	0.25	x		=	
Kitchen sink	Private	Faucet	1.4	x		=	
Kitchen sink	Hotel, restaurant	Faucet	4	x		=	
Laundry trays (1 to 3)	Private	Faucet	1.4	x		=	
Lavatory	Private	Faucet	0.7	x		=	
Lavatory	Public	Faucet	2	x		=	
Service sink	Offices, etc.	Faucet	3	x		=	
Shower head	Public	Mixing valve	4	x		=	
Shower head	Private	Mixing valve	1.4	x		=	
Urinal	Public	1″ flushometervalve	10	x		=	
Urinal	Public	3/4″ flushometervalve	5	x		=	
Urinal	Public	Flush tank	3	x		=	
Washing machine (8 lb)	Private	Automatic	1.4	x		=	
Washing machine (8 lb)	Public	Automatic	3	x		=	
Washing machine (15 lb)	Public	Automatic	4	x		=	
Water closet	Private	Flushometer valve	6	x		=	
Water closet	Private	Flush tank	2.2	x		=	
Water closet	Public	Flushometer valve	10	x		=	
Water closet	Public	Flush tank	5			=	
Water closet	Public or private	Flushometer tank	2	x		=	
For any fixtures not listed, submit manufacturer's data sheets and enter appropriate description and value:							
Other:				x		=	
Other:				x		=	
Other:				x		=	
Other:				x		=	
Other:				x		=	

Total Fixture Value Per Unit =====>	
Number of Units with this Fixture Count =====>	
Grand Total of Fixture Flow Value (Per Unit Total x Number of Units) =====>**	

****Use total Fixture Flow Value on "Table for Estimating Demand" to estimate water meter demand.**

Fixture Flow Value worksheet from FBC 2023 edition

Collier County

Table for Estimating Demand

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow		SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH VALVES	
Load	**Demand**	**Load**	**Demand**
Fixture Flow Value	Gallons per minute	Fixture Flow Value	Gallons per minute
1	3.0	---	---
2	5.0	---	---
3	6.5	---	---
4	8.0	---	---
5	9.4	5	15.0
6	10.7	6	17.4
7	11.8	7	19.8
8	12.8	8	22.2
9	13.7	9	24.6
10	14.6	10	27.0
11	15.4	11	27.8
12	16.0	12	28.6
13	16.5	13	29.4
14	17.0	14	30.2
15	17.5	15	31.0
16	18.0	16	31.8
17	18.4	17	32.6
18	18.8	18	33.4
19	19.2	19	34.2
20	19.6	20	35.0
25	21.5	25	38.0
30	23.3	30	42.0
35	24.9	35	44.0
40	26.3	40	46.0
45	27.7	45	48.0
50	29.1	50	50.0
60	32.0	60	54.0
70	35.0	70	58.0
80	38.0	80	61.2
90	41.0	90	64.3
100	43.5	100	67.5
120	48.0	120	73.0
140	52.5	140	77.0
160	57.0	160	81.0
180	61.0	180	85.5
200	65.0	200	90.0
225	70.0	225	95.5
250	75.0	250	101.0
275	80.0	275	104.5
300	85.0	300	108.0
400	105.0	400	127.0
500	124.0	500	143.0
750	170.0	750	177.0
1,000	208.0	1,000	208.0
1,250	239.0	1,250	239.0
1,500	269.0	1,500	269.0
1,750	297.0	1,750	297.0
2,000	325.0	2,000	325.0
2,500	380.0	2,500	380.0
3,000	433.0	3,000	433.0
4,000	535.0	4,000	535.0
5,000	593.0	5,000	593.0

Table for estimating demand taken from Florida Building Code 2023 Edition

APPENDIX F

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Casing Spacer End Seals	Power Seal	EndSeal	Section 330523.16, Page 4, 3.1 B
Casing Spacer End Seals	Cascade Waterworks MFG Co.	CCES	Section 330523.16, Page 4, 3.1 B
Casing Spacers Stainless Steel	Power Seal	4810	Section 330523.16, Page 4, 3.1 BG-5
Casing Spacers Stainless Steel	Cascade Waterworks MFG Co.	CCS	Section 330523.16, Page 4, 3.1 B-5
Electronic Markers	3M Electronic Ball Marker	1423, 1424 & 1428	Section 1: 2.6.1, 3.1.4, 3.2.1/WW-10/WW-12/WW-16
Electronic Markers	OMNI MARKER	161, 162 & 168	Section 330518, Page 9, 3.2 O.2
Joint Restraint Devices	EBAA Iron Sales		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Romac Industries		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Sigma		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Star Pipe Products		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Ford Meter Box Company		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices, Push-On joints for push joint pipe	American Cast Iron Pipe Company	Flex-Ring & Lok-Ring	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	McWane Inc.	Super-Lock & TR Flex	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	U.S. Pipe		Section 330504, Page 7, F.3
Metalized Tape	Reef Industries, Inc. Houston, TX	Terra Tape	Section 330518, Page 9, O.1

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Metalized Tape	Proline Safety Products	Detectable Tape	Section 330518, Page 9, O.1
Rubber Gasket pipe	McWane Inc.	Long-Span Pipe	Section 330518, Page 10, Q.1
Rubber Gasket pipe	American Cast Iron Pipe Company	Flanged	Section 330518, Page 10, Q.1
Rubber Gasket pipe	US Pipe	Flanged	Section 330518, Page 10, Q.1
Single Sealed Gasket Push-on type joint	American Cast Iron Pipe Company	Fastite	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	U.S. Pipe	Tyton	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	McWane Inc.	Tyton	Section 330504, Page 10, 3.3.C
Two-part Coal tar Epoxy	Madewell Products Corp.	Madewell 1104	Section 330518, Page 6, 3.2 G.4

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Automatic Flushing Device, Ground Mounted	Mueller/Hydro-Guard	HG-1	W-2
Automatic Flushing Device, Ground Mounted	Kupferle Foundry Company	Eclipse #9400-WC	W-2
Automatic Flushing Device, Hydrant Mounted	Mueller/Hydro-Guard	HG-6	W-2
Automatic Flushing Device, Hydrant Mounted	Kupferle Foundry Company	Eclipse #9700	W-2
Backflow Preventer Assembly	See Approved Backflow Devices List, Appendix G		
Bushing	Ford	C18	W-6
Corporation Stops	Ford	F1100NL SERIES	W-6
Corporation Stops	Ford	FB1100NL SERIES	W-6
Corporation Stops	A.Y. McDonald	4104NL	W-5
Corporation Stops	A.Y. McDonald	4101 BF NL	W-5
Corporation Stops	Mueller	H10045N, H15008N	Section 331200, Page 2, 2.3 A.1
Corporation Stops	Mueller	H-10046N/ H-10046	W-5
Coupling	Ford	Model numbers vary by application	W-6
Coupling	A.Y. McDonald	Model numbers vary by application	W-6
Coupling	Mueller	Model numbers vary by application	W-6
Curb Stop	Ford	B43xxxW-NL	W-12
Curb Stop	A.Y. McDonald	76102-22	W-12
Curb Stop	Mueller	Mark II Oriseal H-15172N	Section 331200, Page 2, 2.3 A.1

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
HDPE Stab Fitting	Elster	Hydrosert	
Hydrant	American Darling	6-inch B-84-B	Section 331619, Page 2, 2.1 G
Hydrant	Clow	Medallion	Section 331619, Page 2, 2.1 G
Hydrant	Mueller	Centurion A-423	Section 331619, Page 2, 2.1 G
Meter Box, ~~Light Duty~~	~~DFW~~ Carson	~~Light Duty~~ Fiberlyte FL 12	W-12
Meter Box, ~~Light~~ Duty	Carson	~~Light Duty~~ Fiberlyte FL30	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	DFW	~~Heavy Duty~~ DFW1324FXX-12-AF1PT2	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	~~Carson~~ DFW	~~Heavy Duty~~ DFW37F-12-AF1PT	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	~~Hubbel~~ DFW	~~Heavy Duty~~ DFW1324F-12-AF1PT	W-12
Meter, Fire Protection (3", 4", 6", 8")	Elster AMCO	evoQ4 Electromagnetic Meter	W-9/W-14
Meter, Fire Protection (3", 4", 6", 8", 10")	Neptune	HP Fire Service Turbine Meter	W-9/W-14
Meter, Fire Protection (3/4", 1", 1-1/2", 2")	Mueller Systems - Hersey	Residential Fire Meter	W
Meter, Fire Protection (4", 6", 8", 10")	Neptune	HP Protectus III Fire Service Meter	W-9/W-14
Meter, Potable Water	Neptune	Tru/Flo	W-13
Meter, Potable Water	Neptune	Mach 10	W-13
Pedestal Housing	Channel	CCWD Signature Series SPH	W-5
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4

Sampling Station	Kupferle Foundry Company	~~Eclipse 88WC~~ Eclipse 88	W-6
Sampling Station	~~Water Plus Corp~~ Mueller Company	~~301W~~ Mueller Safety Guard B.O.S.S.	W-6
~~Sampling Station~~	~~GIL Industries~~	~~3/4"~~	~~W-6~~

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Service Saddles (Brass)	Ford	F202B	Section 331200, Page 7, 2.3 G.1
Service Saddles (Brass)	Mueller	DR2 B	Section 331200, Page 7, 2.3 G.1
Service Saddles (PVC) Perm Bact Sample Point	Powerseal	P3401 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Saddles (PVC) Perm Bact Sample Point	Ford	S 90 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Wye	Ford	Y44-xxx-NL	W-12
Strainer, Flanged (Staff Use)	Mars	Z-plate	
Strainer, Flanged (Staff Use)	Neptune	Rilsan nylon-coated ductile iron	
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	W-12
Valve Box	Tyler/Union	461	Section 331200, Page 4, 2.3 B.2
Valve Box, Locking Cover	AMPro USA	LL562	Section 331200, Page , 2.3 B.2.
Valve Setter	Wilkins	WMJS	W-9A/W-11A
Valve, Air	Val-Matic	Model 801AS	W-11/W-14/W-16
Valve, Air Release	A.R.I.	D-040 (nylon), D-040 ST ST (SS)	W-5
Valve, Bacterial Sampling Station Line	Mueller	Mark II Oriseal	Section 331200, Page 3, 2.3 A.1
Valve, Ball	Ford		Section 331200, Page 3, 2.3 A.1
Valves and Appurtenances	American Darling		Section 331200 2.3 A
Valves and Appurtenances	A.Y. McDonald		Section 331200 2.3 A
Valves and Appurtenances	Clow		Section 331200 2.3 A
Valves and Appurtenances	Ford		Section 331200 2.3 A
Valves and Appurtenances	Kennedy		Section 331200 2.3 A
Valves and Appurtenances	Mueller		Section 331200 2.3 A
Valves and Appurtenances	U.S. Pipe		Section 331200 2.3 A

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
120VAC Surge Suppressor	Edco	HSP121	NP-E3
12VDC Power Supply	Allen Bradley	1606-XLS	NP-E3
12VDC Power Supply	Sola HD	SDN-P	NP-E3
12VDC Power Supply	PULS	Dimension - QS	NP-E3
24VDC Power Supply	Allen Bradley	1606-XLE	NP-E3
24VDC Power Supply	Sola HD	SDN-P	NP-E3
24VDC Power Supply	PULS	Dimension - QS	NP-E3
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	NP-E9
Back Pressure Sustaining Valve	Ames	No. 920	NP-1/NP-E2
Plate Strainer, Top Access	Mars		NP-1/NP-E2
Corporation Stops	Ford	FB 1100-NL/ FB 1100	NP-2
Corporation Stops	A.Y. McDonald	74704B	NP-2
Corporation Stops	A.Y. McDonald	74104NL/ 74104	NP-4
Corporation Stops	A.Y. McDonald	74101 BF NL/ 74101 BF	NP-4
Corporation Stops	Mueller	H-10046N/ H-10046	NP-4
Curb Stop	Ford	B43-444W-NL, Compression x Meter Swivel	NP-2
Data Radio	Integra	TR	NP-E3
Data Signal Line Surge Processor	Edco	PC642 Series	NP-E3
Geomembrane	GSE Environmental		Section 334713, Page 4, 1.6 A.1
Level Transducer	Wika		NP-E6

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Meter Box	DFW	12" D1200 AMR Series, Light Duty	NP-2
Meter Box	Carson	Light Duty	NP-2
Flow Meter, Magnetic	Endress+Hauser	W400	NP-1/NP-E2
Meter, Non-Potable Propeller	McCrometer	Water Specialties No. ML-04-X with 4-20 MA Output Transmitter, TR-16	NP-1/NP-E2
Pedestal Housing	Channel	CCWD Signature Series SPH14206C1B1L01	NP-4
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4
Rain Gauge	ISCO	674	NP-E5
Service Wye	Ford	Y44-264-NL	NP-2
Service Wye	A.Y. McDonald	708YS22	NP-2
Service Wye	Mueller	P-15343N	NP-2
Surge Suppression	Edco	SS65 Series	NP-E6/NP-E7
Surge Suppression	CITEL	TSP15M	NP-E6/NP-E7
Surge Suppression, Main Service	Lea	USP-M Series	NP-E5
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	NP-2
Valve, Air Release	A.R.I.	D-040	NP-4
Valve, Air Release	A.R.I.	D-040 SS	NP-4
Valve, Air Release	GA Industries	942SS	NP-4
Valve, Air Release	GA Industries	Combination	Section 1 2.7/NP-1/NP-4/NP-E2
Valve, Rising Stem Gate/ OS&Y	American Flow Control	AFC-2500 SERIES	NP-1/NP-E2
Valve, V-Port Ball	DeZurik	VPB - flanged, type 317 stainless, and Teflon seat and bearings	NP-1

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, V-Port Ball - Motor (Actuator)	Rotork	IQTM	NP-E2

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Access Frame (Pump Station)	U.S. Foundry	AHD	WW-7/WW-8
Access Hatch, Aluminum	Bilco	J-AL H20 (5-1/2" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	Halliday	H1W (3-1/2" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	U.S. Foundry	AHS (5" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	Section 333200, Page 4, 2.1 J/WW-17
Biofiltration Odor Control System	Evoqua	Zabocs (pre-engineered)	Section 333200, Page 5, 2.1 P
Ceramic Epoxy Lining	Vulcan Painters	Protecto 401 Coating	Section 330504, Page 3, 2.1.B
Chimney Seal	Cretex		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Chimney Seal	Trelleborg		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Coaxial Cable	Data Flow Systems, Inc.	RTC 400	Section 333200, Page 2.1 J/WW-17
Diaphragm Seals	Ashcroft		Section 333313, Page 8, 2.2 G
Diaphragm Seals	Mansfield and Green	Type SB	Section 333313, Page 8, 2.2 G
Diaphragm Seals	Trerice		Section 333313, Page 8, 2.2 G
Flanged Adapter Connections	EBAA Iron Sales	E2100 SERIES	Section 333313, Page 8, 2.2 F.1.c.
Flanged Adapter Connections	Victaulic	Vic Flange Style 741	Section 333313, Page 8, 2.2 F.1.c.
Flow Meter	Endress-Hauser	Promag W400	Section 333313, Page 9, 2.2 M.1
Generator Receptacle and Angle Adapter	Crouse-Hinds	AR2042 with S22 option, and an AJA1 angle adaptor	WW-7/WW-9
Grass Covered Porous Pavement	Invisible Structures	Grasspave2	WW-8/WW-8A/WW-8B
Inflow Protector, Stainless Steel	Sewer Shield, Inc. Maitland, FL		Section 333913, Page 4, 2.2 K
Internal Protection	IET Sytems	IET Coating System	Section 333913, Page 5, 3.1 F/Section 099723/WW-3/WW-4/WW-5/WW-7

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Internal Protection	Raven Lining Systems - Broken Arrow, OK	Raven 405	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Internal Protection	Kerneos - Chesapeake, VA	Sewpercoat Lining System	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Junction Box	Hoffman	A12106NFSS	WW-9
Lightning Arrestor	Square D	SDSA-1175 for 1-phase	Section 333200, Page 5, 2.1 O/WW-9
Lightning Arrestor	Square D	SDSA-3650 for 3-phase	Section 333200, Page 5, 2.1 O/WW-9
Liquid Level Regulators (Float Switch)	Roto-Float		WW-7/WW-8
Liquid Level Regulator (Float Switch)	Dura-Float	2900 Series B4	WW-7/WW-8
Pipe Interior Lining	Permox CTF	Ceramic Epoxy Lining	Section 330504, Page 3, 2.1 B
Plastic Joint Sealing Compound	Hamilton Kent, Toronto/Ontario, Canada	Kent-Seal	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Plastic Joint Sealing Compound	Henry	Ram-Nek	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Polymer Concrete Manholes	US Composite Pipe, Inc.		Section 034100, Page 5, 2.2 D
Polymer Concrete Manholes	Armorock		Section 034100, Page 5, 2.2 D
Power Distribution Blocks	Schneider (Square D)	Class 9080 Power Distribution Blocks	WW-9/WW-9A/WW-9B
Pump Control Panel	ECS		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Control Panel	Suncoast Hydraulic		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Controller	Data Flow Systems, Inc.	TCU	Section 333200, Page 3, 2.1 J
Riser Ring, HDPE/EPP	Ladtech/Cretex(EPP)	Riser Ring	Section 333913, Page 4, 2.2 L
Sealing Compound	Crouse-Hindz	Chico Sealing Compound	WW-9/WW-9A/WW-9B

Sealing Element	GPT	Link-Seal	Section 333313, Page 9, 2.2 I.1/WW-18
Sewage Pump	Flygt	N-Series	Section 333200, Page 2, 2.1 D
Sewer Clean-Out Rim and Cover	U.S. Foundry	7621	WW-11

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sewer Manhole Frame and Covers	Pamrex		WW-5
Sewer Manhole Frame and Covers	U.S. Foundry	105M	WW-2
Sewer Manhole Frame and Covers	U.S. Foundry	420-C-ORS	Section 333913, Page 2, 2.1A/WW-3/WW-4/WW-5/WW-6/WW-18
Sleeve Type Couplings	Powerseal	STYLE 3501	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Dresser	Style 38	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Smith Blair	Style 413	Section 333313, Page 8, 2.2 F.1.d.
Tower	Rohn		WW-17
Valve Box	Brooks		WW-9
Valve, 3-Way Plug (Staff Use)	Milliken Valve Co.	Modle M604	WW-7/WW-8
Valve, 3-Way Plug (Staff Use)	Dezurik	Model D202	WW-7/WW-8
Valve, Air Release	HTECH	2" SS MODEL # 8889860041	WW-13/~~WW-14~~/Section 333313, Page 7, 2.2 D.11
Valve, Air Release	A.R.I.	D-025	~~WW-13/WW-14~~ WW-5/Section 333313, Page 7, 2.2 D.11
Valve, Check	Kennedy Valve Manufacturing Co.	MODEL 1106LW/106LW	WW-7/WW-8/Section 333313, Page 5, 2.2 C
Valve, Check	Mueller	A-2600, A2602	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	Milliken Valve Co.	8001	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	GA Industries	340-W	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Duckbill (Staff Use)	Red Valve Co., Inc. Longwood, FL	"Tideflex"	WW-7

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve~~s~~, Plug	DeZurik	Model PEC & PEF (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valve~~s~~, Plug	Milliken Valve Co.	Model M600 & M601 (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1

APPENDIX G

Approved Backflow Devices

VENDOR	SIZE	MODEL NO.	TYPE	USE
Ames / Watts	3/4" - 2"	LF4000B / LF009	RP	Residential or commercial potable water locations
Watts	3/4" - 2"	LF919	RP	Residential or commercial potable water locations
Wilkins	3/4" - 2"	975XL	RP	Residential or commercial potable water locations
Ames / Watts	2.5" - 10"	C400 / 957	RP	Large size meter - potable water for commercial or residential applications
Watts	2.5" - 10"	LF909	RP	Large size meter - potable water for commercial or residential applications
Wilkins	2.5" - 10"	375 or 375AST	RP	Large size meter - potable water for commercial or residential applications
Ames	3/4" - 2"	LF4000B	RP	Combo services: fire and domestic lines
Watts	3/4" - 2"	LF009	RP	Combo services: fire and domestic lines
Wilkins	3/4" - 2"	975XL	RP	Combo services: fire and domestic lines
Ames Colt	2.5" - 10"	C400 (w/OSY)	RP	Combo services: fire and domestic lines
Watts	2.5" - 10"	LF909 (w/OSY)	RP	Combo services: fire and domestic lines
Wilkins	2.5" - 10"	375 or 375AST (w/OSY)	RP	Combo services: fire and domestic lines
Ames	2"	3000B	DCDA	Fire Lines - Standard
Watts	2" - 3"	007DCDA	DCDA	Fire Lines - Standard
Wilkins	2"	950XLTDA	DCDA	Fire Lines - Standard
Ames	2.5" - 10"	C300/M300	DCDA	Fire Lines - Standard
Watts	3" - 10"	709DCDA	DCDA	Fire Lines - Standard
Wilkins	2.5" - 12"	350DA or 350ASTDA	DCDA	Fire Lines - Standard
Wilkins	4" - 10"	450DA or 450STDA (N-Shape)	DCDA	Fire Lines - Standard

Note: All fire line Backflow Devices shall be UL or FM approved for fire service installation. Above is a small list, others may be used if requirements are met and information is provided

APPENDIX H

Collier County

Appendix H

Basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water

1. Property & Customer Information

Property Owner Name:	Date:
Mailing Address:	Phone Number:
Service Address:	Email Address:
Section_____Township_____Range_____	Folio (Parcel) Number:
Total Property Acres:	Acres irrigated by IQ Water only:

2. Irrigation Information

Total Number of Zones:

Each Zones Gallons per Minute-Use another sheet if necessary		
Zone1 =	Zone 6 =	Zone 11 =
Zone 2 =	Zone 7 =	Zone 12 =
Zone 3 =	Zone 8 =	Zone 13 =
Zone 4 =	Zone 9 =	Zone 14 =
Zone 5 =	Zone 10 =	Zone 15 =
Maximum number of zones running at once =		

3. Do you have a backflow prevention device installed on your potable (drinking) water line?

Yes	No	Unknown

4. For what purpose are you using IQ Water? Please select all that apply.

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)
	Single Family Home landscape irrigation
	Cooling Tower
	Other, please specify

5. How many total individual dwelling units will this serve? Please enter a number or N/A. A single family home = 1, a condo with 20 units = 20

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)

6. What is your estimated average and maximum IQ Water usage in gallons per day?

I,_____, (property owner) have read, understand, and shall abide Collier County Ordinance, No. 2013-_____as amended; Collier County Ordinance No. 1997-33, as amended; Ordinance No. 2001-73, as amended, the Federal, State, and local laws, rules, and regulations that pertain to the use of IQ Water.

I understand that due to the composition of IQ water, it may not be suitable for the irrigation of certain susceptible vegetation, and I agree that the District will not be held liable for damages that may occur to susceptible vegetation or any damages that may occur due to the uses of IQ Water, and agree to defend and hold harmless the Collier County Water-Sewer District (District) from all claims and judgments arising therefrom against the District by any person. It is further agreed that submission of this application does not ensure IQ water delivery and the Owner further agrees that the County shall not be liable to the Owner for any damages or expenses incurred by the Owner as a result of the District's failure to deliver IQ Water.

It is further agreed that District employees or authorized agents shall have the right to enter the applicant's property served by the District with IQ Water to inspect the IQ Water System and shall have the right to discontinue IQ Water service should any infraction exist.

Sign and return the completed application, an 8.5"X11" drawing of property detailing desired meter location, and the Legal Property Description to: Reuse Manager, 4370 Mercantile Ave, Naples, FL 34104.

Printed Name:_____Signed:_____Date:_____

Frequently Asked Questions

1. Where can I find the applicable Ordinances? **www.municode.com**
2. Where can I find my Legal Property Description? On your deed which may be found at **www.collierappraiser.com**
3. Where can I find applicable State laws regarding IQ/reclaimed water? **www.dep.state.fl.us/water/reuse**
4. Where do I find billing information? **www.colliercountyfl.gov**
5. How do I report IQ water, potable water, or sewer issues? **Call (239) 252-2600 for IQ water and wastewater and (239) 252-6245 for potable water.**
6. What are irrigated acres? **The acres that are irrigated, you can calculate irrigated acres by subtracting non irrigated areas such as ponds, mulched areas, etc; from the site's pervious acres.**

For District Use Only

Service Level:	Bulk	Pressurized	Pressurized & Distributed
User Type:	Major User	Basic User	
Base Charge:	Allocation Based	Meter Based Charge	

Peak GPM for proposed system_____ Minimum Meter Size Required_____
Existing Service Tap/Tap Fee $_____ Existing Customer_____
Meter Hang Fee $_____ Total Fees $_____
Approved by:_____ Date:_____
Notes:_____
_____
_____

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

October 14, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Development Services Advisory Committee
Utility Subcommittee
Collier County, Florida

October 29, 2024
2:00 p.m.

Notice is hereby given that the **Collier County Development Services Advisory Committee – Utility Subcommittee** will meet on **Tuesday, July 29,** at **2:00 p.m.** in Conference Room 609/610 of the Growth Management Community Development Department building, 2800 N. Horseshoe Drive, Naples, Florida.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item.

About the public meeting:

Two or more members of the Board of County Commissioners and the Development Services Advisory Committee may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting or Development Services Advisory Committee meeting.

All interested parties are invited to attend and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380 as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Rey Torres Fuentes at (239) 252-5727.

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Collier County

Growth Management Community Development

Development Services Advisory Committee

Utilities Subcommittee

Monday, November 18, 2024
2:00 pm

2800 N. Horseshoe Dr.
Naples, FL 34104
Growth Management Community Development Department
Conference Room 609/610

If you have any questions or wish to meet with staff, please contact,

Rey Torres Fuentes at (239) 252-5727 or
Rey.TorresFuentes@colliercountyfl.gov

Collier County

Development Services Advisory Committee

Utilities Subcommittee

Agenda
Monday, November 18, 2024
2:00 pm
2800 N. Horseshoe Dr., Naples, FL 34104
Growth Management Community Development, Conference Rooms 609/610

NOTICE:
Persons wishing to speak on any Agenda item will receive up to three (3) minutes unless the Chairman adjusts the time. Speakers are required to fill out a "Speaker Registration Form", list the topic they wish to address, and hand it to the Staff member before the meeting begins. Please wait to be recognized by the Chairman and speak into a microphone. State your name and affiliation before commenting. During the discussion, Committee Members may direct questions to the speaker.

Please silence cell phones and digital devices. There may not be a break in this meeting. Please leave the room to conduct any personal business. All parties participating in the public meeting are to observe Roberts Rules of Order and wait to be recognized by the Chairman. Please speak one at a time and into the microphone so the Hearing Reporter can record all statements being made.

1. Call to order - Chairman.
2. Approval of Agenda
3. New Business
4. Old Business
    a. Revision to the Utilities Standard Manual
5. Public Speakers
6. Adjourn

For more information, please contact Rey Torres Fuentes at (239) 252-5727
or at Rey.TorresFuentes@colliercountyfl.gov

INTRODUCTION

This Manual has been established by action of the Board of County Commissioners and is authorized by County Ordinance 2004-31, as amended.

This Utilities Standards Manual has been prepared to guide the design, construction, and asset management of potable water, non-potable irrigation water, and wastewater system extensions to Collier County Water-Sewer District (COUNTY) utilities; the Manual applies to utilities in new developments in the County, as well as County Projects involving utilities.

The following standards shall be included in the design and preparation of plans and specifications for all utilities construction projects for Collier County, including utilities and services connected to the COUNTY's utilities systems or constructed for future transfer of ownership to the COUNTY. These standards are provided for uniformity in utilities construction within Collier County, and represent MINIMUM standards acceptable to the COUNTY. The Engineer of Record shall review these MINIMUM standards for applicability and acceptance for the proposed construction project. Where necessary, additional design features shall be provided to prevent system failures, severe damage to other property or serious injury to persons. The Engineer of Record shall be responsible for the specific project under their control.

Not all specification details may apply to an individual project; however, approval of utilities construction within Collier County will require conformance to applicable requirements of these specifications. Approval of any deviation from the specifications must be obtained utilizing the appropriate form included in Appendix A, Utility Deviation Form.

NOTE: Go to Collier County Public Utilities Engineering and Project Management Resources Webpage ~~https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual~~ for the latest revisions to the Utilities Standards Manual.

REVISED STRIKETHROUGH

The following standards shall be included in the design and preparation of plans and specifications for all utilities construction projects for Collier County, including utilities and services connected to the COUNTY's utilities systems or constructed for future transfer of ownership to the COUNTY. These standards are provided for uniformity in utilities construction within Collier County, and represent MINIMUM standards acceptable to the COUNTY. The Engineer of Record shall review these MINIMUM standards for applicability and acceptance for the proposed construction project. Where necessary, additional design features may be required to meet specific project requirements. The Engineer of Record shall be responsible for the specific project under their control.

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DESIGN CRITERIA

SECTION 1

DESIGN CRITERIA

For the latest revisions to the Design Criteria, please visit:

~~https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual~~

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 1

DESIGN CRITERIA

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PART 4 ELECTRICAL AND CONTROL SYSTEMS

4.1 Electrical and Control System Material

Minimum cover for force mains shall be 30 inches. Maximum cover shall be 48 inches after final project grading is complete except when dipping under conflicts in which case the force main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less. The design engineer shall strive to minimize the number and frequency of dips (maintaining a horizontal run line through intermittent grade changes, by deviation). An air release valve is required at all dips. Engineers should evaluate possibilities of lowering storm drainage piping or dipping potable water and non-potable irrigation water main to avoid dips in the force main.

When force mains are interconnected with a gravity sewer system, for transmission purposes through that system, interconnection shall be as shown in the Utility Standard Drawings. No force main laterals shall be core bored into manholes.

3.2.3 Valves

All connections of privately-owned and maintained wastewater force mains to the Wastewater Department's force mains shall be connected through a check valve housed in a structure as shown in the Utilities Detail Drawings which shall allow performance of required maintenance, and shall be owned and maintained by the property owner.

Sufficient plug valves shall be provided to allow for zone isolation of wastewater transmission areas in order to limit the impact of line breaks. In-line plug valves shall be provided at no greater than 1,000 foot intervals per COUNTY requirements.

3.2.4 Force Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a valve and cap/plug.

3.2.5 Air Release Assemblies

Air release assemblies shall be provided at all high points and on the upstream side of conflict crossings at which the force main passes under the conflict (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. Air valves (see County Approved Product List, Appendix F) utilized on raw sewage facilities shall be designed and manufactured specifically for use with domestic sewage. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, "Air-Release, Air Vacuum, and Combination Air Valves". When installed, the air valve shall be provided with a shut-off valve to allow isolation and removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

3.3 Wastewater Pump Stations

Wastewater pump stations shall be designed and constructed in accordance with FDEP regulatory requirements, Section 2 Technical Specifications, National Electrical Code (NEC) Requirements, and Section 3 Utilities Detail Drawings.

Pump Station wetwells shall be designed to withstand flotation forces with the assumption that the structures are empty and ground/flood water elevation is at the top of the structures. The design shall consider the potential for damage or interruption of operation due to flooding. Pump

station structures and electrical and mechanical equipment shall be designed to be protected from physical damage by the 100-year flood event. Pump stations shall be designed to remain fully operational and accessible during the 25-year flood event. Pump stations shall be designed to avoid operational problems from the accumulation of grit.

Pump stations shall be designed to be readily accessible by maintenance vehicles, including pumper trucks, during all weather conditions. Pump stations shall be designed and located on the site to minimize adverse effects from odors, noise, and lighting. Pump stations shall be located on the site to have a minimum separation of 20 feet from the edge of the CUE for the pump station to edge of a body of water and 15 feet from the edge of the CUE for the pump station to a residential structure (including appurtenances).

The effective volume of wet wells shall be based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycling time. Pump stations requiring a pump motor of twenty horsepower or greater shall operate by a VFD (variable frequency drive) that varies the operating speed of the pump based on wet well water levels. Pump stations shall have a compacted earth berm on three sides with 3:1 slopes to divert liquid toward the ROW. Top of berm shall be 12 inches wide and six inches higher than back of curb (with curb) or edge of pavement (without curb). Minimum berm height shall be six inches.

Emergency pumping capability shall be provided for all pump stations. A pump station that is connected directly to the County transmission force main from a development (Community Pump Station) and any pump station that receives flow from one or more upstream pump stations or discharges through a force main 12 inches or larger (see FAC 62-604.400 (2)(a)1) shall have uninterrupted pumping capability (standby Diesel pump or generator) with three days of fuel storage (compliant with Technical Specification 263213) and a concrete pad for a future odor control system.

Alternatively, emergency pumping capability may be achieved by connecting the pump station to at least two independent utility substations, each capable of starting and operating the pump station at its rated capacity. Regardless of the type of emergency standby system provided, a force main riser with rapid connection capabilities and appropriate valving shall be provided for connecting a portable pump. All pump stations shall conform to these standards and shall be conveyed to the Collier County Water-Sewer District in accordance with the utilities conveyance policies and procedures outlined in the Collier County Utilities Standards and Procedures Ordinance (Ord. No. 2004-31 as amended), unless approved for private ownership and maintenance by Deviation and in accordance with Section 3.3.1 below.

All pump stations shall be protected from lightning and transient voltage surges.
All pump stations shall be located at least 100 feet from a public drinking water supply well and 75 feet from a private drinking water well. The design and siting of new private pumping stations shall minimize adverse effects resulting from odors, noise, and lighting.

All pump stations shall have water available to them. Available water means a water main is accessible in the adjacent ROW or CUE.

Landscaping is not required, per these standards, to be installed around wastewater pump stations. If landscaping is provided, it shall be maintained by the developer, homeowners association, or land owner and shall NOT be located in the CUE. Landscaping, if provided, shall be located as to not block access or interfere with operations. If plant material dies, it is the

responsibility of the landscaping owner to replace it. The landscaping shall be maintained to not block telemetry antenna line of site.

3.3.1 Private Pump Stations

~~Pump stations with flows less than 80 gpm and which do not~~ Private pump stations shall not receive flow from any other pump station and shall only serve one property parcel. All private pump stations may be privately monitored and maintained by deviation. ~~may be privately owned and maintained.~~ All new private pump stations shall be grinder pump stations. Positive or semi-positive displacement grinder pumps equipped with thermal overload protection shall be standard on all private grinder pump stations. All new private pump stations shall conform to the design criteria specified in Subsection 3.3 above, unless otherwise specified in this subsection, and shall be configured to facilitate routine maintenance without entering the wet well.

Except in the case of a simplex station serving a single-family residence, private pump stations shall have multiple pumps capable of handling peak flow with one pump out of service. Peak flow shall be calculated as the peak hour flow (per Part 3) divided by a factor of 0.7. This is based on peak hour flow typically being around 70 percent of the peak flow over a briefer (approximately 15-minute) time period[1]. Where possible, pumps shall be selected so that the design operating range is within ten percent (10%) (on a flow basis) of the maximum efficiency point identified by the manufacturer. Otherwise, the pump model that would operate closest to its maximum efficiency point should be selected based on the average head condition.

Design flow shall be calculated in accordance with Part 3, except that average daily flow for a residential project shall be determined from Table I in paragraph 62-6.008(1)(b), F.A.C., based on the number of bedrooms and building area. An assumption of 350 gallons per day per residential unit shall be used if bedroom count and building area are unknown.

The table below defines volumetric terms used in this subsection based on the demarcating design elevations (e.g., storage volume is between the pump on and alarm elevations):

<table>
<tr><th>Elevation</th><th colspan="2">Terms</th></tr>
<tr><td rowspan="2">Top/Overflow</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Reserve Volume</td><td rowspan="3">Reserve Capacity</td></tr>
<tr><td>Alarm</td></tr>
<tr><td rowspan="2">Storage Volume</td><td rowspan="2">On</td></tr>
<tr><td rowspan="2">Effective Volume</td></tr>
<tr><td>Off</td><td></td></tr>
</table>

Residential private pump stations shall have a sufficient combination of storage volume and pump rate to avoid an alarm condition during a peak flow of 46 gallons over a 2-minute period, which represents simultaneous discharge from a bathtub and clothes washer with a high probability of occurrence[2], assuming the basin level is at the pump on elevation just prior to the peak flow occurring.

Non-residential private pump stations shall be designed for simultaneous discharge from

[1] Water Pollution Control Federation. (1986). *Alternative Sewer Systems* (Manual of Practice No. FD-12, Facilities Development).
[2] American Society of Civil Engineers. (1969). *Combined Sewer Separation Using Pressure Sewers* (FWPCA Report ORD-4).

multiple plumbing fixtures as determined by the plumbing system designer. Check pump station capacity using the equation, Q = (V-S)/t, where Q is the minimum pump discharge rate (gpm), V is the volume of peak flow (gal), S is storage volume (gal), and t is the time window (duration) of peak flow (minutes).

The minimum storage volume required to attenuate peak flows is 25 gallons. In no case shall the pump rate be less than 5 to 10 gpm, depending on the storage volume. If the storage volume is 25 gallons, the minimum for attenuation, the pump rate shall be no less than 10 gpm. For storage volumes equal to or greater than 50 gallons, the pump rate shall be no less than 5 gpm. Interpolate the minimum pump rate accordingly if the storage volume is between 25 and 50 gallons.

In-ground installation of a grinder pump station may require a ballast or concrete anchor of proper dimensions and weight to counteract the buoyant forces exerted on the station. Designers of privately-owned pump stations shall adhere to the manufacturer's guidelines and sound engineering practice for counteracting buoyancy.

Unless a standby power generator is connected to the pump station, every private pump station shall have a standard generator receptacle (see Appendix F) and a minimum reserve capacity of half the average daily flow volume, but no less than 50 gallons, as contingency for a power outage or equipment malfunction.

In instances where the reserve capacity (i.e., volume above the pump-on elevation) is less than double the peak hour flow, the private pump station shall be furnished with an external pump-out connection.

New private pumping stations shall be enclosed with a fence or otherwise designed with appropriate features to prohibit the entry of animals and unauthorized persons.

All private pump stations connected with the County's wastewater collection system are required to be inspected, maintained, and repaired on a routine basis. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rules, and regulations to perform preventive maintenance and respond to any service interruption. In accordance with 62-604.400(2)(d), F.A.C., the operator's emergency telephone number shall be displayed on an unobstructed sign made of durable, weather-resistant material and posted at a location visible to the public.

3.4 Connections to Collier County Facilities

Connections to existing COUNTY wastewater mains shall be constructed as described in the Technical Specifications and shown in the Utilities Detail Drawings. These details shall apply to all connections to existing systems.

All projects shall be designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water mains passing through or coming into contact with any part of a sewer manhole.

3.5 Tests and Inspections

Tests and inspections of all wastewater systems or portion(s) thereof shall be performed in accordance with the Technical Specifications before acceptance of the systems or portions thereof by Collier County.

USM SECTIONS

SECTION 2

TECHNICAL SPECIFICATIONS

~~Go to the Collier County website below for the latest revision of the Technical Specifications:~~

For the latest revisions to the Technical Specifications, please visit:

~~https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual~~

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 2

TECHNICAL SPECIFICATIONS

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PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

Requirements for preparation, maintenance and submittal of project record documents. The Contractor's attention is specifically directed to Part 3.2.B. of this Section, which requires use of a Florida licensed surveyor to sign and seal all record drawings.

1.2 RELATED SECTIONS

A. Section 014500 – Quality Control

B. Section 022100 – Lines and Grades

1.3 SUBMITTALS

A. General: Provide all submittals as specified.

B. At Contract close out, three (3) sets of signed and sealed Record Drawings for the potable water OR non-potable irrigation water OR wastewater systems to be conveyed shall be submitted to the County or District. If potable water AND wastewater, AND/OR non-potable irrigation water systems or portion(s) thereof are being conveyed, five (5) sets of signed and sealed Record Drawings shall be submitted to the County.

C. Provide electronic submittal as specified in Part 3.02.B of this Section.

1.4 REQUIREMENTS (For County Capital Projects Only)

Contractor shall maintain at the site for the County one record copy of:

A. Drawings
B. Specifications
C. Addenda
D. Change orders and other modifications to the Contract
E. Design Engineer’s field orders or written instructions
F. Approved shop drawings, working drawings and samples
G. Field test records

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Project record documents shall be stored in Contractor's field office or other location approved by the County apart from documents used for construction

B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Make documents and samples available at all times for inspection by the County.

3.2 RECORDING

A. General

1. Record Drawings shall accurately depict the constructed configuration of all potable water, non-potable irrigation water and/or wastewater systems or portion(s) thereof. All revisions to County staff approved construction drawings shall be precisely identified and illustrated on the Record Drawings. All Record Drawings of utility systems or portion(s) thereof that are not being conveyed to the Board shall bear, on the cover sheet, a prominently displayed DISCLAIMER, in bold lettering at least one-quarter (1/4) inch high, stating: "All on-site potable water, non-potable irrigation and/or wastewater systems shall be owned, operated and maintained by the private owner(s) and/or the master condominium/homeowners' association, successors or assigns" (or other comparable private ownership).
2. Label each document "PROJECT RECORD" or similar text in neat, large printed letters.
3. Survey information can be obtained as needed by the use of 2-inch PVC labeled pipes installed over underground improvements by the contractor during construction. This method is an adequate process for obtaining record information.
4. Record information in red ink.

B. Record Drawings

1. The Record Drawings require signed and sealed as-built information, including above and below ground improvements including underground piping, valves and ductbanks, by a Florida Licensed Land Surveyor.
2. The Record Drawings shall identify the entity that provided the record data.
3. Drawings shall be referenced to and tie-in with the state plane coordinate system, with a Florida East Projection, and a North American Datum 1983/1990 (NAD 83/90 datum), and with United States Survey Feet (USFEET) units, and North American Vertical Datum 1988 (NAVD 88), as established by a registered Florida surveyor and mapper.

4. Files shall be also submitted in two digital file formats, specifically Drawing File (DWG) format in AutoCAD Release 2004 or later version as well as PDF format (latest version).

5. Record drawings shall be submitted to the County staff within 60 days of the final construction completion date.

6. The following items shall be accurately depicted in vertical and horizontal directions on the Record Drawings:

   a) All associated rights-of-way and utility easements whether shown on the Contract Drawings, found during construction or added during the Work.

   b) Sewer system inverts, pipe slopes, manhole rims and run lengths.

   c) Sewer lateral locations stationed from the nearest downstream manhole.

   d) Sewer main stub extension inverts at both ends, pipe slope, run length and location.

   e) Tie-ins to all valves, air release assemblies, fire hydrants, manholes, blowoffs, etc.

   f) Top elevations of treatment plant structures and tanks.

   g) Manhole center for sanitary sewers and storm sewers as related to utility improvements.

   h) Pipe changes in direction or slope.

   i) Buried valves, tees and fittings.

   j) Pipe invert, or centerline, elevations at crossing with other pipe.

   k) Invert, or centerline, elevations and coordinates of existing exposed pipe at crossing with underground pipe installed under this project.

   l) Other horizontal and vertical record data pertinent to completed Work.

   m) Water meter box locations

   n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables shall be depicted from source to County asset found in associated rights-of-way and utility easements.

REVISED STRIKETHROUGH

   k) Invert, or centerline, elevations and coordinates of existing exposed pipe at crossing with underground pipe installed under this project.

   l) Other horizontal and vertical record data pertinent to completed Work.

   m) Water meter box locations

   n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables that will be conveyed to the County shall be depicted.

C. Specifications and Addenda (For County Capital Projects Only)

Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or Change Order.

D. Shop Drawings (For County Capital Projects Only)

1. Keep one copy of the final, approved shop drawing with the Record Documents.
2. Record documents should include all shop drawing information submitted. Additional information submitted during the review process should be filed with the appropriate submittal.

END OF SECTION

SECTION 020500

CONNECTIONS TO EXISTING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Submittals

C. Scheduling of Shutdown

1.2 RELATED SECTIONS

A. Section 011000 – Summary of Work

B. Section 015000 – Construction Facilities and Temporary Controls

C. Section 015526 – Traffic Regulations and Public Safety

D. Section 320117 – Pavement Repair and Restoration

1.3 GENERAL REQUIREMENTS

A. Be responsible for all connection to existing systems, cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

B. Coordination: Before connection is performed, verify and provide for any pipe restraint that may be required for the new connection. Perform all cutting, fitting or patching of the Work that may be required to make the several parts thereof join in accordance with the Contract Documents. Perform restoration with competent workmen skilled in the trade.

C. If changes to a “looped” water distribution system occurring during construction result in dead ends to any new or relocated water mains, connect such dead

ends to the nearest water main. In cases where no nearby water main is available, provide a flushing device in coordination with the COUNTY at no additional cost to the COUNTY.

D. Improperly Timed Work: Perform all cutting and patching required to install improperly timed work, to remove samples of installed materials for testing, and to provide for alteration of existing facilities or for the installation of new Work in the existing construction.

E. Limitations: Except when the cutting or removal of existing construction is specified or indicated, do not undertake any cutting or demolition, which may affect the structural stability of the Work or existing facilities without the ENGINEER's concurrence.

F. Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities (in accordance with pipe separation criteria located in the Design Criteria section). Any and all variations from this order must be approved by the Water or Wastewater Department.

2. **Before commencement of any excavation, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call, in accordance with State Statute Chapter 556 "Underground Facility Damage Prevention and Safety", after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit ~~www.callsunshine.com~~ www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.**

3. All lines in conflict must be physically located by the contractor Any conflict shall be reported to the utility and Collier County Public Utilities. ~~and verified by Collier County Locate Department personnel before performing work~~. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any other information concerning locates, please call the Locate Department at 239- 252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. ~~numeric pager at 239-890-0809~~. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits. ~~delay or denial of permit~~.

1.4 SUBMITTALS

A. Submit a written request to the ENGINEER well in advance of executing any cutting or alteration which affects:

1. Work of the COUNTY or any separate contractor.

2. Structural value or integrity of any element of the project or work.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Include in request:

1. Identification of the work.

2. Description of affected work.

3. The necessity for cutting, alteration or excavation.

4. Effect on work of the COUNTY or any separate contract, or on structural or weatherproof integrity of work.

5. Description of proposed work:

a. Scope of cutting, patching, alteration, or excavation.

b. Trades who will execute the work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate contractor whose work will be affected.

C. SUBMIT WRITTEN NOTICE TO THE ENGINEER DESIGNATING THE DATE AND THE TIME THE WORK WILL BE UNCOVERED.

1.5 SCHEDULING OF SHUTDOWN

A. Connections to Existing Facilities: If any connections, replacement, or other work

requiring the shutdown of an existing facility is necessary, schedule such work at times when the impact on the COUNTY's normal operation is minimal. If shutdown involves the water distribution or transmission system, provide notice to the COUNTY Water Department at least two (2) weeks prior to the proposed shutdown, including date, time and anticipated length of interruption of service. Overtime, night and weekend work without additional compensation from the COUNTY, may be required to make these connections, especially if the connections are made at times other than those specified. The connection of new or existing pipelines is prohibited from starting until CONTRACTOR assures that the system can receive the new flow.

B. Interruptions of Service: Perform cut-ins into lines at a time approved in writing by the County Manager or designee. Whenever it is required to turn off valves which may interrupt the water supply of residents or businesses, notify all concerned parties or agencies with personal contact, door hangers or written notice at least forty-eight (48) hours in advance of such cut-off, after having obtained the approval of the County Manager or designee. Provide a copy of the written notice to the Water Distribution Section by fax. ONLY COUNTY PERSONNEL MAY OPERATE COUNTY-OWNED VALVES. Maintain water service to existing connections during construction, under any and all conditions and at no additional cost to the COUNTY. Thoroughly clean and swab all pipe and fittings for cut-ins with a concentrated solution of calcium hypochlorite.

C. Request for Water System Shutdowns: When plans call for connection to existing water distribution facilities or the CONTRACTOR plans to shut down existing utilities or where damage to such facilities is likely in order to complete construction of items under this contract, furnish the County Manager or designee with a written request for connection. The COUNTY Water Distribution Section will identify the locations of all water valves needed to isolate the point of connection in the event that the existing facilities are damaged while making the connection. Identify in the request means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

D. Request for Wastewater Diversion: Submit a request for each diversion necessary during construction to the County Manager or designee and the ENGINEER sufficiently in advance of any required diversion. Identify in the request the valves, bypass piping, portable pumper trucks or any other means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of projects, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of the work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with work until the ENGINEER has provided further instructions.

3.2 PREPARATION

A. In cases where service to utility customers is interrupted, provide adequate equipment with backup onsite to assure prompt restoration of service.

B. Provide adequate temporary support as necessary to assure structural value or integrity or affected portion of work.

C. Provide devices and methods to protect other portions of project from damage.

D. Provide protection from elements for that portion of the project that may be exposed by cutting and patching work, and maintain excavations free from water.

E. Material Removal: Cut and remove all materials to the extent shown or as required to complete the work. Remove materials in a careful manner with no damage to adjacent facilities. Remove materials that are not salvageable from the site.

3.3 PERFORMANCE

A. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. Restore work, which has been cut or removed; install new products to provide completed work in accord with requirements of contract documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

3.4 PAVEMENT RESTORATION

A. Restore all pavement or roadway surfaces in accordance with Section 320117 – Pavement Repair and Restoration.

B. Restore, replace or rebuild existing street paving, including underdrains, if any are encountered, where damaged, using the same type of construction as was in the original. Be responsible for restoring all such work, including subgrade, base courses, curb and gutter or other appurtenances where present. The County Manager or designee will obtain the permits listed in the Contract Documents. Obtain and pay for at CONTRACTOR’s expense any additional local or other governmental permits as may be required for the opening of streets and be satisfied as to any requirements other than those herein set forth which may effect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

C. This section does not describe the construction of new road surfaces or the complete resurfacing of existing pavements.

D. In all cases, the CONTRACTOR will be required to maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract for a period of 12 months after the acceptance of the Contract, including the removal and replacement of such work wherever surface depressions or underlying cavities result from settlement of trench backfill.

E. Perform all the final resurfacing or repaving of streets or roads, over the excavations made and be responsible for relaying paving surfaces of roads that have failed or been damaged at any time before the termination of the maintenance period on account of work done by him. Resurface or repave over any tunnel jacking, or boring excavation that settles or breaks the surface, repave to the satisfaction of the County Manager or designee and at the CONTRACTOR's expense. Conform backfilling of trenches and the preparation of subgrades to the requirements of excavation and backfilling of pipeline trenches.

F. Where pipeline construction crosses paved streets, driveways or sidewalks, the CONTRACTOR may elect, at no additional cost to the COUNTY, to place the pipe by the jacking and boring, horizontal direction drilling, or tunneling method in lieu of cutting and patching of the paved surfaces. Such work shall be accomplished in accordance with all applicable sections of the Contract Documents.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 221336

DIESEL BACKUP PUMP

PART 1 GENERAL

1.1 SCOPE

A. Requirements for providing a permanently installed automatically starting pump station back-up pumpset.

B. Elevated platforms shall be provided where necessary to provide access to the diesel backup pump for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 GENERAL

A. The specifications herein state the minimum requirements of Collier County (the Owner). All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Owner may consider as “irregular” or “non-responsive”, any bid not prepared and submitted in accordance with the bid documents and specification, or any bid lacking sufficient technical literature to enable the Owner to make a reasonable determination of compliance to the specification. It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (exception yes or no) will cause the proposal to be rejected, without review, as “non-responsive”. All variances, exceptions, and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.

B. INTERPRETATIONS: In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specifications documents or any part thereof. Every request for each a consideration shall be made in writing to the Owner. Based upon such inquiry, the Owner may choose to issue an Addendum in accordance with local public contract laws.

C. GENERAL SPECIFICATIONS: Units described shall be new, unused, and of the current year’s production. The style of pump being bid must be in production for a minimum of 5 years (include users list). Unit shall be of the latest design and in current production completely serviced, ready for work and shall include all standard and optional equipment as specified herein. All bidders must have demonstrated the unit they are bidding, prior to bid date.

D. Bidders must have a fully stocked parts and service facility within 50 miles of the project site. The Owner shall have the right to inspect the office and shall be the sole judge of its adequacy to fulfill this requirement.

E. Bidders, on request of the Owner, must be prepared to review their specifications with the Owner and must, if requested, also be prepared to provide a unit for tangible evaluation purposes only. These services, if needed, are considered as part of the bidder's proposal and will be provided without cost or obligation to the Owner.

1.3 SYSTEM DESCRIPTION

A. The pumpset specified in this section will be used to pump wastewater from a Collier County pumping station (PS).

B. Pump shall be fitted with a fully automatic priming system capable of repeated priming from a completely dry pump casing.

C. The complete pump set shall be supplied by the pump manufacturer.

D. The pump offered shall be the manufacturer's standard production model. It shall have been in continuous use by municipal and industrial owners for a minimum of five years. A list of five user contacts including contact names and telephone numbers shall be provided with the bid submittal. Failure to supply a verifiable users list will be cause for rejection of the bid.

1.4 DESIGN REQUIREMENTS

1.4.1 All design requirements listed below must be clearly displayed on performance pump curves. These performance pump curves shall be based on testing standards established by the hydraulic institute.

DESIGN REQUIREMENTS	
OPERATING SPEED (MAXIMUM) (RPM)	
MAXIMUM SOLIDS HANDLING SIZE (INCHES)	
IMPELLER DIAMETER (INCHES)	
SUCTION SIZE (INCHES)	
DISCHARGE SIZE (INCHES)	
PRIMARY DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT PRIMARY DUTY POINT (FEET)	
MINUMUM EFFICENCY AT MAX DUTY POINT	
SECOND DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT SECOND DUTY POINT (FEET)	
MIMIMUM EFICENCY AT SECOND DUTY POINT	

1.5 REFERENCES

1. ANSI B16.1 - Standard for Cast Iron Pipe Flanges and Flanged Fittings.

PART 2 PRODUCTS

2.1 PRE-APPROVED ACCEPTABLE MANUFACTURERS:

1. GODWIN PUMPS OF AMERICA
2. THOMPSON PUMP & MANUFACTURING CO, INC.

A. All manufacturers shall be ISO 9001: 2008 certified. Certificates shall be made available to Collier County upon request. Bids will be accepted for consideration on any make and model that meets the requirements of the project specifications, as interpreted by the Owner. If a product proposed does not meet the requirements of this specification, the Contractor shall provide a unit which does, at no additional cost to the Owner. The Owner shall have the final decision on which products do and which products do not meet the project specifications.

2.2 EQUIPMENT

A. PUMPS: The pumps used in the diesel backup pump system shall be supplied directly by the manufacturer, not by a distributor. The pump itself and the diesel backup pump system as a whole shall come from a single manufacturer. “Packagers” of systems which incorporate pumps from a separate manufacturer to fabricate diesel backup pump systems shall not be allowed.

B. CASING, SUCTION COVER, SEPARATION TANK: Pump castings shall be cast iron or ductile iron with a minimum pressure rating of 100 psi. The pump casing shall be constructed so that the suction flow path is in axial alignment with the impeller eye. There shall be no turns, chambers, obstructions or straightening vanes between the suction line and the impeller. The pump casing shall be complete with a removable port for inspecting impeller/cut water area.

C. IMPELLERS: The pump impeller shall meet the criteria of one of the following:

1. An open, three-bladed, (or 2-bladed) non-clog type with pump-out vanes on the back shroud and fabricated from hardened cast- chromium steel construction (or other material to meet minimum Brinell Hardness 340 HB).

2. A high efficiency non-clog type, 2-vane, enclosed design with full front and rear shrouds, containing back pumpout vanes, constructed of high grade 65-45-12 ductile iron and capable of passing a 3” spherical solid.

D. WEARPLATES/WEAR RINGS: Shall be fully be replaceable, fabricated of cast iron. Wear plate/wear ring clearances shall have no relationship to the ability of the pump to achieve a prime.

E. BEARINGS AND SHAFTS: Pump shall be fitted with a bearing bracket to contain the shaft and bearings. Bearings shall be tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points. Minimum ISO L_{10} bearing life to be 100,000 hours. Impeller shafts shall be fabricated of high strength alloy steel, accurately machined, polished, and of sufficient size to transmit full driver output without excessive flexing or stress.

F. SEALS: Pump shall be capable of running dry, with no damage, for periods up to twenty-four hours. The pump seals shall be the requirements of one of the following:

1. Seal shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 87 psi. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. All metal parts shall be of stainless steel. Elastomers shall be Viton.

2. Pump seal shall be an inside-mounted, self-cleaning John Crane type 2 component style mechanical seal with tungsten carbide rotating and silicon carbide stationary faces with Viton elastomers and stainless steel spring and hardware.

G. PUMP SUCTION AND DISCHARGE FLANGES: Shall be cast iron ANSI (B16.1) Class 150, raised faced.

H. PUMP GASKETS: Shall be compressed fiber and/or Teflon.

I. PUMP O RINGS: Shall be Buna-N.

J. PRIMING SYSTEM: Pump shall be fitted with a fully automatic priming system incorporating a air compressor, venturi (with lifetime warranty), priming chamber, and discharge check valve assembly. The compressor shall be installed on the engine auxiliary drive and shall be gear driven, lubricated and cooled from the engine. Installed system design shall prevent any carryover of the pumping fluid onto the ground. Priming system may require additional drainage pipelines to be constructed to re-circulate pumping fluid back to sump area. The pump must be capable of running totally dry for periods up to 24 hours, then re-priming and returning to normal pumping volumes. Pump and priming system is capable of priming the pump from a completely dry pump casing. The pump shall be capable of static suction lifts to 28 vertical feet, at sea level. It shall also be capable of operation using extended suction lines, and pump shall be capable of priming and re-priming without any user intervention. Equipment acceptance shall be contingent upon the pump's ability to run continuously at full speed in a completely dry condition. The engineer may require a demonstration. Priming systems that incorporate the use of a positive displacement diaphragms OR oil-cooled vacuum pumps will not be accepted.

K. CHECK VALVE: The priming system shall include a discharge check valve to prevent pulling air through the discharge line during priming and prevent in-line return of flow when the pump is shut off. Non-return check valve shall be constructed of cast iron with Nitrile rubber and shall be field replaceable. Check valve shall be vacuum-tested by the factory, and test results shall be provided.

L. DRIVE UNIT: The drive unit shall be a diesel water-cooled engine. The engine shall drive the pump by use of direct-connected intermediate drive plate. Starter shall be twelve-volt electric. Low oil pressure safety shutdown, high temperature shutdown, tachometer, and hour-meter shall be integrated into engine control panel. Battery shall have 180-amp hour rating. A certified continuous-duty engine curve shall be supplied to the owner/engineer.

M. GOVERNOR: Governor shall be an electronic or mechanical type. Engine speed shall be adjustable to operate the pump between maximum and minimum design operation speeds in manual mode. See section 2.3 for Automatic mode.

N. FUEL SOURCE: Integral skid fuel tank capacity shall be sufficient to provide at least seventy-two (72) hours of continuous operation at full load. The minimum tank size shall be 150 gallons and the maximum tank size shall be 550 gallons. The engine shall be capable of operating satisfactorily on a commercial grade of distilled No. 2 fuel oil.

O. EXHAUST: Exhaust system shall include a hospital grade muffler housed in a separate chamber within the enclosure. All exhaust piping and manifolds shall be encased in fitted acoustic blankets. They shall be constructed of high-density fiberglass material with waterproof jacketing.

P. SOUND ATTENUATED ENCLOSURE: The entire unit including the pump and engine shall be completely enclosed in a lockable enclosure. The enclosure shall be constructed with a modular galvanized steel frame and galvaneel panels. Acoustical material shall be installed as required to reduce pump and engine noise. Maximum sound ratings for specific pump sizes are shown in the table below. These sounds rating shall be the maximum dBA rating measured at 7 meters @ both duty points specified.

Pump Outlet Size	Maximum Sound Rating Allowed
4”	68 dBA
6”	70 dBA
8”	72 dBA
10”	72 dBA
12”	72 dBA

Q. Units not meeting this requirement shall not be considered. The enclosure shall be removable for easy access to the engine / pump for maintenance and repair. The enclosure doors shall all be equipped with latches that are keyed alike. For maintenance and service needs, the enclosure sides shall have hinged doors for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters. The enclosure shall be coated in epoxy based primer and paint to a total dry film thickness of 5 mils.

R. UL LISTED SKID BASE

1. The pump base tank shall be a UL-142 approved double wall design constructed in accordance with Flammable and Combustible Liquids Code, NFPA 30; The Standard for Installation and use of Stationary Combustible Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110. Pumps installed within 25 feet of a building shall be equipped with UL-2085 fire resistant fuel tanks. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

2. The tank design shall be a Closed Top Dike Pump Base Tank. It shall be of double

wall construction having a primary tank to contain the diesel fuel, held within another tank or dike, which is intended to collect and contain any accidental leakage from the primary fuel tank. The completed base tank assembly is to incorporate pump mounting locations and must be able to support four times the rated load.

3. The primary tank shall be designed to withstand normal and emergency internal pressures and external loads. It shall be capable of withstanding internal air pressures of 3 to 5 psig without showing signs of excessive or permanent distortion and 25 psig hydrostatic pressures without evidence of rupture or leakage.

4. The primary and secondary tanks or dike shall have venting provisions to prevent the development of vacuum or pressure capable of distorting them as a result of the atmospheric temperature changes or while emptying or filling. The vent shall also permit the relief of internal pressures caused by exposure to fires. The vent size shall be determined by using the calculated wetted surface area in square feet (the top is excluded) in conjunction with venting capacity table 10.1of UL-142. The tank's vent shall also be equipped with a coupling device and shall be located to facilitate connection to a vent piping system. The dike's vent may be an opening for venting directly to the atmosphere and protection from the entrance of natural elements or debris shall be provided.

5. The primary and outer tanks are to be constructed of 304 stainless steel, 7 gauge minimum. Internal baffles or reinforcement plates shall be located on a maximum of 24 inch centers in tanks up to 60 inch width and on a maximum of 19.5 inch centers in tanks over 60 inch width. At least one baffle shall separate the fuel suction pipe from the fuel return line.

6. The outer tank is to be constructed in a manner to be able to support four times the wet load of the pump and housing. The entire load is to be carried by the outer tank so no load or vibration stress is placed on the primary tank. If the pump base tank is wider than the pump set to be supported, structural rails are to be incorporated to span the width of the base tank so that the load is transferred to the side rails of the tank. Vertical reinforcements shall be welded to the outer sides of the secondary tank or dike at a maximum of 45 inch centers on tanks up to 30 inches high and on 24 inch centers on tanks greater than 30 inches high. At least one vertical reinforcement shall be positioned adjacent to each mounting hole location. Provide level monitoring and interstitial space leak monitoring.

7. Both primary and secondary tanks shall be fitted with the proper welded pipe fittings to accommodate the requirements for the fill port and normal and emergency venting.

8. The completed assembly is to be cleaned with a heated pressure wash followed by a chromium free post treatment to ensure proper paint adhesion. The tank assembly is to be painted with an epoxy ester primer and high quality polyurethane enamel with a minimum dry film thickness of 3.5 mils.

9. All tanks shall be tested in accordance with **NFPA 30 TO INCLUDE ON SITE**

TIGHTNESS TESTING in accordance with NFPA 30 Section 21.5. This requirement shall not apply to portable trailer mounted diesel pumps.

10. Manufacturing and testing of this system shall be performed within the scope of Underwriters Laboratories, Inc. "Standard for Safety UL 142.", or UL 2085, as applicable. A UL label shall be permanently attached to the tank system showing the following information:

    i. The registered UL mark and the name: Underwriters Laboratories, Inc.
    ii. A control number and the word "listed"
    iii. The product's name as identified by Underwriters Laboratories Inc.
    iv. The serial number assigned by Underwriters Laboratories, Inc.
    v. Other manufacturer's information may also be included.

S. PORTABLE TRAILER (FOR TRAILER MOUNTED UNITS ONLY):

1. The complete pump set shall be factory mounted on a highway trailer meeting NHTSA, DOT Part 571 standards 108, 119 and 120.

2. Trailers with loads of 5,000 pounds or less with fuel tank filled, shall have a flat bed, single axle, two 15-inch wheels with 6-ply tires. Axle ratings shall be a minimum of 5,000 pounds.

    i. Trailers with loads from 5,000 to 10,000 pounds with fuel tank filled, shall have a flat bed, 2-axle, four 15-inch or 16-inch wheels with 10-ply tires. Axle rating shall be a minimum of 10,000 pounds.
    ii. Trailers above shall have following accessories. Ring and pintal hitch including safety chain and fasteners, electric brakes shall be provided on all wheels, and all required ICC lights such as tail, brake, direction signals, license holder and light, etc., shall be provided; jacks and sand shoes for front and rear corners shall be provided so that unit can be completely supported.
    iii. The diesel backup pump engine shall be balanced mounted on trailer. All necessary service and checkout of diesel backup pump set shall be performed prior to delivery.

T. FACTORY PAINTING: Pump, engine, and base shall be shop primed and finish painted at the place of manufacturer.

2. 3 AUTOMATIC STARTING CONTROL SYSTEM

A. The engine control panel shall be provided in a NEMA 3R enclosure mounted on rubber isolators to reduce vibration, equipped with a factory installed microprocessor-based controller designed to start/stop the engine at a signal supplied by high and low level floats or a 4-20 mA transducer.

B. The control system shall be able to start/stop the engine a via a signal supplied by a primary level transducer and back-up high and low level floats for redundant automatic operation.

C. ENGINE / PUMP CONTROL SPECIFICATIONS

1. The engine shall be started, stopped, and controlled by a digital controller. The controller shall be weather proof enclosed, and contain an external weatherproof 12-position keypad accessible without the need to remove or open any protective cover or enclosure. It shall be designed to start/stop the engine based on relay contact closure provided by others. The controller shall provide the following functions without modification, factory recalibration, or change of chips or boards, by simply accessing the keypad:

D. The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, and maintain complete weather-tight sealing of the controller.

E. In automatic mode, the unit shall conserve energy and go to "sleep".

F. The controller shall function interchangeably from remote contact closure, as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.

G. The start function can be programmed to provide two separate functions each day for seven days (i.e. a start, exercise cycle on two separate days at different times and for a varying length of time all via the keypad).

H. Manual-Automatic Button:

1. In Manual Mode, manual "Start" button starts engine and runs until "Stop" or "Off" button is depressed or an emergency shutdown occurs.

2. In Automatic Mode, start/stop sequencing is initiated by a signal from a digital input.

I. The controller shall integrate the engine safety shut-off for low and high oil temperature, and provide over-speed protection.

J. The controller shall include standard, field-adjustable parameters for engine cycle crank timer, and shutdown time delay.

K. The controller shall have only one circuit board with eight built-in relays. Three (3) of the relays shall be programmable to output desired parameter on display and to be used as dry-contacts for communication with Collier County's SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software. Relays will monitor the following:

1. Low Battery Charge
2. Low Fuel Level (Less than 25 gallons)
3. Diesel Pump Engine Start

L. Standard components shall consist of one of the following set ups:

1. (24) Digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form “C” relays, (1) RS232 port, (1) RS485 port, (1) RS232/RS485 port, (1) J1939 port, and (1) 64X128 pixel full graphic LCD display with backlight.

2. (8) Digital inputs, (5) analog inputs, (8) digital outputs, (1) RS232 port, (1) RS485 port, (1) J1939 port, (76) selectable features, (32) alarm event history.

M. The industrially-hardened Controller shall withstand vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature range of 4° to 176°F (-20° to 80°C) and an operating humidity range of 0-95% non-condensing.

2.4 OPTIONS

A. FULLY AUTOMATIC TRICKLE CHARGER: The unit shall include a fully automatic trickle charger powered by 6-amps, 115 VAC.

B. LIGHT: The unit shall include a single switch operated 12VDC light within the enclosure.

C. FLOATS: The unit shall be supplied with one (1) float assembly including two (2) N/O floats which shall integrate with the engine control panel via a single multi-pin plug.

D. LEVEL TRANSDUCER: The unit shall be supplied with (1) one Teflon diaphragm sewage compatible level transducer assembly including a single 4-20 mA level transducer with leveling guard (0-15 psig), which shall integrate with the engine control panel via a single multi-pin plug.

E. AUTO THROTTLE: The unit/s shall include one (1) automatic throttle controller integrated into (1) relays in the electronic engine control panel. The auto-throttle control panel combination shall allow the pump to ramp up to the target RPM given a start command and ramp down to idle given a stop command via the 4-20 mA level transducer

F. DC / AC INVERTOR: The unit/s shall include one (1) 12VDC to 110VAC volt single-phase inverter, 1750 watts, mounted inside enclosure, single 15-amp GFI outlet, and one (1) fusible link.

2.5 ACCESS PLATFORM

A. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

B. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.1 MANUFACTURERS SERVICES

A. The manufacturer shall furnish the services of a competent factory representative to do the following:

1. The complete pump set shall be factory tested according to ANSI/HI 1.6¬1994 by a certified quality technician. The pump shall be sound tested according to ISO 3744, ANSI/HI9.4 and CPB Sound Level Measurement Standard.

2. Instruct the Owner's operating personnel in the proper operation and maintenance of the

system for a period of not less than one-half day.

3.2 TOOLS AND SPARE PARTS

A. The manufacturer shall furnish the following on delivery of the pumping system;

1. A recommended list of spare parts.

2. Two (2) replacement mechanical seals

3. An Operations and Maintenance manual for the pump and engine.

4. A fuel polishing system capable of below 1 micron filtration equipped with a fuel-water separator and 12V DC fuel pump rated at 40 GPH minimum. The system shall be a standard commercial or industrial off the shelf unit intended for portable use of diesel fuel polishing. The fuel polishing system shall include 6 spare filters and an operations and maintenance manuals.

3.3 WARRANTY

A. The manufacturer shall furnish the following to the owner:

1. A copy of the engine manufacturer's parts and labor warranty.

2. A 3-year Parts and Labor Warranty issued by the manufacturer on the Diesel Pump System. This warranty must cover all pump parts.

3. The venturi shall have a minimum five (5) year warranty to include parts and labor.

SECTION 263213.13

STANDBY DIESEL GENERATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Extent of diesel generator set work as indicated by Drawings and Schedules, and is hereby defined to include, but not by way of limitation:
   1. Diesel engine.
   2. Electrical generator.
   3. Engine starting system.
   4. Batteries.
   5. Instrument control panel.
   6. Sound Attenuating Enclosure.
   7. Sub-Base Fuel Tanks.
   8. Exhaust silencer.
   9. Wall thimble.
   10. Additional accessories.
   11. Automatic transfer switch (ATS).
   12. Access platform and stairs.

B. Types of generator sets required include:
   1. Permanent Diesel Engine-driven Generator.

1.02 SUBMITTALS

A. Shop Drawings: Submit in accordance with Section 013400, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
   1. Product Data: Submit manufacturer's data on diesel engine-driven generator sets and components.
      a. Generator dimensions.
      b. Generator weight.
      c. Generator rating.
      d. Alternator rating.
      e. Generator Starting System Data:
         1) Battery size and ratings.
         2) Charging system capacity.
         3) Battery heater data.
         4) Battery warranty.
      f. Generator Control Panel Data:
         1) Layout.
         2) Wiring diagrams.
         3) Control interconnection.
         4) Instrumentation.
      g. Exhaust System Data:
         1) Muffler size.
         2) Decibel reduction curve.

3) Fuel system data.

h. Cooling System Data:
   1) Radiator capacity.
   2) Cooling reduction capacity

i. Enclosure Data:
   1) Materials.
   2) Size.
   3) Assembly/disassembly instructions.
   4) Door locations.
   5) Noise reduction.
   6) Color.

j. Sub-Base Fuel Tank:
   1) Capacity.
   2) Fuel usage calculations.
   3) Coating.

k. ATS Data:
   1) Enclosure Material.
   2) Dimensions.
   3) Factory test report.

l. Warranty data.

m. Accessory and miscellaneous equipment.

2. Wiring Diagrams: Submit wiring diagrams for diesel engine-driven generator units showing connections to electrical power panels, feeders, and ancillary equipment. Differentiate between portions of wiring that are manufacturer installed and portions that are field installed.
3. Agreement to Maintain: Prior to time of final acceptance, Installer shall submit 4 copies of an agreement for continued service and maintenance of diesel engine-driven generator sets for OWNER's possible acceptance. Offer terms and conditions for furnishing parts and providing continued testing and servicing, including replacement of materials and equipment, for 1-year period with option for renewal of Agreement by OWNER.
4. Certifications: Provide diesel engine-driven generator sets certified test record of the following final production testing:
   a. Single-step load pickup.
   b. Transient and steady-state governing.
   c. Safety shutdown device testing.
   d. Voltage regulation.
   e. Rated power.
   f. Maximum power.
   g. Provide certified test record prior to engine-driven generator set being shipped from factory to Project location.
5. Spare Parts Data: Submit a list of spare parts for the equipment specified.
6. Operating and Maintenance Instruction Manuals:
   a. Operating instruction manuals outlining step-by-step procedures required for system startup and operation.
   b. Manufacturer's name, model number, service manual parts list.
   c. Brief description of equipment and basic operating features.
   d. Maintenance instruction manuals outlining maintenance procedures.

e. Troubleshooting guide listing possible breakdown and repairs.
f. Point-to-point connection wiring diagram for the system.
g. Performance Test Reports: Upon completion of installed system, submit in booklet form all shop and field tests performed to prove compliance with specified performance criteria.
h. Provide OWNER with two (2) electronic copies of O&M manuals on CD's.

1.03 QUALITY ASSURANCE

A. Codes and Standards:
1. NFPA Compliance: Comply with applicable requirements of NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 99, "Standard for Health Care Facilities," and NFPA 101, "Code for Safety to Life from Fire in Buildings and Structures."
2. UL Compliance: UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," UL 2200, "Standard for Safety for Stationary Engine Generator Assemblies," rated 600 volts or less. UL 1008, "Automatic Transfer Switches," and UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors." Provide transfer switches and components which are UL listed and labeled.
3. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NE MA MG1, "Motors and Generators," and MG2, "Safety and Use of Electric Motors and Generators." NEMA Standards Pub/Nos. ICS 2, "Industrial Control Devices, Controllers and Assemblies," ICS 6 and 250, pertaining to transfer switches.
4. IEEE Compliance: Comply with applicable portions of IEEE Standard 446, "IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications."

B. Submittal information shall be generated from a representative located within Collier County who has knowledge of Local and State code requirements.
C. Warranty: Submit in accordance with requirements of Section 01740, warranties covering the items included under this Section. Unit shall be provided with a full comprehensive warranty of 5 years or 1500 running hours from date of ENGINEER's acceptance. Response time shall be a maximum of 3 hours. Provide label on inside of generator with description of warranty period and contact information.

1.04 DELIVERY, STORAGE AND HANDLING
A. Manufactured material shall be adequately packed to prevent damage during shipping, handling, storage and erection. Material shipped to site shall have approval of OWNER prior to shipping. All shipped material shall be packed in a container properly marked for identification. Blocks and padding shall be used to prevent movement.
B. CONTRACTOR shall inspect the material prior to removing it from carrier. If damage is observed, CONTRACTOR shall immediately notify carrier so that a claim can be made. If no such notice is given, material shall be assumed to be in undamaged condition, any subsequent damage that occurs to the equipment shall be the responsibility of CONTRACTOR.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:
   1. Standby Diesel Generator Sets:
      a. Caterpillar.
      b. Cummins.
   2. Automatic Transfer Switches:
      a. Caterpillar.
      b. Cummins

2.02 GENERATOR SETS

A. Except as otherwise indicated, provide manufacturer's standard diesel engine-driven generator set and auxiliary equipment as indicated by published product information, and as required for a complete installation. Generator set shall be rated to continuously power the total accumulated load and starting load shown on Schedule at 100 degrees F ambient temperature and at altitude where installed.

B. Diesel Engine: Provide a 4-cycle, compression ignition type engine for operation on a commercial grade of petroleum fuel oil such as No. 2 fuel oil. Engine operating speed shall not exceed 1,800 rpm and shall be controlled by a governor to maintain alternator frequency within plus or minus 3 Hertz of 60 hertz from no load to full load. Frequency shall recover to steady-state tolerance within 5 seconds after application of 90 percent rated load.

C. Starting System: Provide engine-generator unit with 12- or 24-volt, negative ground, starting system including positive engagement solenoid shift-starting motor, batteries, and 35-ampere, or greater, automatic battery charging alternator with solid-state voltage regulator. Mount batteries in a plastic- or epoxy-coated metal platform near the starter but not on the generator and coat battery terminals with an anti-oxidant. Generator sets rated 150 kW or less shall have a battery rated 650 amperes cold cranking at 0 degree F and 170 minutes reserve capacity by SAE Standard J-537. Larger generators shall have a battery rated either 220 ampere-hours or 900 amperes cold cranking, and 430 minutes reserve capacity. Batteries shall have a 12-month full warranty and 60-month prorated warranty.

D. Battery Charger: Provide a solid-state, current limiting, float-type SENS model #NRG22-10-RC battery charger with 10-ampere minimum capacity. Charger shall operate from 120-volt AC single phase, 60 hertz power and shall automatically keep batteries at full charge. Equip charger with ammeter and voltmeter. Battery charger shall be located within the generator enclosure.

E. Alternator: Provide a single bearing brushless, self-excited alternator with inherently regulated rotating rectifier exciter system or a revolving field design with a temperature compensated solid-state voltage regulator. Connect the alternator housing directly to the

engine flywheel housing. Couple the alternator rotor directly to engine flywheel with a semi-flexible steel disk coupling.

1. Provide windings with Class F insulation with epoxy impregnation and fungus-resistant coating. Temperature rise shall be as defined in NEMA Standard MG1-22.40.
2. The alternator shall be capable of starting load given for site with 35 percent maximum instantaneous voltage dip. Instantaneous voltage dip shall only be 20 percent when there is a VFD. Recovery to stable equation within plus or minus 5 percent of rated voltage shall occur within 3 seconds.

F. Engine Cooling Radiator: Provide a complete engine cooling system equipped with a radiator and blower type fan sized to maintain safe operation, 190 degrees F engine outlet water temperature at 100 degrees F maximum ambient temperature. The engine cooling system shall be filled with a solution of 50 percent ethylene glycol.

G. Instrument Control Panel: Provide engine-generator unit with engine oil-pressure and water-temperature indicators, reset circuit breaker, static voltage regulator, voltage-adjusting rheostat, voltmeter, ammeter with phase selector switch with an OFF position, and with running time indicator and frequency meters. Select circuitry of plug-in design capable of quick replacement, and capable of accepting a plug-in device which allows maintenance to test control panel performance without operating the engine.

1. Provide a cranking limiter to open starting circuit in 45 to 90 seconds if engine has not started within that time or after a series of 3 or more cranking intervals separated by 2 or more rest periods.
2. Provide engine safety devices to shut unit down on high engine temperature, low oil pressure, overspeed, and overcrank. Provide, for each of these conditions, an alarm light and an unpowered, normally open contact for remote use. Provide an audible alarm with silence switch which is activated by any alarm condition. Provide additional unpowered, normally open contact for remote use that indicates general generator alarm. General alarm contact will be for any alarms associated with the generator and not pre-assigned to a specific alarm. Sacrificing a specific alarm in order to receive the general alarm contact is not acceptable.
3. Provide a relay with 2 normally open and 2 normally closed contacts rated 5A at 120 volts AC and which is energized when unit is running. Wire these contacts to terminal strips for remote use.
4. Provide a RUN-OFF-AUTO switch. In AUTO position unit shall start when a remote contact closes and stop when contact opens. In RUN position unit shall start and run until OFF position is selected.
5. Mount instrument control panel on unit such that it is isolated from generator set vibration.

2.03 PERMANENT ENGINE-GENERATOR SET ACCESSORIES

A. Enclosure Design: Generator set shall be provided with a skin tight outdoor enclosure. Enclosure roof and side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. Side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. The Side Walls shall be complete with necessary access doors and ventilating louvers. There shall be at least 2 access doors on each side of enclosure and

one at the generator control panel for access to the controls. Doors shall be capable of full-range of motion. CONTRACTOR shall coordinate final location of generator to accommodate door swings. Any changes due to generator clearances shall be at the expense of the CONTRACTOR. Doors shall be hung on full-length piano hinge assembly. All hinge hardware shall be stainless steel. Finish paint shall be powder-coated over epoxy primer. Doors shall be equipped with handles. Louvers shall be stationary type and shall be arranged to provide adequate protection against rainfall at 15 degrees from vertical. Air of intake louvers shall be sized so not to exceed .5 inches of water column while providing the required genset cooling and combustion air flow. Enclosure shall be of bolted formed panel type construction. Exhaust shall be provided within the enclosure unless otherwise directed by the ENGINEER. Roof shall have sufficient strength to support an exhaust silencer. Enclosure shall be large enough to fully enclose all components necessary to the system. All doors shall be capable of being locked or have provisions for padlocks. Door hardware shall be stainless steel.

1. All raceway and conduits within the enclosure shall be sealed-tight flexible conduit or rigid aluminum or galvanized steel with malleable iron boxes and compression type fittings as appropriate for the raceways used under NEC. EMT and flex or “Greenfield” conduits are not acceptable.
2. When this outdoor enclosure is specified, the temperature specifications for unit shall be 0 degrees F to 120 degrees F with ambient air at radiator intake being 100 degrees F maximum.
3. Modular enclosures shall comply with DCA, Florida Building Code and have a minimum sustained wind rating of 150 MPH.
4. The CONTRACTOR is responsible for verifying the impact rating requirements under Florida Building Code and shall provide a generator enclosure in compliance to these standards.
5. Consult the ENGINEER prior to bid when generator is located within any “Zone 4 impact area under FBC”.
6. Enclosure shall match footprint of sub base fuel tank.

B. Sound Attenuation: Enclosure shall be insulated to attenuate sound and include sound attenuating features that direct radiant cooling air in a route to minimize ambient noise when generator is running.

C. Operational noise shall not exceed 75 dBA at 23 feet (in Free Field Conditions). Additional sound attenuation references or limitations may be required. See drawings for additional details. If generator is located within 50 feet of a commercial or residential unit, then operational noise shall not exceed 55 dBA.

D. Source dBA and sound attenuation shall be as measured and defined under ANSI S12.34-1998 and SIO 3744 as applicable. Additional local codes and standards may apply for generator operational noise. The CONTRACTOR is responsible for compliance to all local standards without change order or additional payment.

E. Fuel System: Provide unit with a UL142 compliant double-wall skid base type integral fuel tank that is “skid” mounted, unless otherwise directed by the ENGINEER’s drawings or addenda. Tank capacity shall be a maximumum of 550 gross volume gallons. The

tank capacity shall be calculated assuming the tank is 90% full and based on the generator running at full load/speed continuously for three (3) days.

F. The ENGINEER has projected fuel use estimates using equipment listed as the basis of design. The CONTRACTOR is responsible for providing the manufacturer's fuel usage calculations with submittal documents for ENGINEER's review.

G. The fuel tank shall be furnished with UL142 and FDEP required accessories to include a fuel site gauge, normal and emergency vents and fuel cap having padlocking provisions. All necessary fuel supply and return line shall be furnished pre-assembled to unit. The Fuel Tank shall meet all applicable State and local standards for the volume of fuel the tank will hold.

H. Sub base fuel tank size shall be provided and sized as shown on the contract documents and within the specifications.

I. Sub base fuel tank shall not allow pooling or ponding of water on top once generator is mounted on top.

J. Tank shall be made by a manufacturer with minimum of (10) ten years' experience in the design and construction of UL Listed, FDEP and NFPA compliant sub base fuel tanks. Manufacturer of the fuel tank must be approved and registered with the State of Florida, and have their required "EQ" file number on the supplied fuel tank. The installing CONTRACTOR is responsible for supplying fuel for the field testing.

K. The fuel tank shall be mounted under the generator skid rails, consisting of a dual wall design constructed to UL142 and standards applicable to this application under FS-62-762, NFPA 30, NFPA 37 and NFPA 110. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

L. Sub base fuel tank shall be rectangular in shape and include reinforced steel box channel for generator support.

M. Both the inner and outer tanks shall be constructed of 304 stainless steel.

N. The outer wall shall be prepared before & after primer. Prime with one coat of epoxy primer to a thickness of 12-15 mils (DFT). Outer wall finish coat shall be a high gloss, black, UV blocking epoxy primer applied to a minimum thickness of 3.5 mils (DFT). All welds and fasteners connecting the generator skid base to the fuel tank shall be similarly primed and finished. Primers shall not be electrostatically or powder applied. Primers shall be hand applied & dried in a drying booth.

O. Fuel tank shall be equipped with a magnetic liquid level fuel gauge as manufactured by Rochester Gauges, Inc. Fuel tank level shall be output as a 4-20mA signal from the generator control panel.

P. Sub base fuel tank shall have a 4 point lifting system in place when shipped to the site. It shall be the responsibility of the Generator manufacturer to recommend a lifting system along with instructions for the CONTRACTOR on site.

Q. Sub base tank testing shall consist of primary and secondary tank containment basin and shall be pressurized at 3-5 psi and leak checked to ensure integrity of sub base weld seams per UL-142 standards. A copy of this report shall accompany close-out documents. Fuel containment basin shall be sized as a minimum of 110% of the tank capacity to prevent escape of fuel into the environment in the event of a tank rupture. Provide a fuel containment basin leak detector switch.

R. The sub base tank fittings shall include the following:
   1. Appropriately sized NPT fuel supply.
   2. Fuel return fitting
   3. 2” NPT for normal vent
   4. NPT for emergency vent, sized as appropriate
   5. 2” NPT for manual fill.
   6. NPT for level gauge, sized as appropriate.
   7. 3/8” NPT basin drain
   8. 2” NPT for level alarm.
   9. NPT fitting for leak detection alarm

S. Coolant Heater: Provide engine coolant heater that operates from 120-volt AC single phase, 60 hertz power with thermostatic controls to maintain engine coolant at proper temperature to fulfill start-up requirements of NFPA 99.

T. Inlet and Exhaust Systems: Silencers and exhaust ducting to silencers shall be self-supporting when assembled. Provide all necessary supporting members for ductwork between silencer and outlet. Provide all required cutting as shown on Drawings and noted herein. The unit shall be complete with raincap. All exhaust duct shall be Schedule 10 steel pipe, minimum. Inlet silencer and filter to be self-supporting. Provide necessary supports for all intake ductwork. All intake ducts shall be Schedule 10 steel pipe, minimum.
   1. Provide a silencer which meets sound standards of a critical area. Silencer shall provide attenuation (input to output) of 25 dB or greater at frequencies of 125 hertz to 8 kilohertz. A curve shall be submitted with Shop Drawings showing attenuation (input to output) in dB versus frequency. Curve shall be on manufacturer's standard data sheet or from an independent test lab. A spiral or bellows-type flexible section of pipe shall be installed in the exhaust line between the muffler and engine manifold connection. An insulated thimble section shall be provided where exhaust line passes through roof or wall. Exhaust lines shall be pitched and a condensation trap provided at non-draining low points in line.

U. Circuit Breaker: A generator power circuit breaker shall be installed as a manual load circuit interrupter and an automatic overload and short circuit protection device.
   1. The circuit breaker shall be a solid-state trip type for all sizes rated 200 amps continuous and larger. Solid-state trip shall include Long-time, Short-time, and Instantaneous. Ground fault trip required on breakers 1,000 amps and above.

2. 100% ratings under UL shall be required as noted on ENGINEER's drawings.
3. AIC rating for generator power circuit breaker shall meet or exceed that of the upstream service entrance rating.
4. Generator power circuit breaker shall be UL listed as short circuit, service entrance rated device under UL and NEC.
5. Trip settings for all breakers shall be selected for the rating of the generator power circuit as indicated on Drawings.
6. Provide breaker and alternator trip curves in the submittal. Show coordination of curves for equipment provided.

V. Provide protective relays to protect the generator system/alternator.

W. Alternator protection equipment as basis of design shall be equal to "Amp Sentry" protection by Cummins Power Generation with the following features: Over current and short-circuit shut down - Over current warning -Single and three phase fault regulation - Over and under voltage shut down - *Over and under frequency shut down - Overload warning with alarm contact - Reverse power and reverse* Var shut down - Excitation fault. Equipment other than basis of design is subject to ENGINEER's approval. Provide full submittal and comparison data for ENGINEER's review on equipment as provided.

X. Any pump station requiring a generator shall also have a generator receptacle located on the pump control panel for a portable generator, coordinate exact model with OWNER.

2.04 AUTOMATIC TRANSFER SWITCHES

A. Automatic Transfer Switch: UL listed and 600 volt-rated with amperage rating shown on Drawings and shall be the mechanically held, electrically operated type rated for continuous duty in an unventilated sheet metal enclosure.

B. Switch shall be double throw, with an off position, having electrical operated normal-emergency positions inherently interlocked mechanically, and with main contacts mechanically attached to a common shaft. Main contacts shall be silver alloy wiping-action type. They shall be protected by arcing contacts.

C. Heavy duty emergency pushbuttons shall be provided. Emergency pushbuttons shall reset when pulled out.

D. Switch and Relay Contacts, Coils, Springs, and Control Elements: Removable from front of transfer switch without removal of the switch panels from enclosure and without disconnection of drive linkages or power conductors. Sensing and control relays shall be continuous duty industrial control type with 600 volt, 10 amp rated contacts.

E. Transfer switch internal wiring shall be composed of pre-manufactured harnesses that are permanently marked for source and destination. Harnesses shall be connected to the control system by means of locking disconnect plug(s), to allow the control system

to be easily disconnected and serviced without disconnecting power from the transfer switch mechanism.

F. Power transfer switch shall be provided with flame retardant transparent covers to allow viewing of switch contact operation but prevent direct contact with components that could be operating at line voltage levels.

G. Transfer switches that are designated on the drawings as 3-pole shall be provided with a neutral bus and lugs. The neutral bus shall be sized to carry 100% of the current designated on the switch rating.

H. Field control connections shall be made on a common terminal block that is clearly and permanently labeled.

I. Upon drop in normal voltage of 83-85 percent of rated voltage, and after an override delay of 3 seconds nominal, switch shall start generator and transfer the load to emergency source, provided emergency source voltage and frequency are 90 percent of rated or higher.

J. Upon return of normal source voltage for 5 seconds nominal, to 92-95 percent of rated, switch shall retransfer load to normal source after a minimum transfer time or if emergency source fails. Provide a 5- to 60-second adjustable time delay to maintain transfer switch in the "Off" position during transfer to either source.

K. Sensing relays shall operate without contact chatter or false response when voltage is slowly varied to dropout and pickup levels.

L. Four auxiliary contacts shall be provided: Two for transfer switch position indicating use, and two auxiliary contacts, one N.O. and one N.C. to operate after completion of the 3-second override delay for starting generator. All auxiliary contacts shall be 600 volt, 10 amp continuous rating.

M. Operator Panel. Each transfer switch shall be provided with a control panel to allow the operator to view the status and control operation of the transfer switch. The operator panel shall be a sealed membrane panel rated NEMA 3R/IP53 or better (regardless of enclosure rating) that is permanently labeled for switch and control functions. The operator panel shall be provided with the following features and capabilities:
   1. High intensity LED lamps to indicate the source that the load is connected to (source 1 or source 2); and which source(s) are available. Source available LED indicators shall operate from the control microprocessor to indicate the true condition of the sources as sensed by the control
   2. High intensity LED lamps to indicate that the transfer switch is “not in auto” (due to control being disabled or due to bypass switch (when used) enabled or in operation) and “Test/Exercise Active” to indicate that the control system is testing or exercising the generator set.
   3. “OVERRIDE” pushbutton to cause the transfer switch to bypass any active time delays for start, transfer, and retransfer and immediately proceed with its next logical operation.

4. “TEST” pushbutton to initiate a preprogrammed test sequence for the generator set and transfer switch. The transfer switch shall be programmable for test with load or test without load.
5. “RESET/LAMP TEST” pushbutton that will clear any faults present in the control, or simultaneously test all lamps on the panel by lighting them.
6. The control system shall continuously log information on the number of hours each source has been connected to the load, the number of times transferred, and the total number of times each source has failed. This information shall be available via a PC-based service tool and an operator display panel.
7. Vacuum fluorescent alphanumeric display panel with push-button navigation switches. The display shall be clearly visible in both bright (sunlight) and no light conditions. It shall be visible over an angle of at least 120 degrees. The Alphanumeric display panel shall be capable of providing the following functions and capabilities:
    a. Display source condition information, including AC voltage for each phase of normal and emergency source, frequency of each source. Voltage for all three phases shall be displayed on a single screen for easy viewing of voltage balance. Line to neutral voltages shall be displayed for 4-wire systems.
    b. Display source status, to indicate source is connected or not connected.
    c. Display load data, including 3-phase AC voltage, 3-phase AC current, frequency, KW, KVA, and power factor. Voltage and current data for all phases shall be displayed on a single screen.
    d. The display panel shall allow the operator to view and make the following adjustments in the control system, after entering an access code:
        1) Set nominal voltage and frequency for the transfer switch.
        2) Adjust voltage and frequency sensor operation set points.
        3) Set up time clock functions.
        4) Set up load sequence functions.
        5) Enable or disable control functions in the transfer switch, including program transition.
        6) Set up exercise and load test operation conditions, as well as normal system time delays for transfer time, time delay start, stop, transfer, and retransfer.
    e. Display Real time Clock data, including date, and time in hours, minutes, and seconds. The real time clock shall incorporate provisions for automatic daylight savings time and leap year adjustments. The control shall also log total operating hours for the control system.
    f. Display service history for the transfer switch. Display source connected hours, to indicate the total number of hours connected to each source. Display number of times transferred, and total number of times each source has failed.
    g. Display fault history on the transfer switch, including condition, and date and time of fault. Faults to include controller checksum error, low controller DC voltage, ATS fail to close on transfer, ATS fail to close on retransfer, battery charger malfunction, network battery voltage low, and network communications error.

N. The transfer switch control system shall be configurable in the field for any operating voltage level up to 600VAC. Provide RMS voltage sensing and metering that is accurate to within plus or minus 1% of nominal voltage level. Frequency sensing shall be accurate to within plus or minus 0.2%. Voltage sensing shall be monitored based on the normal

voltage at the site. Systems that utilize voltage monitoring based on standard voltage conditions that are not field configurable are not acceptable.

O. Transfer switch voltage sensors shall be close differential type, providing source availability information to the control system based on the following functions:
   1. Monitoring all phases of the normal service (source 1) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of normal voltage level).
   2. Monitoring all phases of the emergency service (source 2) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of pickup voltage level).
   3. Monitoring all phases of the normal service (source 1) and emergency service (source 2) for loss of a single phase.

P. The transfer switch shall be configurable to control the operation time from source to source (program transition operation). The control system shall be capable of enabling or disabling this feature, and adjusting the time period to a specific value. The transfer switch shall incorporate adjustable time delays for generator set start (adjustable in a range from 0-15 seconds); transfer (adjustable in a range from 0-120 seconds); retransfer (adjustable in a range from 0-30 minutes); and generator stop (cooldown) (adjustable in a range of 0-30 minutes).

Q. The transfer switch shall be configurable to accept a relay contact signal and a network signal from an external device to prevent transfer to the generator service.

R. The control system shall be designed and prototype tested for operation in ambient temperatures from -40C to +70C. It shall be designed and tested to comply with the requirements of the noted voltage and RFI/EMI standards.

S. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs, and relays on all outputs, to provide optimum protection from line voltage surges, RFI and EMI.

T. Enclosures shall be UL listed. The enclosure shall provide wire bend space in compliance to the latest version of NFPA70. The cabinet door shall include permanently mounted key type latches.

U. Transfer switch equipment shall be provided in a NEMA 4X enclosure.

V. The enclosure shall provide code-required wire bend space at point of entry as shown on the drawings. Manual operating handles and all control switches (other than key-operated switches) shall be accessible to authorized personnel only by opening the key-locking cabinet door. Transfer switches with manual operating handles and/or non key-operated control switches located on outside of cabinet do not meet this specification and are not acceptable.

W. Transfer switch normally connects an energized utility power source (source 1) to loads and a generator set (source 2) to the loads when normal source fails. The normal

position of the transfer switch is source 1 (connected to the utility), and no start signal is supplied to the genset.

X. Generator Set Exercise (Test) With Load Mode. The control system shall be configurable to test the generator set under load. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate to connect the loads to the generator set by opening the normal source contacts, and closing the alternate source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   5. The generator set shall operate connected to the load for the duration of the exercise period. If the generator set fails during this period, the transfer switch shall automatically reconnect the generator set to the normal service.
   6. On completion of the exercise period, the transfer switch shall operate to connect the loads to the normal source by opening the alternate source contacts, and closing the normal source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   7. The transfer switch shall operate the generator set unloaded for a cooldown period, and then remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Y. Generator Set Exercise (Test) Without Load Mode. The control system shall be configurable to test the generator set without transfer switch load connected. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate the generator set unloaded for the duration of the exercise period.
   5. At the completion of the exercise period, the transfer switch shall remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Z. Factory Testing. The transfer switch manufacturer shall perform a complete operational test on the transfer switch prior to shipping from the factory. A certified test report shall be provided to OWNER & ENGINEER upon delivery of generator. Test process shall include calibration of voltage sensors.

AA. The manufacturer of the transfer switch and generator set shall maintain service parts inventory at a central location (within 50 miles of the city) which is accessible to the service location 24 hours per day, 365 days.

BB. The transfer switch shall be serviced by a local service organization that is trained and factory certified in both generator set and transfer switch service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

CC. The manufacturer shall maintain model and serial number records of each transfer switch provided for at least 20 years.

DD. Accessory devices shall be provided as follows:

1. Time delay to override harmless power dips and outages. (Inverse time characteristic with voltage.)
2. Test switch.
3. Auxiliary contacts (as specified herein).
4. Selector relay (as specified herein).
5. Lockout relay (sensitive to voltage and frequency).
6. Full phase protection with nominal 75-80 percent dropout and 92-95 percent pickup on phase relay.
7. Adjustable time delay on retransfer to normal source. Minimum retransfer of 2 minutes and maximum of 25 minutes. Built-in circuitry to nullify the retransfer time delay if the emergency source fails and the normal source is available.
8. Adjustable (10-20 minutes) time delay for running generator unloaded after transfer for cool down.
9. Adjustable time delay or delays (5 to 60 seconds) for holding transfer switch in the "Off" position when switching from standby source to normal and normal source to standby.
10. Engine starting contact.
11. A selector switch shall permit generator to be exercised with or without load.

2.05 ACCESS PLATFORM

A. Elevated platforms shall be provided where necessary to provide access to the generator for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

B. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered

Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

C. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.01 INSTALLATION OF DIESEL ENGINE-DRIVEN GENERATOR SETS

A. Install diesel engine-driven generator units as indicated, in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that engine-generator units fulfill requirements. Comply with NFPA and NEMA standards pertaining to installation of engine-generator sets and accessories.

B. Coordinate with other work, including raceways, electrical boxes and fittings, fuel tanks, piping, and accessories, as necessary to interface installation of engine generator equipment work with other work.

C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B, and the National Electrical Code.

D. Install units on steel spring type vibration isolators fastened to an inertia base in accordance with manufacturer's instructions.

E. Connect fuel piping to generator equipment as indicated, and comply with manufacturer's installation instructions.

3.02 GROUNDING

A. Provide equipment grounding connections for diesel engine-driven generator unit and automatic transfer switch as indicated. Connect generator equipment ground to ground ring around generator pad. Ground ring shall have a minimum of four (4) 5/8” x 20’ copper-clad ground rods. Connect ground ring to sites counterpoise. Connections to ground ring, counterpoise and ground rods shall be exothermically welded. Add additional ground rings as required to meet five (5) ohm (or less) specified resistance. Tighten connections to comply with tightening torques specified in UL Standard 486A to ensure permanent and effective grounding.

3.03 FIELD QUALITY CONTROL

A. Start-up Testing:
   1. Engage local equipment manufacturer's representative to perform start-up and building load tests upon completion of installation, with ENGINEER in attendance; provide certified test record. Tests are to include the following:
      a. Check fuel, lubricating oil, and antifreeze in liquid-cooled models for conformity to manufacturer's recommendations under environmental conditions present.
      b. Test prior to cranking engine for proper operation, accessories that normally function while the set is in a standby mode. Accessories include: alternator strip heater, engine coolant heater, and battery charger.
      c. Check, during start-up test mode, for exhaust leaks, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage, and phase rotation.
      d. Test, by means of simulated power outage, automatic start-up by remote-automatic starting, transfer of load, and automatic shutdown. Prior to this test, adjust for proper system coordination, transfer switch timers. After installation inspection and fine adjustments have been completed, the Generator set shall be connected to resistive type load banks, matching the full rated output of this installed generator set.

1) A four (4) hour 100% resistive load bank test, matching the full rated output of this installed generator set, is to be performed after installation in the presence of the ENGINEER, OWNER, and any required Authority. Coordinate with ENGINEER, OWNER, and any required Authority for appropriate test date and time. During this load bank test, monitor the engine temperature, oil pressure, battery charge level, generator voltage, amperes, and frequency. Voltage dip will be observed with a recording oscilloscope furnished by supplier for this test only. Voltage dip is defined as the peak-to-peak voltage minimum, at starting compared to the average peak-to-peak voltage with the starting load running. The difference shall be less than 25 percent of the running P-P voltage.
2) Provide a test of safeties and transfer under NFPA-110 criteria.
3) Provide all tests in the presence of an OWNER representative.
Upon completion of installation and testing, demonstrate capability and compliance of system with requirements. Where possible, correct malfunctioning units at Site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting. Initial testing and retesting to be at no cost to OWNER.

3.04 QUALITY ASSURANCE

A. Commissioning and Qualifications shall be performed by Manufacturer's authorized and factory certified trained for installation of units personnel.

B. Maintenance Proximity: The commissioning and selling manufacturer office location shall not be more than two hours' normal travel time from the project site.

C. Access to Service & Parts: Manufacturer for the Generator shall maintain a full operational facility, with service, parts and distribution center within 50 miles of the Project Site. A ‘sales office’ will not qualify as a service & parts facility. A “dealer” that buys product from a Factory Distributor does not qualify.

D. Manufacturer’s Qualifications: The manufacturer shall be in the business of manufacturing power generation systems under ISO-9001 certification process for over 10 years. The manufacturer shall employ service, engineering, and parts staff within a factory-owned or authorized service center, within 50 miles of Project site.

E. When an “upfitter” is used for a fuel tank or generator enclosure, the manufacturer shall be located in the same state as the Project Site.

F. Upfitters shall provide their UL Listing number on all documentation of compliance. UL as an “assembly” under the generator manufacturer’s main UL Listing is not acceptable.

G. cUL (or other) listing or compliance shall not be accepted in lieu of UL listing and label.

H. Manufacturer Service Qualifications: The generator manufacturer shall have a service center within a 2-hour driving distance from the project site. This service center shall have engineering, application support, on-site rental, start-up, commissioning, and

replacement parts and labor for the maintenance and repair of the same brand of power generation system equipment as supplied on the Project.

I. Source Limitations: Obtain all equipment under this section through one source as practical and possible under the limitations of the manufacturer’s ability to provide equipment.

J. The equipment under this Section must be sold to the installer or the OWNER by an entity operating from within the project State.

K. The equipment under this Section must be installed by a CONTRACTOR operating from offices located within the Project state.

L. Equipment under this section shall be provided by a single manufacturer, so as to provide only one source of warranty and responsibility whenever possible.

M. Generator engine, alternator, and generator controller shall be provided by a single manufacturer exceptions must be noted in submittal. The ENGINEER reserves the right to reject exceptions based on the equipment used as the basis of design in comparison.

3.05 PERSONNEL TRAINING

A. Building Operating Personnel Training: Train OWNER's building personnel in procedures for starting-up, testing, and operating diesel engine-driven generator sets. In addition, train OWNER's personnel in periodic maintenance of batteries.

END OF SECTION

SECTION 330518

LAYING AND JOINTING BURIED PIPELINES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Installation of all underground pipelines. Provide pipeline materials, coatings and linings as specified and pipe of the types, sizes and classes shown or specified.

1. Use proper and suitable tools and appliances for the safe and convenient cutting, handling, and laying of the pipe and fittings.

2. Use suitable fittings where shown and at connections or where grade or alignment changes require offsets greater than those recommended and approved.

3. Lay all underground pipelines not supported on piles or concrete cradle in select fill bedding material.

4. Close off all lines with bulkheads when pipe laying is not in progress.

B. Related Work Specified in Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 312316 – Excavation - Earth and Rock

4. Section 312319 – Groundwater Control for Open Excavation

5. Section 312323 – Backfilling

6. Section 330502 – High Density Polyethylene (HDPE) Pipe and Fittings

7. Section 330503 - Polyvinyl Chloride (PVC) Pipe and Fittings

8. Section 330504 - Ductile Iron Pipe (DIP) and Fittings

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 2774 - Practice for Underground Installation of Thermoplastic Pressure Piping

2. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

3. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60000 psi Tensile

4. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, C25, 125, 250, 800

5. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges

6. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

7. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe With Threaded Flanges

8. Uni-Bell - Handbook of PVC Pipe

9. Collier County - Utilities Standards and Procedures Ordinance

1.3 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all products and materials as specified in Division 1 and as follows:

B. Transportation and Delivery: Take every precaution to prevent injury to the pipe during transportation and delivery to the site.

C. Loading and Unloading: Take extreme care in loading and unloading the pipe and fittings.

1. Work slowly with skids or suitable power equipment, and keep pipe under perfect control at all times.

2. Under no condition is the pipe to be dropped, bumped, dragged, pushed, or moved in any way that will cause damage to the pipe or coating.

D. Sling: When handling the pipe with a crane, use a suitable sling around the pipe.

1. Under no condition pass the sling through the pipe. Interior of pipe is to be kept free of dirt and foreign matter at all times.

2. Use a nylon canvas type sling or other material designed to prevent damage to the pipe and coating.

3. When handling reinforced concrete pipe or uncoated steel or ductile iron pipe, steel cables, chain or like slings are acceptable.

E. Damaged Piping: If in the process of transportation, handling, or laying, any pipe or fitting is damaged, replace or repair such pipe or pipes.

F. Blocking and Stakes: Provide suitable blocking and stakes installed to prevent pipe from rolling.

1. Obtain approval for the type of blocking and stakes, and the method of installation.

G. Storage for Gaskets: Store gaskets for pipe joints in a cool place and protect gaskets from light, sunlight, heat, oil, or grease until installed. Store gaskets in a sealed container (such as a vented drum). When long-term storage with exposure to direct sunlight is unavoidable, PVC pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excessive heat accumulation (Uni-Bell PVC Handbook).

1. Do not use any gaskets showing signs of cracking, weathering or other deterioration.

2. Do not use gasket material stored in excess of six months without approval.

1.4 FIELD CONDITIONS

A. Repair of Sanitary Sewers and Services: Rebed, in compacted select fill material, sanitary sewers which cross over the new pipe or which cross under the new pipe with less than 12 inches clear vertical separation. Compact the bedding to densities required for new pipeline construction and extend bedding below the sewer to undisturbed earth. Reconstruct sewers damaged by pipeline construction.

1. Furnish and install all materials and do all work necessary for the reconstruction or repairs of sanitary sewers and services.

2. Provide pipe for reconstruction of sanitary sewers and services meeting the appropriate specification requirements.

3. Provide pipe of the same size as the existing sewer or when the same size is not available, use the next larger size of pipe. Obtain approval of joints made between new pipe and existing pipe.

PART 2 PRODUCTS

A. The materials allowed for buried sewer pipes are PVC, HDPE or Ductile Iron Pipe.

PART 3 EXECUTION

3.1 PREPARATION

A. Dry Trench Bottoms: Lay pipe only in dry trenches having a stable bottom.

1. Where groundwater is encountered, make every effort to obtain a dry trench bottom in accordance with Section 312319.

2. Perform trench excavation and backfill in accordance with Sections 312316 and 312323.

3.2 INSTALLATION

A. General: Install all piping in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1. Where pipe joint deflections are used, do not exceed 80 percent of the maximum deflection limits shown in AWWA C600. Gravity systems shall contain no joint deflection.

1. Arrange miscellaneous pipelines, which are shown in diagram form on the Plans, clear of other pipelines and equipment.

2. Gravity systems shall not contain vertical dips greater than one ~~and a half~~ inch~~es~~ ~~(1.5")~~ (1.0").

B. Code Requirements: Provide pipeline installations complying with AWWA C600 for iron pipe, AWWA Manual M11 for steel pipe, ASTM D 2774 for thermoplastic pressure piping, and as modified or supplemented by the Specifications.

C. Pipe Laying - General:

1. Thoroughly inspect all pipe for damage and cleanliness. If found to be defective, tag, remove and replace pipe with satisfactory pipe or fittings at no additional charge to COUNTY.

2. Generally, lay all pipe with bells pointing ahead.

3. Carefully place all pipe, pipe fittings, valves and hydrants into trench by means of a derrick, ropes or other suitable tools or equipment in such a manner as to prevent damage and check for alignment and grade.

4. Make adjustments to bring pipe to line and grade by scraping away or filling in select fill material under the body of the pipe.

5. Wedging or blocking up the pipe barrel is not permitted.

6. Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely shove the pipe home.

7. As the work progresses, clean the interior of pipelines of all dirt and superfluous materials of every description.

8. Keep all lines absolutely clean during construction.

9. Lay pipelines accurately to line and grade.

10. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other material from entering the pipe.

D. Pipe Laying - Trenches:

1. Carefully lay all pipelines in trench excavations piece by piece using suitable tools or equipment on select fill bedding (refer to Utilities Standards and Procedures Ordinance, Section 9.1.2), concrete cradle or other foundations as shown, specified or ordered in writing. Prevent damage to materials, protective coatings and linings.

2. Do not dump or drop pipe or pipe materials into trench.

3. Properly secure the pipe against movement and make the pipe joints in the excavation as required.

4. Carefully grade and compact pipe bedding.

5. Bell Holes:

a. Cut out bell holes for each joint as required to permit the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length.

b. Thoroughly tamp bell holes full of select fill material following the making of each joint to provide adequate support to the pipe throughout its entire length.

E. Other Foundations: Install pipelines laid on other types of foundations as specified for such other foundations or as ordered in writing.

F. Field Cuts of Pipelines: For shorter than standard pipe lengths, make field cuts in a manner producing a cut square and perpendicular to the pipe axis. Remove any sharp, rough edges which otherwise might injure the gasket.

G. Procedure for sealing cut ends and repairing field damaged areas of polyethylene lined pipe and fittings is as follows:

1. Remove burrs caused by field cutting of ends or handling damage and smooth out edge of polyethylene lining if made rough by field cutting or handling damage.

2. Remove oil or lubricant used during field cutting operations.

3. Areas of loose lining associated with field cutting operation must be removed and exposed metal cleaned by sanding or scraping. For larger areas, remove loose lining and dirt, then roughen bare pipe surface by scratching or gouging with a small chisel to provide an anchor pattern for the epoxy. It is recommended that the polyethylene lining be stripped back by chiseling, cutting, or scraping about 1 inch to 2 inches into well adhered lined area before patching. This ensures that all areas of undercutting have been removed. Be sure to roughen an overlap of 1 inch to 2 inches of polyethylene lining in area to be epoxy coated. This roughening should be done with a rough grade emery paper (40 grit), rasp, or small chisel. Avoid honing, buffing, or wire brushing since these tend to make surface to be repaired too smooth for good adhesion.

4. With area to be sealed or repaired clean and suitably roughened, apply a thick coat of a two-part coal tar epoxy (see County Approved Product List, Appendix F). The heavy coat of epoxy must be worked into the scratched surface by brushing. Mixing and application procedure for the epoxy must follow the epoxy manufacturer's instructions.

5. It is important that the entire freshly cut, exposed metal surface of the cut pipe be coated. To ensure proper sealing, overlap at least 1 inch of the roughened polyethylene lining with this two-part epoxy system.

H. Ductile Iron Pipe Mechanical Joints:

1. Assembly: In making up mechanical joints, center the spigot in the bell.

   a. With a wire brush just prior to assembly of the joint thoroughly brush 8 inches outside of spigot and inside of bell with which the rubber gasket comes in contact. Remove all oil, grit, tar (other than standard coating) and other foreign matter from joint.

   b. Brush lubricant over the gasket just prior to installation. (Note: There is only one rubber gasket size for each diameter of pipe.)

   c. Press the gasket into place within the bell and move the gland into position, bolts inserted, and the nuts tightened finger tight.

   d. Tighten the nuts with a torque wrench so that the gland is brought up toward the pipe evenly. Torque wrenches shall be set as specified in AWWA C111. Spanner type wrenches not longer than specified in

AWWA C111 may be used with the permission of County Manager or designee.

e. Tighten all nuts 180 degrees apart alternately in order to produce equal pressure on all parts of the gland.

2. Torques: Apply the following range of bolt torques:

Size Inches	Range of Torque - ft. lbs
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

3. Remaking of Joints: If effective sealing is not obtained at the maximum torque listed above, disassemble and reassemble the joint after thorough cleaning.

I. Ductile Iron Pipe Rubber Gasket Joints:

1. Assembly: In making up the rubber gasket joint, brush the gasket seat in the socket thoroughly with a wire brush and wipe the gasket with a cloth.

a. Place the gasket in the socket with the large round end entering first so that the groove fits over the bead in the seat.

b. Apply a thin film of lubricant (AWWA C600) to the inside surface of the gasket that will come in contact with the entering pipe.

c. Brush the plain end of the pipe to be entered thoroughly with a wire brush and place it in alignment with the bell of the pipe to which it is to be joined.

d. Exert sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket to make the joint.

2. Positioning: Before proceeding with backfilling, feel completely around the joint using a feeler gauge to confirm that the gasket is in its proper position.

a. If the gasket can be felt out of position, withdraw the pipe and examine the gasket for cuts or breaks.

b. If the gasket has been damaged, replace it with a new one before re-installing the pipe.

3. Optional Mechanical Joints: Use mechanical joint fittings that meet the requirements of Section 330504 with the rubber gasket joint pipe when specified or when rubber gasket fittings are not available.

J. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed, and in connections built into pipelines where adjoining pipelines or structures have not been completed and are not ready to be connected.

1. Remove bulkheads encountered in connecting sewers or structures included in this Contract, or in pipelines or structures previously built, when they are no longer needed or when ordered.

K. Temporary Blow-Off Assembly: Dead-end water lines shall be temporarily ended with a blow-off as shown in Collier County Standard Details. After full bore flush replace with a fire hydrant meeting the requirements of Section 331619.

L. Sleeve Type Couplings: For sleeve type couplings, equally tighten diametrically opposite bolts on the connection so that the gaskets will be brought up evenly all around the pipe.

1. Torque Wrenches: Do the final tightening with torque wrenches set for the torque recommended by the coupling manufacturer.

M. Concrete Encasement: Concrete encasement shall be constructed in accordance with Collier County Standard Details when:

1. A potable water main crosses at a depth that provides less than 18 inches clear distance from sewer lines in which case a Deviation Form request should be completed. Encase the sewer main unless specifically approved by Collier County Utilities. Encasement shall extend a minimum 10 feet on each side of the point of crossing. Pressure test both pipelines to 150 psi after the concrete has properly cured.

2. A water main running parallel to a sewer line provides less than 10 feet separation from sewer lines, in which case a Deviation Form Request needs to be completed. Encase the sewer main unless specifically approved by Collier County Utilities.

3. The ENGINEER has ordered the line encased. NO POTABLE WATER MAIN SHALL BE ENCASED IN CONCRETE UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY MANAGER OR DESIGNEE.

The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

N. Valve Box Setting: Install valve boxes vertical and concentric with the valve stem.

1. Adjust valve-box to final grade at the time designated by the County Manager or designee.

2. Build a collar, as shown in the standard details, 18 inches by 18 inches by 6 inches or 24 inch diameter round by 6 inches flush to grade of top of box. Similar collar shall be poured flush with grade and top of unpaved areas.

3. Satisfactorily reset any valve box that is moved from its original position, preventing the operation of the valve.

4. Replace any valve box that has been damaged.

O. Identification:

1. Metallized Warning Tape: For DIP and PVC pipe (other than gravity sewer pipe and laterals) to be installed, 3-inch detectable marking tape, of appropriate color and appropriate warning statement, shall be placed along the entire pipe length. In all cases, marking tape shall be installed two feet (2') below grade or one-half the pipe's bury, whichever is less, during backfill operations (refer to Utilities Standards Manual Section 1 – 1.1 and 2.2.1). All PVC pipe, PVC fittings, and identification tape shall be color-coded per Collier County Standards. HDPE pipe installed by horizontal directional drilling will not be required to be marked with metalized warning tape.

2. Electronic Markers (see County Approved Product List, Appendix F): Install electronic markers twenty-four inches (24") below final grade, above pipe, at all bends or changes in alignment and every two hundred and fifty feet (250') along the pipe between bends.

P. Separation From Other Pipe Systems:

1. Parallel Water and Sewer or Non-Potable Lines: Sanitary sewer lines, storm sewers or force mains shall be separated from water mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. Non-potable, reclaimed or reuse water mains shall be separated from water mains, gravity sewers or force mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 5 feet center to center or 3 feet outside to outside. When this standard cannot be maintained, the sewer line shall be concrete encased for a distance of 10 feet each way from the water line and any other conduit, with a minimum vertical clearance of 12 inches being provided at all times. See Section 1 - Design Criteria, Subsection 1.2.3.

2. Crossing Water and Sewer or Non-Potable Lines: Water mains crossing over a sewer or non-potable water line shall be (bottom of water main to top of sewer) separated by at least 18 inches unless local conditions or barriers

prevent an 18 inch vertical separation. All crossings with vertical clearance less than 18 inches shall be made using sewer pipe thickness Class 200 AWWA C900 PVC pipe, and water pipe of Class 51 Ductile iron pipe, for a distance of 10 feet on each side of the crossing. The gravity sewer pipe in these locations shall be backfilled with USCS Class I bedding stone to a height of 6 inches above the crown of the pipe. When water mains cross under a sewer, both mains shall be constructed of C900 Class 200 PVC pipe with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing with no intermediate joints. Additionally, a section of water main pipe shall be centered at the point of crossing. See Section 1 – Design Criteria, Subsection 1.3.

Q. Aerial Crossings:

1. Pipes spanning elevated pier crossings shall be flanged ductile iron Pressure Class 350 pipe conforming to AWWA C115, C150 & C151. Pipe spanning on piers spaced further apart than normal pipe length of 18 or 20 ft. shall be multiple length pipe with interior flanged joints with a rubber gasket pipe (see County Approved Product List, Appendix F). The pipe wall thickness and flanged joints shall be designed to safely span the elevated piers under working pressure without exceeding the allowable stresses and conform to AWWA C150. Limit pipe deflection at center of span with pipe full of water to 1/720 of span length. Provide expansion joints for between above ground and below ground wastewater lines.

2. Flanges shall conform to AWWA C150 and C115. All bolts and nuts used in aerial crossings shall be 304 stainless steel. Gaskets shall be full faced or recessed "O-Ring" type to prevent leaks in pipe under stress in the aerial crossing.

3. Outside surface of all pipe, flanges or spool pieces shall be shop coated with zinc primer, High Build Epoxy protective coat and a finish coat of polyurethane high gloss. Color shall be Federal Safety Blue for potable water mains and Pantone Purple 522 C for non-potable irrigation water mains.

4. Install operating valves or other flow regulating devices on each shoreline or at a safe distance from each shoreline to prevent discharge in the event the line is damaged.

5. Install supports for all joints in pipes utilized for aerial crossings and to prevent overturning and settlement. Expansion jointing is specified between above ground and below ground sewers and force mains.

3.3 FIELD QUALITY CONTROL

A. Testing: Test pipelines in accordance with Section 022501.

1. Test valves in place, as far as practicable, and correct any defects in valves or connections.

2. Gravity Sewer Lines: Test in accordance with Section 022501

B. Inspection: Clean, inspect, and examine each piece of pipe and each fitting and special for defects before it is installed.

1. Cut away any lumps or projections on the face of the spigot end or the shoulder.

2. Do not use any cracked, broken, or defective pieces in the work.

3. If any defective piece should be discovered after having been installed, remove and replace this piece with a sound piece in a satisfactory manner at no increase in Contract Amount.

3.4 CLEANING

A. General: Thoroughly clean all pipe before it is laid and keep it clean until it is accepted in the completed work.

B. Removal of Materials: Exercise special care to avoid leaving bits of wood, dirt, and other foreign particles in the pipe. If any particles are discovered before the final acceptance of the work, remove and clean the pipe.

3.5 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water in accordance with Section 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 331619

HYDRANTS

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Furnish and install fire hydrants where shown on the Drawings or directed by the ENGINEER.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 033100 – Concrete for Non-Plant Work

B. Section 331200 – Water Valves and Appurtenances

1.3 QUALITY ASSURANCE

A. Install hydrants to meet current requirements of Collier County Utilities.

B. Provide manufacturer's certificate those products meet or exceed minimum requirements as specified.

1.4 SUBMITTALS

A. Submit manufacturer's certificates on conformance.

B. Shop Drawings: Submit manufacturer's drawings and data sheets for material to be supplied under this Section. Indicate sizes and types to be installed.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. During loading, transportation and unloading, exercise care to prevent damage to materials.

B. Handling: Fire hydrants should be unloaded carefully. The hydrant should be carefully lowered from the truck to the ground, not dropped. Only hoists and slings with adequate load capacity to handle the weight of the hydrant shall be used.

C. Storage: Hydrants should be stored in the fully closed position to prevent entry of foreign material that could cause damage to the seating surfaces. Whenever practical, hydrants should be stored indoors. If outside storage is required, means should be provided to protect the operating mechanism. In outside storage, parts and flanges should be protected from the weather and foreign materials.

PART 2 PRODUCTS

2.1 FIRE HYDRANTS

A. Fire hydrants shall be of the dry barrel, compression type conforming to AWWA C502 “Standard for Dry-Barrel Fire Hydrants” and additional requirements as set forth herein.

B. Hydrant shall have break away upper sections capable of ready replacement without loss in the event of traffic damage. Each hydrant shall have a 6" bottom inlet connection and valve opening at least 5-1/4 inches in diameter. Hydrants shall have a national standard pentagon 1.5 inch, point to flat operating nut and turn to the left (counter clockwise) to open. Each hydrant shall be fitted with one 4-1/2-inch pumper connection and two 2-1/2 inch hose connections, both having threads that conform to the Fire Division Standard for the area. Hose caps shall be chained (unless specified without by appropriate fire control district) to the hydrant barrel and fitted with nuts similar to the hydrant operating nuts. Each hydrant shall have a barrel of sufficient length to bring the bottom of the 6" pipe connection 3 feet below the surface of the finished ground. Each hydrant shall have breakaway flanges and be made in at least two sections bolted together. All interior working parts of the hydrant shall be removable from the top of the hydrant to allow repairs without removing the hydrant barrel after it has been installed. Hydrants shall have renewable O-ring stem seals. Hydrant barrels shall be painted AWWA Safety Yellow (lead free) or as specified by appropriate fire control district. They shall be designed for a working pressure of 150 psi.

C. Hydrant shall have no drain ports. If ports exist, they shall be plugged with a threaded plug.

D. Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stops shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir with O-ring seals.

E. Hydrants shall be designated for 150 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drain shall function and there shall be no leakage into the bonnet.

F. Hydrants shall be of the years manufacture when construction commenced.

G. Acceptable models, see Appendix F, County Approved Product List.

PART 3 EXECUTION

3.1 INSTALLATION

A. Set hydrants plumb and in true alignment with mains. Utilize restrained joints as shown in the Collier County Standard Details. Carefully backfill around hydrants so as not to disturb the hydrant and thoroughly compact backfill so as to support the hydrant securely. The hydrants ~~shall have 18-inch~~ clearance measured from finish grade to the center of pumper connection shall be based upon manufacturers recommendations.

REVISED STRIKETHROUGH

A. Set hydrants plumb and in true alignment with mains. Utilize restrained joints as shown in the Collier County Standard Details. Carefully backfill around hydrants so as not to disturb the hydrant and thoroughly compact backfill so as to support the hydrant securely. The hydrants shall have a minimum 18-inch clearance measured from finish grade to the center of pumper connection.

requirement is not applicable to privately owned and operated water distribution systems.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 312316

EXCAVATION - EARTH AND ROCK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for performing opencut excavations to the widths and depths necessary for constructing structures and pipelines, including excavation of any material necessary for any purpose pertinent to the construction of the Work.

B. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 033100 – Concrete, Masonry, Mortar and Grout

3. Section 312319 – Groundwater Control for Open Cut Excavation

4. Section 312323 – Backfilling

5. Section 314000 – Shoring, Sheeting and Bracing

1.2 DEFINITIONS

A. Earth: "Earth" includes all materials which, in the opinion of the ENGINEER, do not require blasting, barring, wedging or special impact tools for their removal from their original beds, and removal of which can be completed using standard excavating equipment. Specifically excluded are all ledge and bedrock and boulders or pieces of masonry larger than one cubic yard in volume.

B. Rock: "Rock" includes all materials which, in the opinion of the ENGINEER, require blasting, barring, wedging and/or special impact tools such as jack hammers, sledges, chisels, or similar devices specifically designed for use in cutting or breaking rock for removal from their original beds and which have compressive strengths in their natural undisturbed state in excess of 300 psi. Boulders or masonry larger than one cubic yard in volume are classed as rock excavation.

1.3 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Engage the services of a Professional Engineer who is registered in the State of Florida to design all cofferdam and sheeting and bracing systems which the CONTRACTOR feels necessary for the execution of his work. Submit to the ENGINEER a signed statement that he has been employed by the CONTRACTOR to design all sheeting and bracing systems. After the systems have been installed, furnish to the ENGINEER an additional signed statement that the cofferdams and sheeting and bracing systems have been installed in accordance with his design.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.4 SITE CONDITIONS

A. Geotechnical Investigation: A geotechnical investigation may have been prepared by the COUNTY and ENGINEER in preparing the Contract Documents.

1. The geotechnical investigation report may be examined for what ever value it may be considered to be worth. However, this information is not guaranteed as to its accuracy or completeness.

2. The geotechnical investigation report is not part of the Contract Documents.

B. Actual Conditions: Make any geotechnical investigations deemed necessary to determine actual site conditions.

C. Underground Utilities and Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities. Any and all variations from this order must be the Water or Wastewater Department.

2. Before commencement of any excavation at road crossings or any boring or any drilling, the contractor shall mark the proposed run alignment with white paint or flags. Subsequent to placement of the white markings, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit ~~www.callsunshine.com~~ www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. ~~and verified by Collier County Locate Department personnel before performing work~~. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any

other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. ~~numeric pager at 239-890-0809~~. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits. ~~delay or denial of permit~~.

4. The contractor must comply with all provisions of Florida Statute 556, the Underground Facility Damage Prevention and Safety Act.

D. Quality and Quantity: Make any other investigations and determinations necessary to determine the quality and quantities of earth and rock and the methods to be used to excavate these materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

A. Clearing: Clear opencut excavation sites of obstructions preparatory to excavation. Clearing in accordance with Section 017416, includes removal and disposal of vegetation, trees, stumps, roots and bushes, except those specified to be protected during trench excavation.

B. Banks: Shore or slope banks to the angle of repose to prevent slides or cave-ins in accordance with Section 314000.

C. Safety: Whenever an excavation site or trench is left unattended by the CONTRACTOR or when an area is not within 100 feet of observation by the CONTRACTOR, the excavation site or trench shall be filled and/or, at the County's Manager or designee discretion, protected by other means to prevent accidental or unauthorized entry. Include barricades and other protection devices requested by the ENGINEER or County Manager or designee, including temporary fencing, snow fencing, or temporary "structure" tape. Such safety items shall not relieve the CONTRACTOR of any site safety requirements or liabilities established by Federal, State and local laws and agencies, including OSHA, but is intended as additional safety measures to protect the general public.

D. Hazardous Materials: If encountered, take care of hazardous materials not specifically shown or noted in accordance with Section 015000.

E. During excavation and any site work, take storm water pollution prevention measures to ensure that water quality criteria are not violated in the receiving water body and all state and local regulatory requirements are met.

3.2 STRUCTURE EXCAVATION

A. Excavation Size: Provide excavations of sufficient size and only of sufficient size to permit the Work to be economically and properly constructed in the manner and of the size specified.

B. Excavation Shape: Shape and dimension the bottom of the excavation in earth or rock to the shape and dimensions of the underside of the structure or drainage blanket wherever the nature of the excavated material permits.

C. Compaction: Before placing foundation slabs, footings or backfill, proof roll the bottom of the excavations to detect soft spots.

1. For accessible areas, proof roll with a ten wheel tandem axle dump truck loaded to at least 15 tons or similarly loaded construction equipment.

2. For small areas, proof roll with a smooth-faced steel roller filled with water or sand, or compact with a mechanical tamper.

3. Make one complete coverage, with overlap, of the area.

4. Overexcavate soft zones and replace with compacted select fill.

3.3 TRENCH EXCAVATION

A. Preparation: Properly brace and protect trees, shrubs, poles and other structures which are to be preserved. Unless shown or specified otherwise, preserve all trees and large shrubs. Hold damage to the root structure to a minimum. Small shrubs may be preserved or replaced with equivalent specimens.

B. Adequate Space: Keep the width of trenches to a minimum, however provide adequate space for workers to place, joint and backfill the pipe properly.

1. The minimum width of the trench shall be equal to at least 3.5 feet or the outside diameter of the pipe at the joint plus 8-inches for unsheeted trench or 12 inches for sheeted trench, whichever is greater. Conform the trench walls to OSHA Regulations.

2. In sheeted trenches, measure the clear width of the trench at the level of the top of the pipe to the inside of the sheeting.

C. Depth:

1. Excavate trenches to a minimum depth of 8 inches, but not more than 12 inches, below the bottom of the pipe so that bedding material can be placed in the bottom of the trench and shaped to provide a continuous, firm bearing for pipe barrels and bells.

2. Standard trench grade shall be defined as the bottom surface of the utility to be constructed or placed within the trench. Trench grade for utilities in rock or other non-cushioning material shall be defined as additional undercuts backfilled with crushed stone compacted in 6-inch lifts, below the standard 8-inches minimum trench undercut. Backfill excavation below trench grade not ordered in writing by the ENGINEER with acceptable Class I, II or III embedment material to trench grade and compact to density equal to native soil.

D. Unstable or Unsuitable Materials: If unstable or unsuitable material is exposed at the level of the bottom of the trench excavation, excavate the material in accordance with the subsection headed "Authorized Additional Excavation".

1. Remove material for the full width of the trench and to the depth required to reach suitable foundation material.

2. When in the judgment of the ENGINEER the unstable or unsuitable material extends to an excessive depth, the ENGINEER may advise, in writing, the need for stabilization of the trench bottom with additional select fill material, crushed stone, washed shell, gravel mat or the need to provide firm support for the pipe or electrical duct by other suitable methods.

3. Crushed stone, washed shell and gravel shall be as specified in Section 312323.

4. Payment for such trench stabilization will be made under the appropriate Contract Items or where no such items exist, as a change in the Work.

E. Length of Excavation: Keep the open excavated trench preceding the pipe laying operation and the unfilled trench, with pipe in place, to a minimum length which causes the least disturbance. Provide ladders for a means of exit from the trench as required by applicable safety and health regulations.

F. Excavated Material: Neatly deposit excavated material to be used for backfill at the sides of the trenches where space is available. Where stockpiling of excavated material is required, obtain the sites to be used and maintain operations to provide for natural drainage and not present an unsightly appearance.

G. Water: Allow no water to rise in the trench excavation until sufficient backfill has been placed to prevent pipe flotation. Provide trench dewatering in accordance with Section 312319.

3.4 EXCAVATION FOR JACKING AND AUGERING

A. Jacking and Augering Requirements: Allow adequate length in jacking pits to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Provide sufficient pit width to allow ample working space on each side of the jacking frame. Allow sufficient pit depth such that the invert of the pipe, when placed on the guide frame, will be at the elevation desired for the completed line. Tightly sheet the pit and keep it dry at all times.

3.5 ROCK EXCAVATION

A. Rock Excavation: Excavate rock within the boundary lines and grades as shown, specified or required.

1. Rock removed from the excavation becomes the property of the CONTRACTOR. Transport and dispose of excavated rock at an off site disposal location. Obtain the off site disposal location.

2. Remove all shattered rock and loose pieces.

B. Structure Depths: For cast-in-place structures, excavate the rock only to the bottom of the structure, foundation slab, or drainage blanket.

C. Trench Width: Maintain a minimum clear width of the trench at the level of the top of the pipe of the outside diameter of the pipe barrel plus 2 feet, unless otherwise approved.

D. Trench Depth: For trench excavation, in which pipelines are to be placed, excavate the rock to a minimum depth of 8 inches below the bottom of the pipe or duct encasement. Provide a cushion of sand or suitable crushed rock. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material in the appropriate Contract Items.

E. Manhole Depths: For manhole excavation, excavate the rock to a minimum depth of 8 inches below the bottom of the manhole base for pipelines 24 inches in diameter and larger and 6 inches below the bottom manhole base for pipelines less than 24 inches in diameter. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material for manhole bases in the appropriate Contract Items.

F. Over-excavated Space: Refill the excavated space in rock below structures, pipelines, conduits and manholes, which exceeds the specified depths with 2,500 psi concrete, crushed stone, washed shell, or other material as directed. Include refilling of over-excavated space in rock as part of the rock excavation.

G. Other Requirements: Follow, where applicable, the requirements of the subsections on "Trench Excavation" and "Structure Excavation".

H. Payment: No additional payment will be made for rock excavation.

3.6 FINISHED EXCAVATION

A. Finish: Provide a reasonably smooth finished surface for all excavations, which is uniformly compacted and free from irregular surface changes.

B. Finish Methods: Provide a degree of finish that is ordinarily obtainable from blade-grade operations and in accordance with Section 312323.

3.7 PROTECTION

A. Traffic and Erosion: Protect newly graded areas from traffic and from erosion.

B. Repair: Repair any settlement or washing away that may occur from any cause, prior to acceptance. Re-establish grades to the required elevations and slopes.

C. It shall be the CONTRACTOR’s responsibility to acquaint himself with all existing conditions and to locate all structures and utilities along the proposed utility alignment in order to avoid conflicts. Where actual conflicts are unavoidable, coordinate work with the facility owner and perform work so as to cause as little interference as possible with the service rendered by the facility disturbed in accordance with Section 020500. Repair and/or replace facilities or structures damaged in the prosecution of the work immediately, in conformance with current standard practices of the industry, or according to the direction of the owner of such facility, at the CONTRACTOR’s expense.

D. Other Requirements: Conduct all Work in accordance with the environmental protection requirements specified in Division 1.

3.8 AUTHORIZED ADDITIONAL EXCAVATION

A. Additional Excavation: Carry the excavation to such additional depth and width as authorized in writing, for the following reasons:

1. In case the materials encountered at the elevations shown are not suitable.

2. In case it is found desirable or necessary to go to an additional depth, or to an additional depth and width.

B. Refill Materials: Refill such excavated space with either authorized 2500 psi concrete or compacted select fill material, in compliance with the applicable provisions of Section 312323.

C. Compaction: Compact fill materials to avoid future settlement. As a minimum, backfill layers shall not exceed 6-inches in thickness for the full trench width and compaction shall equal 95% of maximum density, or 98% if under paved area of roadway, as determined by using ASTM D 1557. Perform compaction density tests at all such backfill areas with spacing not to exceed 100 feet apart and on each 6-inch compacted layer.

D. Payment: Additional earth excavations so authorized and concrete or select fill materials authorized for filling such additional excavation and compaction of select fill materials will be paid for under the appropriate Contract Items or where no such items exist, as a change in the Work.

3.9 UNAUTHORIZED EXCAVATION

A. Stability: Refill any excavation carried beyond or below the lines and grades shown, except as specified in the subsection headed "Authorized Additional Excavation", with such material and in such manner as may be approved in order to provide for the stability of the various structures.

B. Refill Materials: Refill spaces beneath all manholes, structures, pipelines, or conduits excavated without authority with 2500 psi concrete or compacted select fill material, as approved.

C. Payment: Refill for unauthorized excavation will not be measured and no payment will be made therefor.

3.10 SEGREGATION STORAGE AND DISPOSAL OF MATERIAL

A. Stockpiling Suitable Materials: Stockpile topsoil suitable for final grading and landscaping and excavated material suitable for backfilling or embankments separately on the site in approved locations.

B. Stockpile Locations: Store excavated and other material a sufficient distance away from the edge of any excavation to prevent its falling or sliding back into the excavation and to prevent collapse of the wall of the excavation. Provide not less than 2 feet clear space between the top of any stockpile and other material and the edge of any excavation.

C. Excess Materials: Be responsible for transport and disposal of surplus excavated material and excavated material unsuitable for backfilling or embankments at an off site disposal location secured by the CONTRACTOR.

3.11 REMOVAL OF WATER

A. Water Removal: At all times during the excavation period and until completion and acceptance of the WORK at final inspection, provide ample means and equipment with which to remove promptly and dispose of properly all water entering any excavation or other parts of the WORK.

B. Dry Excavations: Keep the excavation dry, in accordance with Section 312319.

C. Water Contact: Allow no water to rise over or come in contact with masonry and concrete until the concrete and mortar have attained a set and, in any event, not sooner than 12 hours after placing the masonry or concrete.

D. Discharge of Water: Dispose of water pumped or drained from the Work in a safe and suitable manner without damage to adjacent property or streets or to other work under construction.

E. Protection: Provide adequate protection for water discharged onto streets. Protect the street surface at the point of discharge.

F. Sanitary Sewers: Discharge no water into sanitary sewers.

G. Storm Sewers: Discharge no water containing settleable solids into storm sewers.

H. Repair: Promptly repair any and all damage caused by dewatering the Work.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330502

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to install High Density Polyethylene (HDPE) pressure pipe, fittings, and appurtenances as shown on the Drawings and specified in the Contract Documents.

B. High Density Polyethylene (HDPE) – Collier County Utilities has the option of approving the use of HDPE for pipeline crossings of roadways, ditches, canals, and environmentally sensitive lands. HDPE mains shall have the same equivalent internal diameter and equivalent pressure class rating as the corresponding PVC pipe, unless otherwise approved by the County Manager or designee. For all roadway crossings requiring casing pipe, a steel or DR 11 HDPE casing pipe must be provided. The Department of Transportation having jurisdiction of said road and right-of-way must grant specific approval.

1.2 REFERENCED STANDARDS

A. All standard specifications, i.e., Federal, ANSI, ASTM, etc., made a portion of these Specifications by reference, shall be the latest edition and revision thereof.

1.3 QUALIFICATIONS

A. Furnish all HDPE pipe, fittings, and appurtenances by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the items to be furnished.

1.4 SUBMITTALS

A. Submit to the ENGINEER, a list of materials to be furnished, the names of the suppliers, and the appropriate shop drawings for all HDPE pipe and fittings.

B. Submit the pipe manufacturer's certification of compliance with the applicable sections of the Specifications.

C. Submit shop drawings showing installation method and the proposed method and specialized equipment to be used.

1.5 INSPECTIONS AND TESTS

A. All work shall be inspected by the County Manager or designee who shall have the authority to halt construction if, in his opinion, these specifications or standard construction practices are not being followed. Whenever any portion of these specifications is violated, the County Manager or designee, may order further construction to cease until all deficiencies are corrected.

1.6 WARRANTY AND ACCEPTANCE

A. Warrant all work to be free from defects in workmanship and materials for a period of one year from the date of completion of all construction. If work meets these specifications, a letter of acceptance, subject to the one year warranty period, shall be given at the time of completion. A final acceptance letter shall be given upon final inspection at the end of the one year warranty period, provided the work still complies with these specifications. In the event deficiencies are discovered during the warranty period, the CONTRACTOR shall correct them without additional charge to the COUNTY before final acceptance. During the warranty period, the ENGINEER will determine if warranty repairs or replacement work shall be performed by the CONTRACTOR. The decision of the ENGINEER shall be binding upon the CONTRACTOR.

B. Installer Certification for The CONTRACTOR installing thermal butt fused HDPE pipe.

PART 2 PRODUCTS

2.1 POLYETHYLENE PIPE AND FITTINGS

A. Provide polyethylene pressure pipe manufactured from ~~PE3408~~ PE4710 polyethylene meeting AWWA C906 standards. When specified by the ENGINEER on the construction drawings, as an alternate to PVC, HDPE (ductile iron pipe sized) piping can be used for buried applications. Iron pipe sized (IPS) HDPE piping can be used for below-ground applications as determined by the ENGINEER.

B. The diameter of DR 11 HDPE casing pipe provided for roadway crossings or other purposes shall conform to the following.

For HDPE pressure carrier pipes, casing spacers are not required when HDPE DR11 (or DR17 for 42” to 54” or DR21 for 63”) casing is used. The casing inside diameter shall be a minimum of two inches larger than the carrier pipe’s outside diameter.

C. HDPE to HDPE pipe connections shall be by thermal butt fusion. Thermal fusion shall be accomplished in accordance with the pipe manufacturer and fusion equipment supplier specifications. The CONTRACTOR installing thermal butt

fused HDPE pipe shall be certified in this type of work and have a minimum of five years experience performing this type of work. The CONTRACTOR shall provide certification to the Engineer of Record, who will provide the Engineering Review Services Department with the certification.

D. Qualification of Manufacturer: The Manufacturer shall have manufacturing and quality control facilities capable of producing and assuring the quality of the pipe and fittings required by these specifications. The Manufacturer's production facilities shall be open for inspection by the County Manager or designee. Qualified manufacturers shall be approved by the County Manager or designee.

E. See the County Approved Product List, Appendix F, for manufacturers that are qualified. Products from other manufacturers proposed for the work must receive approval from the County Manager or designee prior to ordering.

F. Materials: Materials used for the manufacture of polyethylene pipe and fittings shall be ~~PE3408~~ PE4710 high density polyethylene meeting cell classification 445574C ~~345434C~~ or 445574E ~~345434E~~ per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting manufacturer in PPI (Plastics Pipe Institute) TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

G. Polyethylene Pipe: Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter or ASTM D3035, Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, (from pipe) dimensions and either quick burst or ring tensile strength (equipment permitting).

H. Color Identification: HDPE must have at least three equally spaced horizontal colored marking stripes. Permanent identification of piping service shall be provided by adhering to the following colors.

Blue – potable water (Underground HDPE pipe shall be one of the following:

a. Solid-wall blue pipe;
b. Co-extruded blue external skin; or
c. White or black pipe with blue stripes incorporated into, or applied to, the pipe wall.

White – raw water
Green – wastewater, sewage
Pantone Purple – non-potable irrigation, reclaimed or reuse water

I. Polyethylene Fittings and Custom Fabrications: Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Pressure de-rated fabricated fittings are prohibited.

J. Molded Fittings: Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the tests required under ASTM D3261.

K. X-Ray Inspection: The Manufacturer shall submit samples from each molded fittings production lot to x-ray inspection for voids, and shall certify that voids were not found.

L. Fabricated Fittings: Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16” IPS and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets. Part drawings shall be submitted for the approval of the ENGINEER.

M. Polyethylene Flange Adapters: Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasketless sealing, or to restrain the gasket against blow-out.

N. Back-up Rings and Flange Bolts: Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. The lap joint flange bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

2.2 MANUFACTURER’S QUALITY CONTROL

A. The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rate, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer’s Quality Control. Incoming materials shall be approved by Quality Control before processing into finished goods. Outgoing materials shall be checked for:

1. Outside diameter, wall thickness, and eccentricity as per ASTM D2122 at a frequency of at least once/hour or once/coil, whichever is less frequent.

2. Out of Roundness at frequency of at least once/hour or once/coil, whichever is less frequent.

3. Straightness, inside and outside surface finish, markings and end cuts shall be visually inspected as per ASTM F714 on every length of pipe.

B. Quality Control shall verify production checks and test for:

1. Density as per ASTM D1505 at a frequency of at least once per extrusion lot.

2. Melt Index as per ASTM D1238 at a frequency of at least once per extrusion lot.

3. Carbon content as per ASTM D1603 at a frequency of at least once per day per extrusion line.

4. Quick burst pressure (sizes thru 4-inch) as per ASTM D1599 at a frequency of at least once per day per line.

5. Ring Tensile Strength (sizes above 4-inch equipment permitting) as per ASTM D2290 at a frequency of at least once per day per line.

6. ESCR (size permitting) as per ASTM F1248 at a frequency of at least once per extrusion lot.

C. X-ray inspection shall be used to inspect molded fittings for voids, and knit line strength shall be tested. All fabricated fittings shall be inspected for joint quality and alignment.

2.3 COMPLIANCE TESTS

A. In case of conflict with Manufacturer's certifications, the CONTRACTOR, ENGINEER, or County Manager or designee may request re-testing by the manufacturer or have re-tests performed by an outside testing service. All re-testing shall be at the requestor's expense, and shall be performed in accordance with the Specifications.

B. Installation shall be in accordance with Manufacturer's recommendations and this specification. All necessary precautions shall be taken to ensure a safe working environment in accordance with the applicable codes and standards.

PART 3 EXECUTION

3.1 INSTALLATION OF HIGH DENSITY POLYETHYLENE PRESSURE PIPE AND FITTINGS

A. Install all high density polyethylene (HDPE) pressure pipe by direct bury, directional bore, or a method approved by the COUNTY or ENGINEER prior to construction. If directional bore is used, or if directed by the County Manager or designee or ENGINEER, surround the entire area of construction by silt barriers.

Install all high density polyethylene pressure pipe and fittings in accordance with Manufacturer's recommendations, and this specification. Take all necessary precautions to ensure a safe working environment in accordance with the applicable codes and standards.

3.2 HEAT FUSION JOINING

A. Make joints between plain end pipes and fittings by butt fusion, and joints between the main and saddle branch fittings by using saddle fusion using only procedures that are recommended by the pipe and fitting Manufacturer. Ensure that persons making heat fusion joints have received training and certification for heat fusion in the Manufacturer's recommended procedure. Maintain records of trained personnel, and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

3.3 MECHANICAL JOINING

A. HDPE pipe and fittings shall be fused together by heat welding when possible. HDPE pipe and fittings may be joined together or to other materials by means of flanged connections with back-up rings, by mechanical joint adapter with glands, or mechanical couplings designed for joining HDPE pipe or for joining HDPE pipe to another material. A stainless steel sleeve insert shall be used with a mechanical coupling. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins.

3.4 BRANCH CONNECTIONS

A. Make branch connections to the main with saddle fittings or tees. Saddle fuse polyethylene saddle fittings to the main pipe.

3.5 EXCAVATION

A. Excavate trenches in conformance to this specification, the plans and drawings, or as authorized in writing by the County Manager or designee, and in accordance

with all applicable codes. Remove excess groundwater. Where necessary, shore or reinforce trench walls.

3.6 LARGE DIAMETER FABRICATED FITTINGS

A. Butt fuse fabricated directional fittings 16" IPS and larger to the end of a pipe. Make up the flanged directional outlet connections in the trench.

3.7 MECHANCIAL JOINT AND FLANGE INSTALLATION

A. Install mechanical joints and flange connections in accordance with the Manufacturer's recommended procedure. Center and align flange faces to each other before assembling and tightening bolts. Do not use the flange bolts to draw the flanges into alignment. Lubricate bolt threads, and fit flat washers under the flange nuts. Tighten bolts evenly according to the tightening pattern and torque step recommendations of the Manufacturer. At least one hour after initial assembly, re-tighten flange connections following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be 100 ft-lbs or less as recommended by the Manufacturer.

3.8 FOUNDATION AND BEDDING

A. Lay pipe on grade and on a stable foundation. Remove unstable or mucky trench bottom soils, and install a 6-inch foundation or bedding of compacted Class I material to pipe bottom grade. Remove excess groundwater from the trench before laying the foundation or bedding and the pipe. A trench cut in rock or stony soil shall be excavated to 6 inches below pipe bottom grade, and brought back to grade with compacted Class I bedding. Remove all ledge rock, boulders, and large stones.

3.9 PIPE HANDLING

A. When lifting with slings, use only wide fabric choker slings to lift, move, or lower pipe and fittings. Do not use wire rope or chain. Slings shall be of sufficient capacity for the load, and shall be inspected before use. Do not use worn or defective equipment.

3.10 TESTING

A. Hydrostatic Pressure Testing: Pressure test and flush HDPE pipes after swabbing in accordance with Section 022501 and 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333200

PUMP STATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK FOR COUNTY PUMP STATIONS

A. This section includes the following items for COUNTY owned and operated pump stations: wet wells, access covers, pumps, wet well equipment, valves, emergency bypasses, pump control panels, pump controller, antenna subsystem, disconnects, electric meters, electric service, pump wiring, lightning arrestors, and odor control systems.

B. Conform all pump stations to the specifications, Utilities Detail Drawings, and latest National Electrical Code (NEC) requirements.

C. When a pump station has a peak design flow coming into the station greater than 500 gpm, contact Public Utilities Planning and Project Management Department for specifications.

D. For systems eligible to be taken over by the COUNTY, provide enough room to operate and maintain all water and wastewater systems in a simple and non-awkward manner. If a pump station pump needs to be replaced, provide enough room for the COUNTY to readily remove the pump, and to do so without interfering with traffic. To be eligible for conveyance to the COUNTY, the pump station easement area must be designed to 30'X30', or twice the depth of the wet well by twice the depth of the wet well, whichever is larger, as defined in the Collier County Standards and Procedures Ordinance, Subsection 7.7(c), as amended or superseded.

E. Schedule required COUNTY inspections of (1) pump station installation prior to cover-up and (2) pump station start-up.

F. Install all fencing and gates around the pump station in accordance with Section 323113.

G. Communications: When proposing fiber-optic connectivity at pump stations, a letter of availability shall be requested to the COUNTY for review and approval.

H. Elevated platforms shall be provided where necessary to provide access to wet wells, pump station control panels, electrical devices and panels, generators, and bypass equipment. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 SCOPE OF WORK FOR PRIVATE GRINDER PUMP STATIONS

A. This section includes the following items for privately owned and operated grinder pump stations: wet wells, pumps, impeller, valves, level control, alarm, well equipment, pump control panels, pump controller, disconnects, and sloping requirements for private pump stations.

B. All maintenance tasks for private grinder pump stations must be possible without entry into the grinder pump station per 29 CFR 1910.146 (OSHA Permit-Required Confined Spaces).

C. The grinder pump station shall be free from electrical and fire hazards as required for functionality in a residential environment. The completed assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. (UL) to be safe and appropriate for the intended use. UL listing of components of the grinder pump station, or third-party testing to UL standard is not acceptable.

D. All private grinder pump stations shall bear the seal of NSF International to show that station meets accepted standards for plumbing equipment in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications.

E. Private pump service sewers shall conform to applicable parts of the Florida Building Code and the COUNTY's Design Criteria. Where the COUNTY's standards are more restrictive than the Florida Building Code, the COUNTY's standards shall prevail.

F. Private pump station force main connections must follow the COUNTY's requirements for testing.

G. Schedule required COUNTY inspections of (1) testing of force main connection prior to cover-up and (2) pump station start-up.

H. Prior to the start-up inspection, the following documentation must be furnished to the COUNTY via electronic mail or a secure electronic file transfer service:

1. As-built drawing (in both PDF and DWG formats) showing the completed pump station and force main locations, sizes, materials, and elevations along with the location of all valves, the pump-out connection, the control panel, and the generator receptacle on the property and

2. A pump test curve from the pump manufacturer.

PART 2 EQUIPMENT

2.1 MATERIALS FOR COUNTY PUMP STATIONS

A. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

B. Wet Well: The concrete structure shall consist of precast, reinforced sections conforming to ASTM C76 and/or ASTM C478. 8-foot diameter wet wells shall have a minimum wall thickness of 8 inches. Wall thickness for larger wet wells shall conform to ASTM standards for wall thickness, but shall not be less than 8 inches in any case. The minimum inside diameter for all wet wells eligible to be owned and maintained by Collier County shall be 8 feet. As a deviation, a 6-foot

diameter wet well can be utilized if the ENGINEER can demonstrate that the wet well is sufficient hydraulically and the developer can demonstrate that the pump station shall be used for the perpetual and exclusive use of that development. For pump stations that will not be owned and maintained by Collier County, the ENGINEER shall set the design specifications for the wet well, provided such design does not in any way endanger the health, safety and/or welfare of the public. Base riser section shall be monolithically cast with the base slab. All concrete shall utilize Type 2 cement and have a minimum compressive strength of 4000 psi at 28 days. On new construction, if more than one hole is abandoned and required to be cemented in, provide a new wet well barrel section. Reinforcing steel for all wet well structures should be sized by the unit manufacturer and verified by the ENGINEER. All connections to the wet well for gravity sewer piping shall be equal to those for manholes as described in Section 333913. Factory double coat all exterior surfaces with an acceptable bituminous or epoxy sealer a minimum of 18 mils thick. Seal all riser joints utilizing plastic joint sealing compound (see County Approved Product List, Appendix F). Reinforcement and top slab thickness shall be specified by the design ENGINEER for H-20 loadings in all cases. Minimum reinforced slab thickness shall be 8 inches. Typical standards for wet wells are available in the Collier County Standard Details. The ENGINEER shall be responsible for designing all wet well structures to overcome buoyancy forces exerted on the installed structure. Coat all wet well interiors with an acceptable field applied internal protection (see County Approved Product List, Appendix F) in accordance with Section 099723.

C. Above-Ground Valves and Piping: Above-ground valves and piping must be positioned so that it does not lie above any gravity sewer line entering the wet well, unless field conditions dictate otherwise and the COUNTY has granted prior approval. Typical above-ground valves and piping standards are shown in the Collier County Standard Details. All valve and flange bolting shall be Type 316 stainless steel.

D. Pumps: Sewage pumps (see County Approved Product List, Appendix F) shall be of the submersible type suitable for operation in sewage of temperature not exceeding 115 degrees Fahrenheit. Pump head curves and design specifications for each application proposed shall be submitted for review and approval within the ENGINEER's hydraulic design report. All pumps shall be three-phase unless approved by a Utility Deviation Form. At least one (1) pump in each wet well shall be equipped with an opening in the volute with a bolted cover for a mix-flush system (see County Approved Product List, Appendix F).

E. Access Covers: Access covers for pump station wet wells shall be above the 100-year flood elevation unless the structure is located within a documented velocity and tidal flood zone, and elevation differentials prohibit such installation. In such cases, watertight access covers shall be utilized. The ENGINEER shall provide shop drawings of such access covers for review and approval by THE County Manager or designee prior to use. Access covers shall be constructed of diamond plate aluminum sheets and aluminum structural members. All access covers shall be attached to aluminum angle frames with stainless steel hinges and fasteners. Angle frames shall be firmly anchored into the top concrete slab of the structure.

All access covers shall be equipped with a ratchet-type restraint mechanism to prevent accidental closing of the cover and torsion bar or spring assist type openers. Assist openers shall be manufactured of stainless steel. Access covers shall be designed for H-20 loadings.

F. Wet Well Equipment: All pump discharge piping shall be HDPE pipe and shall be in conformance with pipe utilized for wastewater force mains. All fittings shall be HDPE fused, flange/flange, or Uni-Flange connections. All nuts, bolts, fasteners, brackets, pump guide rails and other hardware located inside the wet well shall be 316 stainless steel. A pump out with a screened vent shall be provided on all installations, with the pipe extended through the wet well lid (see details). Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wetwells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present shall comply with the National Electrical Code (NEC) requirements for Class I Group D, Division 1 locations. Electrical equipment located in wet wells shall be suitable for use under corrosive conditions.

G. Valves: Discharge piping for each pump shall be equipped with a weighted check valve and plug valve. A tee with an isolation plug valve, equipped with a quick coupling (see County Approved Product List, Appendix F), shall be provided for a means of emergency bypass access to the wastewater force main. Valves shall be supported by stainless steel pipe supports.

H. Emergency Bypass: A 4-inch emergency bypass connection shall be provided down-stream from the in-line discharge piping valves. The connection shall be readily accessible and be equipped with a plug-type isolation valve and 4-inch male camlock type quick coupling and cap.

I. Pump Control Panel (see County Approved Product List, Appendix F): Panel enclosure construction shall be equal to a NEMA 4X stainless steel with 3-point latch where required and utilize stainless steel. When possible, panel door shall open away from wetwell and not towards wetwell hatch to ensure safety during maintenance of wetwell and panel. To ensure proper installation of control panel, contact the Wastewater Division prior to rough-in or installation of control panel, for a pre-construction meeting with respective Wastewater Collections personnel. Control panels shall be mounted on two 6-inch by 6-inch precast concrete posts. All mounting bars, nuts, bolts, etc. shall be stainless steel. A 110/120-volt (110V) receptacle shall be provided inside the control panel for pump stations that have outdoor control panels. Ground fault interruption (GFI) protection shall be provided for all outdoor outlets.

J. Pump Controller: Provide a pump control panel (see County Approved Product List, Appendix F) including a telemetry control unit (TCU) for pump controlling purposes. At a minimum, the TCU shall include an integrated 2-Watt digital radio with and Ethernet module for dual communications capability, an 18-amp-hour back-up battery, a manufacturer's prefabricated wire harness, all manufacturer recommended surge protection, and suitable devices for measuring wastewater flow. The TCU shall incorporate three on-board fail-safe HOA switches and

Triplex/Duplex/Simplex configurable operation mode. An on-board 240 or 460 VAC three-phase monitor shall be provided. The Alarm light and bell shall be activated by the TCU and the external push-button alarm silence switch shall be wired into the TCU. The TCU shall incorporate an on-board 4- by 20- character LCD display for elapsed runtime of each pump. During the automatic sequence, the pumps shall be controlled in an alternate mode. Pump controller shall be Data Flow Systems model TCU800 with features listed above.

K. Antenna Subsystem: Provide a high gain antenna (see County Approved Product List, Appendix F) for use to transmit and receive TCU data to and from the COUNTY's existing SCADA server. Antenna shall utilize all welded-aluminum elements. Element connections utilizing nuts and bolts are not acceptable. Antenna shall have a single radiator element connected to a type N female connector. Antenna shall be supported on a mast/pole and have DC grounding for lightning protection. Antenna mounting hardware shall be made of stainless steel. Antenna shall meet or exceed the quality, reliability and performance of the RTA series as provided by Data Flow Systems, Inc. Antenna mast/pole shall be a 21foot by 1.25 inch SCH80 galvanized pole. Mounting of the antenna mast/pole shall be in accordance with all applicable local and state building codes as they pertain to structural strength and wind velocity requirements. Tower shall meet or exceed the quality and reliability of the 25G manufactured by Rohn. Coaxial cable shall be RTC 400 as supplied by Data Flow Systems, Inc. Type N connectors shall be utilized at both ends of the coax. Type N connectors shall be sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink tubing. Coaxial cable shall be secured to the mast/pole with E.V.A.-coated 316 stainless steel cable ties. Cable ties shall meet or exceed the quality, reliability and performance of AE112 cable ties manufactured by Band-It. For pump stations to be conveyed to the County, a startup and successful testing of Data Flow telemetry equipment by Data Flow representatives and County Wastewater Collections instrumentation and telemetry representatives is required prior to County acceptance. After initial startup, for pump stations to be conveyed to the County, the latitude and longitude of pump stations shall be provided.

L. Disconnect: A circuit breaker disconnect shall be provided to isolate the pump control panel. Disconnect shall be installed on the service line between the electric meter and control panel and shall be lockable in the "ON" or "OFF" position. Disconnects shall be housed in a NEMA 4X, stainless steel enclosure or better.

M. Electric Meter: The electric meter servicing the pump station shall be located adjacent to the pump control panel, and shall be located and wired to service only the pump station facility.

N. Electric Service: All underground electric services shall be fully conduited in 2-inch diameter Schedule 80 PVC pipe from the power company source point to the pump control panel. The maximum length of the electric service from the power company transformer to the pump control panel shall be 200 feet. One spare conduit shall be provided and terminated in the meter. Only copper service wire shall be utilized. Sizing of the service wire shall be verified with the power company and the

extent and location of the service shall be indicated on the record drawings. The CONTRACTOR shall certify that the voltage drop across the service does not exceed five percent (5%) of the power company's line voltage at full load start-up of the pump station pumps. All pump stations shall have minimum 100-amp service. All electrical components shall be located within the COUNTY right-of-way or County Utility Easement (CUE).

O. Pump Wiring: Power wiring for each pump, from the control panel to the wet well shall be conduited in separate 2-inch diameter Schedule 80 PVC pipe and an appropriately sized water-tight fitting with separate strain relief shall be installed on each line. A spare parallel 2-inch PVC pipe conduit from the panel to the wet well shall be provided. All wire shall be stranded THHN or MTW copper wire. The pump motor cords shall be flexible and serviceable under conditions of extreme usage. Total of angle bends shall be 180 degrees or less. All conduits between wetwell and control panel shall not exceed a total of 180 degrees of bends per run. All service conduits shall be 2" Schedule 80 PVC except where noted. The pump motor cords shall be flexible and have an appropriate amount of slack.

P. Lightning Arrestors: All pump stations shall be equipped with lightning arrestor(s) (see County Approved Product List, Appendix F). The lightning arrestor shall be installed externally on the load side of the disconnect, between the disconnect and the main breaker. The penetration through the disconnect must be made below the working mechanism of the disconnect.

Q. Odor Control Systems for Community Pump Stations: Furnish and install an 8'X11' concrete slab for potential future odor control system. A Pre-Engineered Biofiltration Odor Control System shall be furnished if required by the engineer of record.

R. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flodd Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

S. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

2.2 MATERIALS FOR PRIVATE PUMP STATIONS

A. All private grinder pump stations shall conform to the requirements specified in Section 2.1 above, unless otherwise stated in this section.

B. Pumps: Private pump stations shall be constructed using progressive cavity, non-clogging, non-jamming, positive or semi-positive displacement grinder pump(s) capable of operating at a negative total dynamic head (TDH) equipped with thermal overload protection. Grinder pumps shall be capable of grinding all material typically found in domestic or commercial wastewater to a fine slurry that will pass through the pump, 1-1/4-inch NPT discharge piping and downstream appurtenances.

C. Impeller: The grinder impeller shall be a one-piece, rotating type cutter wheel constructed from hardened 4140 steel. The cutter teeth shall be treated and hardened to 56 to 60 Rockwell C. The shredder ring shall be stationary type with a staggered tooth pattern and made of white cast iron per ASTM A532(1B).

D. Valves: In addition to valve requirements described in Section 2.1, an anti-siphon valve shall be integral with the grinder pump station pump. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the grinder pump station discharge piping. The check valve will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow.

E. Level Control: Level sensing control for private grinder pump stations shall be a non-fouling type with no moving parts in contact with the wastewater.

F. Alarms: All grinder pump station shall be equipped with a high level audible and visual warning alarm to notify the residential or commercial property owner(s) of a high wet well level.

G. Wet Well: The wet-well basin for all grinder pump stations shall be constructed from any watertight material suitable for light commercial applications, such as high-density polyethylene (HDPE), polyethylene (PE), or glass-fiber reinforced polyester (FRP). FRP wet wells must conform to ASTM D3753. All grinder pump station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure. The grinder pump station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable. No secondary welding of the wet well basin or cover will be accepted. The wet well shall be vented to the atmosphere.

H. Wet Well Equipment: Pumps and all electrical devices, components, and connections inside the wet well shall be explosion proof.

I. Anti-Siphon/Check Valve: All private grinder pump stations shall be equipped with a factory installed, gravity operated flapper-type integral check valve and anti-siphon valve built into the stainless-steel discharge piping, per Section 2.1 and Section 2.2. valve requirements.

J. Pump Control Panel: All electrical elements for private grinder pump stations shall be furnished pre-wired and housed in a NEMA 4X enclosure. In a flood zone, a NEMA 6P

enclosure is required if the control panel is mounted less than a foot above the base flood elevation. A NEMA Control circuit shall be 115 volts. The door of the control box shall be hinged of the dead type with locking hasp and suitable accessories to allow wall mounting. Motor shall be activated by a magnetic type contactor and protected by a UL-listed electrical monitoring system against damaging high current or low voltage conditions. An automatic reset, integral thermal overload protector shall protect the motor against excessive heat. The sensor shall reset automatically when the motor cools. An alarm test switch, HOA switch, run light, auto/off switch, and overload reset button shall be supplied inside the control box. A terminal strip with box type connections shall be supplied to make all power and control connections. All terminals shall be marked for easy identification. A ground terminal strip shall also be provided and labeled.

K. Disconnect: The grinder pump station shall be equipped with a factory-installed NEMA 6P electrical quick disconnect for all power and control functions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Finished grade shall be 1 inch to 4 inches below the bottom of the lid and shall slope away from the wet well.

B. Fill grinder pump stations with water prior to backfill compaction to prevent deformation of the basin wall and follow all other manufacturer's installation instructions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 409500

FIBER-OPTIC COMMUNICATION STANDARDS

PART 1 GENERAL

1.1 OVERVIEW

A. The standards herein pertain to all work associated with the procurement, installation, configuration, and testing of fiber-optic communications and associated infrastructure for County installations.

B. All contractors and subcontractors selected to perform fiber-optic communications work for the County shall adhere to the standards described in this document.

C. Additional requirements may be defined in engineering plans related to the fiber-optic communications work performed. In the event of a conflict, the most stringent requirement shall be followed. In the event of a conflict where the most stringent requirement cannot be resolved, Contractor shall inform County in writing identifying the discrepancy for final direction.

1.2 DEFINITIONS

A. Common Abbreviations

1. Amps: Ampere.
2. ANSI: American National Standards Institute.
3. ASTM: American Society for Testing and Materials.
4. AWG: American Wire Gauge.
5. CCITD: Collier County Information Technology Department.
6. CFR: Code of Federal Regulations.
7. dB: Decibel.
8. EIA: Electronic Industries Alliance.
9. FDEP: Florida Department of Environmental Protection.
10. HASB: High Airspeed Blowing.
11. HDPE: High Density Polyethylene.
12. IT: Information Technology.
13. km: Kilometer.
14. lbs: Pounds.
15. m: Meter.
16. N: Newton.

17. NEC: National Electric Code.
18. NEMA: National Electrical Manufacturers Association.
19. NESC: National Electrical Safety Code.
20. nm: Nanometer.
21. OSHA: Occupational Safety and Health Administration.
22. OTDR: Optical Time Domain Reflectometer.
23. PVC: Polyvinyl Chloride.
24. RCDD: Registered Communications Distribution Designer.
25. RUS: United States Rural Utilities Service.
26. SC: Subscriber Connection.
27. SDR: Standard Dimension Ratio.
28. SMF: Single Mode Fiber.
29. SRM: Standard Route Marker.
30. TIA: Telecommunications Industry Association.
31. UV: Ultraviolet.
32. VAC: Volts Alternating Current.
33. WGU: Wire Grounding Unit.

1.3 COORDINATION ACTIVITIES

A. Work involving the installation of fiber-optic cabling and equipment will interface with equipment provided by Others including, but not limited to, the following:
   1. Mounting of the IT Telecommunications Panel
      a. The IT telecommunications panel shall be mounted to an equipment rack at the installation site. Refer to County Utility Detail G-12.

B. Contractor shall determine all interface and installation requirements at the site prior to procurement and delivery and coordinate as required with County.

C. Permitting:
   1. Contractor is responsible for determining and obtaining all necessary permits for the work being performed, including, but not limited to:
      a. Stormwater.
      b. Utilities.
      c. Right-of-way.
      d. Canal crossings [South Florida Water Management District].
      e. FDEP.
   2. Contractor is responsible for all permitting fees.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:

1. Contractor shall be firms, corporations, individuals, or partnerships normally engaged in the deployment, maintenance, and repairs of fiber-optics at the municipal, county or state level.
2. Contractor shall have one or more of the following certifications
    a. Registered Communications Distribution Designer (RCDD)
    b. IMSA Fiber Optics for Traffic Stem Technician 2
    c. IMSA Traffic Signal Technician Level 2
    d. IMSA Traffic Signal Technician Level 3
3. Contractor shall have a minimum of 5 years of experience performing fiber-optic communications work based on the relevant scope definition category or categories above.

PART 2 PRODUCTS

2.1 GENERAL

A. Each subsection below specifies the minimum requirements for each type of product. Contractor shall adhere to product requirements below unless otherwise approved by County in writing.

2.2 FIBER-OPTIC CABLE

A. General: Provide all-dielectric, dry-filled, loose-tube, dispersion-unshifted, single-mode fiber (SMF) with low water peak, gel free, and suitable for underground (i.e., in conduit) and aerial outside plant installation. All fiber optic cable shall be splice-compatible with existing dispersion-unshifted SMF and require no electronic equipment for dispersion compensation between new and existing fiber. Ensure that all components that comprise a single length of cable are continuous and of the same material. Furnish only commercial off-the-shelf materials, equipment, and components.

B. Optical Fibers:

1. Ensure that the optical fibers used in the cable meet or exceed the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) TIA/EIA-492-CAAB specification, the U.S. Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900, and International Telecommunication Union ITU-T G.652.D requirements. Use only optical fibers meeting the additional requirements as follows:
    a. Optical:
        1) Cabled Fiber Attenuation:
            a) 1310 nm; Less than or equal to 0.35 dB/km.
            b) 1550 nm; Less than or equal to 0.25 dB/km.
        2) Point Discontinuity:
            a) 1310 nm; Less than or equal to 0.05 dB/km.
            b) 1550 nm; Less than or equal to 0.05 dB/km.

2. Ensure that all fiber in the buffer tube is usable fiber that complies with attenuation requirements. Ensure that fibers do not adhere to each other. Ensure that the fiber is free of surface imperfections and inclusions. Ensure that all fiber optic core glass is from the same manufacturer.

C. Buffer Tubes: Ensure that the fiber optic cable includes loose buffer tubes that isolate internal optical fibers from outside forces and provide protection from physical damage as well as water ingress and migration. Ensure that buffer tubes provide freedom of movement for internal optical fibers. Ensure buffer tubes allow for expansion and contraction of the cable without damage to internal optical fiber. Ensure that fiber does not adhere to the inside of the tube. Ensure that buffer tubes permit intentional scoring and breakout without damage to the fiber. Ensure that each fiber optic cable buffer tube contains 12 fibers per tube.

D. Color Code:

1. Ensure that the marking and color-coding of the fibers and buffer tubes conforms to the TIA-598-D standard.
2. Ensure that colors are permanent and stable during temperature cycling, and not subject to fading or smearing onto each other or into the water-blocking material. Ensure that fibers are colored with UV curable inks that remain clearly distinguishable as the intended color.

E. Strength Member: Ensure that the fiber optic cable contains a dielectric central and outside elements that prevent buckling of the cable and provide tensile strength. Ensure that the fiber optic cable can withstand a pulling tension of 600 lbs. without damage to any components of the fiber optic cable.

F. Outer Jacket:

1. Mark the jacket with the cable manufacturer’s name, fiber type, fiber count, date of manufacture”, and the sequential cable lengths marked in feet. All fiber-optic cabling shall have a stripe, yellow in color, along the entire length of the cable, and shall be marked "Collier County BCC IT" at three-foot intervals. Provide legible marking with contrasting color to that of the cable jacket.

G. Performance:

1. Bend radius: Ensure that the fiber optic cable is capable of withstanding a minimum unloaded bend radius of 10 times the cable diameter and a minimum loaded bend radius of 20 times the cable diameter when loaded to pulling tension of 600 pounds. Test the cable as required in the TIA -455-33B standard. Ensure that bending the fiber optic cable up to the minimum bend radius does not affect the optical characteristics of the fiber.

2. Cable Strength: Ensure that the fiber optic cable is capable of withstanding a pulling tension of 600 pounds during installation without increasing the fiber attenuation more than 0.8 dB/mile and without changing other optical fiber characteristics after the tensile load is removed. Ensure that optical fiber is proof-tested by the fiber manufacturer at a minimum of 100 kilo pounds per square inch. Ensure that the cable will withstand 25 impact cycles and the change in attenuation does not exceed 0.2 dB at 1550 nm when tested according to the requirements as detailed in the TIA -455-25D standard. Ensure that the change in attenuation will not exceed 0.15 dB during loading at 1550 nm, and that no fiber displays a measurable change in attenuation after load removal.

2.3 FIBER-OPTIC CONNECTION HARDWARE

A. General: Ensure that all splice enclosures, organizers, cable end preparation tools, and procedures are compatible with the fiber optic cable, and are approved by the County in writing.

B. Splice Enclosures:

1. Contain all optical fiber splices within a splice enclosure. Ensure that the enclosures provide storage for splices, fiber, and buffer tubes. Ensure that the splice enclosure restores the mechanical and environmental integrity of the fiber optic cable, encases the sheath opening in the cable, and organizes and stores optical fiber. Ensure all hinges and latching devices are stainless steel. Ensure that the enclosure is airtight and prevents water intrusion. Ensure that the splice enclosure can accommodate pressurization and has the ability to be reentered without requiring specialized tools or equipment. Ensure that the enclosure provides fiber and splice organizers including splice trays and strain relief.
2. Ensure that splice enclosures are hermetically sealed to protect internal components from environmental hazards such as moisture, insects, and UV light. Fiber optic splice enclosures shall also:
3. Comply with the Telcordia Technologies' GR-771-CORE standard and all applicable NEC requirements.
4. Provide space for future expansion equal to 100% of the initial utilization.
5. Provide fiber optic cable penetration end caps to accommodate a minimum installation of two trunk fiber optic cables and two fiber optic drop cables. Ensure that the enclosure end caps are factory-drilled to the proper diameter to accept and seal the fiber optic cable entries. Ensure that the cable entry locations can accommodate an assortment of cables with outside diameters ranging from 0.45 inches to 0.55

inches, plus 10%, without jeopardizing the waterproof characteristics of the enclosure.

C. Splice Trays: Ensure that splice trays are securely attached and accessible and provide sufficient storage for the fiber cable. Ensure splice trays provide access to individual fibers without disrupting other fibers in the tray. Ensure that splice trays hold the buffer tubes rigidly in place and provide protection for fusion splices. Ensure that the raceway accommodates the minimum bend radius of the fiber. Ensure that splice trays allow visible inspection of the fiber. Ensure that splice trays include a cover with a locking mechanism to hold it in place.

D. Cable Terminations:

1. Use Type SC connectors for all new network installations. Ensure that all connectors include a ceramic ferrule and provide a strain relief mechanism when installed on a single fiber cable that contains strength elements. Ensure that the optical fiber within the body of all connectors is mechanically isolated from cable tension, bending, and twisting.

E. Pre-Terminated Connector Assemblies: Ensure that pre-terminated cable assemblies consist of fiber optic cables with factory-installed connectors on one end of the cable and an un-terminated optical fiber on the other. Ensure that the pre-terminated connector assemblies are installed with fusion splices. Ensure that all buffer tubes and fibers are protected once the attachment of pre-terminated connector assemblies is complete.

F. Buffer Tube Fan-Out Kits: Ensure that a buffer tube fan-out kit is installed when fiber optic cables are terminated. Use a kit compatible with the fiber optic cable being terminated and that is color-coded to match the optical fiber color scheme. Ensure that the buffer tube fan-out kit supports 12 fiber strands.

G. Patch Panels:

1. Ensure that the patch panel is compatible with the fiber optic cable being terminated and color coded to match the optical fiber color scheme. Ensure that the patch panel has a minimum of 12 SC-type panel connectors unless otherwise shown in the Plans. Ensure that the patch panel dimensions do not exceed 14 inches x 6 inches x 4 inches for fiber counts of twelve or less. Ensure the patch panel is suitable for mounting within an approved cabinet at the field device location. Ensure patch panels are sized to accommodate specified coupler housings and maintain sufficient bend radius for cables. Ensure the patch panel is sized to occupy the minimum space required for capacity.
2. Connector Panels:

a. Ensure that the connector panel provides 12 SC-type, bulkhead-mount coupling connectors. Ensure that each coupling connector allows connection of a cable terminated on one side of the panel to a cable on the opposite side.

2.4 IT TELECOMMUNICATIONS PANEL

A. General:
1. Function: Receive incoming fiber-optic cable at installation site from County network.
2. Major parts include fiber-optic patch panel, network cabling, and accessories.

B. Enclosure Specifications:
1. Manufacturers and Products:
a. American Products; AP Minifort Model AM-462418-24RU.
b. No substitutions.
2. Panel Size:
a. Include mounting bracket accessory from panel manufacturer for installation.
b. Increase panel size if and as needed to accommodate additional network equipment or to increase heat dissipation to reach an internal steady-state operating temperature below the maximum operating temperature of all contained equipment.
3. Provide ground bar inside enclosure.
4. All conduit penetrations shall be made through the bottom face of the enclosure. Side or top penetrations are not acceptable.
5. Include quad 120 VAC power receptacle gang box inside enclosure.
6. Enclosure shall include a standard rack for mounting of rack-mounted equipment.

2.5 CONDUIT

A. Materials of Construction: Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:
- High Density Polyethylene (HDPE):
  - For use outside site boundaries, such as roadside pull boxes and splice enclosures.
- HDPE Standard Dimension Ratio (SDR) 13.5: ASTM F2160, NEMA TC-7
- All HDPE conduit shall be orange in color.
- Schedule 80 PVC:
  - For use inside site boundary for interconnection of fiber-optic equipment and to on-site fiber-optic handholes, pull boxes, and splice enclosures.

B. Locate Wire: Ensure that locate wire is a single copper solid conductor with a minimum gauge of No. 12 AWG with blue shielding. Ensure locate wire is insulated using a 45-millimeter minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

C. Locate Wire Grounding: Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:

1. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.
2. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.
3. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation.
4. The WGU system meets the minimum standards listed below for surge protection:
    a. Surge Element: Three-element maximum duty fail-safe gas tube.
    b. Rating: 40,000 Amp surge capacity (single-cycle, 8 by 20 microsecond waveform).
    c. Life: Minimum 1,000 surges (1000 Amps to ground).
    d. Insulation Resistance: 1,000 megohm minimum at 100 volts of direct current.
    e. Clamp Voltages:
        1) Impulse at 100 volts per microsecond.
        2) Direct Current: 300 to 500 volts.

D. Route Markers:

1. Ensure Standard Route Marker (SRM) is a rigid, three-sided driven post used for location and notification purposes only.
2. Ensure that each SRM is labeled and identified as a County IT fiber optic cable marker unless otherwise shown in the Plans. The labels must include the contact information for the Collier County IT department, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.
3. Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made

from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.

4. Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.
5. Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.
6. Ensure that SRMs installed at the minimum 2-foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

2.6 PULL AND SPLICE BOXES

A. General:

1. The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.
2. Ensure in-ground boxes have an open bottom design.

B. Marking:

1. The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, and bonded with adhesive material suitable for outdoor applications.
   a. Mark application as “COMMUNICATIONS”
   b. Manufacturer’s name or logo.

C. Dimensions:

1. For fiber optic cable applications, pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 18 inches deep shall be provided.
2. Rectangular splice boxes with nominal cover dimensions of 30 inches wide by 48 inches long or larger and no less than 18 inches deep shall be provided.

D. Fabrication:

1. Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.
2. Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.
3. The box construction shall be an ANSI Tier 22 Quazite brand enclosure.

PART 3 EXECUTION

3.1 PREPARATION

A. Conduit:
   1. Ensure installed conduit system conforms to fiber-optic system requirements, including:
      a. Conduits: Size and number.
      b. Access Holes, Handholes, and Pull Boxes: Location and size, to ensure cables may be installed without exceeding manufacturer's limitations.
      c. Outlet Boxes: Size to coordinate with outlet cover plates for adequate volume and bend radius.
   2. Expansion Plugs: Seal conduit to stop ingress of water and grit with fabricated expansion plugs.
   3. Ensure duct bank, conduit, and other confined routing is free and clear of debris before cable placement.

3.2 SOURCE QUALITY CONTROL

A. Cable End Sealing: Ensure that fiber optic cable ends are capped or sealed to prevent the entry of moisture during shipping, handling, storage, and installation. Equip one end of the fiber optic cable with flexible pulling eyes.

B. Protective Wrap: Ensure that the fiber optic cable is shipped and stored with a protective wrap or other approved mechanical reel protection device over the outer turns of the fiber optic cable on each reel. Ensure that the wrap is weather resistant and protects the cable reel from environmental hazards. Ensure that the cable reel remains wrapped until cable is to be installed.

C. Packaging, Shipping and Receiving: Ensure that the packaging and delivery of fiber optic cable reels comply with the following minimum requirements:

1. Ensure cable is shipped on reels of marked continuous length.
2. Ensure each cable is shipped on a separate, strongly constructed reel designed to prevent damage to the cable during shipment and installation.
3. Ensure each reel has a minimum of 6 feet on each end of the cable available for testing.
4. Ensure that all fiber optic cable is continuous and free from damage.
5. Ensure no point discontinuities greater than 0.1 dB per reel.
6. Ensure satisfactory transmission loss test results as required by the TIA-455-61-A standard.
7. Ensure that the manufacturer submits the date of manufacture; product and serial numbers; cable data, including the reel length; refraction index; the project name and location; type of fiber and quantity of strands used; technical product data sheets; and reel numbers.

D. Manufacturer Testing and Certification: Submit documentation of all factory tests performed by the manufacturer for all fiber optic cable, splicing material, cable terminations, and patch panels as requested by the County.

3.3 INSTALLATION

A. Fiber-Optic Cable Installation:
   1. Install all materials and equipment according to the latest version of the manufacturer's installation procedures. Ensure that all materials and installation practices are in accordance with the applicable OSHA requirements as found in 29 CFR Part 1926, Safety and Health Standards for Construction. In addition, perform the following:
      a. Ensure conduit and innerduct is clean and free from damage prior to installing fiber optic cable.
      b. Document the sequential cable length markings at each splice box and pull box wall that the cable passes through and include the information with the as-built documentation.
   2. Provide all incidental parts needed to complete the installation as necessary for a complete and properly operating system.
   3. Cable Identification:
      a. All fiber cable shall be striped with a yellow color along the entire length of the cable.
      b. A cable tag with permanent ink shall denote "COLLIER COUNTY BCC IT FIBER-OPTIC CABLE" shall be affixed on the cable at every 3-foot interval.
   4. Pulling:
      a. Install the fiber optic cable by hand or by using a mechanical pulling machine. If a mechanical pulling machine is used, equip the machine with a monitored or recording tension meter.

Ensure that at no time the manufacturer's recommended maximum pulling tension is exceeded. Ensure that the central strength member and aramid yarn are attached directly to the pulling eye during cable pulling. Use pulling attachments to ensure that the optical and mechanical characteristics are not degraded during the fiber optic cable installation.

b. Ensure that excess cable is coiled in a figure eight and fed manually when pulling through pull boxes and splice boxes by hand. If pulleys and sheaves will be used to mechanically pull through pull boxes and splice boxes, ensure that the cable will never be pulled through a radius less than the manufacturer's minimum bend radius. Use large diameter wheels, pulling sheaves, and cable guides to maintain the appropriate bend radius. Provide tension monitoring at all times during the pulling operation. Ensure that cable pulling lubricant used during installation is recommended by the optical fiber cable manufacturer.

5. Blowing: Use either the high airspeed blowing (HASB) method or the piston method. When using the HASB method, ensure that the volume of air passing through the conduit does not exceed 600 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive. When using the piston method, ensure that the volume of air passing through the conduit does not exceed 300 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive.
6. Slack Cable Storage: Provide and store fiber optic cable at each pull box and splice box to allow for future splices, additions, or repairs to the fiber network. Store the fiber optic cable without twisting or bending the cable below the minimum bend radius.
   a. Store a total of 200 feet of fiber optic backbone cable in splice boxes, with 100 feet of cable on each side of the cable splice point.
   b. Store a minimum of 100 feet of fiber optic drop cable in splice boxes.
   c. Store 100 feet of spare fiber optic cable in pull boxes.
7. Fiber Optic Connection - Splicing:
   a. Perform all optical fiber splicing using the fusion splicing technique, and according to the latest version of the manufacturer's cable installation procedures, industry accepted installation standards, codes, and practices. Ensure that all splices match fiber and buffer tube colors.
   b. Ensure that splice loss does not exceed a maximum of 0.05 dB per splice as measured on the fusion splice machine when splicing newly installed fibers together. Ensure that splice loss does not exceed a maximum of 0.1 dB per splice as measured

on the fusion splice machine when splicing newly installed fibers to existing fibers.

c. Where a fiber cable is to be accessed for lateral or drop signal insertion, only open the buffer tube containing the fiber to be accessed and only cut the actual fiber to be accessed. If a fiber end is not intended for use, cut the fiber to a length equal to that of the fiber to be used and neatly lay it into the splice tray.

d. Treat any fibers exposed during splicing with a protective coating and place in a protective sleeve or housing to protect the fiber from damage or contaminants. Neatly store all splice enclosures within a splice box.

8. Splice Plan: Submit a splice plan showing the location and configuration of splices in the system for approval by the County. Perform all splicing according to the splice plan. Document each splice location and identify the source and destination of each fiber in each splice tray. Document all fiber colors and buffer jacket colors used during installation and develop a sequential fiber numbering plan as required in the TIA -598-D standard for color-coding in the documentation.

9. Splice Equipment: Use a fusion splice machine to splice all optical fiber. Ensure that splice equipment is new from the factory, or equipment has been serviced and certified by the factory or its authorized representative within the previous 12 months from the commencement of its use. Ensure that the calibration certificate is maintained in the splicing equipment case or provided electronically when requested. Clean all splicing equipment and calibrate according to the manufacturer's recommendations prior to each splicing session at each location.

B. Cable Termination Installation: Ensure that cables, buffer tubes, or strands are neatly routed, secured, and terminated in a patch panel in coordination with the County. Ensure all cable termination points include documentation regarding the identification, route, and function of each fiber installed at that location. Ensure that a copy of this information is placed alongside the installed equipment (for instance, in a document pouch or drawer within a field cabinet).

C. Patch Panel Installation: Ensure that patch panels are neatly installed and secured in a weather-proof enclosure.

D. Conduit Installation:

1. Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Standard Plans. Construct conduit runs as straight as possible. Mark the location of the conduit system

with route markers every 1,000 feet and at every pull box and splice box. Ensure that all route markers used are new and consistent in appearance.

2. Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.
3. Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.
4. Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.
5. Install the conduit system so the fiber optic cable maintains the minimum bend radius. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Coupling method and material to be in compliance with manufacturer's installation guidelines.
6. Conduit Terminations:
    a. Where conduit enters a box, fitting, or other enclosure, provide a bushing or adapter (end bell, conduit adapter, etc.) to protect the conductor or cable from abrasion unless the box, fitting, or enclosure provides equivalent protection.
    b. For conduit to be encased in concrete, wrap with tape, or otherwise protect all terminations to prevent the entrance of concrete.
    c. Connect new underground conduits to existing underground conduits with a pull box.
    d. Seal conduits terminating in a pull box or junction box with a moisture resistant sealant.
7. Restoration of Trench Areas: Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.
8. Above-Ground Installation
    a. Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration.
    b. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5-foot centers.
9. Elbow Curvature:
    a. For 2-inch conduit, the radius of curvature of the centerline of any bend shall not be less than 9.5 inches.

E. Fiber-Optic Cable Locate Wire:
   1. Installation:
      a. Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. When conduit is placed by trenching, bury locate wire along the centerline of the top outer surface of installed conduit.
      b. Do not run locate wires into field cabinets. Terminate locate wires at the following locations or as shown on the Plans, nearest pull box to a field cabinet, nearest pull box to a building, and splice box locations. Ensure that wire termination occurs in a pull box.
      c. Install WGUs in pull boxes and splice boxes as shown in the Plans. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.
   2. Testing: Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system. Perform continuity tests and insulation resistance tests on all locate wires. Replace, or repair defective locate wire at no additional cost.

F. Route Markers:
   1. Install route markers for new fiber optic cable installations, replace route markers as shown in the Plans, and ensure the following:
      a. Markers are plumb and level and the notification information is clearly visible when viewed from the side facing the roadway.
      b. Markers are set within the right of way.
      c. Markers are placed at a one-foot offset from the conduit system.
      d. The top of the marker post is a minimum of five feet and maximum of six feet above the finish grade
      e. Place marker at each pull box location.
      f. Markers are installed on both sides of a stream, river, or other water crossing, and on both sides of aboveground attachments such as bridges and walls.
   2. Remove and replace all marker posts damaged during installation at no additional cost. Provide as-built documentation at the completion of installation that includes location of all installed route markers and correlates the marker to the fiber optic infrastructure that it signifies.

G. Pull and Splice Boxes:
   1. Do not install power and communication cables in the same box.

2. Install pull and splice boxes in accordance with Plans. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Prior to installation, pour in a bed of pea rock or crushed stone at least one foot deep, with horizontal dimensions four inches longer than the width and length of the pull box. The pull or splice box installation shall be placed so that the inside edge of the box rests entirely on a gravel bed. Do not install pull or splice boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without exceeding the cable bend radius.
3. Provide conductive metal ground rod that is at least 5/8 inches in diameter and 48 inches long. Ground rod shall be installed vertically within three inches of the inside edge of the pull or splice box, with at least 10 inches of the rod exposed above the gravel base.
4. Placement and Spacing: Pull boxes shall be spaced a maximum of 1,000 feet apart, and within 20 feet of either side of a roadway, and within 10 linear feet of any fiber optics termination point. The County agency shall reserve sole determination whether spacing of pull boxes shall be less or more than the standard 1,000 feet apart.
5. Relocation of Pull and Splice Boxes:
    a. Relocation of pull and splice boxes shall consist of removing an existing box and installing the box at the location shown in the Plans. Restore the area of the box removal and relocation to the condition of the adjacent area. The costs for restoration will be included in the Contract unit price of the relocation.
    b. Boxes damaged due to the Contractor's operations must be replaced by the Contractor at no cost to the County. Replacement boxes must be of the same material and size of the existing box, unless directed otherwise by the CCITD.

3.4 FIELD QUALITY CONTROL

A. Installation Testing:
    1. General:
        a. Notify the CCITD of cable testing at least 14 calendar days in advance. Submit the testing procedures to the CCITD staff for approval prior to commencement of testing. Perform all tests at 1310 nm and 1550 nm wavelengths, and include the last calibration date of all test equipment with the test parameters set on the equipment in the test documentation. Ensure that the last calibration date of all test equipment is within the last 12 months and that the calibration certificate is maintained in the test equipment case or provided electronically when requested. Test all installed fibers (terminated and un-terminated) using

methods identified in this Section. All tests must be conducted with a launch box.

b. Fibers containing splices or fibers terminated on both ends must be bidirectionally tested.

c. Present the results of the optical time domain reflectometer (OTDR) testing (i.e., traces for each fiber) and a loss table showing details for each splice and termination tested to the CCITD in an approved electronic format. Ensure all OTDR testing complies with the EIA/TIA-455-61 standard.

2. OTDR Attenuation Testing: Perform testing on all fibers to ensure that attenuation does not exceed allowable loss (0.35 dB/km for 1310 nm wavelength, 0.25 dB/km for 1550 nm wavelength, plus 0.5 dB for any connectors and 0.1 dB for splices). Repair or replace cable sections exceeding allowable attenuation at no cost to the County.

3. OTDR Tracing: Test all fibers with an OTDR at wavelengths of 1310 and 1550 nm.

4. Splice Loss Testing: Ensure that the splice loss for a SMF fusion splice does not exceed a maximum bidirectional average of 0.1 dB per splice when measured using an OTDR. Repair or replace splices that exceed allowable attenuation at no cost to the County.

5. Connector Loss Testing**:** Ensure that the attenuation in the connector at each termination panel and its associated splice does not exceed 0.6 dB when measured using an OTDR. Repair or replace connectors exceeding allowable attenuation at no cost to the County.

B. Fiber Optic Cable Locator: Locate and mark all existing County owned or maintained fiber optic facilities within project limits prior to performing any subsurface work. Locate and mark as necessary to ensure that all fiber optic facilities are located and visibly marked at all times.

C. Fiber-Optic Cable Warranty: Ensure that the fiber optic cable, the splice enclosures, and terminations have a manufacturer's warranty covering defects for a minimum of two years from the date of final acceptance. Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

D. Pull and Splice Box Warranty: Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance. Ensure the warranty includes providing replacements, within 30 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

E. Documentation and Closeout

1. Within ten (10) days following successful installation and testing of the fiber-optic communication work, Contractor shall provide the County both printed and electronic copies of as-built network drawings.
2. At minimum, as-builts shall contain:
    a. Network block diagrams, identifying endpoints for fiber termination, number of fiber strands and cables, and topology layout.
    b. Updated site plan of each affected installation site identifying location of the IT telecommunications cabinet, in addition to pull boxes and handhole locations at the installation and interconnecting conduit.
    c. Updated overall site plan identifying the fiber-optic cable installation for the entire project, including all interconnecting segments between installations or other endpoint locations. Overall site plant shall include all pull boxes, splice vaults, handholes, and fiber cable lengths.
    d. As-built plans shall additionally be provided as converted Google Earth and Visio formats for County use.

END OF SECTION

DETAILS

SECTION 3

UTILITIES DETAIL DRAWINGS

~~Go to the Collier County website below for the latest revision of the Utilities Detail Drawings:~~

For the latest revisions to the Utilities Detail Drawings visit:

~~https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual~~

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 3

UTILITIES DETAIL DRAWINGS

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NP-2	Typical Irrigation Service Meter Setting Detail for Connection To Irrigation Main	05/2009
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Drawing No.	Title	Revision Date
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Drawing No.	Title	Revision Date
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PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET							
	VERTICAL BENDS							
	90°		45°		22–1/2°		11–1/4°	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
4	60	24	25	10	12	5	6	3
6	85	34	35	14	17	7	9	3
8	110	43	45	18	22	9	11	9
10	133	52	55	21	27	10	13	5
12	155	60	64	25	31	12	15	6
16	198	76	82	31	40	15	20	8
18	218	83	90	35	44	17	22	8
20	238	90	98	37	47	18	23	9
24	277	104	115	43	55	21	27	10
30	330	122	136	51	66	24	33	12
36	379	139	156	57	75	28	38	14

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET				
	HORIZONTAL BENDS				DEAD ENDS (2)
	90°	45°	22–1/2°	11–1/4°	
4	23	9	5	2	55
6	32	13	6	3	77
8	40	17	8	4	100
10	48	20	10	5	120
12	56	23	11	6	141
16	71	29	14	7	181
18	77	32	15	8	200
20	84	35	17	8	218
24	96	40	19	10	253
30	112	47	22	11	303
36	127	53	25	13	350

NOTES:

1. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.

2. ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS. WITH RESTRAINT ON BOTH SIDES OF THE VALVE.

3. RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.

4. RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).

5. THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

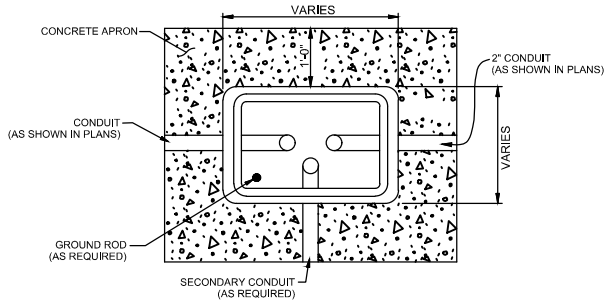
PIPE RESTRAINT SCHEDULE

NTS

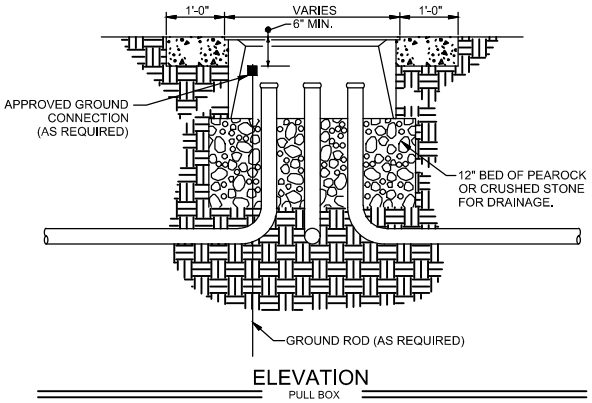
REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
G–10



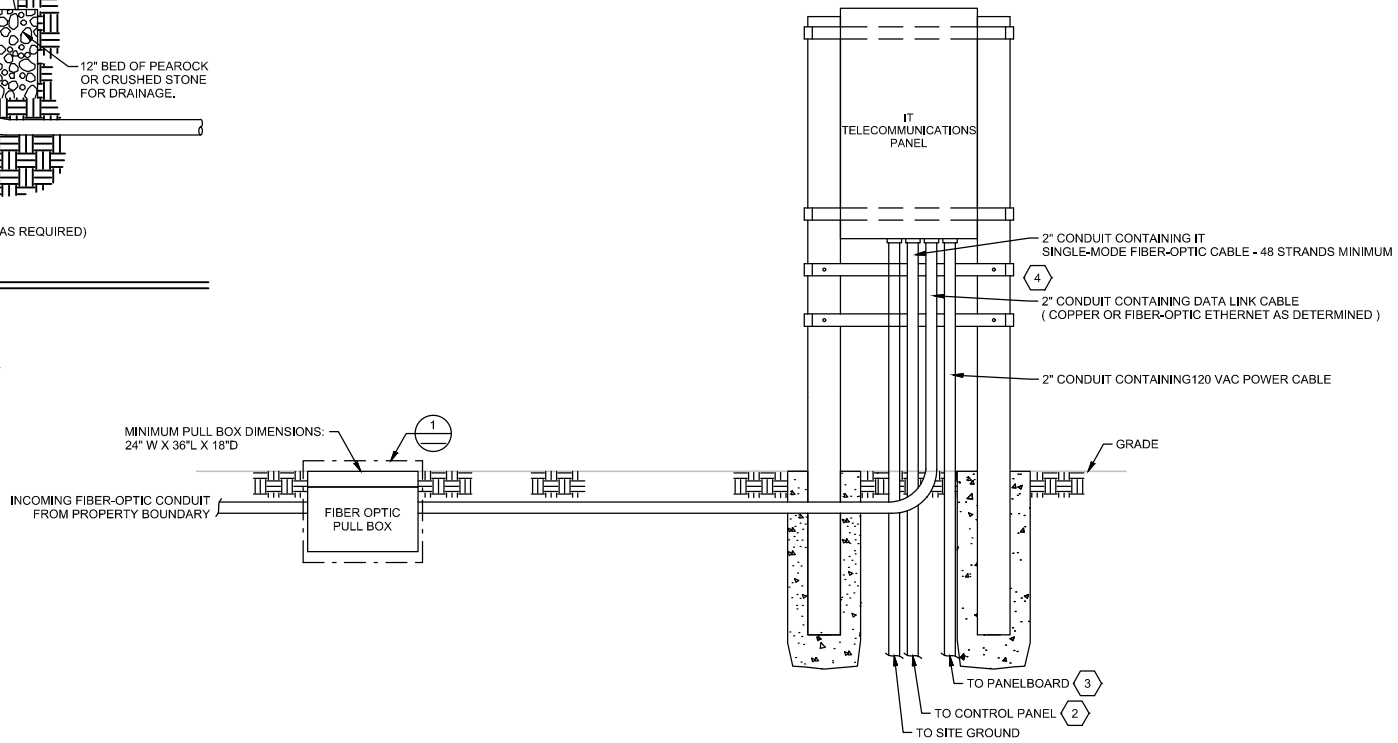
PLAN



1 DETAIL

EQUIPMENT SPECIFICATIONS

MARK	
1	DRAWING NOT TO SCALE.
2	CONTROL PANEL LOCATION AND CONFIGURATION VARIES. REFER TO COUNTY DETAILS WW-8, WW-8A, AND WW-8B FOR DETAILS.
3	120VAC PANELBOARD LOCATED ON EQUIPMENT RACK WITH OTHER PANELS NOT SHOWN. REFER TO COUNTY DETAIL WW-9A FOR COMPLETE EQUIPMENT RACK LAYOUT AND ADDITIONAL PANELBOARD REQUIREMENTS.
4	ALL TELECOMMUNICATIONS CONDUIT ENTERING SITE FROM STATION SIDE HANDHOLE SHALL BE SCH 80 PVC UNLESS OTHERWISE NOTED.
5	REFER TO COUNTY SPECIFICATIONS FOR DETAILED REQUIREMENTS ON MATERIALS OF CONSTRUCTION AND INSTALLATION METHODS.



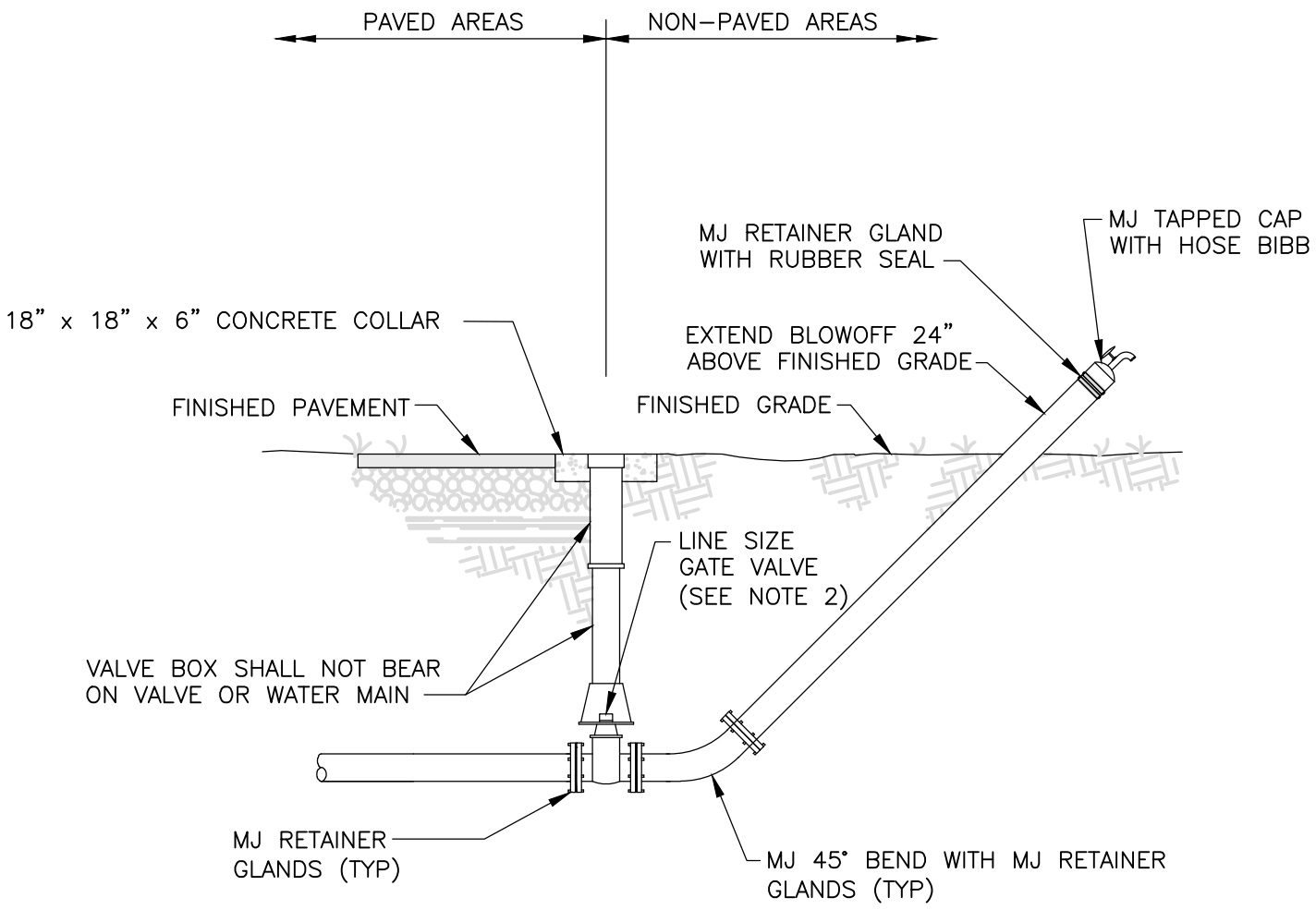
IT FIBER-OPTIC TELECOMMUNICATIONS DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
G-12

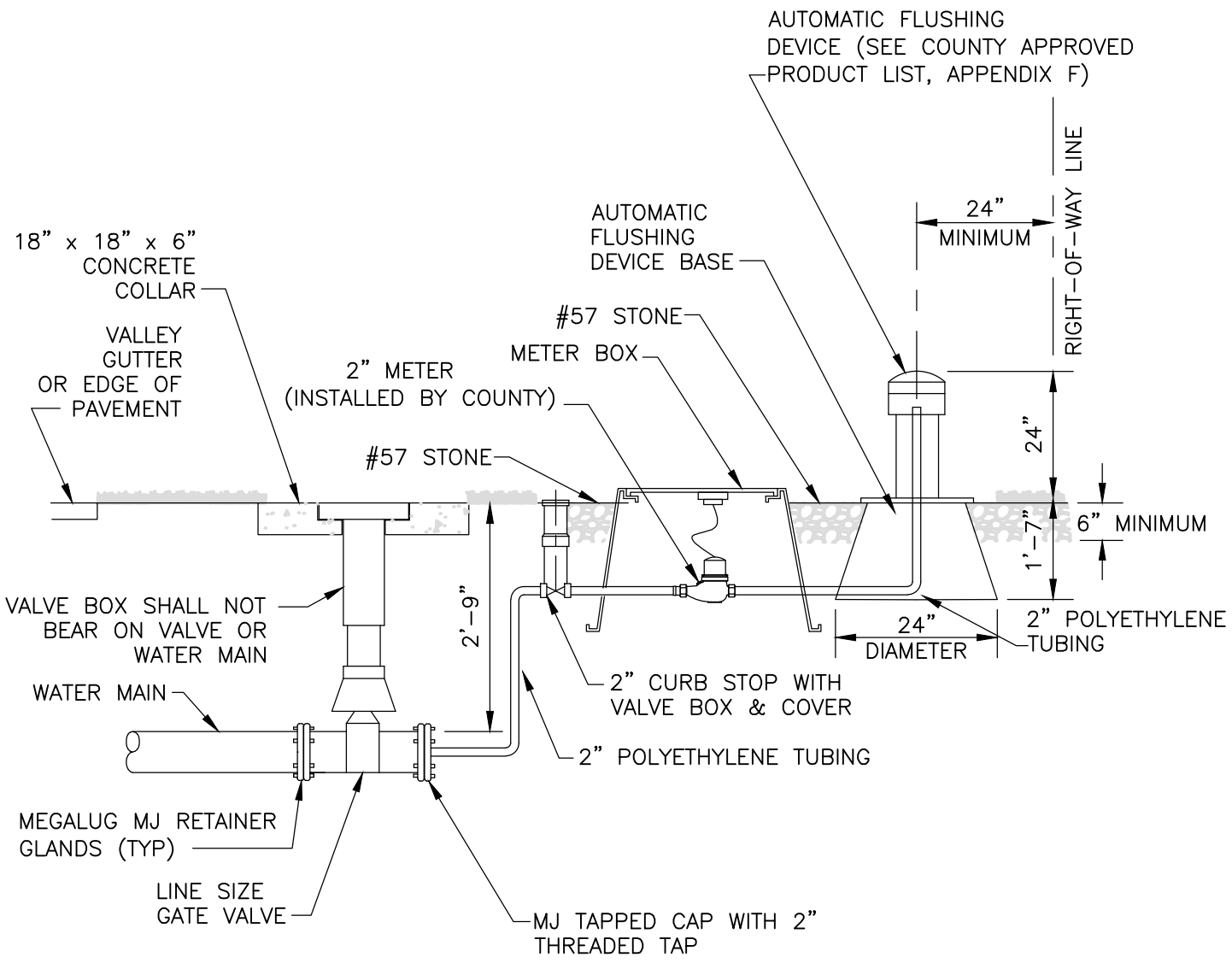


SIDE VIEW

NOTES:

1. MJ TAPPED CAP WITH HOSE BIBB IS TO BE REMOVED AFTER INITIAL BACTERIOLOGICAL CLEARANCE AND PRIOR TO WATER MAIN ACCEPTANCE.
2. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
3. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

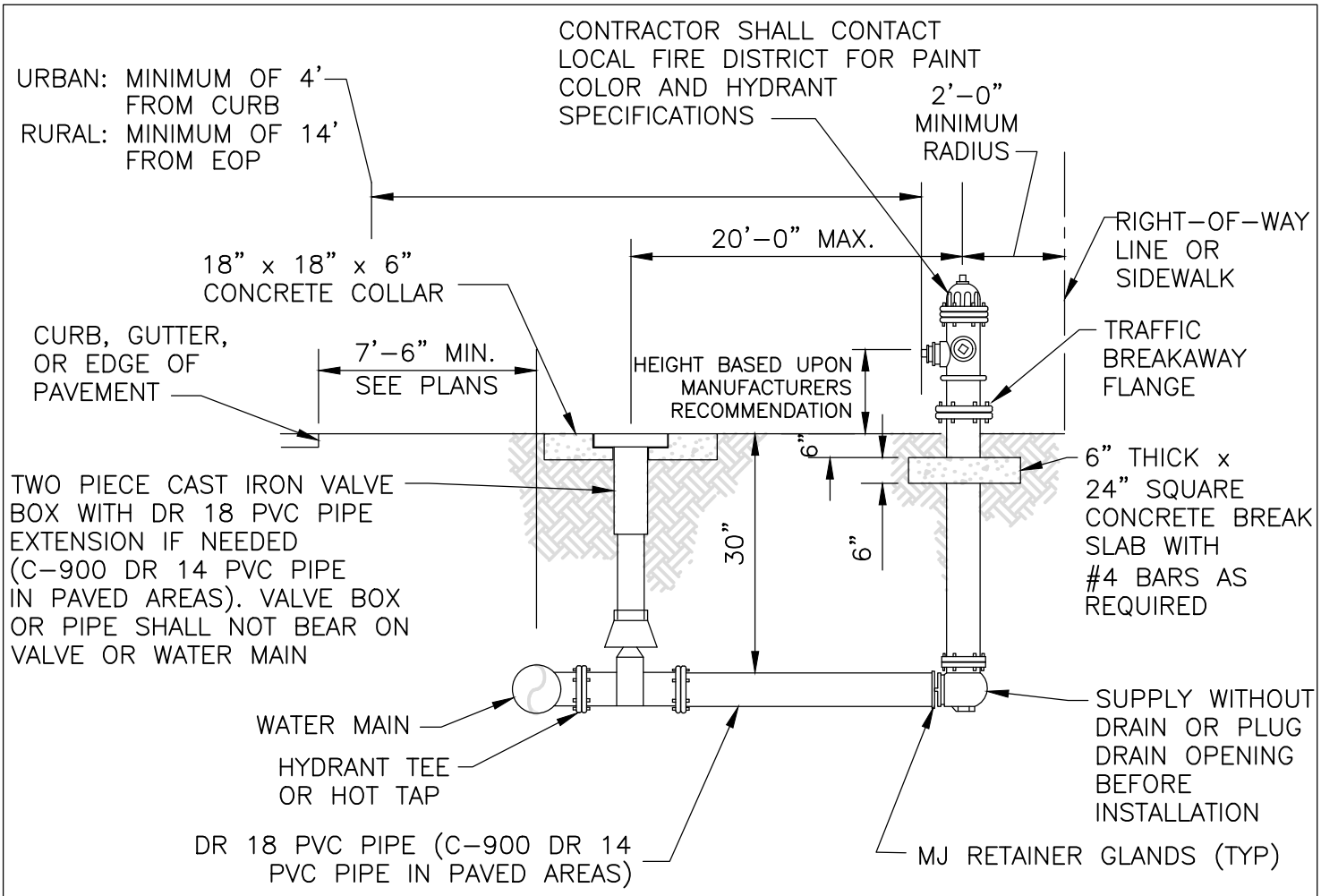
TEMPORARY BLOWOFF ASSEMBLY WITH BACTERIAL SAMPLING POINT DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W–1
NTS			



NOTES:

1. PIPING SHALL BE INSTALLED UP TO 2" CURB STOP WITH VALVE BOX AND COVER AT TIME OF MAIN INSTALLATION.
2. AUTOMATIC FLUSHING DEVICE SHALL BE SHUT OFF UNTIL MAIN LINE HAS BEEN BACTERIOLOGICALLY TESTED.
3. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
4. AT TIME OF ACCEPTANCE, WATER DEPARTMENT WILL INSTALL 2" METER.
5. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W-2
NTS			

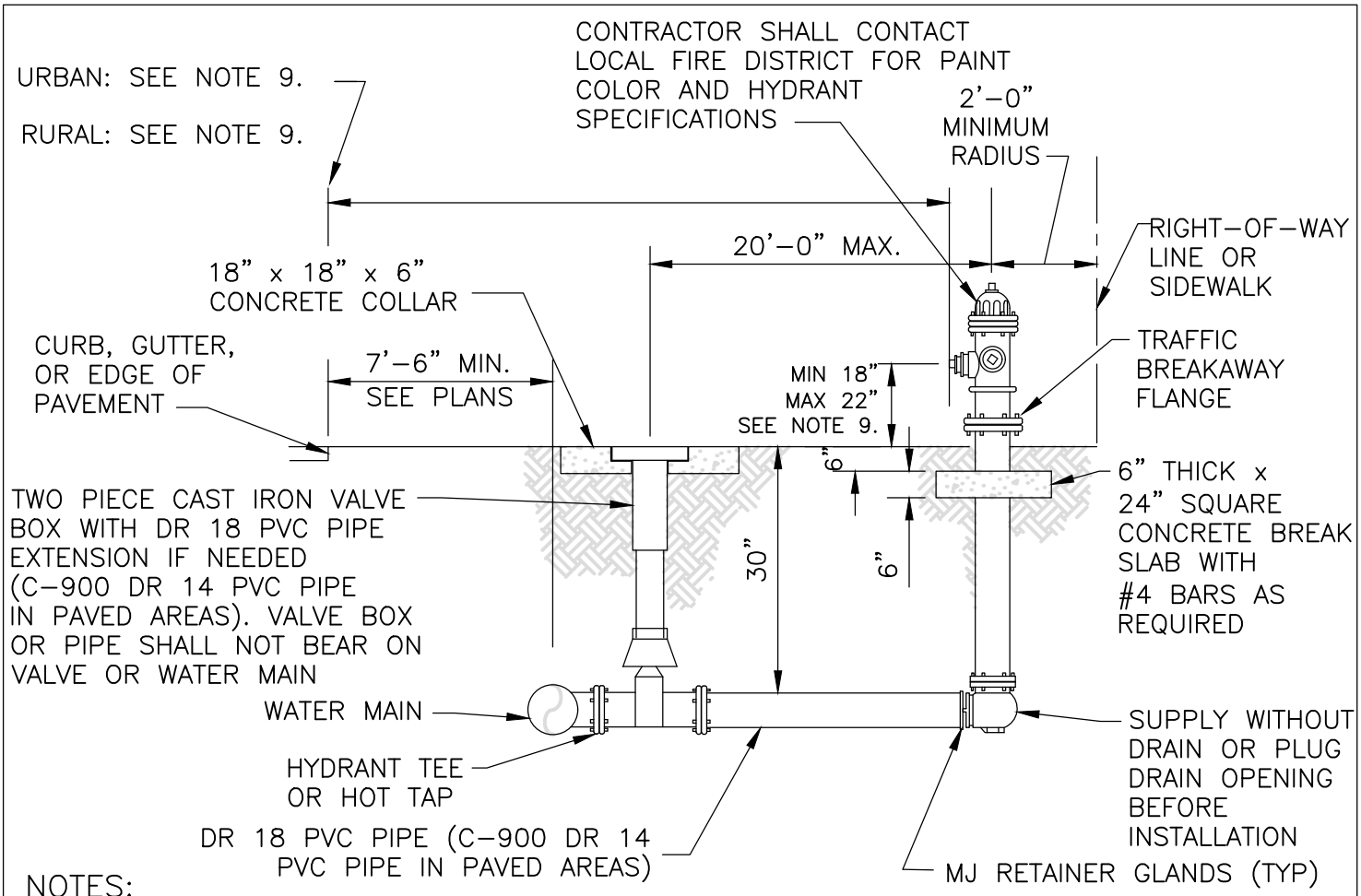


NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5-1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C-502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

FIRE HYDRANT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-3
NTS			

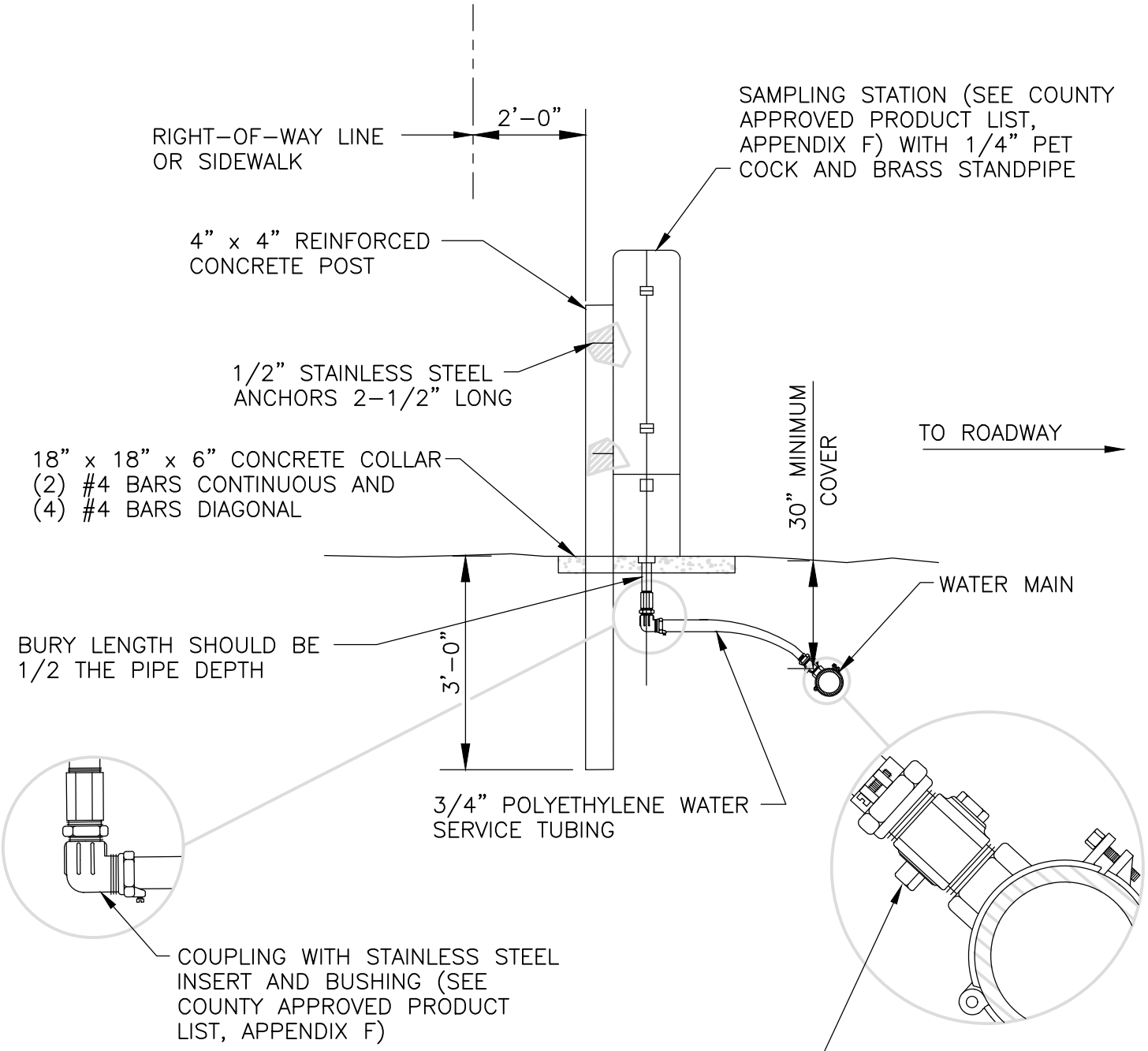
REVISED DETAIL



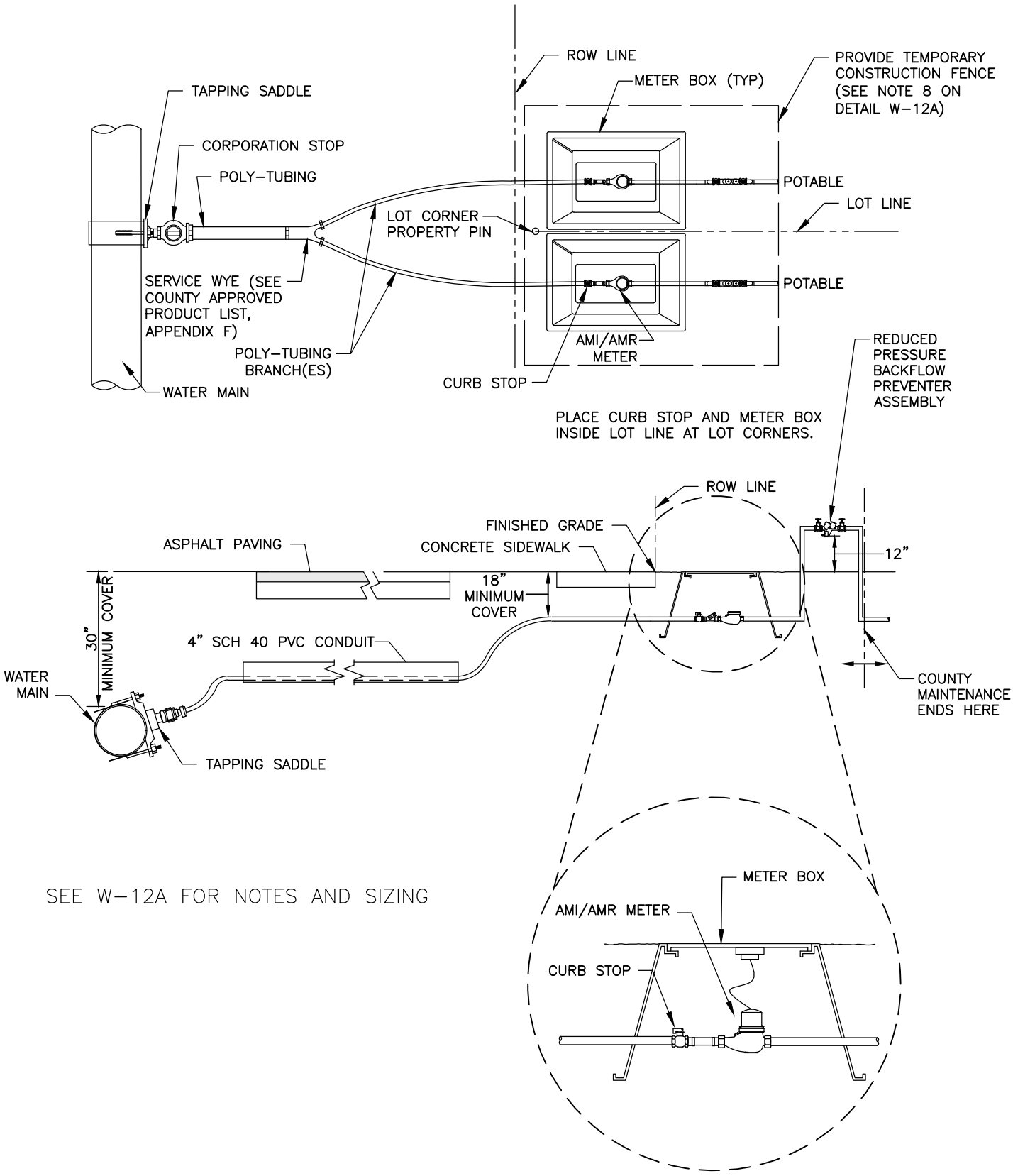
NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5-1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C-502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. INSTALLATION OF ALL FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE DEPARTMENT OF TRANSPORTATION AND LOCAL FIRE CONTROL DISTRICT REQUIREMENTS.

FIRE HYDRANT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-3
NTS			



PERMANENT BACTERIAL SAMPLE POINT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W–6
NTS			



SEE W-12A FOR NOTES AND SIZING

TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-12
NTS			

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	$1-\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	$1-\frac{1}{2}$"	1"
1" METER	$1-\frac{1}{2}$"	(2) 1" METERS	$1-\frac{1}{2}$"	1"
$1-\frac{1}{2}$" METER	$1-\frac{1}{2}$"			
2" METER	2"			

NOTES:

1. $1-\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C-901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.
8. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AT WATER METER SETTINGS UNTIL BUILDING CERTIFICATE OF OCCUPANCY OR INSTALLATION OF SOD. FENCE TO BE 3' IN HEIGHT AND OFFSET 3' FROM ASSEMBLY.

SERVICE CONNECTION SIZING CHART AND NOTES	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-12A
NTS			

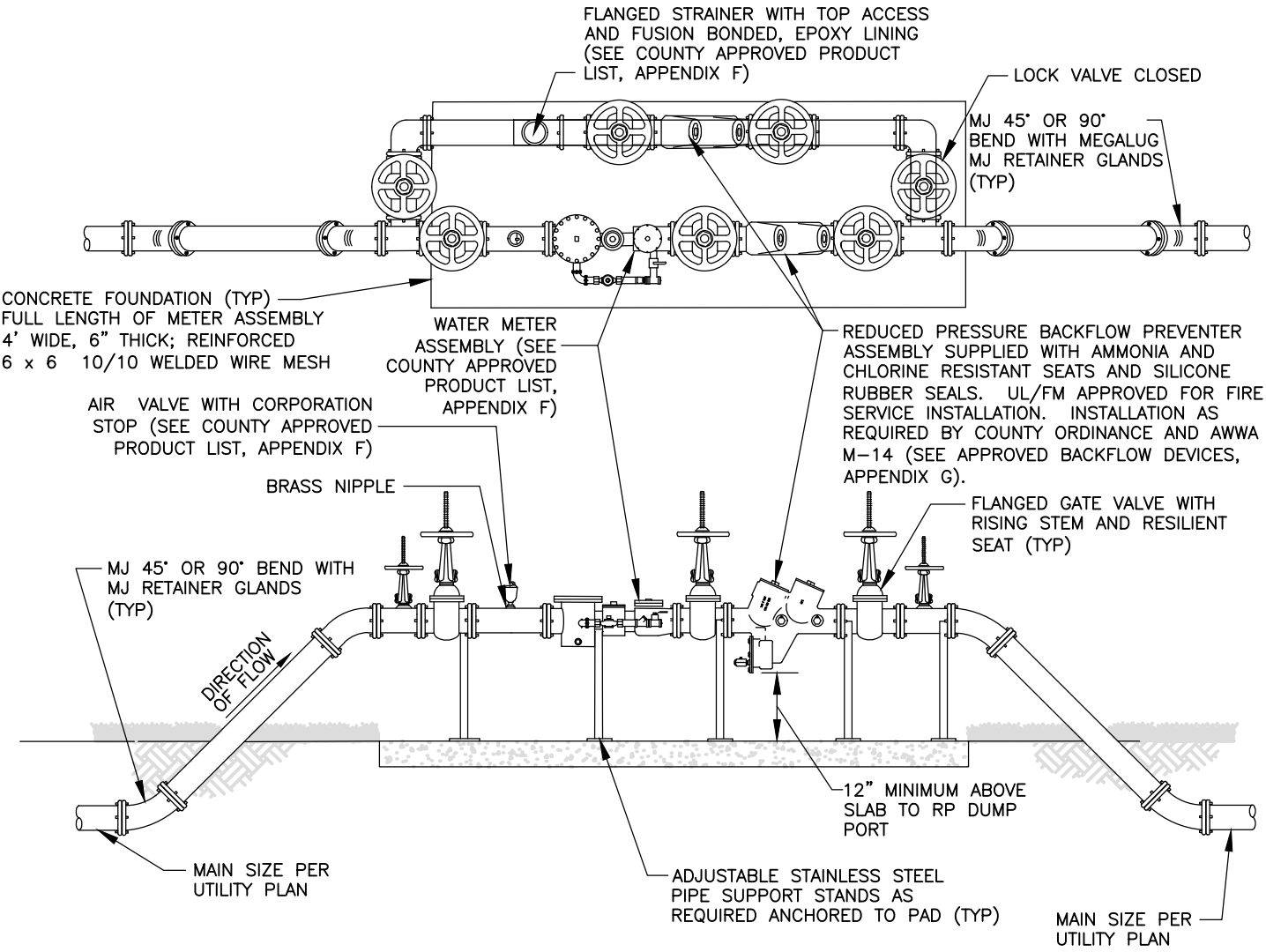
REVISED DETAIL

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	$1-\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	$1-\frac{1}{2}$"	1"
1" METER	$1-\frac{1}{2}$"	(2) 1" METERS	$1-\frac{1}{2}$"	1"
$1-\frac{1}{2}$" METER	$1-\frac{1}{2}$"			
2" METER	2"			

NOTES:

1. $1-\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C-901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.
8. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AT WATER METER SETTINGS UNTIL BUILDING CERTIFICATE OF OCCUPANCY OR INSTALLATION OF SOD. THE EXISTING TEMPORARY CONSTRUCTION FENCE SHALL BE MODIFIED AS NECESSITATED BY LOT DEVELOPMENT. FENCE TO BE 3' IN HEIGHT AND OFFSET 3' FROM ASSEMBLY.

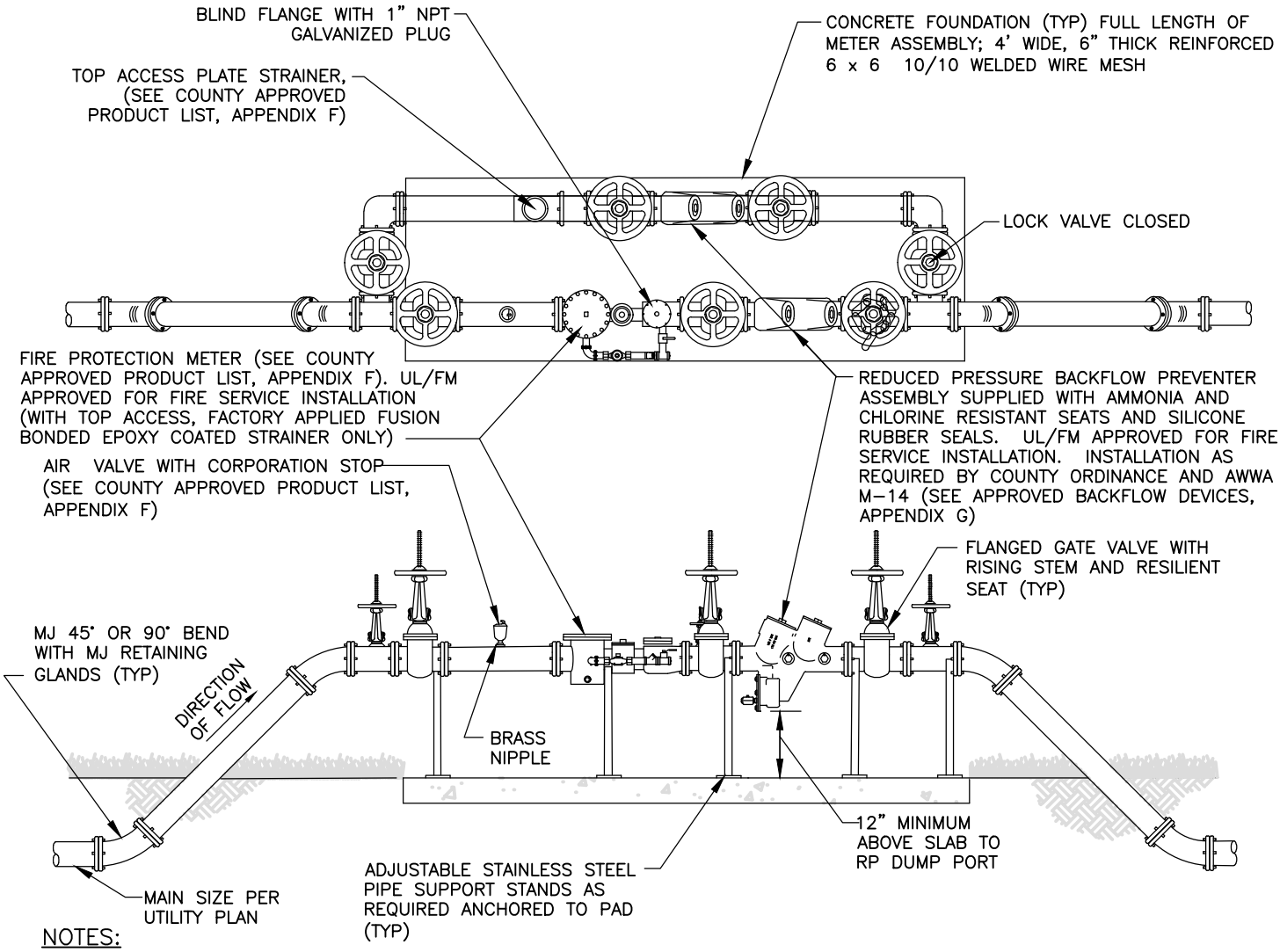
SERVICE CONNECTION SIZING CHART AND NOTES	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-12A
NTS			



NOTES:

1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE ONLY.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW UNITS SHALL BE TESTED BY CERTIFIED BACKFLOW TECHNICIAN WITH TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT FOR CERTIFICATION AND APPROVAL.
6. COUNTY WILL REQUIRE DEDICATION OF ALL MATERIALS AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY WATER MAIN.
7. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION).

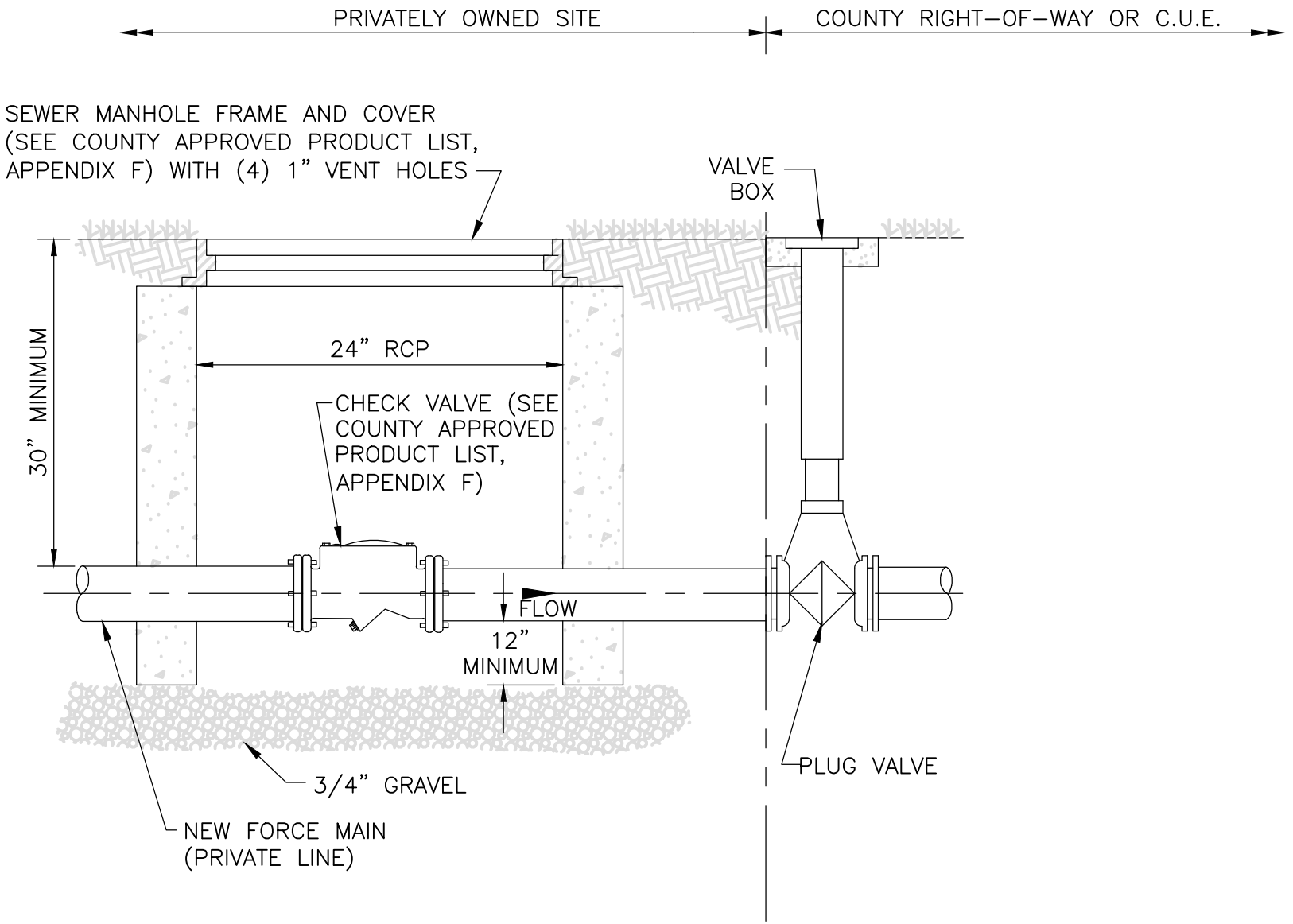
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-13
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. COUNTY REQUIRES DEDICATION OF ALL ABOVE GROUND MATERIAL AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY MAIN.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION),

4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-14
NTS			



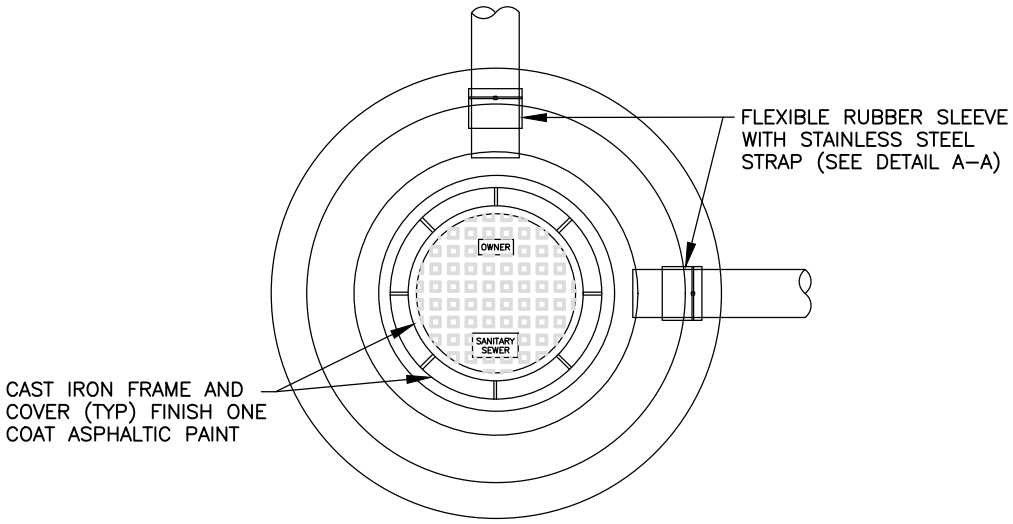
PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

NTS

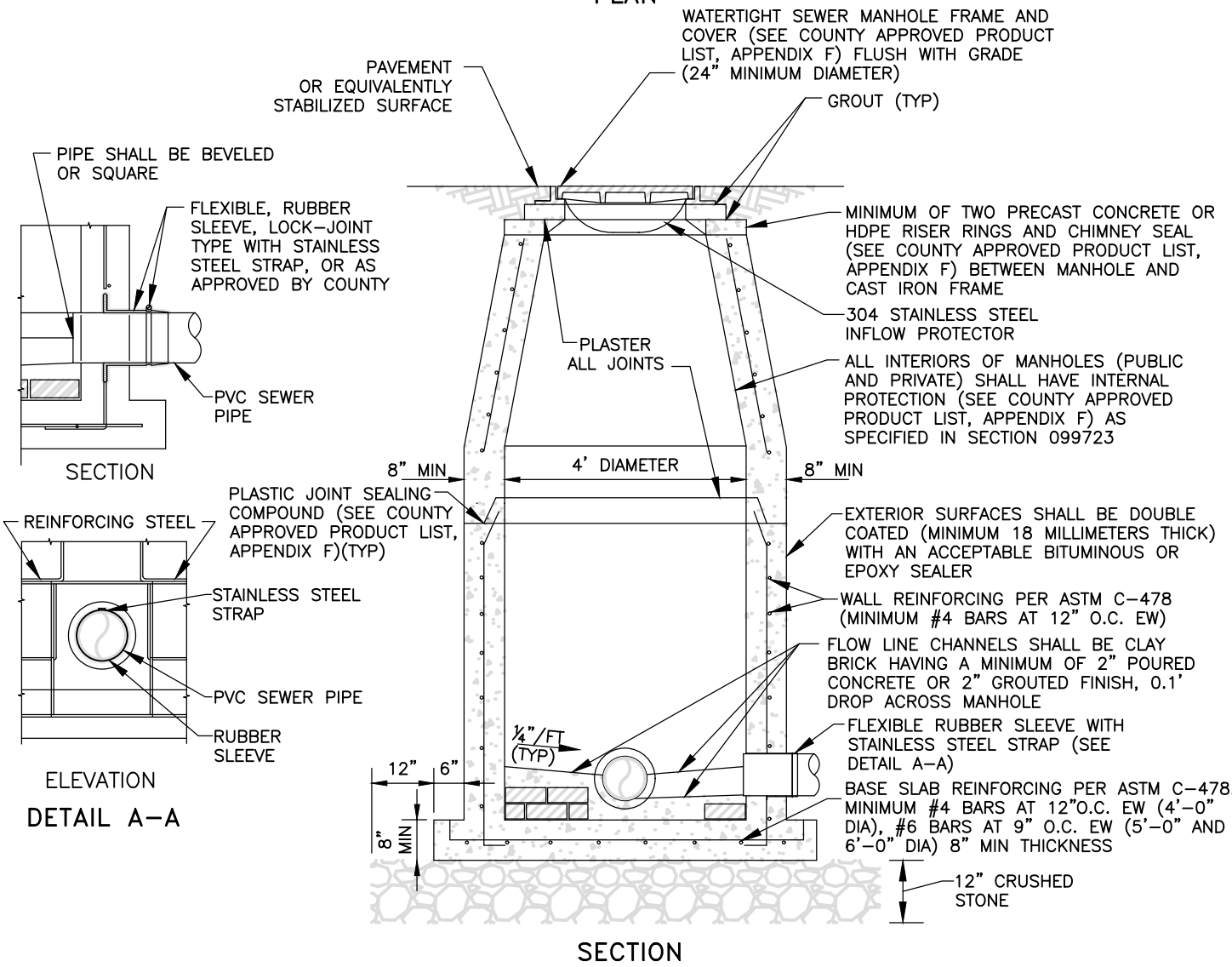
REVISION DATE: JULY 2018

Collier County

SHEET NO. WW-2



PLAN



SECTION

ELEVATION

DETAIL A–A

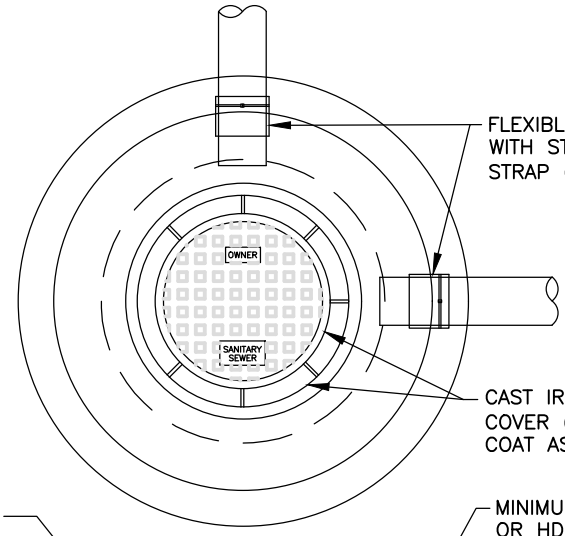
PRECAST REINFORCED CONCRETE MANHOLE DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–3



FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

CAST IRON FRAME AND COVER (TYP) FINISH ONE COAT ASPHALTIC PAINT

PLAN

WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH WITH GRADE (24" MINIMUM DIAMETER)

PAVEMENT

304 STAINLESS STEEL INFLOW PROTECTORS

TOP SLAB REINFORCING PER ASTM C–478 (MIN #4 BARS AT 12" O.C. EW). MIN 8" THICK.

ALL INTERIORS OF MANHOLES (PUBLIC AND PRIVATE) SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AS SPECIFIED IN SECTION 099723

MINIMUM OF TWO PRECAST CONCRETE OR HDPE RISER RINGS AND CHIMNEY SEAL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) BETWEEN MANHOLE AND CAST IRON FRAME

GROUT (TYP)

PLASTIC JOINT SEALING COMPOUND (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) KEYED (TYP)

EXTERIOR SURFACES SHALL BE DOUBLE COATED (MINIMUM 18 MILLIMETERS THICK) WITH AN ACCEPTABLE BITUMINOUS OR EPOXY SEALER

WALL REINFORCING PER ASTM C–478

FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED FINISH, 0.1' DROP ACROSS MANHOLE

FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

BASE SLAB REINFORCING PER ASTM C–478. MINIMUM #4 BARS AT 12"O.C. EW (4'–0" DIA), #6 BARS AT 9" O.C. EW (5'–0" AND 6'–0" DIA). 8" MIN THICKNESS.

12" CRUSHED STONE

8" MIN

8" MIN

12'

24"

12"

8" MIN

4' DIAMETER

VARIES

¼"/FT (TYP)

12"

6"

8" MIN

SECTION

PIPE SHALL BE BEVELED OR SQUARE

FLEXIBLE, RUBBER SLEEVE, LOCK–JOINT TYPE WITH STAINLESS STEEL STRAP, OR AS APPROVED BY COUNTY

PVC SEWER PIPE

SECTION

REINFORCING STEEL

STAINLESS STEEL STRAP

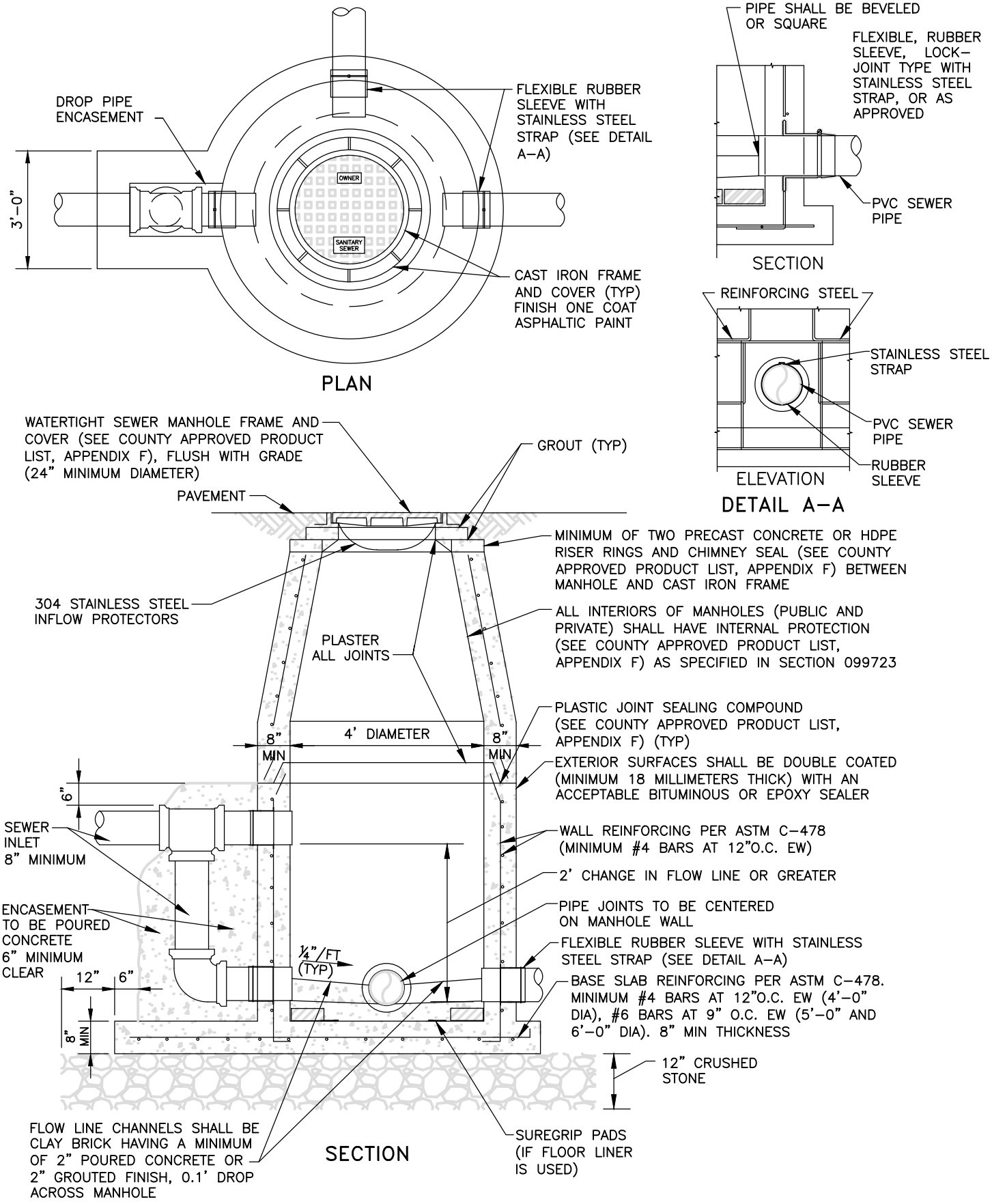
PVC SEWER PIPE

RUBBER SLEEVE

ELEVATION

DETAIL A–A

SHALLOW MANHOLE DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW–4
NTS			



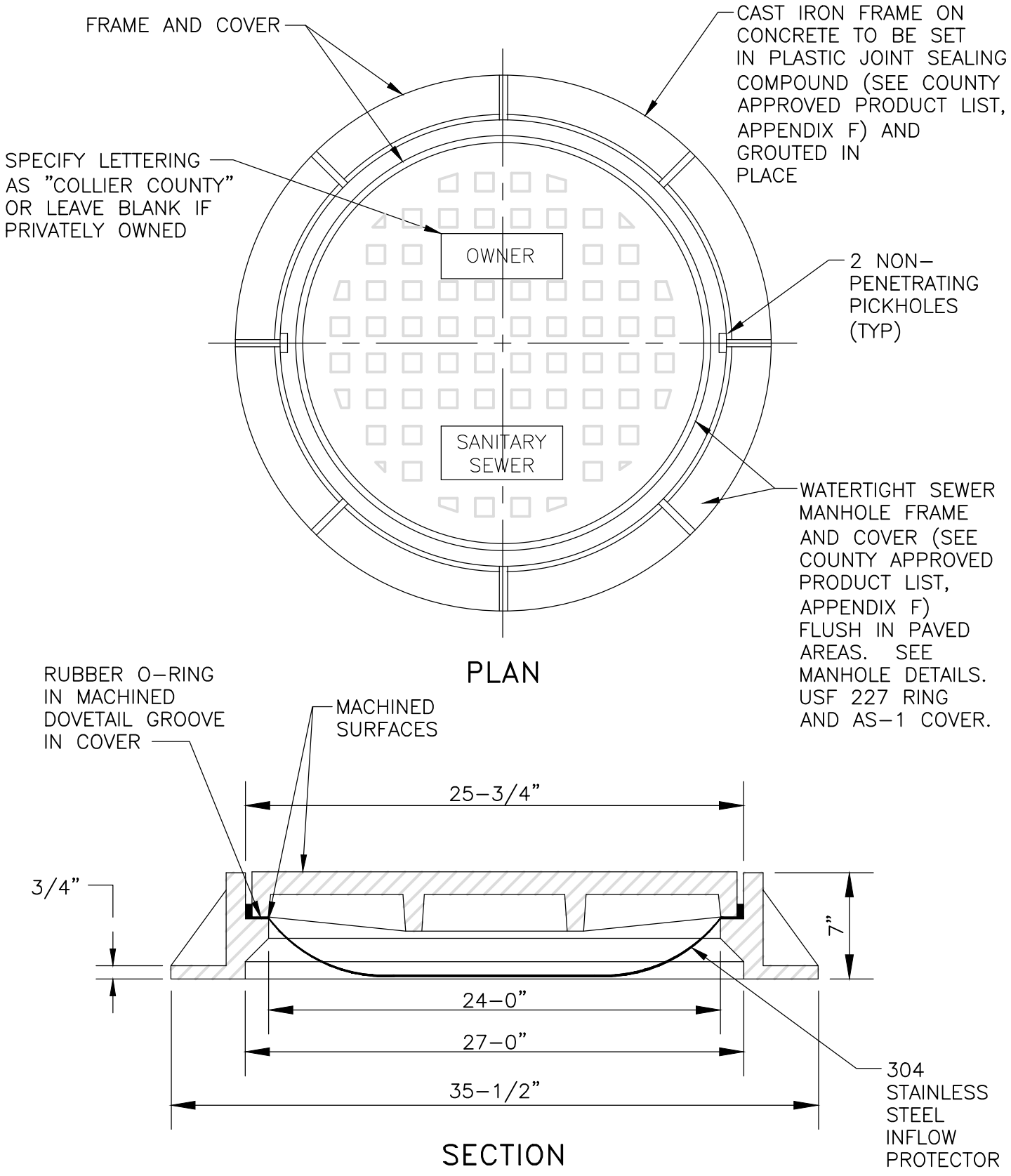
DROP MANHOLE DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–5



MANHOLE RING AND COVER DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW-6
NTS			

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

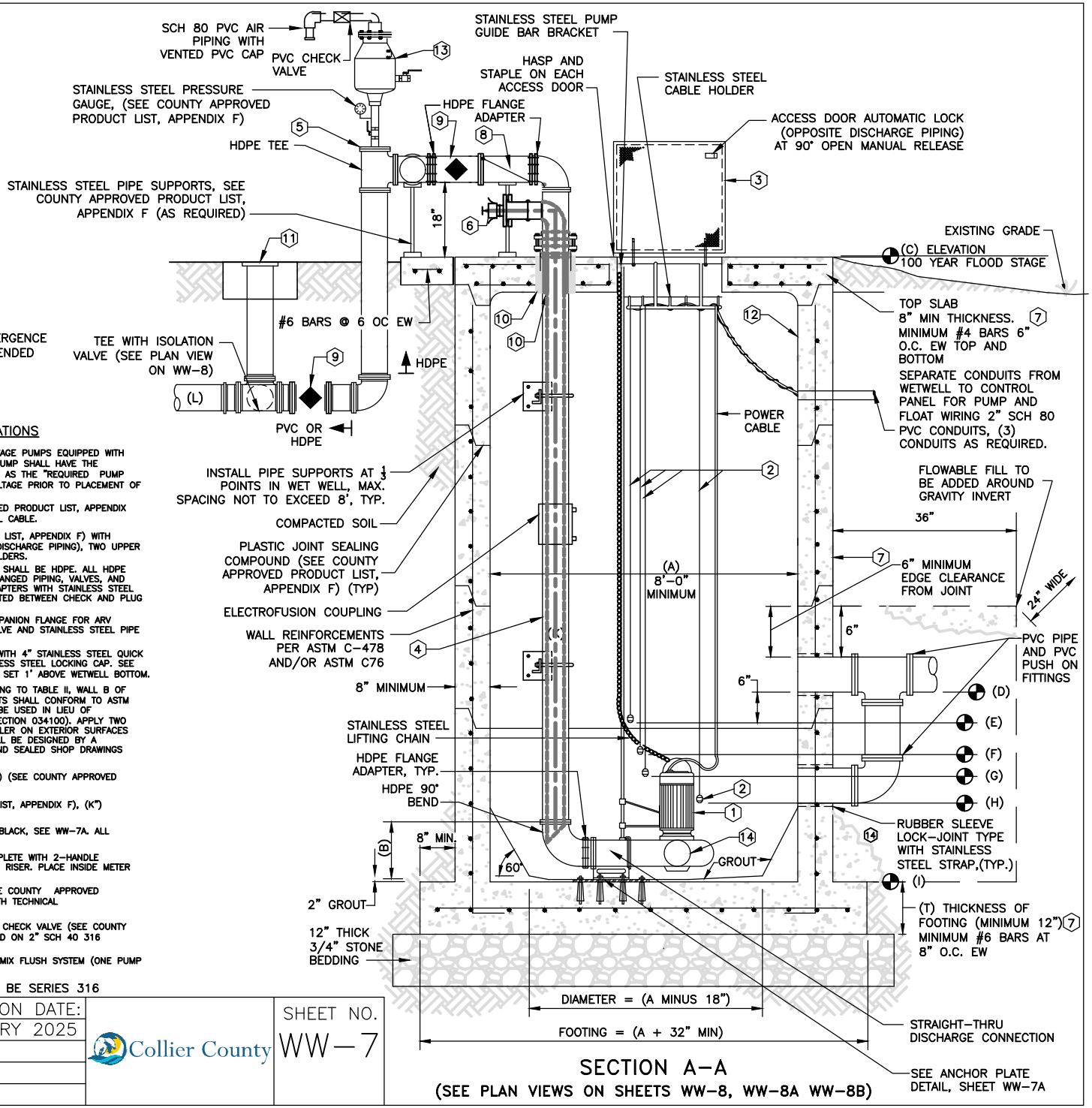
*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER (OPPOSITE DISCHARGE PIPING), TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76 AND/OR ASTM C-478. O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. RAM-NEK MAY BE USED IN LIEU OF O-RING RUBBER GASKETS (SEE SPECIFICATION SECTION 034100). APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL. PUMP STATION WET WELL SHALL BE DESIGNED BY A FLORIDA PROFESSIONAL ENGINEER AND SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



SECTION A-A
(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)

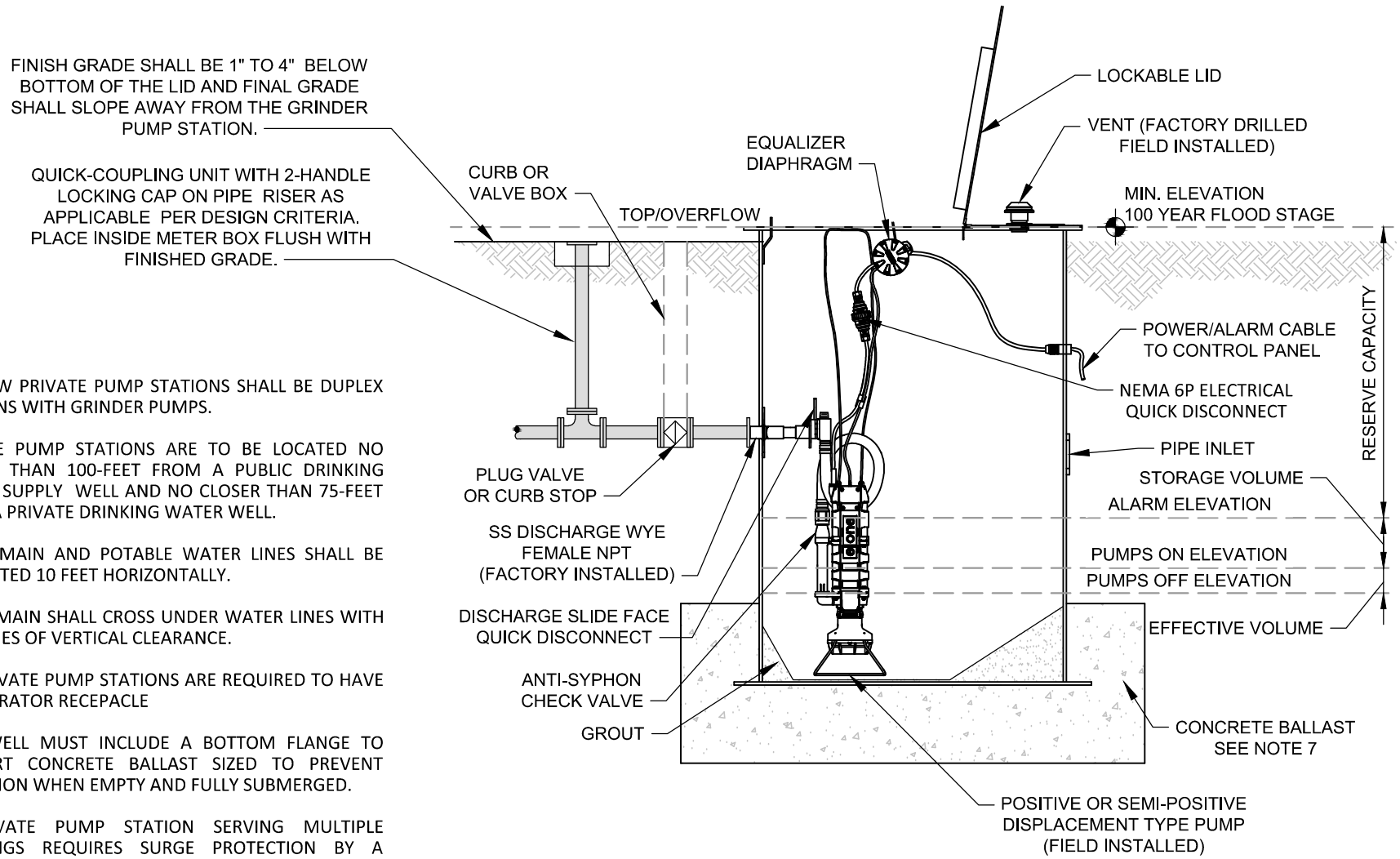
PUMP STATION DETAIL - PROFILE

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-7



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPACLE
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

PRIVATE GRINDER PUMP STATION DETAIL

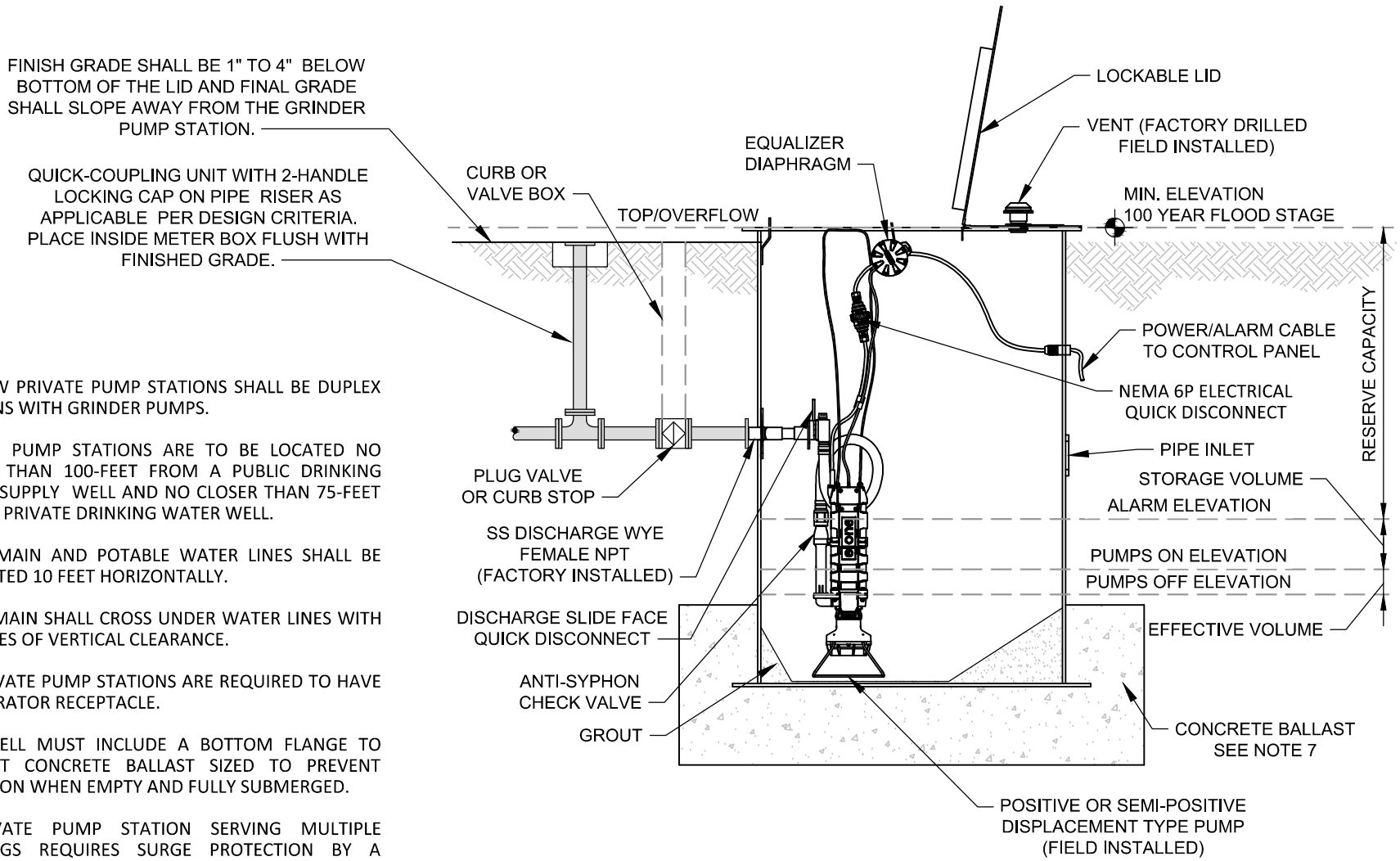
NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–7D

REVISED DETAIL



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPTACLE.
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

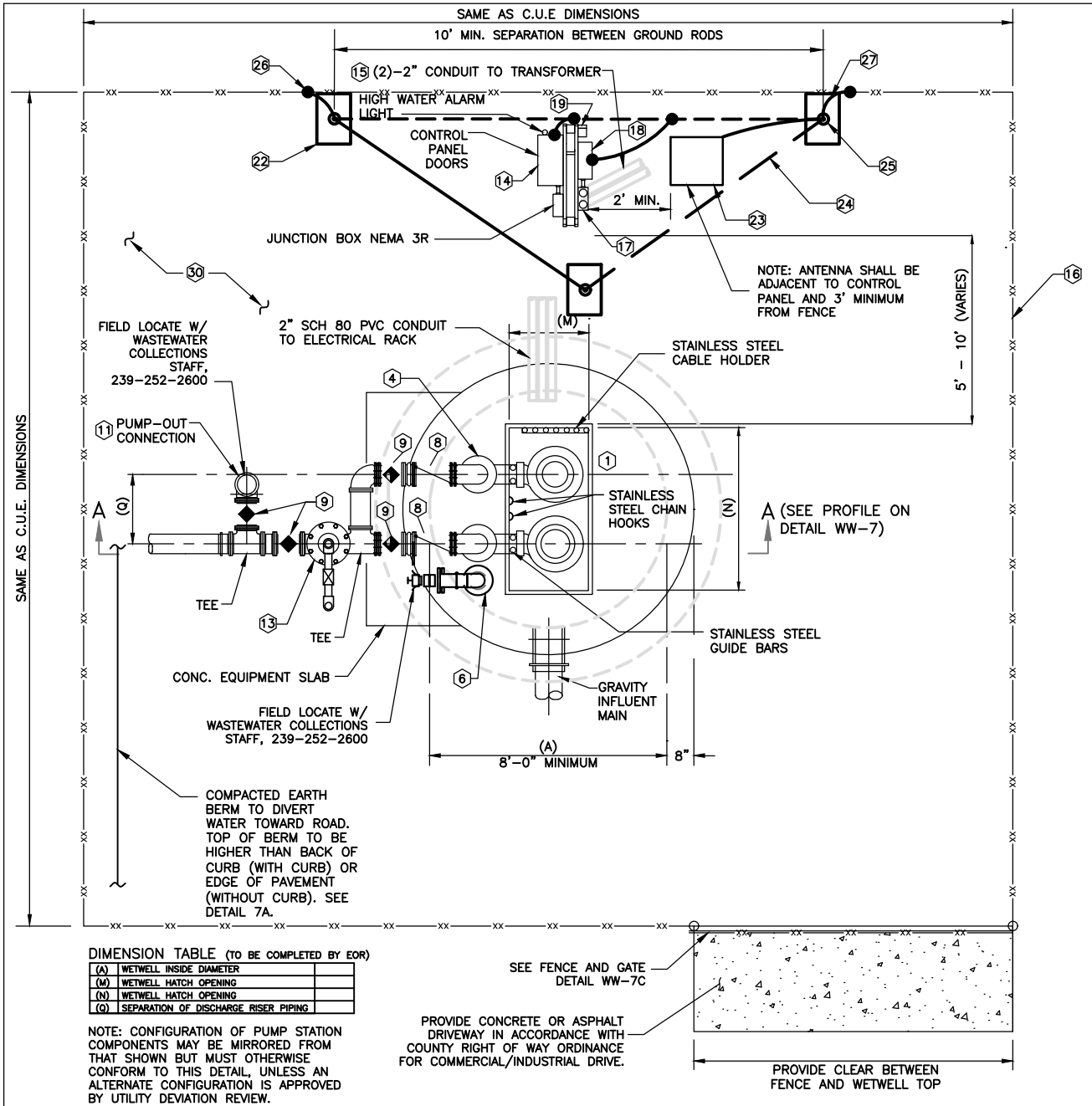
PRIVATE GRINDER PUMP STATION DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-7D



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW-9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600. SEE DETAIL WW-9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

PUMP STATION DETAIL - PLAN

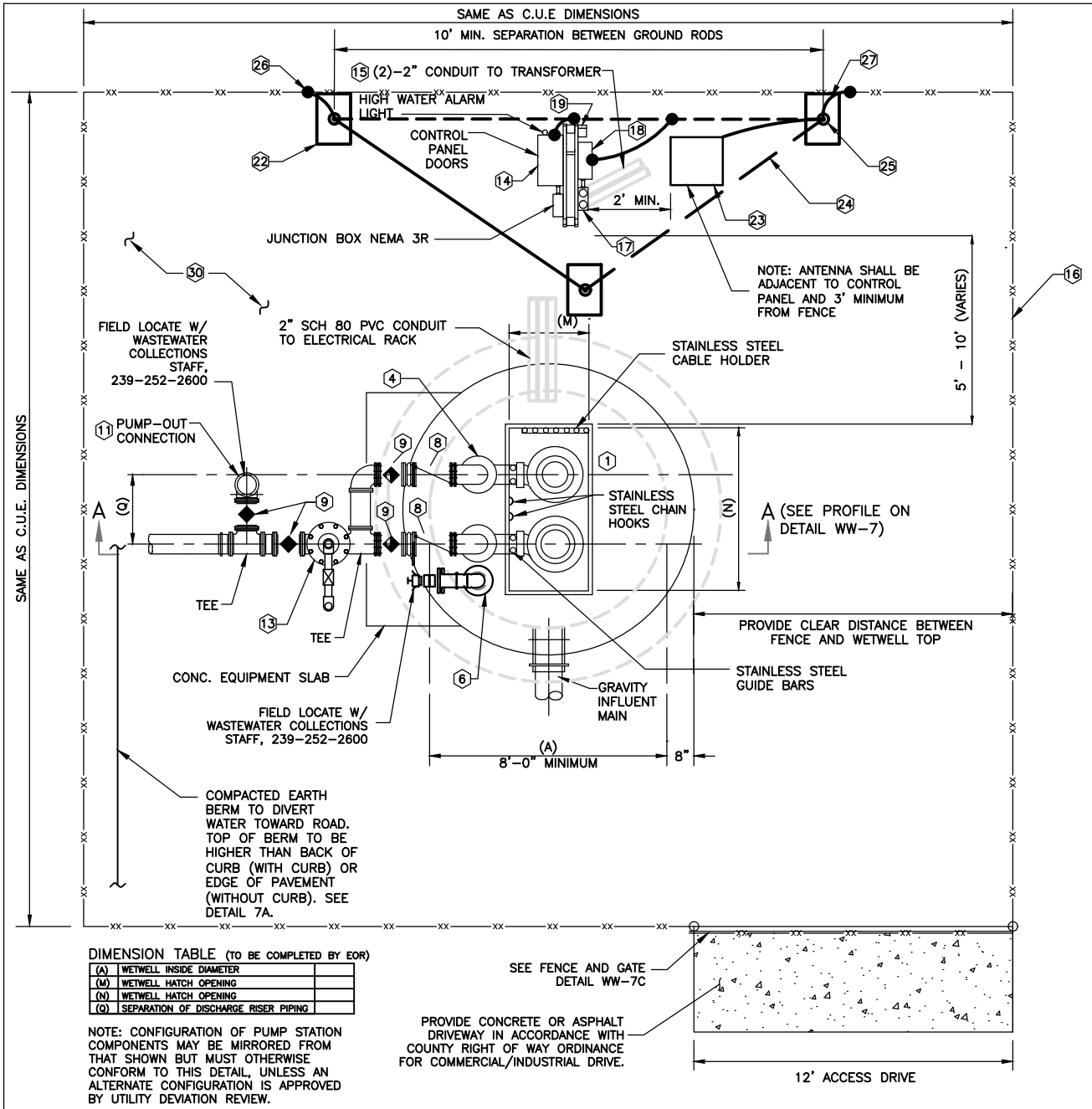
NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8

REVISED DETAIL



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW-9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600. SEE DETAIL WW-9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

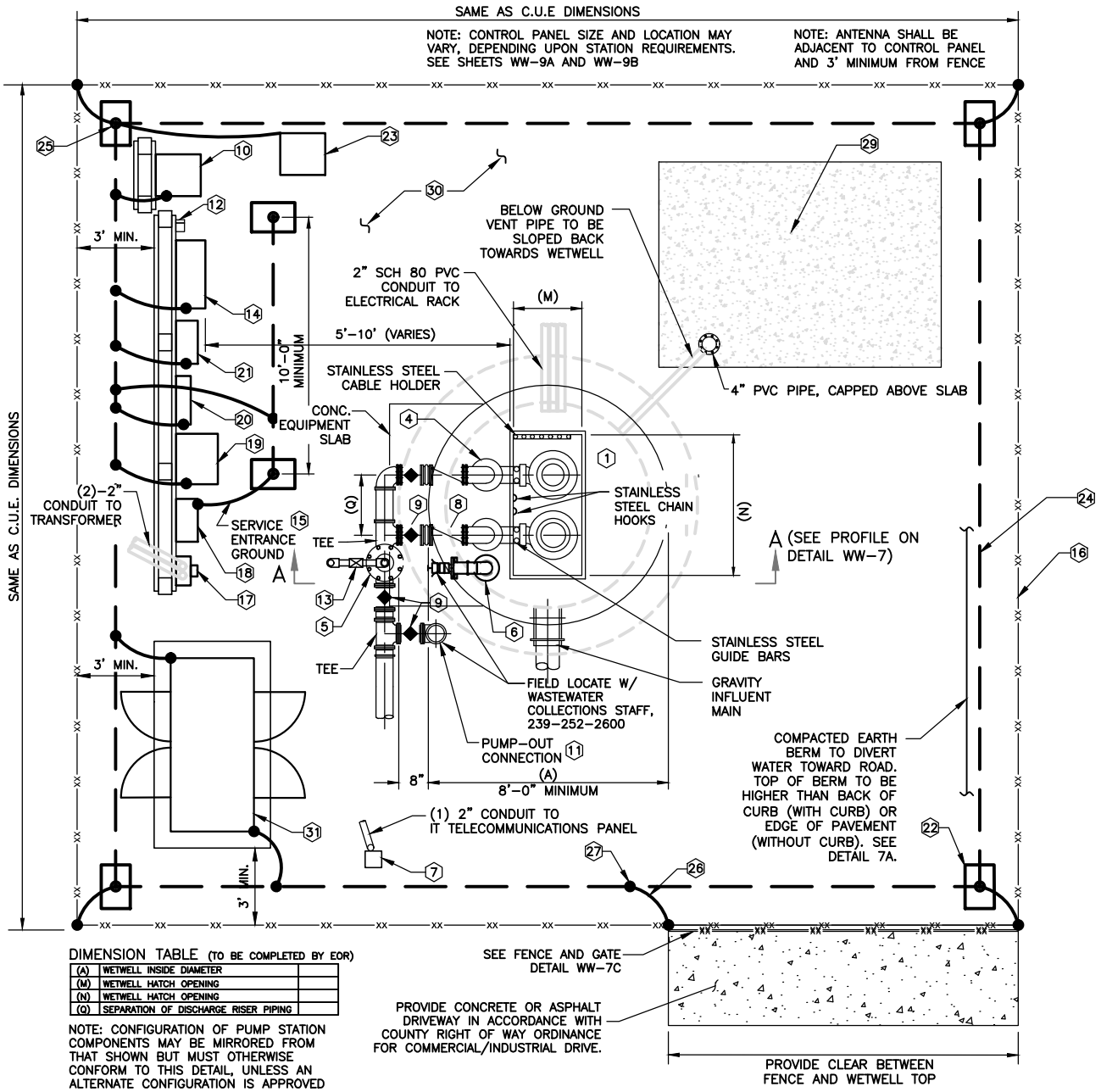
PUMP STATION DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

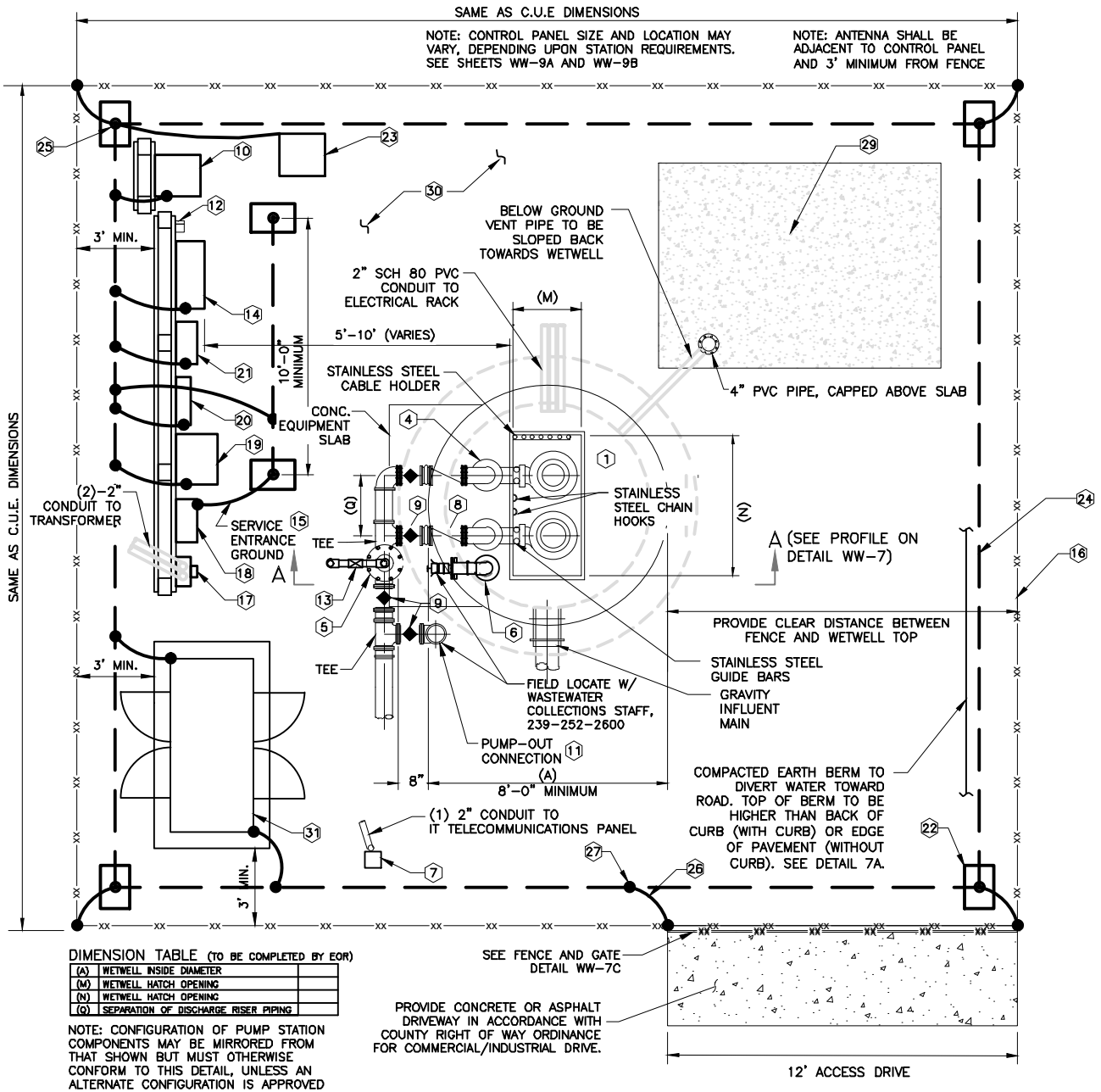
NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A

REVISED DETAIL



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD, FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

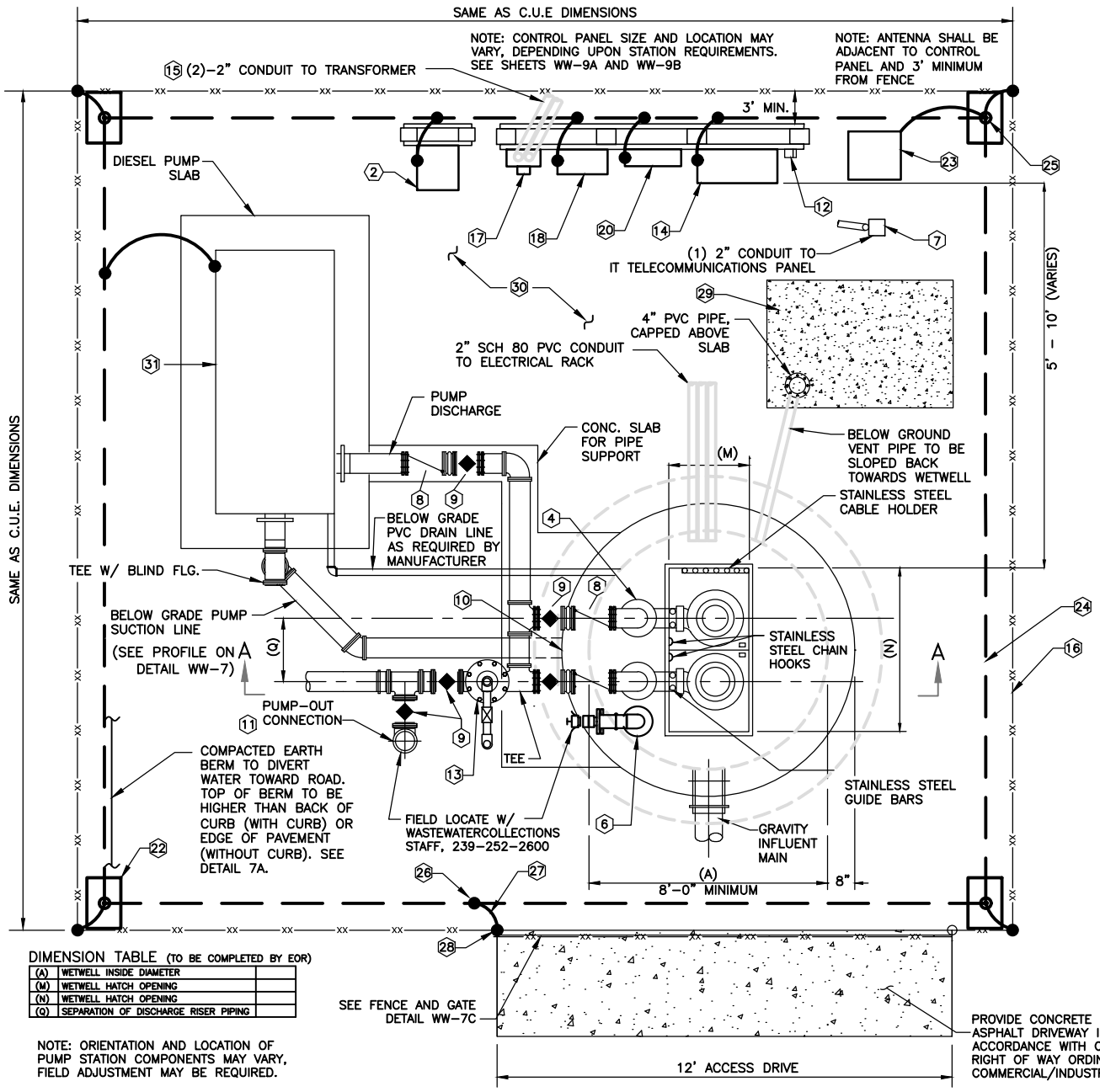
COMMUNITY PUMP STATION WITH GENERATOR DETAIL – PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

EQUIPMENT SPECIFICATIONS

MARK	
1	ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2	IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
3	NOT USED
4	ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5	TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6	COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7	FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8	CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10	STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11	4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12	GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600.
13	2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15	ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16	6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17	POWER METER
18	SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19	NOT USED
20	120V PANELBOARD / MINI POWER ZONE AS REQUIRED
21	NOT USED
22	SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23	TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24	#4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25	3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26	EXOTHERMICALLY WELDED CONNECTION (TYP.)
27	#2 SOLID TINNED COPPER JUMPER (TYP.)
28	BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29	8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30	GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31	STAND-BY DIESEL PUMP WITH INTEGRATED FUEL TANK AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 221336.

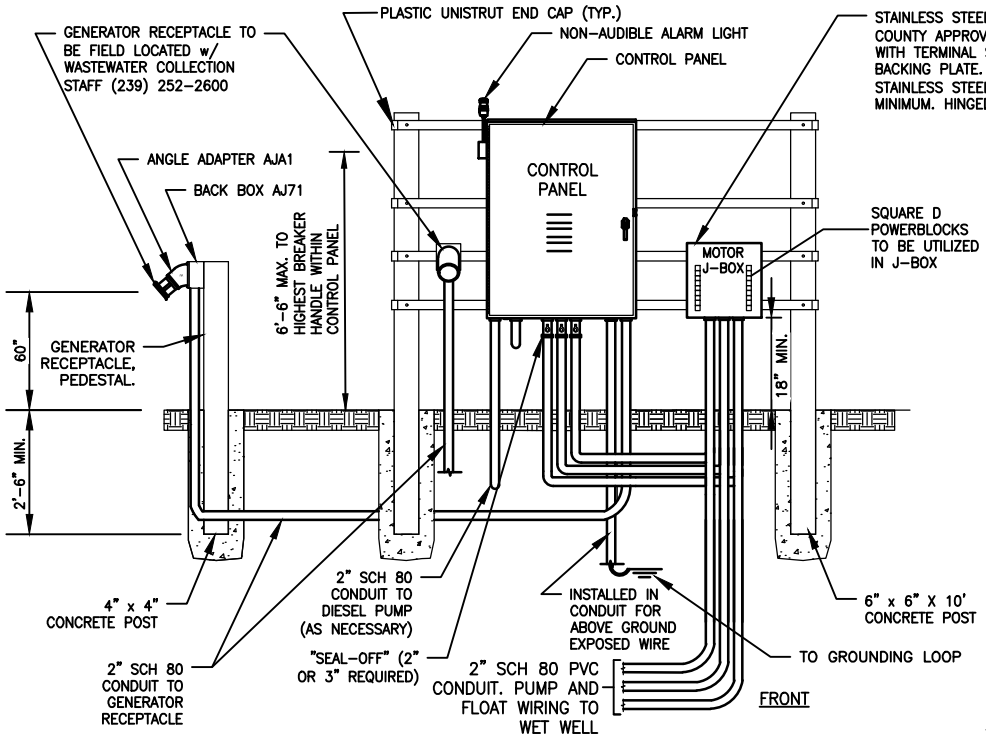
COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

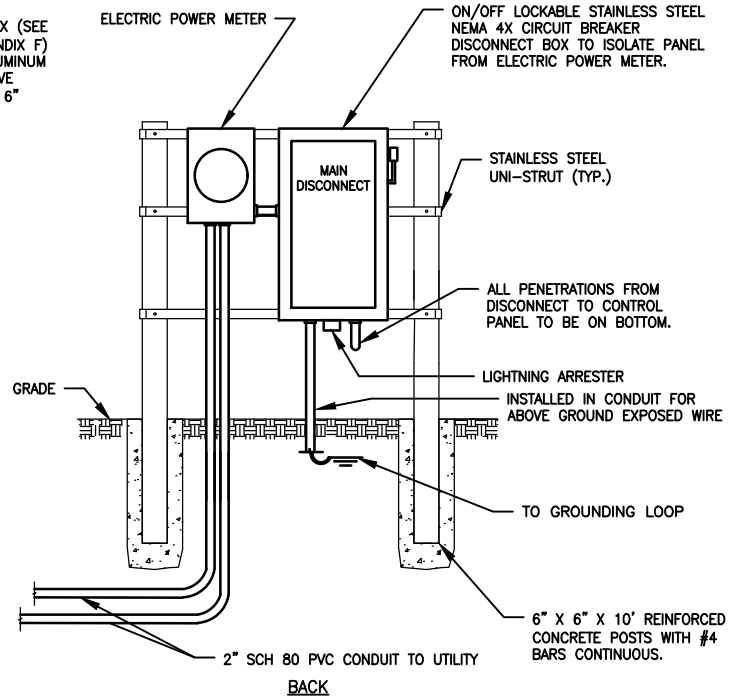
Collier County

SHEET NO. WW-8B



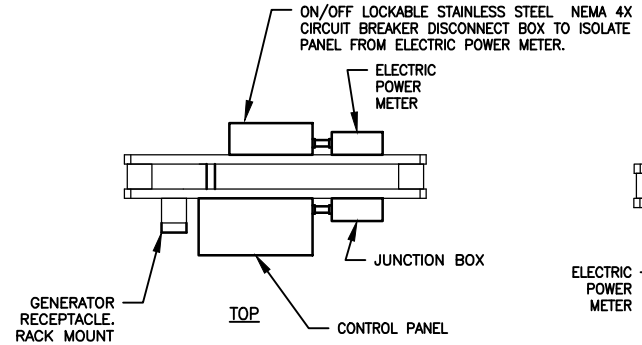
PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION

SCALE: 1" = 4'-0"



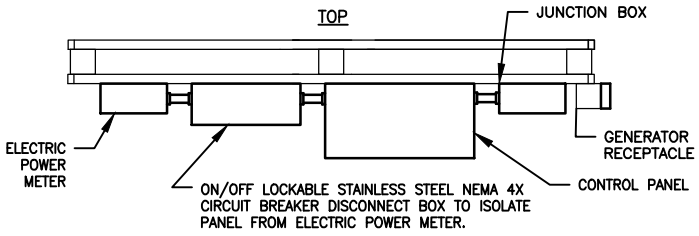
PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION

SCALE: 1" = 4'-0"



PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW

SCALE: 1" = 4'-0"



SINGLE SIDE ALTERNATE - PLAN VIEW

SCALE: 1" = 4'-0"

NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
8. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600
9. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
10. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
11. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

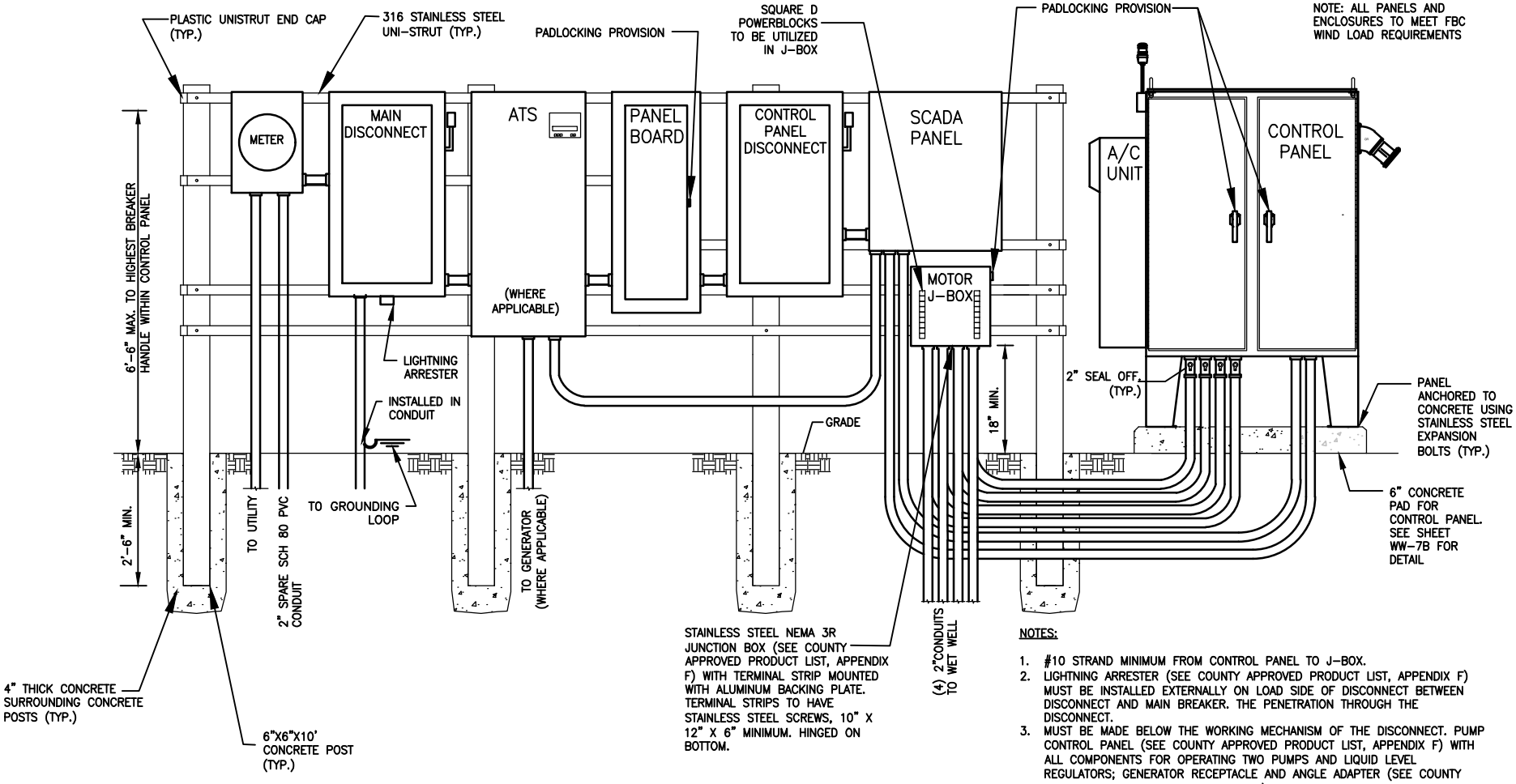
PUMP STATION CONTROL PANEL DETAIL

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-9



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT.
3. MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

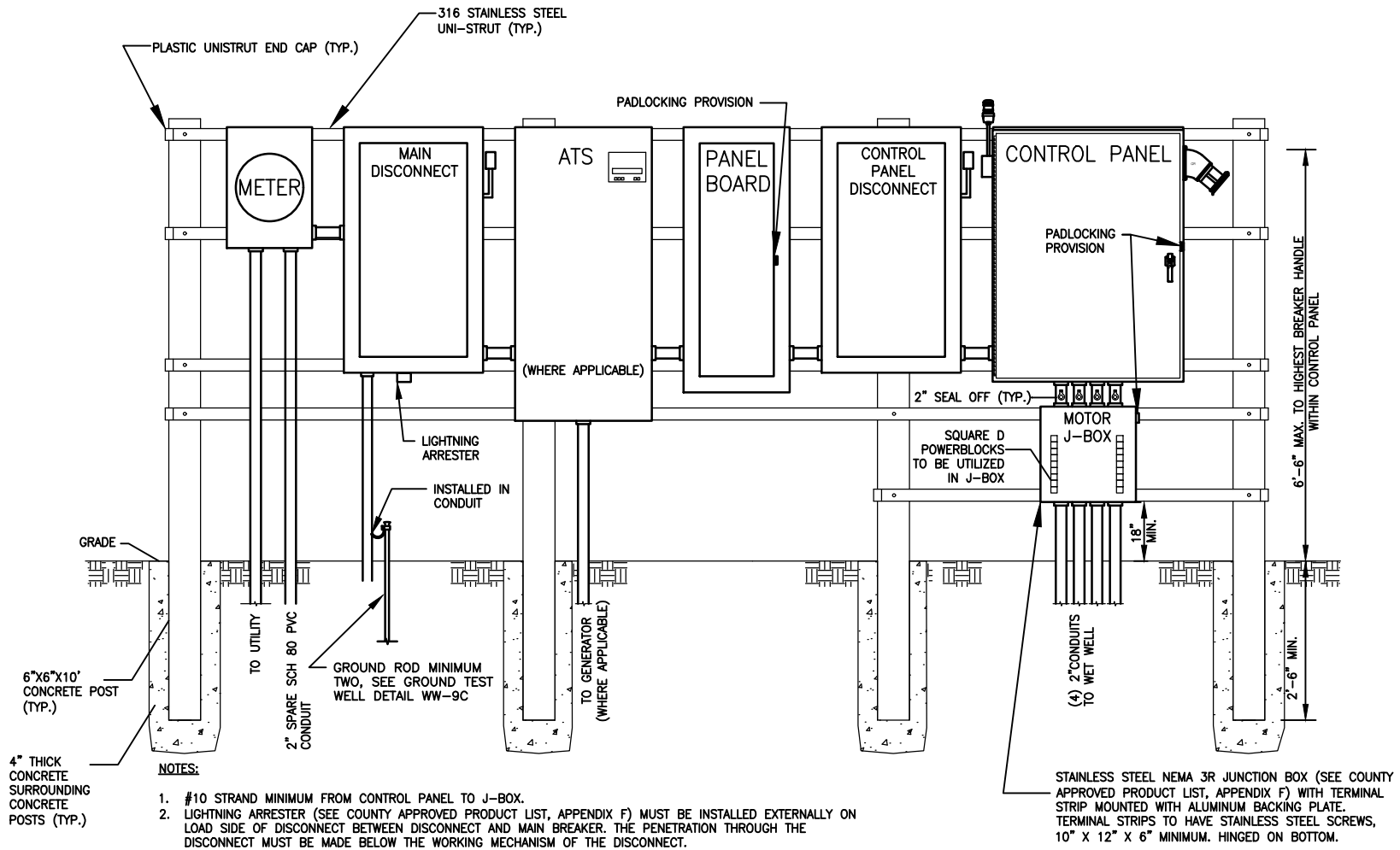
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-9A



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

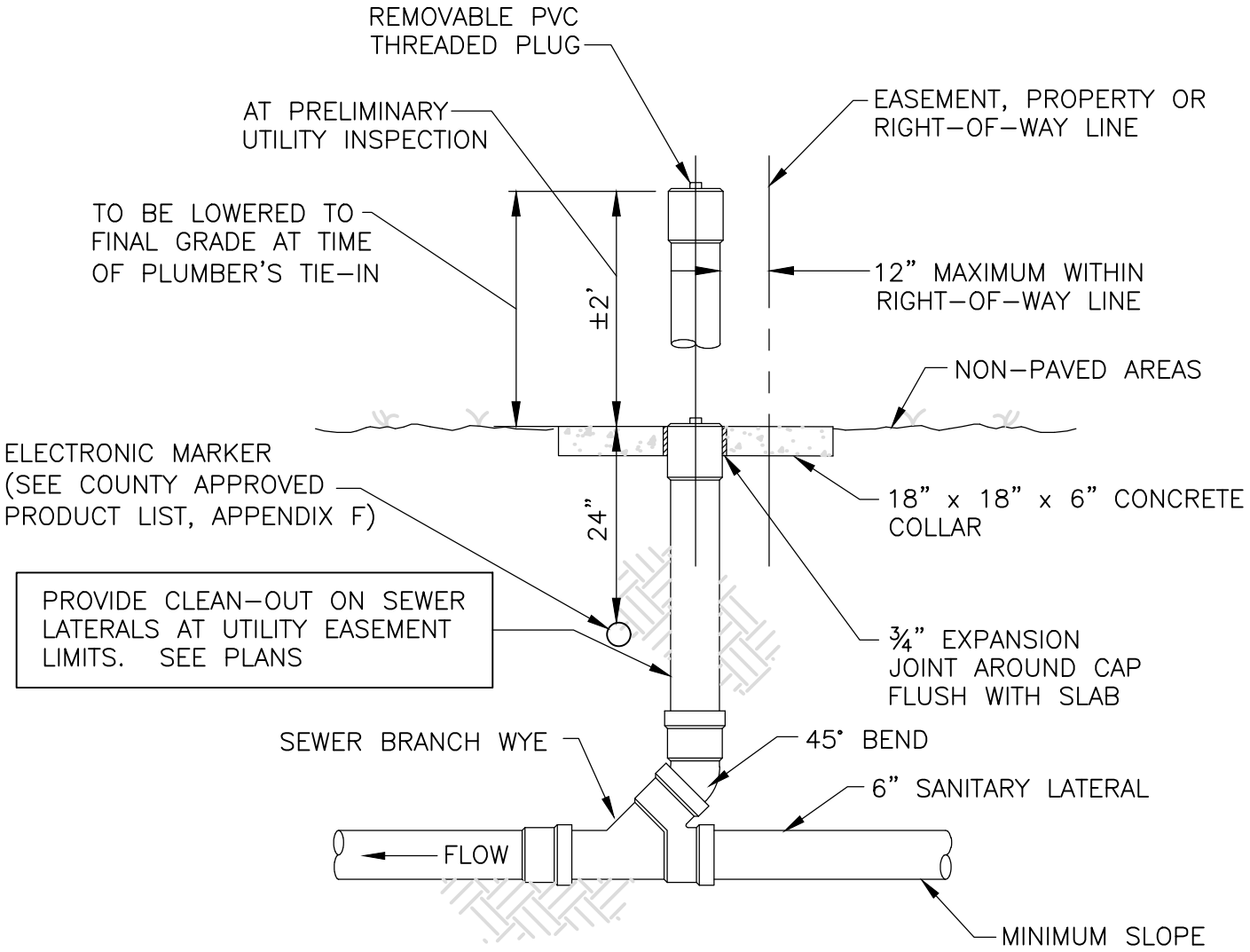
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-9B



ELEVATION

SEWER CLEAN-OUT DETAIL NON PAVED AREAS	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. WW-12
NTS			

SECTION 4

APPENDICES

~~Go to the Collier County website below for the latest revisions to the appendices:~~

For the latest revisions to the Appendices visit:

~~https://www.colliercountyfl.gov/your-government/divisions-f-r/public-utilities-planning-and-project-management/utilities-standards-manual~~

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 4

APPENDICES

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APPENDIX B

Collier County

Water Meter Sizing Form

One Form Per Meter

Preparer's Information:

Name ============> _____

Title ==============> _____

Company=========> _____

Address ==========> _____

_____

Phone ============> _____

Email Address =====> _____

Project Information:

Date ====> _____

Permit or AR Number _____

Name of Project ===> _____

Project Address ===> _____

Please Note:

1. All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development.

2. The Design Engineer/Architect must submit signed and sealed documentation supporting meter sizing. Sizing shall be based upon fixture flow values, as shown on the following page and the table on page 3, unless approved otherwise by Utility Deviation. If an increase in meter size is requested to accommodate for fire flow, the Engineer/Architect should check appropriate box below. A Utility Deviation will not be required for increasing meter size for fire flow requirements. For all meter sizes, the Engineer/Architect must consider all relevant factors before selecting the final meter size.

3. For remodeling projects this form must be submitted only if there is a net increase in fixture flow value.

This Section to be filled out by Engineer/Architect of Record:

Demand in accordance with the Fixture Flow Value Worksheet and the Table for Estimating Demand

_____ **GPM**

Meter Size Required: _____

Meter Size Requested: _____

Existing Meter Size: _____

If the meter size requested is larger than the meter size required per the table velow, please indicate the reason for the request by checking the appropriate box:

☐ **Fire Flow** ☐ **Other (Please attach Utility Deviation approval)**

_____

Type or Print Name of Engineer/Architect of Record for Project

_____

Signature of Engineer/Architect of Record for Project and Date

[Affix Engineering/Architect Seal Here]

Demand Range (GPM)	Meter Size
0 to 30	3/4"
30.1 to 50	1"
50.1 to 100	1 1/2"
100.1 to 160	2"
160.1 to 435	3"
435.1 to 750	4"
750.1 to 1600	6"
1600.1 to 2800	8"
2800.1 to 4200	10"

Demand ranges from AWWA M22 Table 6-1 Third Edition

Collier County

Fixture Flow Value Worksheet

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow Value

Fixture	Occupancy	Type of Supply Control	Load Values, in Water Supply Fixture Units (wsfu) Total		# of Fixtures Per Unit		Fixture Flow Value
Bathroom group	Private	Flush tank	3.6	x		=	
Bathroom group	Private	Flushometer valve	8	x		=	
Bathtub	Private	Faucet	1.4	x		=	
Bathtub	Public	Faucet	4	x		=	
Bidet	Private	Faucet	2	x		=	
Combination fixture	Private	Faucet	3	x		=	
Dishwashing machine	Private	Automatic	1.4	x		=	
Drinking fountain	Offices, etc.	3/8″ valve	0.25	x		=	
Kitchen sink	Private	Faucet	1.4	x		=	
Kitchen sink	Hotel, restaurant	Faucet	4	x		=	
Laundry trays (1 to 3)	Private	Faucet	1.4	x		=	
Lavatory	Private	Faucet	0.7	x		=	
Lavatory	Public	Faucet	2	x		=	
Service sink	Offices, etc.	Faucet	3	x		=	
Shower head	Public	Mixing valve	4	x		=	
Shower head	Private	Mixing valve	1.4	x		=	
Urinal	Public	1″ flushometervalve	10	x		=	
Urinal	Public	3/4″ flushometervalve	5	x		=	
Urinal	Public	Flush tank	3	x		=	
Washing machine (8 lb)	Private	Automatic	1.4	x		=	
Washing machine (8 lb)	Public	Automatic	3	x		=	
Washing machine (15 lb)	Public	Automatic	4	x		=	
Water closet	Private	Flushometer valve	6	x		=	
Water closet	Private	Flush tank	2.2	x		=	
Water closet	Public	Flushometer valve	10	x		=	
Water closet	Public	Flush tank	5			=	
Water closet	Public or private	Flushometer tank	2	x		=	
For any fixtures not listed, submit manufacturer's data sheets and enter appropriate description and value:							
Other:				x		=	
Other:				x		=	
Other:				x		=	
Other:				x		=	
Other:				x		=	

Total Fixture Value Per Unit =====>	
Number of Units with this Fixture Count =====>	
Grand Total of Fixture Flow Value (Per Unit Total x Number of Units) =====>**	

****Use total Fixture Flow Value on "Table for Estimating Demand" to estimate water meter demand.**

Fixture Flow Value worksheet from FBC 2023 edition

Collier County

Table for Estimating Demand

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow		SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH VALVES	
Load	**Demand**	**Load**	**Demand**
Fixture Flow Value	Gallons per minute	Fixture Flow Value	Gallons per minute
1	3.0	---	---
2	5.0	---	---
3	6.5	---	---
4	8.0	---	---
5	9.4	5	15.0
6	10.7	6	17.4
7	11.8	7	19.8
8	12.8	8	22.2
9	13.7	9	24.6
10	14.6	10	27.0
11	15.4	11	27.8
12	16.0	12	28.6
13	16.5	13	29.4
14	17.0	14	30.2
15	17.5	15	31.0
16	18.0	16	31.8
17	18.4	17	32.6
18	18.8	18	33.4
19	19.2	19	34.2
20	19.6	20	35.0
25	21.5	25	38.0
30	23.3	30	42.0
35	24.9	35	44.0
40	26.3	40	46.0
45	27.7	45	48.0
50	29.1	50	50.0
60	32.0	60	54.0
70	35.0	70	58.0
80	38.0	80	61.2
90	41.0	90	64.3
100	43.5	100	67.5
120	48.0	120	73.0
140	52.5	140	77.0
160	57.0	160	81.0
180	61.0	180	85.5
200	65.0	200	90.0
225	70.0	225	95.5
250	75.0	250	101.0
275	80.0	275	104.5
300	85.0	300	108.0
400	105.0	400	127.0
500	124.0	500	143.0
750	170.0	750	177.0
1,000	208.0	1,000	208.0
1,250	239.0	1,250	239.0
1,500	269.0	1,500	269.0
1,750	297.0	1,750	297.0
2,000	325.0	2,000	325.0
2,500	380.0	2,500	380.0
3,000	433.0	3,000	433.0
4,000	535.0	4,000	535.0
5,000	593.0	5,000	593.0

Table for estimating demand taken from Florida Building Code 2023 Edition

APPENDIX F

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Casing Spacer End Seals	Power Seal	EndSeal	Section 330523.16, Page 4, 3.1 B
Casing Spacer End Seals	Cascade Waterworks MFG Co.	CCES	Section 330523.16, Page 4, 3.1 B
Casing Spacers Stainless Steel	Power Seal	4810	Section 330523.16, Page 4, 3.1 BG-5
Casing Spacers Stainless Steel	Cascade Waterworks MFG Co.	CCS	Section 330523.16, Page 4, 3.1 B-5
Electronic Markers	3M Electronic Ball Marker	1423, 1424 & 1428	Section 1: 2.6.1, 3.1.4, 3.2.1/WW-10/WW-12/WW-16
Electronic Markers	OMNI MARKER	161, 162 & 168	Section 330518, Page 9, 3.2 O.2
Joint Restraint Devices	EBAA Iron Sales		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Romac Industries		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Sigma		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Star Pipe Products		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Ford Meter Box Company		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices, Push-On joints for push joint pipe	American Cast Iron Pipe Company	Flex-Ring & Lok-Ring	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	McWane Inc.	Super-Lock & TR Flex	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	U.S. Pipe		Section 330504, Page 7, F.3
Metalized Tape	Reef Industries, Inc. Houston, TX	Terra Tape	Section 330518, Page 9, O.1

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Metalized Tape	Proline Safety Products	Detectable Tape	Section 330518, Page 9, O.1
Rubber Gasket pipe	McWane Inc.	Long-Span Pipe	Section 330518, Page 10, Q.1
Rubber Gasket pipe	American Cast Iron Pipe Company	Flanged	Section 330518, Page 10, Q.1
Rubber Gasket pipe	US Pipe	Flanged	Section 330518, Page 10, Q.1
Single Sealed Gasket Push-on type joint	American Cast Iron Pipe Company	Fastite	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	U.S. Pipe	Tyton	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	McWane Inc.	Tyton	Section 330504, Page 10, 3.3.C
Two-part Coal tar Epoxy	Madewell Products Corp.	Madewell 1104	Section 330518, Page 6, 3.2 G.4

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Automatic Flushing Device, Ground Mounted	Mueller/Hydro-Guard	HG-1	W-2
Automatic Flushing Device, Ground Mounted	Kupferle Foundry Company	Eclipse #9400-WC	W-2
Automatic Flushing Device, Hydrant Mounted	Mueller/Hydro-Guard	HG-6	W-2
Automatic Flushing Device, Hydrant Mounted	Kupferle Foundry Company	Eclipse #9700	W-2
Backflow Preventer Assembly	See Approved Backflow Devices List, Appendix G		
Bushing	Ford	C18	W-6
Corporation Stops	Ford	F1100NL SERIES	W-6
Corporation Stops	Ford	FB1100NL SERIES	W-6
Corporation Stops	A.Y. McDonald	4104NL	W-5
Corporation Stops	A.Y. McDonald	4101 BF NL	W-5
Corporation Stops	Mueller	H10045N, H15008N	Section 331200, Page 2, 2.3 A.1
Corporation Stops	Mueller	H-10046N/ H-10046	W-5
Coupling	Ford	Model numbers vary by application	W-6
Coupling	A.Y. McDonald	Model numbers vary by application	W-6
Coupling	Mueller	Model numbers vary by application	W-6
Curb Stop	Ford	B43xxxW-NL	W-12
Curb Stop	A.Y. McDonald	76102-22	W-12
Curb Stop	Mueller	Mark II Oriseal H-15172N	Section 331200, Page 2, 2.3 A.1

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
HDPE Stab Fitting	Elster	Hydrosert	
Hydrant	American Darling	6-inch B-84-B	Section 331619, Page 2, 2.1 G
Hydrant	Clow	Medallion	Section 331619, Page 2, 2.1 G
Hydrant	Mueller	Centurion A-423	Section 331619, Page 2, 2.1 G
Meter Box, ~~Light Duty~~	~~DFW~~ Carson	~~Light Duty~~ Fiberlyte FL 12	W-12
Meter Box, ~~Light~~ Duty	Carson	~~Light Duty~~ Fiberlyte FL30	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	DFW	~~Heavy Duty~~ DFW1324FXX-12-AF1PT2	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	~~Carson~~ DFW	~~Heavy Duty~~ DFW37F-12-AF1PT	W-12
Meter Box,~~Heavy Duty (Staff Use)~~	~~Hubbel~~ DFW	~~Heavy Duty~~ DFW1324F-12-AF1PT	W-12
Meter, Fire Protection (3", 4", 6", 8")	Elster AMCO	evoQ4 Electromagnetic Meter	W-9/W-14
Meter, Fire Protection (3", 4", 6", 8", 10")	Neptune	HP Fire Service Turbine Meter	W-9/W-14
Meter, Fire Protection (3/4", 1", 1-1/2", 2")	Mueller Systems - Hersey	Residential Fire Meter	W
Meter, Fire Protection (4", 6", 8", 10")	Neptune	HP Protectus III Fire Service Meter	W-9/W-14
Meter, Potable Water	Neptune	Tru/Flo	W-13
Meter, Potable Water	Neptune	Mach 10	W-13
Pedestal Housing	Channel	CCWD Signature Series SPH	W-5
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4

Sampling Station	Kupferle Foundry Company	~~Eclipse 88WC~~ Eclipse 88	W-6
Sampling Station	~~Water Plus Corp~~ Mueller Company	~~301W~~ Mueller Safety Guard B.O.S.S.	W-6
~~Sampling Station~~	~~GIL Industries~~	~~3/4"~~	~~W-6~~

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Service Saddles (Brass)	Ford	F202B	Section 331200, Page 7, 2.3 G.1
Service Saddles (Brass)	Mueller	DR2 B	Section 331200, Page 7, 2.3 G.1
Service Saddles (PVC) Perm Bact Sample Point	Powerseal	P3401 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Saddles (PVC) Perm Bact Sample Point	Ford	S 90 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Wye	Ford	Y44-xxx-NL	W-12
Strainer, Flanged (Staff Use)	Mars	Z-plate	
Strainer, Flanged (Staff Use)	Neptune	Rilsan nylon-coated ductile iron	
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	W-12
Valve Box	Tyler/Union	461	Section 331200, Page 4, 2.3 B.2
Valve Box, Locking Cover	AMPro USA	LL562	Section 331200, Page , 2.3 B.2.
Valve Setter	Wilkins	WMJS	W-9A/W-11A
Valve, Air	Val-Matic	Model 801AS	W-11/W-14/W-16
Valve, Air Release	A.R.I.	D-040 (nylon), D-040 ST ST (SS)	W-5
Valve, Bacterial Sampling Station Line	Mueller	Mark II Oriseal	Section 331200, Page 3, 2.3 A.1
Valve, Ball	Ford		Section 331200, Page 3, 2.3 A.1
Valves and Appurtenances	American Darling		Section 331200 2.3 A
Valves and Appurtenances	A.Y. McDonald		Section 331200 2.3 A
Valves and Appurtenances	Clow		Section 331200 2.3 A
Valves and Appurtenances	Ford		Section 331200 2.3 A
Valves and Appurtenances	Kennedy		Section 331200 2.3 A
Valves and Appurtenances	Mueller		Section 331200 2.3 A
Valves and Appurtenances	U.S. Pipe		Section 331200 2.3 A

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
120VAC Surge Suppressor	Edco	HSP121	NP-E3
12VDC Power Supply	Allen Bradley	1606-XLS	NP-E3
12VDC Power Supply	Sola HD	SDN-P	NP-E3
12VDC Power Supply	PULS	Dimension - QS	NP-E3
24VDC Power Supply	Allen Bradley	1606-XLE	NP-E3
24VDC Power Supply	Sola HD	SDN-P	NP-E3
24VDC Power Supply	PULS	Dimension - QS	NP-E3
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	NP-E9
Back Pressure Sustaining Valve	Ames	No. 920	NP-1/NP-E2
Plate Strainer, Top Access	Mars		NP-1/NP-E2
Corporation Stops	Ford	FB 1100-NL/ FB 1100	NP-2
Corporation Stops	A.Y. McDonald	74704B	NP-2
Corporation Stops	A.Y. McDonald	74104NL/ 74104	NP-4
Corporation Stops	A.Y. McDonald	74101 BF NL/ 74101 BF	NP-4
Corporation Stops	Mueller	H-10046N/ H-10046	NP-4
Curb Stop	Ford	B43-444W-NL, Compression x Meter Swivel	NP-2
Data Radio	Integra	TR	NP-E3
Data Signal Line Surge Processor	Edco	PC642 Series	NP-E3
Geomembrane	GSE Environmental		Section 334713, Page 4, 1.6 A.1
Level Transducer	Wika		NP-E6

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Meter Box	DFW	12" D1200 AMR Series, Light Duty	NP-2
Meter Box	Carson	Light Duty	NP-2
Flow Meter, Magnetic	Endress+Hauser	W400	NP-1/NP-E2
Meter, Non-Potable Propeller	McCrometer	Water Specialties No. ML-04-X with 4-20 MA Output Transmitter, TR-16	NP-1/NP-E2
Pedestal Housing	Channel	CCWD Signature Series SPH14206C1B1L01	NP-4
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4
Rain Gauge	ISCO	674	NP-E5
Service Wye	Ford	Y44-264-NL	NP-2
Service Wye	A.Y. McDonald	708YS22	NP-2
Service Wye	Mueller	P-15343N	NP-2
Surge Suppression	Edco	SS65 Series	NP-E6/NP-E7
Surge Suppression	CITEL	TSP15M	NP-E6/NP-E7
Surge Suppression, Main Service	Lea	USP-M Series	NP-E5
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	NP-2
Valve, Air Release	A.R.I.	D-040	NP-4
Valve, Air Release	A.R.I.	D-040 SS	NP-4
Valve, Air Release	GA Industries	942SS	NP-4
Valve, Air Release	GA Industries	Combination	Section 1 2.7/NP-1/NP-4/NP-E2
Valve, Rising Stem Gate/ OS&Y	American Flow Control	AFC-2500 SERIES	NP-1/NP-E2
Valve, V-Port Ball	DeZurik	VPB - flanged, type 317 stainless, and Teflon seat and bearings	NP-1

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, V-Port Ball - Motor (Actuator)	Rotork	IQTM	NP-E2

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Access Frame (Pump Station)	U.S. Foundry	AHD	WW-7/WW-8
Access Hatch, Aluminum	Bilco	J-AL H20 (5-1/2" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	Halliday	H1W (3-1/2" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	U.S. Foundry	AHS (5" depth)	~~WW-13~~ WW-8/WW-8A/WW-8B
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	Section 333200, Page 4, 2.1 J/WW-17
Biofiltration Odor Control System	Evoqua	Zabocs (pre-engineered)	Section 333200, Page 5, 2.1 P
Ceramic Epoxy Lining	Vulcan Painters	Protecto 401 Coating	Section 330504, Page 3, 2.1.B
Chimney Seal	Cretex		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Chimney Seal	Trelleborg		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Coaxial Cable	Data Flow Systems, Inc.	RTC 400	Section 333200, Page 2.1 J/WW-17
Diaphragm Seals	Ashcroft		Section 333313, Page 8, 2.2 G
Diaphragm Seals	Mansfield and Green	Type SB	Section 333313, Page 8, 2.2 G
Diaphragm Seals	Trerice		Section 333313, Page 8, 2.2 G
Flanged Adapter Connections	EBAA Iron Sales	E2100 SERIES	Section 333313, Page 8, 2.2 F.1.c.
Flanged Adapter Connections	Victaulic	Vic Flange Style 741	Section 333313, Page 8, 2.2 F.1.c.
Flow Meter	Endress-Hauser	Promag W400	Section 333313, Page 9, 2.2 M.1
Generator Receptacle and Angle Adapter	Crouse-Hinds	AR2042 with S22 option, and an AJA1 angle adaptor	WW-7/WW-9
Grass Covered Porous Pavement	Invisible Structures	Grasspave2	WW-8/WW-8A/WW-8B
Inflow Protector, Stainless Steel	Sewer Shield, Inc. Maitland, FL		Section 333913, Page 4, 2.2 K
Internal Protection	IET Sytems	IET Coating System	Section 333913, Page 5, 3.1 F/Section 099723/WW-3/WW-4/WW-5/WW-7

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Internal Protection	Raven Lining Systems - Broken Arrow, OK	Raven 405	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Internal Protection	Kerneos - Chesapeake, VA	Sewpercoat Lining System	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Junction Box	Hoffman	A12106NFSS	WW-9
Lightning Arrestor	Square D	SDSA-1175 for 1-phase	Section 333200, Page 5, 2.1 O/WW-9
Lightning Arrestor	Square D	SDSA-3650 for 3-phase	Section 333200, Page 5, 2.1 O/WW-9
Liquid Level Regulators (Float Switch)	Roto-Float		WW-7/WW-8
Liquid Level Regulator (Float Switch)	Dura-Float	2900 Series B4	WW-7/WW-8
Pipe Interior Lining	Permox CTF	Ceramic Epoxy Lining	Section 330504, Page 3, 2.1 B
Plastic Joint Sealing Compound	Hamilton Kent, Toronto/Ontario, Canada	Kent-Seal	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Plastic Joint Sealing Compound	Henry	Ram-Nek	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Polymer Concrete Manholes	US Composite Pipe, Inc.		Section 034100, Page 5, 2.2 D
Polymer Concrete Manholes	Armorock		Section 034100, Page 5, 2.2 D
Power Distribution Blocks	Schneider (Square D)	Class 9080 Power Distribution Blocks	WW-9/WW-9A/WW-9B
Pump Control Panel	ECS		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Control Panel	Suncoast Hydraulic		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Controller	Data Flow Systems, Inc.	TCU	Section 333200, Page 3, 2.1 J
Riser Ring, HDPE/EPP	Ladtech/Cretex(EPP)	Riser Ring	Section 333913, Page 4, 2.2 L
Sealing Compound	Crouse-Hindz	Chico Sealing Compound	WW-9/WW-9A/WW-9B

Sealing Element	GPT	Link-Seal	Section 333313, Page 9, 2.2 I.1/WW-18
Sewage Pump	Flygt	N-Series	Section 333200, Page 2, 2.1 D
Sewer Clean-Out Rim and Cover	U.S. Foundry	7621	WW-11

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sewer Manhole Frame and Covers	Pamrex		WW-5
Sewer Manhole Frame and Covers	U.S. Foundry	105M	WW-2
Sewer Manhole Frame and Covers	U.S. Foundry	420-C-ORS	Section 333913, Page 2, 2.1A/WW-3/WW-4/WW-5/WW-6/WW-18
Sleeve Type Couplings	Powerseal	STYLE 3501	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Dresser	Style 38	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Smith Blair	Style 413	Section 333313, Page 8, 2.2 F.1.d.
Tower	Rohn		WW-17
Valve Box	Brooks		WW-9
Valve, 3-Way Plug (Staff Use)	Milliken Valve Co.	Modle M604	WW-7/WW-8
Valve, 3-Way Plug (Staff Use)	Dezurik	Model D202	WW-7/WW-8
Valve, Air Release	HTECH	2" SS MODEL # 8889860041	WW-13/~~WW-14~~/Section 333313, Page 7, 2.2 D.11
Valve, Air Release	A.R.I.	D-025	~~WW-13/WW-14~~ WW-5/Section 333313, Page 7, 2.2 D.11
Valve, Check	Kennedy Valve Manufacturing Co.	MODEL 1106LW/106LW	WW-7/WW-8/Section 333313, Page 5, 2.2 C
Valve, Check	Mueller	A-2600, A2602	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	Milliken Valve Co.	8001	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	GA Industries	340-W	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Duckbill (Staff Use)	Red Valve Co., Inc. Longwood, FL	"Tideflex"	WW-7

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve~~s~~, Plug	DeZurik	Model PEC & PEF (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valve~~s~~, Plug	Milliken Valve Co.	Model M600 & M601 (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1

APPENDIX G

Approved Backflow Devices

VENDOR	SIZE	MODEL NO.	TYPE	USE
Ames / Watts	3/4" - 2"	LF4000B / LF009	RP	Residential or commercial potable water locations
Watts	3/4" - 2"	LF919	RP	Residential or commercial potable water locations
Wilkins	3/4" - 2"	975XL	RP	Residential or commercial potable water locations
Ames / Watts	2.5" - 10"	C400 / 957	RP	Large size meter - potable water for commercial or residential applications
Watts	2.5" - 10"	LF909	RP	Large size meter - potable water for commercial or residential applications
Wilkins	2.5" - 10"	375 or 375AST	RP	Large size meter - potable water for commercial or residential applications
Ames	3/4" - 2"	LF4000B	RP	Combo services: fire and domestic lines
Watts	3/4" - 2"	LF009	RP	Combo services: fire and domestic lines
Wilkins	3/4" - 2"	975XL	RP	Combo services: fire and domestic lines
Ames Colt	2.5" - 10"	C400 (w/OSY)	RP	Combo services: fire and domestic lines
Watts	2.5" - 10"	LF909 (w/OSY)	RP	Combo services: fire and domestic lines
Wilkins	2.5" - 10"	375 or 375AST (w/OSY)	RP	Combo services: fire and domestic lines
Ames	2"	3000B	DCDA	Fire Lines - Standard
Watts	2" - 3"	007DCDA	DCDA	Fire Lines - Standard
Wilkins	2"	950XLTDA	DCDA	Fire Lines - Standard
Ames	2.5" - 10"	C300/M300	DCDA	Fire Lines - Standard
Watts	3" - 10"	709DCDA	DCDA	Fire Lines - Standard
Wilkins	2.5" - 12"	350DA or 350ASTDA	DCDA	Fire Lines - Standard
Wilkins	4" - 10"	450DA or 450STDA (N-Shape)	DCDA	Fire Lines - Standard

Note: All fire line Backflow Devices shall be UL or FM approved for fire service installation. Above is a small list, others may be used if requirements are met and information is provided

APPENDIX H

Collier County

Appendix H

Basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water

1. Property & Customer Information

Property Owner Name:	Date:
Mailing Address:	Phone Number:
Service Address:	Email Address:
Section_____Township_____Range_____	Folio (Parcel) Number:
Total Property Acres:	Acres irrigated by IQ Water only:

2. Irrigation Information

Total Number of Zones:

Each Zones Gallons per Minute-Use another sheet if necessary		
Zone1 =	Zone 6 =	Zone 11 =
Zone 2 =	Zone 7 =	Zone 12 =
Zone 3 =	Zone 8 =	Zone 13 =
Zone 4 =	Zone 9 =	Zone 14 =
Zone 5 =	Zone 10 =	Zone 15 =
Maximum number of zones running at once =		

3. Do you have a backflow prevention device installed on your potable (drinking) water line?

Yes	No	Unknown

4. For what purpose are you using IQ Water? Please select all that apply.

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)
	Single Family Home landscape irrigation
	Cooling Tower
	Other, please specify_____

5. How many total individual dwelling units will this serve? Please enter a number or N/A. A single family home = 1, a condo with 20 units = 20

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)

6. What is your estimated average and maximum IQ Water usage in gallons per day?

_____

I,_____, (property owner) have read, understand, and shall abide Collier County Ordinance, No. 2013-48 as amended; Collier County Ordinance No. 1997-33, as amended; Ordinance No. 2001-73, as amended, the Federal, State, and local laws, rules, and regulations that pertain to the use of IQ Water.

I understand that due to the composition of IQ water, it may not be suitable for the irrigation of certain susceptible vegetation, and I agree that the District will not be held liable for damages that may occur to susceptible vegetation or any damages that may occur due to the uses of IQ Water, and agree to defend and hold harmless the Collier County Water-Sewer District (District) from all claims and judgments arising therefrom against the District by any person. It is further agreed that submission of this application does not ensure IQ water delivery and the Owner further agrees that the County shall not be liable to the Owner for any damages or expenses incurred by the Owner as a result of the District's failure to deliver IQ Water.

It is further agreed that District employees or authorized agents shall have the right to enter the applicant's property served by the District with IQ Water to inspect the IQ Water System and shall have the right to discontinue IQ Water service should any infraction exist.

Sign and return the completed application, an 8.5"X11" drawing of property detailing desired meter location, and the Legal Property Description to: Reuse Manager, 4370 Mercantile Ave, Naples, FL 34104.

Printed Name:_____Signed:_____Date:_____

Frequently Asked Questions

1. Where can I find the applicable Ordinances? **www.municode.com**
2. Where can I find my Legal Property Description? On your deed which may be found at **www.collierappraiser.com**
3. Where can I find applicable State laws regarding IQ/reclaimed water? **www.dep.state.fl.us/water/reuse**
4. Where do I find billing information? **www.colliercountyfl.gov**
5. How do I report IQ water, potable water, or sewer issues? **Call (239) 252-2600 for IQ water and wastewater and (239) 252-6245 for potable water.**
6. What are irrigated acres? **The acres that are irrigated, you can calculate irrigated acres by subtracting non irrigated areas such as ponds, mulched areas, etc; from the site's pervious acres.**

For District Use Only

Service Level:	Bulk	Pressurized	Pressurized & Distributed
User Type:	Major User	Basic User	
Base Charge:	Allocation Based	Meter Based Charge	

Peak GPM for proposed system_____ Minimum Meter Size Required_____
Existing Service Tap/Tap Fee $_____ Existing Customer_____
Meter Hang Fee $_____ Total Fees $_____
Approved by:_____ Date:_____
Notes:_____
_____
_____

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
Introduction			
1	Introduction	Modified third paragraph to 'introduction' explaining PE responsibilities. Web page reference change.	None
Section 1 – Design Criteria			
2	Cover Page	Web page reference change.	None
3	Table of Contents	Modified Table of Contents to reflect changes and correct scrivener's errors.	None
4	3.3 Wastewater pump stations	Revised section 3.3 Wastewater Pump Stations. Added section 3.3.1 Private Pump Stations.	None
Section 2 - Technical Specifications			
5	Cover Page	Web page reference change.	None
6	Table of Contents	Modified Table of Contents to reflect changes.	None
7	017839 Project Record Documents	Corrected scrivener's error on paragraph 1.3.C. Added notes m and n to part (3.2 B.6) identifying that m) meter boxes and n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables that will be conveyed to the County shall be depicted.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
8	020500	Connections to existing systems	Revised section 1.3 General Requirements (F.2 and F.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
9	221336	Diesel Backup Pump	Add sections 1.1 B, 2.5A, and 2.5B on platform requirements.	$10,000 - $30,000 Depending on site
10	263213.13	Standby Diesel Generators	Add sections 1.01.A.12, 2.05A, 2.05B, and 2.05C on platform requirements.	$10,000 - $30,000 Depending on site
11	330518	Laying and jointing buried pipelines	Changed language in Part 3.2 A.2. to decrease vertical dip tolerance from 1.5” to 1.0”.	None
12	312316	Excavation – Earth and Rock	Revised section 1.4 Site Conditions (C.2 and C.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
13	330502	High Density Polyethylene (HDPE) Pipe and Fittings	Revised section 2.1A eliminating PE3408 and added PE4710. Revised section 2.1F eliminating PE3408 and added PE4710. Removed cell classification 345434C and 345434E and added cell classifications 445574C and 445574E.	None
14	333200	Pump Stations	Added language to 1.1 SCOPE OF WORK ‘FOR COUNTY PUMP STATIONS’. Added language to 1.1.A. This section includes the following items for ‘COUNTY owned and operated pump stations:’	None
15	333200	Pump Stations	Add section 1.2 ‘Scope of Work for Private Grinder Pump Stations’	None
16	333200	Pump Stations	Add language to 1.1F to include gates.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
17	333200	Pump Stations	Added communications (1.1G.) note requesting letter of availability	None
18	333200	Pump Stations	Add sections 1.1 H, 2.1 R, and 2.1 S on platform requirements.	$10,000 - $30,000 Depending on site
19	333200	Pump Stations	Add 'For County Pump Stations' to section 2.1 heading.	None
20	333200	Pump Stations	Revised section 2.1 J. Added language for 2-Watt digital radio. Added pump controller type to be utilized.	None
21	333200	Pump Stations	Added section 2.2 'Materials for Private Pump Stations'. Added section 3.1 'Installation'.	None
22	409500	Fiber-Optic Communication Standards	New Fiber-Optic Communication Standards	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
Section 3 - Utilities Detail Drawings				
23	Cover Page		Web page reference change.	None
24	Table of Contents		Modified Table of Contents to reflect changes and correct scrivener's errors.	None
25	Various Details – Title Block Addition		Collier County title block added to details: G-1, G-4, G-5, G-6, G-10, NP-E1, NP-E2, NP-E3, NP-E4, NP-E5, NP-E6, NP-E7, NP-E8, NP-E9, W-5, W-6, W-11A, W-16, WW-1, WW-4, WW-5, WW-6, WW-10, WW-15, WW-16, WW-17, WW-18, WW-18A.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
26	G-10	Pipe Restraint Schedule	The detail was modified to include additional restrained pipe length tables for vertical bends.	None
27	G-12	IT Fiber-Optic Telecommunications	New Detail	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
28	W-1	Temporary Blowoff Assembly with Bacterial Sample Point Detail	Corrected PDF to reflect 2014 revision.	None
29	W-2	Automatic Water Main Flushing Device Detail	Corrected PDF to reflect 2014 revision.	None
30	W-3	Fire Hydrant Detail	Added note # 9 noting fire hydrant installation requirements.	None
31	W-3	Fire Hydrant Detail	Added text 'See note 9' below FH connection point range (MIN 18", MAX 22"). Added notes 'Urban: See note 9' and 'Rural: See note 9.'	None
32	W-6	Permanent Bacterial Sample Point Detail	Brass models added to approved product list. Stainless steel models removed.	Potential cost savings
33	W-12	Typical short and long side water service meter setting detail for connection to water main	Temporary construction fence graphic added around the water meter boxes, with note referencing 'Note 8' on Detail W-12A. Revised meter callout to 'AMI/AMR meter'.	$200/installation
34	W-12A	Service connection sizing chart and notes	Added note # 8 to Equipment Specifications, calling out temporary construction fence installation.	$200/installation
35	W-13	3" and over potable water meter assembly detail	Added note # 9 to Equipment Specifications including maintenance access in County CUE or R/W.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
36	W-14	4" and over potable water fire and domestic meter assembly detail	Added note #10 to Equipment Specifications including maintenance access in County CUE or R/W.	None
37	WW-2	Private Force Main Connection to County Force Main Detail	Corrected PDF to reflect 2018 revision.	None
38	WW-3	Precast reinforced concrete manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
39	WW-4	Shallow manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
40	WW-5	Drop manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
41	WW-6	Manhole ring and cover detail	Updated new required manhole dimensions.	None
42	WW-6	Manhole ring and cover detail	Added note to call out for revised ring and cover models.	None
43	WW-7	Pump Station Detail - Profile	Mark # 3 for access door was modified by adding, '(Opposite discharge piping)'. Also added to detail callout.	None
44	WW-7	Pump Station Detail - Profile	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
45	WW-7	Pump Station Detail - Profile	Mark # 7 was modified by adding the sentence 'RAM-NEK may be used in lieu of o-ring rubber gaskets (see specification Section 034100)'.	None
46	WW-7	Pump Station Detail - Profile	Mark #7 was modified by adding the sentence, 'Pump Station wetwell shall be designed by a Florida Professional Engineer and signed and sealed shop drawings shall be submitted.'	None. Already a requirement

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
47	WW-7	Pump Station Detail - Profile	Mark # 8 was modified by adding the text 'with external weight/lever'.	None
48	WW-7	Pump Station Detail - Profile	Added reference to plan sheets under profile callout 'Section A-A'.	None
49	WW-7	Pump Station Detail - Profile	Added ASTM callouts. Added note, 'Top slab, 8" min thickness'. Revised footer dimension to 'A+32" min'. Added mark references.	None
50	WW-7D	Private Grinder Pump Station Detail	Detail added to County detail set.	None
51	WW-8	Pump Station Detail - Plan	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
52	WW-8	Pump Station Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
53	WW-8	Pump Station Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
54	WW-8	Pump Station Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top. Callout 'Provide clear distance between fence and wetwell top' was added.	Potential cost savings
55	WW-8	Pump Station Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
56	WW-8	Pump Station Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
57	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
58	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
59	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
60	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 10 was added: "IT telecommunications panel: See technical specification 409500 and detail G-12, where applicable". IT telecommunications graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
61	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
62	WW-8A	Community Pump Station with Generator Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top. Callout 'Provide clear distance between fence and wetwell top' was added.	Potential cost savings
63	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
64	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
65	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 2 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
66	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 4 was modified by adding the sentence "No spacers permitted between check and plug valves".	None
67	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
68	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
69	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
70	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt.	Potential cost savings
71	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	An additional concrete post was added to the control panel.	Approx. $500

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
72	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
73	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
74	WW-9	Pump Station Control Panel Detail	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
75	WW-9	Pump Station Control Panel Detail	Added callouts to details: 'Square D Powerblocks to be installed in j-box' & 'Plastic Unistrut endcap callout'	$50/pump station for Square D Powerblocks
76	WW-9	Pump Station Control Panel Detail	Note # 9 was added: "Side panel penetrations are acceptable with the use of Myers Hubs".	$250.00/Hub (Only used when necessary)
77	WW-9	Pump Station Control Panel Detail	Note # 10 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
78	WW-9	Pump Station Control Panel Detail	Note # 11 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station
79	WW-9	Pump Station Control Panel Detail	Note # 12 was added: ''All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware".	None
80	WW-9	Pump Station Control Panel Detail	Note # 13 was added: "All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner".	None
81	WW-9	Pump Station Control Panel Detail	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
82	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
83	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
84	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Added callout to detail: ‘Square D Powerblocks to be utilized in j-box’.	$50/pump station
85	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 8 was added: “Side panel penetrations are acceptable with the use of Myers Hubs”	$250.00/Hub (Only used when necessary)
86	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 9 was added: “Phase monitor to be installed parallel with FPL meter (on FPL side)”.	$100-$350/Monitor (Prices vary with voltages)
87	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 10 was added: “CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings”. Updated detail to show fittings under control panel.	$50/pump station
88	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
89	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
90	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
91	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
92	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
93	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
94	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Added callout to detail: 'Square D Powerblocks to be utilized in j-box'.	$50/pump station
95	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 8 was added: "Side panel penetrations are acceptable with the use of Myers Hubs"	$250.00/Hub (Only used when necessary)
96	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 9 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
97	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 10 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
98	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
99	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
100	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None
101	WW-12	Sewer Clean-out Detail - Non Paved Areas	Corrected PDF to reflect 2014 revision.	None
Section 4 – Appendices				
102	Cover Page		Web page reference change.	None
103	Table of Contents		Modified Table of Contents to reflect changes	None

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
104	Appendix B Water Meter Sizing Form	The demand range table on the Water meter sizing form (pg.1) was updated and taken from AWWA M22 Table 6-1 (Third Edition). The flow ranges for 3/4", 1", 1 ½", and 2" meter sizes are flow ranges for positive displacement meters. The flow ranges for 3", 4", 6", 8" and 10" meter sizes are flow ranges for turbine class II meters. (This table can vary depending on meter type). Modified language on signature line (pg.1). Replaced 'Stamp' with 'Seal'. The fixture flow value worksheet (pg.2) was updated and taken from the Florida Building Code (2023 Edition).	None
105	Appendix F Approved Products List	• Appendix F was revised to include new products that are to be placed on the approved product list.	Approx. $100 increase for water and IQ meter boxes (only identified fiscal impact to Developers)
106	Appendix G Approved Backflow Devices	• Added LF to models that are used in residential service and available in both Lead Free and Not Lead Free • Changed 4000B-LBV (less ball valve) to 4000B so all models in that section are comparable and include ball valves • Deleted 4000B-FP since it is not available lead free and this section serves residential requiring lead free • Deleted OSY on 975XL since it is not available lead free – All models in that section would include ball valves – No one offers a lead free ¾" – 2" OSY valve • Changed Wilkins model number to include bypass 950XLTDA – All models in this section are not lead free since these are dedicated Fire Lines – This is allowable – All models shown are standard w/OSY valves • Added large diameter stainless models	None
107	Appendix H IQ User Application and Agreement	Added basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water	None

INTRODUCTION

This Manual has been established by action of the Board of County Commissioners and is authorized by County Ordinance 2004-31, as amended.

This Utilities Standards Manual has been prepared to guide the design, construction, and asset management of potable water, non-potable irrigation water, and wastewater system extensions to Collier County Water-Sewer District (COUNTY) utilities; the Manual applies to utilities in new developments in the County, as well as County Projects involving utilities.

The following standards shall be included in the design and preparation of plans and specifications for all utilities construction projects for Collier County, including utilities and services connected to the COUNTY's utilities systems or constructed for future transfer of ownership to the COUNTY. These standards are provided for uniformity in utilities construction within Collier County, and represent MINIMUM standards acceptable to the COUNTY. The Engineer of Record shall review these MINIMUM standards for applicability and acceptance for the proposed construction project. Where necessary, additional design features may be required to meet specific project requirements. The Engineer of Record shall be responsible for the specific project under their control.

Not all specification details may apply to an individual project; however, approval of utilities construction within Collier County will require conformance to applicable requirements of these specifications. Approval of any deviation from the specifications must be obtained utilizing the appropriate form included in Appendix A, Utility Deviation Form.

NOTE: Go to Collier County Public Utilities Engineering and Project Management Resources Webpage for the latest revisions to the Utilities Standards Manual.

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SECTION 1

DESIGN CRITERIA

For the latest revisions to the Design Criteria, please visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

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DESIGN CRITERIA

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4.1 Electrical and Control System Material

PART 1 GENERAL

1.1. Pipeline Separation Requirements

1. Potable water pipelines shall be separated from wastewater lines and /or stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. The 18 inches minimum vertical separation distance does not apply to separations of sewer laterals and potable water pipeline installations. 57 stone shall be utilized for separation between wastewater lines and stormwater lines if separation is less than 18 inches.

2. Non-potable irrigation water pipelines two inches and larger shall be separated from potable water mains, wastewater lines and/or stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of five feet as shown in the Utilities Detail Drawings.

3. Wastewater lines shall be separated from stormwater lines by a minimum clear vertical distance of 18 inches and a horizontal distance of five feet. All pipeline crossings with vertical clearance less than 18 inches shall be made using a full 20 foot length of thickness Class 200 AWWA C900 PVC pipe or Class 235 AWWA C905 PVC pipe, centered on the crossing. The sewer pipe in these locations shall be back-filled with bedding stone or sand to a height six inches above the crown of the pipe.

4. Potable water, non-potable irrigation water, and wastewater pipelines shall be separated from telephone, power, cable and gas sleeves/lines and any other underground utilities by a minimum clear vertical distance of 18 inches and horizontal distance of five feet.

5. Potable water, non-potable irrigation water, and wastewater lines shall be separated from raw water mains by a clear vertical distance of 18 inches and a horizontal distance of 10 feet. Stormwater lines shall be separated from raw water mains by a clear vertical distance of 18 inches and a horizontal distance of five feet.

6. Wastewater lines shall be separated from public drinking water supply wells by a horizontal distance of 100 feet. Wastewater lines shall be separated from private drinking water supply wells by a horizontal distance of 75 feet.

7. Also see separation requirements in Section 020500, 1.3.F.

8. Potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a minimum setback of five feet from the centerline of the pipe to residential roadways, curb and gutters, structures, fence posts, walls, or plantings not specifically allowed by ordinance. Also, potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a minimum setback of 10 feet from the centerline of the pipe to a building and shall not be placed beneath any existing or proposed building or structure. Additionally, potable water mains, non-potable irrigation water mains, and wastewater force mains shall have a five-foot minimum setback from the center line of pipe to the edge of a right of way (ROW) or County utility easement (CUE), unless there is an adjacent CUE.

1.2. Horizontal Directional Drilling

When horizontal directional drilling is used on any capital improvement project for the Public Utilities Department, detailed construction drawings shall be prepared by a Licensed

Professional Engineer registered in the State of Florida which, at a minimum, show the following information:

1. The proposed entry and exit point of the drill
2. The overall geometry of the drill include entry and exit angles, minimum and maximum bending radii, and the horizontal and vertical path of the drill
3. The minimum and maximum depth of the drill
4. Minimum separation distances between adjacent pipes, structures, watercourses, etc.
5. The estimated pull back force required for the drill

The design Engineer shall calculate the estimated pull back force required for the directional drill and ensure that it does not exceed the maximum allowable safe pull back forces as defined by the Plastic Pipe Institute's (PPI) Handbook for Polyethylene Pipe, Chapter 12 – Horizontal Directional Drilling.

		Safe Pull Back Force, lbs.	
Size	Nom. OD	DR 9	DR 11
4	4.800	8,217	6,876
6	6.900	16,980	14,208
8	9.050	29,210	24,442
10	11.100	43,942	36,770
12	13.200	62,141	51,998
14	15.300	83,486	69,859
16	17.400	107,977	90,353
18	19.500	135,613	113,478
20	21.600	166,395	139,235
24	25.800	237,395	198,647
30	32.000	365,201	305,592
36	38.300	N.A.	437,764

Source: Table 6, "PE4xxx 12 hour Pull DIPS Size", *Handbook for Polyethylene Pipe, Second Edition,* Plastic Pipe Institute

PART 2 POTABLE WATER AND NON-POTABLE IRRIGATION WATER SYSTEMS

All potable water, non-potable irrigation (including reclaimed or reuse) water and raw water pipe, material, equipment and appurtenances shall be new, and shall conform to Section 2, Technical Specifications and Section 3, Utilities Detail Drawings.

All material and equipment designed or used in connection with a potable (drinking) water system shall conform to the requirements of the National Sanitation Foundation (NSF) Standard 61, "Drinking Water System Components – Health Effects" and the Reduction of Lead in Drinking Water Act amending the Safe Drinking Water Act.

2.1 Pipe and Fitting Material

All potable water or non-potable irrigation water pipelines shall be constructed of ductile iron, HDPE, or PVC pipe, and shall utilize pipe meeting the requirements of the Technical Specifications. HDPE shall not be used for pipelines with service connections.

All pipe and pipe fittings shall contain no lead pursuant to the Reduction in Lead in Drinking Water Act. All pipe and pipe fittings installed shall be color coded or marked in accordance with F.A.C. 62-555.320(21)(b)3.

Potable water pipelines shall be blue in color. Raw water pipelines shall be white in color. Non-potable irrigation, reclaimed, and reuse water pipelines shall be pantone purple in color.

All Ductile Iron buried water main pipelines shall have blue stripes applied to the pipe wall. If tape or paint is used to stripe pipe during installation, the tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe.

All buried water pipelines and mains, except those installed by horizontal directional drilling or jack-and-bore methods, shall be marked using metalized warning tape for HDPE and PVC pipe and non-magnetic for ductile iron pipe. The locator tape shall be placed in the pipe trench two feet below grade or one-half the pipe's bury, whichever is less, and labeled "potable water" or "non-potable water" as applicable. Horizontal directional drilling shall include installation of at least two locating tone wires as described in the Technical Specifications.

All water main aerial crossings shall be Pressure Class 350 flanged ductile iron pipe and shall be coated on the exterior using a suitable grade of appropriately colored, field applied (or factory applied with field touch-up as required) epoxy coating. Potable water mains shall be painted Federal Safety Blue. Raw water mains shall be painted white. Non-potable irrigation, reclaimed, and reuse water mains shall be painted Pantone Purple 522C. Specific colors shall be subject to approval of the County Manager or designee. All nuts and bolts used in aerial crossings shall be stainless steel. All canal, river, or creek crossings shall be aerial, unless otherwise approved by the County Manager or designee. Aerial crossings shall be designed to incorporate valves or other flow regulation devices in accordance with F.A.C. 62-555.320(21)(b). Aerial crossings shall be designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property Owners. Submit aerial pipe and flange computations, including support and anchor design, for review. The submittal must be signed and sealed by a Florida registered Licensed Professional Engineer.

2.2 Design of Pipeline Size and Location

2.2.1 Water Pipeline Sizing Criteria

All potable water mains to be maintained by the COUNTY shall be a minimum of six inches in diameter. Hydraulic calculations shall show the capability of maintaining required fire flow (according to NFPA 1) plus potable demand as required below.

Water systems shall be designed to maintain adequate flows and pressures and water quality standards as established by Florida Department of Environmental Protection (FDEP). The following criteria shall be used to design water systems and analyze model chloramine dissipation:

A. Minimum residual node pressure within a proposed project system shall be 20 psi under peak hour with fire flow conditions, assuming a source pressure verified by the results of a fire flow test not older than six months. The design source pressure shall be calculated as follows: $P_d = P_s - (P_s - P_r) (D / Q)^{1.85}$, where P_d is the design source pressure (i.e. theoretical residual pressure for the design demand), P_s is the static pressure from the fire flow test, P_r is the residual pressure from the fire flow test, D is the design demand (i.e. peak hour demand plus required fire flow), and Q is the flow rate from the fire flow test.

B. The design Engineer shall model the proposed system, including all dead ends, for chloramine dissipation and assume a chloramine residual of 2.0 ppm at the entrance point to the project.

C. When estimating potable water demands multiply the estimated wastewater flows from Part 3 Wastewater Collection and Transmission Systems by 1.4.

D. The standard chloramine decay rate is - 0.012 ppm per hour. Using the decay rate and solving for the elapsed time from the initial chloramine level to the minimum chloramine level residual of 0.6 ppm in the following: 0.6 ppm = 2.0 ppm x e^(-0.012 ppm x #hours) => time = 100.33 hours.

The Project Engineer shall submit an analysis to the Growth Management Department as part of the review package, certifying that all points within the proposed system shall maintain a minimum level of 0.6 ppm chloramine residual under the conditions listed above.

Systems unable to meet minimum design requirements or maintain minimum chloramine residual levels shall not be eligible for ownership and maintenance by the COUNTY.

Water mains not designed to carry fire flows shall not have fire hydrants connected to them.

2.2.2 Distribution System Layout

Potable and non-potable irrigation water pipelines and fittings, except for service piping, shall have a minimum depth of 30 inches and a maximum depth of 48 inches below finished grade.

Water distribution systems shall be designed so that all systems are located adjacent to, and are accessible from, paved or unpaved roadways so as to allow access for short and long term maintenance, repair, and/or replacement of such system.

New potable water distribution systems shall be designed as “looped” systems to avoid dead ends. A “looped” system should have two independent connections off the source main (unless served by a master meter). If two independent connections aren’t possible, a stub out for future development in a location agreed to by the County shall be provided in an easement or ROW to the limits of the project. In cases where no nearby water main is available for looping, a County approved automatic flushing device (AFD) shall be provided at each dead end of a water main. An AFD shall also be provided near the mid-point of a looped water main unless the design engineer can provide information to confirm that the minimum residual chlorine will be maintained based on the predicted water consumption at the time of County acceptance of the water main. At no time shall a dead end serve more than 149 residential units. On dead end water mains that do not have service connections, no automatic flushing devices are required.

Installation of the automatic flushing devices shall be designed so as to prevent erosion of nearby areas as well as prevent silt and sediment transport.

All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development. Master meters and backflow assemblies shall be located within a County Utility Easement (CUE), which shall be located outside of, but contiguous to, the road Right-Of-Way (ROW).

Deviations from these design parameters shall only be approved in cases where such installations can be shown to be necessary in order to comply with minimum chlorine residuals or other FDEP quality parameters, unless otherwise approved by the County Manager or designee. In such cases, the water main shall be located within a separate tract of land or CUE dedicated to the Water-Sewer District. Such tracts shall be delineated with fencing, landscaping, signage, pavement, or other methods determined to be acceptable to the Water-Sewer District. All such installations shall require approval from the Water-Sewer District. In addition, an agreement shall be provided authorizing the COUNTY to traverse all private property outside of the CUE for the purpose of access, maintenance, repair, and/or replacement of such main. The agreement shall also hold the COUNTY harmless for any damage to the private property resulting from the COUNTY’s maintenance, repair and/or replacement activities within or outside of the CUE.

The encasement of potable water mains in concrete shall only be made after review and approval by the County Manager or designee.

2.2.3 Valve Locations

Valves shall be provided at all intersections and branches in sufficient numbers as to allow for zone isolation of distribution areas in order to limit impacts of line breaks and service disruptions to customers. In-line gate valves shall be provided in accordance with AWWA requirements and at no greater than 1,000 foot intervals when no other valves exist within internal distribution systems. All gate valves 20 inches and smaller shall be of the resilient-seated wedge type, conforming to AWWA C509 or C515, or latest revisions thereof. All gate valves or plug valves 30 inches or larger shall have a concrete slab placed under the valve to help distribute the total weight of the valve and reduce line sagging. See Technical Specifications 331200 2.3.A.2. All valves shall be furnished with valve boxes extending to finished grade as shown in the Utilities Detail Drawings (G-7).

2.3 Conflict Crossings

All storm sewer, non-potable irrigation water mains, and wastewater transmission system conflicts with water systems or portion(s) thereof that must be crossed shall be performed using AWWA C900 Class 200 or C905 Class 235 PVC with ductile iron fittings. All fittings shall be adequately restrained using retainer glands, stainless steel rods, or see County Approved Product List, Appendix F. Transitional fittings, when approved by the County Manager or designee, shall be located as close to the point of conflict as possible. Air release assemblies shall be provided as specified in Subsection 2.7 herein, below. Gradual deflection of the water line in lieu of using fittings to clear the conflict shall not be permitted if cover exceeds five feet. A minimum vertical clearance of 18 inches shall be provided between the water main and bottom of conflict. A deviation form will not be required for separation of sewer laterals and potable water pipeline. Maximum depth of 48 inches below final grade is exempt when dipping under conflicts in which case the water main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less.

2.3.1 Subaqueous Canal Crossings

Potable and non-potable subaqueous crossings shall be designed to a minimum depth of 36 inches below the design or actual bottom, whichever is deeper, of a canal and other dredged waterway or the natural bottom of streams, rivers, estuaries, bays, and other natural water bodies. If not practical to design the project with a minimum 36 inch cover, alternative construction features must be installed to ensure adequate protection of the pipeline.

All subaqueous crossings must be introduced/discussed at a plan Pre-Submittal Conference. It is important that representatives from the Water Department or Wastewater Department and GMD be present for approval at the plan Pre-Submittal Conference.

A permanent easement is needed when there is no room available in the ROW.

When crossing watercourses, the following shall be provided:

A. The pipe shall be of special construction (HDPE), having welded (butt fusion) watertight joints;

B. Valves shall be provided at both ends of the subaqueous crossing for isolation, testing, or repair of the line. The valves shall be easily accessible and not subject to flooding. The valve closest to the supply source shall be in a below grade vault as per FDEP requirements and constructed to meet FDOT standards. All welding shall be done above ground. Water, reclaimed water, and wastewater lines shall have two air release valves between the two valves;

C. Permanent taps shall be made on each side of the valve within the manhole to allow insertion of a small meter to determine leakage and for sampling purposes. The taps will allow for a three quarter inch meter to be attached;

D. The HPDE pipe shall be encased in HDPE DR11 casing;

E. Pressure test according to Section 022501;

F. Conform to HDPE Specifications, Section 330502.

Warning signs shall be placed along the banks of canals, streams, and rivers clearly identifying the nature and location of subaqueous crossings. The signs shall state the type of pipeline and the depth of pipeline below design or natural bottom of the water body. Warning sign shall be aluminum and have minimum dimensions of four feet wide by two feet high with a minimum of two inch lettering.

2.4 Fire Service Systems

All private fire service systems for sprinkler systems, wet standpipe systems, and privately-owned or controlled distribution systems shall be installed with an appropriate back flow prevention device with a leak detection meter. The backflow device shall be sized by the Developer's Engineer and shall be purchased, owned and maintained by the private service owner. The COUNTY requires all privately-owned backflow devices to be certified at the time of installation and on an annual basis by a Certified Backflow Tester (University of Florida, TREEO Center, or equivalent certification program). The results shall be submitted to the County Manager or designee. The County Manager or designee will require all privately owned metering devices to be certified for accuracy at the time of installation. Fire meter devices using a three quarter to two inch metering device shall be re-calibrated to manufacturer's specifications every five years, replaced every 10 years, or replaced immediately upon meter failure. Fire meter devices greater than two inches shall be re-calibrated to manufacturer's specifications every five years and replaced immediately upon meter failure. The County Manager or designee will inform the owner by mail prior to the due date. Private owner(s) shall submit certification results to the County Manager or designee within 60 days of the due date.

2.4.1 Fire Service Meters for Residential Systems

Residential projects such as, but not limited to, single family, multi-family condominiums, trailer parks, mobile home parks, etc. utilizing a master meter shall pass all fire flow through such meter. The meter shall be sized to pass the domestic coincident draft plus rated fire flow at the AWWA pressure loss specifications.

2.4.2 Fire Service Meters for Commercial and Other Non-residential Systems

Commercial projects such as, but not limited to, shopping centers, malls, retail, and industrial buildings shall pass all fire flow through a potable master meter or have a separate fire service connection to the water distribution main. The Fire Service meter and isolation valves shall be extended above final grade as shown in the Utilities Detail Drawings. For meter reading purposes, metering devices shall lie within a County Utility Easement (CUE) that shall be dedicated separately to the Board for the appropriate Water-Sewer District or in conjunction with the easements for any on-site utility system(s).

The Owner shall purchase and install an approved backflow device with a leak detection meter at no expense to the Water-Sewer District.

2.5 Connections to Collier County Facilities

Connections to existing COUNTY water mains shall be constructed as described in Section 2, Technical Specifications and shown in Section 3, Utilities Detail Drawings. These details shall apply to all connections to existing systems including, but not limited to, hot taps and extensions from existing dead end systems. A section of pipe shall be inserted into the gap to connect the

new construction to the existing systems for the purpose of accomplishing line flushing. Immediately upon completion of the flush, the connection shall be removed. A jumper shall be installed (see detail W-4) until final connection is authorized by the County Manager or designee and approved by the FDEP at the completion of construction and after satisfactory completion of all test procedures and bacterial clearance of the new water system or portion(s) thereof.

Steam condensate, cooling water from engine jackets, or water used in conjunction with heat exchangers shall not be returned to potable water mains.

2.6 Water Services

2.6.1 Service Pipelines

All building lots and parcels of land within a development shall be provided with a means for potable water service and non-potable irrigation water service by the developer. Accessibility to lands on the opposite side of a roadway shall be provided by the installation of water service conduits. Conduits shall be a minimum of four inch diameter PVC, with a minimum cover of 24 inches. Such pipelines shall extend at least five feet past the edge-of-pavement or back of curb where provided and shall run from lot corners on one side of the street to a lot corner on the opposite side and shall be capped and marked with an electronic marker (see County Approved Product List, Appendix F). Service pipelines shall be polyethylene of a minimum of one-and-one-half inches in diameter. Service pipelines under pavement shall be in conduits in all scenarios for County owned services.

2.6.2 Water Meters

Water meters shall be properly sized, based on the total calculated service demand for water, according to the Collier County Water Meter Sizing Form (Appendix B). The properly sized water meter shall be installed according to specifications and standards. Any deviation from the determined meter size shall require an approved Deviation Request.

All water meters larger than two inches shall be installed above ground. These meters shall be equipped with a backflow preventer and installed by the Contractor at his expense. The type of backflow device utilized shall be on the Water Department’s list of Approved Backflow Devices (Appendix G).

All large potable meters shall be purchased by the owner and installed by the Developer's Contractor. The systems’ master meter assemblies shall be built in accordance with the current design details shown in the Utilities Detail Drawings. Alternate designs may be permitted upon submission of design details for review and approval. The location of all meters (potable and non-potable) shall be clearly shown on the construction plans.

All potable water and/or non-potable irrigation water meters shall be equipped to accept the COUNTY’s Automatic Meter Reading (AMR) units shown on the Utilities Detail Drawings. Two inch and smaller meter units will be installed by the COUNTY. On meters three inches and larger, contact the Water Distribution office to determine the necessary AMR equipment for the meters. All meters shall be turned over to the technician performing the full bore flush prior to the acceptance of the meter.

Temporary meters may be applied for by phoning the Water Distribution office between 7:30 a.m. and 4:00 p.m., Monday through Friday, under the conditions provided by the ordinance.

Temporary meters shall be installed for the purpose of supplying construction water to meet the COUNTY requirement for new water line construction as listed below and require a minimum of 48 hours advance notice. All backflow devices shall be reduced pressure type and shall be certified as required by the ordinance, provided by the Contractor, and be of an approved type.

Temporary meters shall be installed as shown in the Utilities Detail Drawings.

2.7 Air Release Assemblies

Air release assemblies shall be installed at all high points on all County owned mains where air will not be released through service lines, and on both sides of conflict crossings (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). In cases where reversal of flow is not expected, the air release assembly shall be provided at high points and on the upstream side of conflict crossings. A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, “Air-Release, Air Vacuum, and Combination Air Valves”. Air valves shall be suitable for use with potable water or non-potable irrigation water. For all water or non-potable irrigation water mains 14 inches and smaller, see the County Approved Product List, Appendix F. For potable water or non-potable irrigation water mains 16 inches and greater, the design engineer shall be responsible for air valve selection and sizing. An isolating valve shall be provided below the air valve to allow removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

2.8 Concrete Collars

All gate valve boxes, air release assemblies, and permanent sample points outside paved surfaces shall be provided with a concrete collar set to finish grade. Such collar(s) shall have a minimum thickness of six inches and the outside dimension of the pad shall be as shown in the Utilities Detail Drawings. Concrete shall have minimum compression strength of 3000 psi at 28 days.

2.9 Testing and Clearance Procedures

All water systems or portion(s) thereof shall be subjected to pressure testing and disinfection conforming to the AWWA Standards C600, C602, C605, and C606, or latest revision(s) thereof.

Under no circumstances shall any person other than an authorized COUNTY Water Department employee operate valves, make service taps or otherwise tamper with COUNTY Distribution system or portion(s) thereof. Failure to comply with these requirements will place such individual in jeopardy of legal action by the COUNTY pursuant to US Code, COUNTY Ordinances and/or Resolutions in effect at the time of the violation.

2.9.1 Pigging

All lines larger than 12 inches in diameter shall be pigged with a new pig to clear debris prior to flushing. Refer to specifications section 025400, 3.1.

2.9.2 Flushing

Full-bore flushing shall be coordinated with COUNTY Water Distribution personnel and shall require 48-hour notice to Water Distribution prior to performance. During flushing the Contractor will be permitted to install a spool piece to close the gap as shown in the Utilities Detail Drawings. Upon completion of such flushing, connection to the COUNTY's systems or portion(s) thereof shall be returned to the configuration shown in the Utilities Detail Drawings. Refer to specifications section 025400, 3.1.

2.9.3 Line Filling

Lines under construction shall be filled utilizing water supplied by the temporary meter and such filling shall be performed by the Contractor in accordance with required procedures including those outlined herein below.

2.9.4 Chlorination

Line chlorination shall be performed utilizing water supplied by the temporary meter for the purpose of chlorinating newly constructed potable water lines. Such procedure shall be performed by the Contractor, and shall require 48-hour notice to Water Distribution prior to performance.

2.9.5 Post-Chlorination Flushes

The Contractor using the temporary construction meter shall perform Post Chlorination Flushes. All chlorine injected into the system for disinfection shall be flushed from the system at least 24 hours prior to collection of Bacteriological Samples.

The initial flush volume equal to the volume of water main being flushed shall be captured and properly disposed of, such that no chlorinated water enters into a storm water system and/or is discharged to the ground; all regulatory requirements for the protection of the environment shall be met.

2.9.6 Bacteriological Samples

Bacteriological sample collection shall be performed utilizing water supplied by the temporary meter in order to supply pressure during sample collection of newly constructed potable water lines. Such procedure shall require 48-hour notice to Water Distribution prior to performance. These procedures shall be performed on Monday through Thursday, excluding holidays, unless otherwise directed by the County Manager or designee.

2.10 Laboratory Testing and Sample Collection

All new potable and raw water systems shall be subject to bacteriological sample collection and testing. Sample collection and laboratory analyses shall be performed by COUNTY certified laboratory technicians only. The Contractor or his agent shall provide the equipment required in Section 2, Technical Specifications, to supply a continuous sample at the points indicated on the engineer's construction drawings. Sample points having a one day total of 200 non-coliform bacteria or greater shall be considered as failed samples. Samples containing one coliform bacteria or greater shall be considered as a failed sample. All potable water piping up to and including 8-inches in diameter shall pass bacteriological tests within sixty (60) days of being

placed in service. All potable water piping greater than 8-inches shall pass bacteriological tests within forty-five (45) days of being placed in service.

Sample collection and sample laboratory analyses costs shall be borne by the developer. For Utilities Capital Projects that are run by the COUNTY for the COUNTY, one set of tests (including water costs) are provided by the COUNTY free of charge and the contractor shall pay for any additional tests.

PART 3 WASTEWATER COLLECTION AND TRANSMISSION SYSTEMS

All wastewater pipe, material, equipment and appurtenances shall be new, and shall conform to Section 2, Technical Specifications and Section 3, Utilities Detail Drawings.

Wastewater systems shall be designed to maintain adequate flows and standards as established by Florida Department of Environmental Protection (FDEP), using the equivalent residential connection (ERC) value of 250 gallons per day per residential unit (broken down to 100 gallons per day per person and 2.5 people per household) and F.A.C. 64E-6.008 for non-residential. The peak hour factor shall be determined using the equation:

$$\frac{(18+\sqrt{\text{population in thousands}})}{(4+\sqrt{\text{population in thousands}})}$$

Populations for non-residential units shall be derived using the estimated average daily flows calculated using Table 1 in Rule 64E-6.008 of the Florida Administrative Code, divided by the average daily flow per capita of 100 gallons.

All wastewater projects shall be designed to preclude the deliberate introduction of storm water, surface water, groundwater, roof runoff, subsurface drainage, swimming pool drainage, air conditioning system condensate water, non-contact cooling water, and sources of uncontaminated wastewater as specified in F.A.C. Chapter 62-610 and comply with Ordinance 2012-13 “Collier County Industrial Pretreatment Ordinance.”

3.1 Gravity Sewer Systems

3.1.1 Pipe and Fitting Materials

Gravity sewer pipe and materials shall conform to Technical Specifications for polyvinyl chloride (PVC) pipe and fittings. All pipelines shall be green in color.

3.1.2 Design of Pipeline Size, Depth and Location

All gravity sewer mains constructed shall be a minimum of eight inches in diameter. The minimum depth of cover over all gravity sewers shall be 36 inches. All gravity sewer designs shall consider buoyancy of sewers, and appropriate construction techniques to prevent floatation of the pipe where high groundwater conditions are anticipated.

All gravity mains eight inches or larger are allowed to be core bored into existing manholes. The manhole must be restored as per Section 333913. An inspector from the Wastewater Collections Department must be present during manhole restoration.

Hydraulic Design Requirements - All gravity sewers shall be designed to give mean velocities, when flowing full or half-full of not less than two feet per second, based on Manning’s formula. When calculating full-flow velocity, use a Manning’s Roughness Coefficient of n=0.013. Design wastewater system with uniform slope between manholes. The following are the minimum allowable design slopes that may be provided for each pipe size listed:

Minimum Slope in Feet per One Hundred Feet (ft/100'):

Sewer Size	Slope (ft/100 ft)	Sewer Size	Slope (ft/100 ft)
8 inch	0.40	18 inch	0.12
10 inch	0.28	21 inch	0.10
12 inch	0.22	24 inch	0.08
15 inch	0.15		

Special attention shall be given to gravity lines that receive flows from wastewater transmission or re-pumping facilities. Due care shall be taken in these cases to ensure that no surcharge conditions occur downstream due to excessive flow rates. Under no conditions shall pipe of a diameter larger than that necessary for proper hydraulic design as determined by the COUNTY Growth Management Division or Public Utilities Engineering and Project Management Department be permitted for use on any project.

All sewers shall be designed to prevent superimposed loads.

3.1.3 Gravity Sewer Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a bell or manhole.

3.1.4 Gravity Sewer Laterals

Laterals shall be extended to the property line or easement limit for all installations.

Laterals shall be a minimum of six inches in diameter. Lateral shall have a minimum depth of 30 inches and a maximum depth of 48 inches below finished grade. In locations where a minimum depth of 30 inches cannot be provided, laterals shall be C900, DR 14 PVC pipe. At no time shall the depth of a lateral be less than 24 inches. At no time shall a lateral be core bored into manholes. Upon installation, all lateral ends shall be plugged. A cleanout shall be provided at the end of each lateral prior to the end plug and a maximum of every 75 feet. Intermediate cleanouts shall be located on the back side of the curb or gutter (where available). Typical lateral and cleanout standards are shown in the Utilities Detail Drawings. The cleanout riser and cap shall be set 24 inches above finished grade. All COUNTY-owned sewer cleanouts shall be provided with an electronic marker and concrete collar as shown in Utilities Detail Drawings (see County Approved Product List, Appendix F). Electronic markers shall be placed 24 inches below final grade at the cleanout, for COUNTY inspector to see during final plumbing tie-in inspection. At no time shall the connection to the lateral be made to the cleanout riser or any part of the vertical assembly. Either a single six inch diameter or larger lateral to each property or a single six inch or larger lateral with a double wye shall be provided.

3.1.5 Manholes

Precast concrete manholes shall be installed at the end of each wastewater main, at all changes in grade, size, or horizontal alignment, and at all main pipe intersections, shall be spaced at distances not greater than 400 feet and shall be placed in pavement or equivalently stabilized surface (or future pavement). For sanitary sewers with a diameter greater than 15 inches, the maximum distance between manholes is 450 feet. All gravity collection mains shall terminate in a precast concrete manhole.

Minimum inside diameter of all manholes shall be four feet. The angle between the inlet and outlet pipe within manholes shall be no less than 90 degrees. A drop pipe shall be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Drop manholes shall be constructed with an outside drop connection encased in concrete, as shown in the Utilities Detail Drawings. See FDEP Wastewater Checklist Form 62-604.300(8)(a), "Manholes" section, for further design requirements, as well as Specification Section 333913 and the Detail Drawings.

3.2 Force Mains

3.2.1 Pipe and Fitting Materials

Force main pipelines and fittings shall be a minimum of four inches in diameter. All force mains shall be constructed of PVC, HDPE, or ductile iron pipe and shall utilize pipe meeting the requirements of the Technical Specifications. The use of ductile iron pipe on force mains is restricted to aerial crossings and above ground flanged pipe only. A plug valve is required to delineate ownership between County owned and privately owned force mains.

All HDPE and PVC buried pipelines shall be color-coded as described in the Technical Specifications. Force main pipelines shall be green in color.

Buried force mains, except those installed by directional drill or jack-and-bore methods, shall be marked using metalized warning tape for PVC. The metalized warning tape shall be placed in the pipe trench at two feet below grade or one-half the depth of the pipe's bury, whichever is less, and labeled "WASTEWATER FORCE MAIN." Electronic markers (see County Approved Product List, Appendix F) shall be placed 24 inches below final grade, above the force main, at all bends or changes in alignment, valves, and every 250 feet. Horizontal directional drilling shall include installation of at least two locating tone wires as described in the Technical Specifications.

All force main aerial crossings shall be Pressure Class 350 flanged ductile iron pipe and shall be coated on the exterior using a suitable grade of Safety Green colored, field applied (or factory applied with field touch-up as required) epoxy coating. Specific color shall be subject to approval of the County Manager or designee. All nuts and bolts used in aerial crossings shall be stainless steel. All canal, river, or creek crossings shall be aerial, unless otherwise approved by the County Manager or designee. Aerial crossings shall be designed to incorporate valves or other flow regulation devices in accordance with F.A.C. 62-604.400(2)(k)5. Aerial crossings shall be designed to maintain existing or required navigational capabilities within the waterway and to reserve riparian rights of adjacent property Owners. Submit aerial pipe and flange computations, including support and anchor design, for review. The submittal must be signed and sealed by a Florida registered Licensed Professional Engineer.

3.2.2 Design of Pipeline Size and Location

Force mains shall be sized to provide a desired flushing velocity of two and one-half feet per second with a minimum allowable velocity of two feet per second. The maximum allowable velocity in wastewater force mains is six feet per second. The minimum size force main conveyed to the CCWSD shall be four inches in diameter. Approved mechanical thrust restraints are required at pipe joints where specified in the Utility Standards.

Minimum cover for force mains shall be 30 inches. Maximum cover shall be 48 inches after final project grading is complete except when dipping under conflicts in which case the force main shall be returned to normal depth within 10 feet on either side of the conflict or as soon as possible using a fitting of 45 degrees or less. The design engineer shall strive to minimize the number and frequency of dips (maintaining a horizontal run line through intermittent grade changes, by deviation). An air release valve is required at all dips. Engineers should evaluate possibilities of lowering storm drainage piping or dipping potable water and non-potable irrigation water main to avoid dips in the force main.

When force mains are interconnected with a gravity sewer system, for transmission purposes through that system, interconnection shall be as shown in the Utility Standard Drawings. No force main laterals shall be core bored into manholes.

3.2.3 Valves

All connections of privately-owned and maintained wastewater force mains to the Wastewater Department's force mains shall be connected through a check valve housed in a structure as shown in the Utilities Detail Drawings which shall allow performance of required maintenance, and shall be owned and maintained by the property owner.

Sufficient plug valves shall be provided to allow for zone isolation of wastewater transmission areas in order to limit the impact of line breaks. In-line plug valves shall be provided at no greater than 1,000 foot intervals per COUNTY requirements.

3.2.4 Force Main Extension Stubs

All main-line extension stubs to future developments and/or parcels shall terminate in a stub-out if it is part of a phased project. The stub-out shall end with a valve and cap/plug.

3.2.5 Air Release Assemblies

Air release assemblies shall be provided at all high points and on the upstream side of conflict crossings at which the force main passes under the conflict (unless it can be demonstrated by hydraulic analysis that air pockets will not accumulate at individual high points). A high point is defined by the hydraulic gradient and is considered the upper end of any pipe segment that slopes up to the hydraulic gradient or runs parallel to it. Air valves (see County Approved Product List, Appendix F) utilized on raw sewage facilities shall be designed and manufactured specifically for use with domestic sewage. The design engineer shall review and apply the pertinent provisions of AWWA-C512 and AWWA Manual of Water Supply Practices M51, "Air-Release, Air Vacuum, and Combination Air Valves". When installed, the air valve shall be provided with a shut-off valve to allow isolation and removal of the valve assembly. All air release assemblies shall be installed as shown in the Utilities Detail Drawings.

3.3 Wastewater Pump Stations

Wastewater pump stations shall be designed and constructed in accordance with FDEP regulatory requirements, Section 2 Technical Specifications, National Electrical Code (NEC) Requirements, and Section 3 Utilities Detail Drawings.

Pump Station wetwells shall be designed to withstand flotation forces with the assumption that the structures are empty and ground/flood water elevation is at the top of the structures. The design shall consider the potential for damage or interruption of operation due to flooding. Pump

station structures and electrical and mechanical equipment shall be designed to be protected from physical damage by the 100-year flood event. Pump stations shall be designed to remain fully operational and accessible during the 25-year flood event. Pump stations shall be designed to avoid operational problems from the accumulation of grit.

Pump stations shall be designed to be readily accessible by maintenance vehicles, including pumper trucks, during all weather conditions. Pump stations shall be designed and located on the site to minimize adverse effects from odors, noise, and lighting. Pump stations shall be located on the site to have a minimum separation of 20 feet from the edge of the CUE for the pump station to edge of a body of water and 15 feet from the edge of the CUE for the pump station to a residential structure (including appurtenances).

The effective volume of wet wells shall be based on design average flows and a filling time not to exceed 30 minutes unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycling time. Pump stations requiring a pump motor of twenty horsepower or greater shall operate by a VFD (variable frequency drive) that varies the operating speed of the pump based on wet well water levels. Pump stations shall have a compacted earth berm on three sides with 3:1 slopes to divert liquid toward the ROW. Top of berm shall be 12 inches wide and six inches higher than back of curb (with curb) or edge of pavement (without curb). Minimum berm height shall be six inches.

Emergency pumping capability shall be provided for all pump stations. A pump station that is connected directly to the County transmission force main from a development (Community Pump Station) and any pump station that receives flow from one or more upstream pump stations or discharges through a force main 12 inches or larger (see FAC 62-604.400 (2)(a)1) shall have uninterrupted pumping capability (standby Diesel pump or generator) with three days of fuel storage (compliant with Technical Specification 263213) and a concrete pad for a future odor control system.

Alternatively, emergency pumping capability may be achieved by connecting the pump station to at least two independent utility substations, each capable of starting and operating the pump station at its rated capacity. Regardless of the type of emergency standby system provided, a force main riser with rapid connection capabilities and appropriate valving shall be provided for connecting a portable pump. All pump stations shall conform to these standards and shall be conveyed to the Collier County Water-Sewer District in accordance with the utilities conveyance policies and procedures outlined in the Collier County Utilities Standards and Procedures Ordinance (Ord. No. 2004-31 as amended), unless approved for private ownership and maintenance by Deviation and in accordance with Section 3.3.1 below.

All pump stations shall be protected from lightning and transient voltage surges.
All pump stations shall be located at least 100 feet from a public drinking water supply well and 75 feet from a private drinking water well. The design and siting of new private pumping stations shall minimize adverse effects resulting from odors, noise, and lighting.

All pump stations shall have water available to them. Available water means a water main is accessible in the adjacent ROW or CUE.

Landscaping is not required, per these standards, to be installed around wastewater pump stations. If landscaping is provided, it shall be maintained by the developer, homeowners association, or land owner and shall NOT be located in the CUE. Landscaping, if provided, shall be located as to not block access or interfere with operations. If plant material dies, it is the

responsibility of the landscaping owner to replace it. The landscaping shall be maintained to not block telemetry antenna line of site.

3.3.1 Private Pump Stations

Private pump stations shall not receive flow from any other pump station and shall only serve one property parcel. All private pump stations may be privately monitored and maintained by deviation. All new private pump stations shall be grinder pump stations. Positive or semi-positive displacement grinder pumps equipped with thermal overload protection shall be standard on all private grinder pump stations. All new private pump stations shall conform to the design criteria specified in Subsection 3.3 above, unless otherwise specified in this subsection, and shall be configured to facilitate routine maintenance without entering the wet well.

Except in the case of a simplex station serving a single-family residence, private pump stations shall have multiple pumps capable of handling peak flow with one pump out of service. Peak flow shall be calculated as the peak hour flow (per Part 3) divided by a factor of 0.7. This is based on peak hour flow typically being around 70 percent of the peak flow over a briefer (approximately 15-minute) time period[1]. Where possible, pumps shall be selected so that the design operating range is within ten percent (10%) (on a flow basis) of the maximum efficiency point identified by the manufacturer. Otherwise, the pump model that would operate closest to its maximum efficiency point should be selected based on the average head condition.

Design flow shall be calculated in accordance with Part 3, except that average daily flow for a residential project shall be determined from Table I in paragraph 62-6.008(1)(b), F.A.C., based on the number of bedrooms and building area. An assumption of 350 gallons per day per residential unit shall be used if bedroom count and building area are unknown.

The table below defines volumetric terms used in this subsection based on the demarcating design elevations (e.g., storage volume is between the pump on and alarm elevations):

<table>
<tr><th>Elevation</th><th colspan="2">Terms</th></tr>
<tr><td rowspan="2">Top/Overflow</td><td></td><td></td></tr>
<tr><td rowspan="2">Reserve Volume</td><td rowspan="3">Reserve Capacity</td></tr>
<tr><td>Alarm</td></tr>
<tr><td rowspan="2">Storage Volume</td></tr>
<tr><td>On</td><td rowspan="2">Effective Volume</td><td rowspan="3"></td></tr>
<tr><td rowspan="2">Off</td></tr>
<tr><td></td></tr>
</table>

Residential private pump stations shall have a sufficient combination of storage volume and pump rate to avoid an alarm condition during a peak flow of 46 gallons over a 2-minute period, which represents simultaneous discharge from a bathtub and clothes washer with a high probability of occurrence[2], assuming the basin level is at the pump on elevation just prior to the peak flow occurring.

Non-residential private pump stations shall be designed for simultaneous discharge from multiple plumbing fixtures as determined by the plumbing system designer. Check pump station

[1] Water Pollution Control Federation. (1986). *Alternative Sewer Systems* (Manual of Practice No. FD-12, Facilities Development).
[2] American Society of Civil Engineers. (1969). *Combined Sewer Separation Using Pressure Sewers* (FWPCA Report ORD-4).

capacity using the equation, Q = (V-S)/t, where Q is the minimum pump discharge rate (gpm), V is the volume of peak flow (gal), S is storage volume (gal), and t is the time window (duration) of peak flow (minutes).

The minimum storage volume required to attenuate peak flows is 25 gallons. In no case shall the pump rate be less than 5 to 10 gpm, depending on the storage volume. If the storage volume is 25 gallons, the minimum for attenuation, the pump rate shall be no less than 10 gpm. For storage volumes equal to or greater than 50 gallons, the pump rate shall be no less than 5 gpm. Interpolate the minimum pump rate accordingly if the storage volume is between 25 and 50 gallons.

In-ground installation of a grinder pump station may require a ballast or concrete anchor of proper dimensions and weight to counteract the buoyant forces exerted on the station. Designers of privately-owned pump stations shall adhere to the manufacturer's guidelines and sound engineering practice for counteracting buoyancy.

Unless a standby power generator is connected to the pump station, every private pump station shall have a standard generator receptacle (see Appendix F) and a minimum reserve capacity of half the average daily flow volume, but no less than 50 gallons, as contingency for a power outage or equipment malfunction.

In instances where the reserve capacity (i.e., volume above the pump-on elevation) is less than double the peak hour flow, the private pump station shall be furnished with an external pump-out connection.

New private pumping stations shall be enclosed with a fence or otherwise designed with appropriate features to prohibit the entry of animals and unauthorized persons.

All private pump stations connected with the County's wastewater collection system are required to be inspected, maintained, and repaired on a routine basis. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rules, and regulations to perform preventive maintenance and respond to any service interruption. In accordance with 62-604.400(2)(d), F.A.C., the operator's emergency telephone number shall be displayed on an unobstructed sign made of durable, weather-resistant material and posted at a location visible to the public.

3.4 Connections to Collier County Facilities

Connections to existing COUNTY wastewater mains shall be constructed as described in the Technical Specifications and shown in the Utilities Detail Drawings. These details shall apply to all connections to existing systems.

All projects shall be designed with no physical connections between a public or private potable water supply system and a sewer or force main and with no water mains passing through or coming into contact with any part of a sewer manhole.

3.5 Tests and Inspections

Tests and inspections of all wastewater systems or portion(s) thereof shall be performed in accordance with the Technical Specifications before acceptance of the systems or portions thereof by Collier County.

3.6 Wastewater Pump Station Asset Management

Asset management is required for proper use and maintenance of these wastewater facilities. State of Florida DEP regulations state: "…systems shall be operated and maintained so as to provide uninterrupted service…" To accomplish this obligation on privately owned wastewater pump stations, the owner(s) of each such station shall:

A. Maintain a permanent fence with a sign mounted thereon, which sign shall include the correct name and phone number(s) of at least one emergency contact individual and the correct name(s) and phone number(s) of the station's operator as well as the station's owner(s). The text on the sign must be immediately updated if and when any of the information on the sign becomes outdated.

B. The station's owner shall continuously retain (contract with) an operator qualified under Florida laws, rule or regulation, for operations, preventive maintenance, and to respond to each service interruption, if any, at that station.

The above requirements are mandated by the Florida Department of Environmental Protection regulations: Florida Administrative Code, Subsection 62-604.400(2)(d).

PART 4 ELECTRICAL AND CONTROL SYSTEMS

4.1 Electrical and Control System Material

All electrical devices such as motor starters, breakers, and control centers shall be manufactured to current NEMA standards. The construction of each device shall conform to the NEMA rating for the environment of that device.

All programmable logic controllers (PLC) shall be manufactured by Allen-Bradley. The PLC model for each specific application shall be coordinated with the Utilities Engineering Department.

END OF SECTION 1

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SECTION 2

TECHNICAL SPECIFICATIONS

For the latest revisions to the Technical Specifications, please visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 2

TECHNICAL SPECIFICATIONS

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SECTION 011000

SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description of Work

B. CONTRACTOR's Use of Site

C. Work Sequence

D. COUNTY Occupancy

1.2 DESCRIPTION OF WORK

A. General: The Work to be done under this Contract is shown on the drawings and specified in Contract Documents.

B. The Work includes:

1. Furnishing of all labor, material, superintendence, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies, services and other means of construction necessary or proper for performing and completing the Work.

2. Sole responsibility for adequacy of plant and equipment.

3. Maintaining the Work area and site in a clean and acceptable manner.

4. Maintaining existing facilities in service at all times.

5. Protection of finished and unfinished Work.

6. Repair and restoration of Work or existing facilities damaged during construction.

7. Furnishing as necessary proper equipment and machinery, of a sufficient capacity, to facilitate the Work and to handle all emergencies normally encountered in Work of this character.

8. Furnishing, installing, and protecting all necessary guides, track rails, bearing plates, anchor and attachment bolts, and all other appurtenances needed for the installation of the devices included in the equipment specified. Make anchor bolts of appropriate size, strength and material for the purpose intended. Furnish substantial templates and shop drawings for installation.

C. Implied and Normally Required Work: It is the intent of these Specifications to provide the COUNTY with complete operable systems, subsystems and other items of Work. Any part or item of Work, which is reasonably implied or normally required to make each installation satisfactorily and completely operable, is deemed to be included in the Work and the Contract Amount. All miscellaneous appurtenances and other items of Work incidental to meeting the intent of these Specifications are included in the Work and the Contract Amount even though these appurtenances may not be specifically called for in these Specifications.

D. Quality of Work: Regard the apparent silence of the Contract Documents as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished as meaning that only the best general practice is to prevail and that only materials and workmanship of the best quality are to be used. Interpretation of these specifications will be made upon this basis.

1.3 CONTRACTOR'S USE OF SITE

A. In addition to the requirements of the Supplemental Terms and Conditions, limit use of site and premises for work and storage to allow for the following:

1. Coordination of the Work under this CONTRACT with the work of the other contractors where Work under this CONTRACT encroaches on the Work of other contractors.

2. COUNTY occupancy and access to operate existing facilities.

3. Coordination of site use with ENGINEER.

4. Responsibility for protection and safekeeping of products under this CONTRACT.

5. Providing additional off site storage at no additional cost to the COUNTY as needed.

1.4 WORK SEQUENCE

A. Construct Work in stages to accommodate the COUNTY’s use of premises during construction period and in accordance with the limitations on the sequence of construction specified. Coordinate construction schedules and operations with ENGINEER.

B. Coordinate Work of all subcontractors.

1.5 COUNTY OCCUPANCY

A. The COUNTY will occupy premises during entire period of construction in order to maintain normal operations. Cooperate with the COUNTY's Manager or designee in all construction operations to minimize conflict, and to facilitate COUNTY usage.

B. Conduct operations with the least inconvenience to the general public.

1.6 PROTECTION OF EXISTING UTILITIES

A. In case of damage to existing utilities caused by construction activities, contact the owner of the utility or appropriate COUNTY department (Water or Wastewater) immediately. Repair any damage to existing utilities caused by construction activities in coordination with or as directed by the owner of the utility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

A. Starting Work: Start Work within 10 days following the date stated in the Notice to Proceed and execute with such progress as may be required to prevent delay to other contractors or to the general completion of the project. Execute Work at such items and in or on such parts of the project, and with such forces, material and equipment, as to complete the Work in the time established by the Contract. At all times, schedule and direct the Work so that it provides an orderly progression to completion within the specified time for completion.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 014127

NPDES REQUIREMENTS

FOR CONSTRUCTION ACTIVITIES IMPACTING MORE THAN ONE ACRE

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section describes the required documentation to be prepared and signed by the CONTRACTOR before conducting construction operations, in accordance with the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) Stormwater Permit, as required by Florida Administrative Code (F.A.C.) Chapter 62-621.

B. The CONTRACTOR shall be for responsible for implementation, maintenance and inspection of stormwater pollution prevention control measures in accordance with F.A.C. Chapter 62-621 including, but not limited to, erosion and sediment control, stormwater management plans, waste collection and disposal, off-site vehicle tracking, and other practices shown on the Drawings and/or specified elsewhere in this or other specifications. The stormwater pollution prevention control measures shall include protection of offsite public and private stormsewer facilities potentially impacted during construction. Stormwater facilities include streets, inlets, pipes, ditches, swales, canals, culverts, control structures, and detention/retention areas.

C. The CONTRACTOR shall prepare and review implementation of the Stormwater Pollution Prevention Plan (SWPPP) in a meeting with the County Manager or designee prior to start of construction.

1.2 UNIT PRICES

A. Unless indicated in the Unit Price Schedule as a pay item, no separate payment will be made for work performed under this Section. Include cost of work to be performed under this Section in pay items of which this work is a component.

1.3 REFERENCE DOCUMENTS

A. ASTM D3786 – Standard Test Method for Hydraulic Bursting Strength for Knitted Goods and Nonwoven Fabrics

B. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 NOTICE OF INTENT (NOI)

A. Fill out, sign and date a Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, (FDEP Form 62-621.300(4)(b)). Submit the signed copy of the NOI to the County Manager or designee. The County Manager or designee will submit the completed form to the FDEP along with the required permit fee.

3.2 CERTIFICATION REQUIREMENTS

A. On the attached OPERATOR'S INFORMATION form, fill out the name, address and telephone number for the CONTRACTOR, persons or firms responsible for maintenance and inspection of erosion and sediment control measures, and all Subcontractors.

B. The CONTRACTOR and Subcontractors named in the Operator's Information form shall read, sign and date the attached CONTRACTOR'S/SUBCONTRACTOR'S CERTIFICATION form.

C. The persons or firms responsible for maintenance and inspection of erosion and sediment control measures shall read, sign and date the attached EROSION CONTROL CONTRACTOR'S INSPECTION AND MAINTENANCE CERTIFICATION form.

D. Submit all forms to the County Manager or designee before beginning construction.

3.3 RETENTION OF RECORDS

A. Retain a copy of the SWPPP at the construction site and at the Contractor's office from the date that it became effective to the date of project completion.

B. At project closeout, submit to the County Manager or designee all NPDES forms and certifications, as well as a copy of the SWPPP. Stormwater pollution prevention records will be retained by the County Manager or designee for a period of three (3) years from the date of project completion.

3.4 REQUIRED NOTICES

A. The following notices shall be posted from the date that the SWPPP goes into effect until the date of final site stabilization:

1. A copy of the submitted NOI and a brief project description, as given in the SWPPP, shall be posted at the construction site and at the CONTRACTOR's office in a prominent place for public viewing.

2. Notice to drivers of equipment and vehicles, instructing them to stop, check and clean tires of debris and mud before driving onto traffic lanes. Post such notices at every stabilized construction exit area.

3. Post a notice of waste disposal procedures in an easily visible location on site.

4. Notice of hazardous material handling and emergency procedures shall be posted with the NOI on site. Keep copies of Material Safety Data Sheets at a location on site that is know to all personnel.

5. Keep a copy of each signed certification at the construction site and at the CONTRACTOR's office.

REQUIRED FORMS FOLLOW

OPERATOR'S INFORMATION

Owner's Name and Address: Collier County Public Utilities Planning and Project Management Department

3301 East Tamiami Trail
Naples, Florida 34112
(239) 252-4285

Contractors' Names and Addresses:

General Contractor: _____

Telephone: _____

Site Superintendent: _____

Telephone: _____

Erosion Control and:
Maintenance Inspection _____

Telephone: _____

Subcontractors' Names and Addresses:

_____ _____

_____ _____

_____ _____

_____ _____

Phone: _____ Phone: _____

CONTRACTOR'S / SUBCONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of Florida's National Pollutant Discharge Elimination System (NPDES) Construction General Permit that authorizes storm water discharges associated with activity from the construction site identified as part of this certification, and that I have received a copy of the SWPPP.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

EROSION CONTROL CONTRACTOR'S
INSPECTION AND MAINTENANCE CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of Florida's National Pollutant Discharge Elimination System (NPDES) Construction General Permit that authorizes storm water discharges associated with activity from the construction site identified as part of this certification, and that I have received a copy of the SWPPP.
.

Signature: _____

Name: (printed or typed) _____

Title: _____

Company: _____

Address: _____

_____

Date: _____

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

Project: _____

Contractor: _____

Inspector: _____

Date: _____

CONTROLS	LOCATION	SEDIMENT HEIGHT	PROBLEM DESCRIPTION	MAINTENANCE REQUIRED	REPAIRED BY / DATE

END OF SECTION

SECTION 014200

REFERENCES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reference Abbreviations

B. Abbreviations

C. Reference Standards

D. Definitions

1.2 RELATED SECTIONS

A. Information provided in this section is used where applicable in individual Specification Sections.

1.3 REFERENCE ABBREVIATIONS

A. Reference to a technical society, trade association or standards setting organization, may be made in the Specifications by abbreviations in accordance with the following list:

AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ADC	Air Diffusion Council
AFBMA	Anti-friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	Association of Home Appliance Manufacturers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
ARI	American Refrigeration Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers

ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of American
CABO	Council of American Building Officials
CAGI	Compressed Air and Gas Institute
CISPI	Cast Iron Soil Pipe Institute
CMAA	Crane Manufacturers Association of America
CRD	U.S. Corps of Engineers Specifications
CRSI	Concrete Reinforcing Steel Institute
CTI	Cooling Tower Institute
DHI	Door and Hardware Institute
DOH	Department of Health
DOT	Department of Transportation
Fed. Spec.	Federal Specifications
FGMA	Flat Glass Marketing Association
FM	Factory Mutual
HMI	Hoist Manufacturing Institute
HPMA	See HPVA
HPVA	Hardwood Plywood Veneer Association
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
MIL	Military Specifications
MSS	Manufacturer's Standardization Society
NAAMM	National Association of Architectural Metal Manufacturers
NACM	National Association of Chain Manufacturers
NBS	National Bureau of Standards, See NIST
NEBB	National Environmental Balancing Bureau
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NFPA	National Fluid Power Association
NIST	National Institute of Standards and Technology
NLMA	National Lumber Manufacturers Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Act
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
SAE	Society of Automotive Engineers
SCPRF	Structural Clay Products Research Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association

SPI	Society of the Plastics Industry
SSPC	Steel Structures Painting Council
STI	Steel Tank Institute
TCA	Tile Council of American
TIMA	Thermal Insulation Manufacturers' Association
UL	Underwriters' Laboratories, Inc.
USBR	U. S. Bureau of Reclamation
USBS	U. S. Bureau of Standards, See NIST

1.4 ABBREVIATIONS

A. Abbreviations which may be used in individual Specification Sections are as follows:

alternating current ..... ac
American wire gauge ..... AWG
ampere(s) ..... amp
ampere-hour(s) ..... AH
annual ..... ann
Ampere Interrupting Capacity ..... AIC
atmosphere(s) ..... atm
average ..... avg

biochemical oxygen demand ..... BOD
Board Foot ..... FBM
brake horsepower ..... bhp
Brinell Hardness ..... BH
British thermal unit(s) ..... Btu

calorie(s) ..... cal
carbonaceous biochemical oxygen demand ..... CBOD
Celsius (centigrade) C
Center to Center ..... C to C
centimeter(s) ..... cm
chemical oxygen demand ..... COD
coefficient, valve flow ..... C_v
condensate return ..... CR
cubic ..... cu
cubic centimeter(s) cc
cubic feet per day ..... cfd
cubic feet per hour ..... cfh
cubic feet per minute ..... cfm
cubic feet per minute, standard conditions ..... scfm
cubic feet per second ..... cfs
cubic foot (feet) ..... cu ft
cubic inch(es) ..... cu in
cubic yard(s) ..... cu yd

decibels ..... dB
decibels (A scale) ..... dBa
degree(s) ..... deg
dewpoint temperature ..... dpt
diameter ..... dia
direct current ..... dc
dissolved oxygen ..... DO
dissolved solids ..... DS
dry-bulb temperature ..... dbt

efficiency ..... eff
elevation ..... el
entering water temperature ..... ewt
entering air temperature ..... eat
equivalent direct radiation ..... edr

face area ..... fa
face to face ..... f to f
Fahrenheit ..... F
feet per day ..... fpd
feet per hour ..... fph
feet per minute ..... fpm
feet per second ..... fps
foot (feet) ..... ft
foot-candle ..... fc
foot-pound ..... ft-lb
foot-pounds per minute ..... ft-lb/min
foot-pounds per second ..... ft-lb/sec
formazin turbidity unit(s) ..... FTU

frequency ..... freq
fuel oil ..... FO
fuel oil supply ..... FOS
fuel oil return ..... FOR

gallon(s) ..... gal
gallons per day ..... gpd
gallons per day per cubic foot ..... gpd/cu ft
gallons per day per square foot ..... gpd/sq ft
gallons per hour ..... gph
gallons per minute ..... gpm
gallons per second ..... gps
gas chromatography and mass spectrometry ..... GC-MS
gauge ..... ga
grain(s) ..... gr
gram(s) ..... g
grams per cubic centimeter ..... gm/cc
Heat Transfer Coefficient ..... U
height ..... hgt
Hertz ..... Hz
horsepower ..... hp
horsepower-hour ..... hp-hr
hour(s) ..... hr
humidity, relative ..... rh
hydrogen ion concentration ..... pH

inch(es) ..... in
inches per second ..... ips
inside diameter ..... ID

Jackson turbidity unit(s) ..... JTU

kelvin ..... K
kiloamperes ..... kA
kilogram(s) ..... kg
kilometer(s) ..... km
kilovar (kilovolt-amperes reactive) ..... kvar
kilovolt(s) ..... kV
kilovolt-ampere(s) ..... kVA
kilowatt(s) ..... kW
kilowatt-hour(s) ..... kWh

linear foot (feet) ..... lin ft
liter(s) L

megavolt-ampere(s) ..... MVA
meter(s) ..... m
micrograms per liter ..... ug/L
miles per hour ..... mph
milliampere(s) ..... mA
milligram(s) ..... mg
milligrams per liter ..... mg/L
milliliter(s) ..... mL
millimeter(s) ..... mm
million gallons ..... MG
million gallons per day ..... mgd
millisecond(s) ..... ms
millivolt(s) ..... mV
minute(s) ..... min
mixed liquor suspended solids ..... MLSS
nephelometric turbidity unit ..... NTU
net positive suction head ..... NPSH
noise criteria ..... nc
noise reduction coefficient ..... NRC
number ..... no

ounce(s) ..... oz
outside air ..... oa
outside diameter ..... OD

parts per billion ..... ppb
parts per million ..... ppm
percent ..... pct
phase (electrical) .... ph
pound(s) ..... lb
pounds per cubic foot ..... pcf
pounds per cubic foot per hour ..... pcf/hr
pounds per day ..... lbs/day
pounds per day per cubic foot ..... lbs/day/cu ft
pounds per day per square foot ..... lbs/day/sq ft
pounds per square foot ..... psf
pounds per square foot per hour ..... psf/hr
pounds per square inch ..... psi

pounds per square inch absolute ..... psia

pounds per square inch gauge ..... psig
power factor ..... PF
pressure drop or difference ..... dp
pressure, dynamic (velocity) ..... vp
pressure, vapor ..... vap pr

quart(s) ..... qt

Rankine ..... R
relative humidity ..... rh
resistance ..... res
return air ..... ra
revolution(s) ..... rev
revolutions per minute ..... rpm
revolutions per second ..... rps
root mean squared ..... rms

safety factor ..... sf
second(s) ..... sec
shading coefficient ..... SC
sludge density index ..... SDI

Sound Transmission Coefficient ..... STC
specific gravity ..... sp gr
specific volume ..... Sp Vol
sp ht at constant pressure ..... Cp
square ..... sq
square centimeter(s) ..... sq cm
square foot (feet) ..... sq ft
square inch (es) ..... sq in
square meter(s) ..... sq m
square yard(s) ..... sq yd
standard ..... std
static pressure ..... st pr
supply air .... sa
suspended solids ..... SS

temperature ..... temp
temperature difference ..... TD
temperature entering ..... TE
temperature leaving ..... TL
thousand Btu per hour ..... Mbh
thousand circular mils ..... kcmil
thousand cubic feet ..... Mcf
threshold limit value ..... TLV
tons of refrigeration ..... tons
torque ..... TRQ
total dissolved solids ..... TDS
total dynamic head ..... TDH
total kjeldahl nitrogen ..... TKN
total oxygen demand ..... TOD
total pressure ..... TP
total solids ..... TS
total suspended solids ..... TSS
total volatile solids ..... TVS
vacuum ..... vac
viscosity ..... visc
volatile organic chemical ..... VOC
volatile solids ..... VS
volatile suspended solids ..... VSS
volt(s) V
volts-ampere(s) ..... VA
volume ..... vol
watt(s) ..... W
watthour(s) ..... Wh
watt-hour demand ..... WHD
watt-hour demand meter ..... WHDM
week(s) ..... wk
weight ..... wt
wet-bulb ..... WB
wet bulb temperature ..... WBT

yard(s) ..... yd
year(s) ..... yr

1.5 REFERENCE PUBLICATIONS

The following publications are incorporated into this Manual and are made a part of this Manual as is set out verbatim in this Manual. Violations of any provision of every such publication, as updated from time-to-time by Resolution(s) of the Board of County

Commissioners, shall be a violation of the Collier County Utilities Standards and Procedures Ordinance, as then amended.

A. Water Environment Federation, Manual of Practice No. 8, Wastewater Treatment Plant Design, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

B. Water Environment Federation, Manual of Practice No. 9, Design and Construction of Sanitary and Storm Sewers, W.E.F., 601 Wythe Street, Alexandria, VA, 22314-1994.

C. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Sewage Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York, 12224.

D. Great Lakes/Upper Mississippi River Board of State Sanitary Engineers. Recommended Standards for Water Works, Health Education Service, Inc., P.O. Box 7283, Albany, New York, 12224.

E. Rules of the Florida Department of Environmental Protection for Water, Wastewater, and Reclaimed Water Systems, latest revisions of F.A.C. Chapters 62-550, 62-555, 62-600, 62-604, 62-610, 64E-6, and 64E-8, 3900 Commonwealth Boulevard M.S. 49, Tallahassee, Florida, 32399.

F. American Water Works Association, Inc., Water Treatment Plant Design, 6666 West Quincy Avenue, Denver, Colorado, 80235.

G. American Water Works Association, Inc., Water Treatment Plant Design, AWWA Standards and Applicable Manuals, 6666 West Quincy Avenue, Denver, Colorado, 80235.

H. Ductile Iron Pipe Research Association, Handbook, Ductile Iron Pipe/Cast Iron Pipe, Ductile Iron Pipe Research Association, 245 Riverchase Parkway East, Birmingham, Alabama, 35244.

I. Uni-Bell Plastic Pipe Association, Handbook of PVC Pipe, Uni-Bell Plastic Pipe Association, 2655 Villa Creek Drive, Suite 164, Dallas, Texas, 75234.

J. American National Standards Institute, latest revisions of applicable standards, 1819 L Street NW, Suite 600, Washington, D.C., 20036.

K. American Society for Testing and Materials, latest revisions of applicable standards, ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, 19428-2959.

L. National Water Research Institute, Treatment Technologies for Removal of MTBE. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.

M. National Water Research Institute, Valuing Ground Water: Economic Concepts/Approaches. NWRI, 10500 Ellis Ave., P.O. Box 20865, Fountain Valley, CA, 92728.7.3.14.

N. U.S. Environmental Protection Agency, Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability, Supplement to the Federal Guidelines for Design, Operation, and Maintenance of Wastewater Treatment Facilities, Technical Bulletin EPA-430-99-74-001, U.S. EPA, Office of Water Program Operations.

O. Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, Maps & Publications Sales, Mail Station 12, 605 Suwannee Street, Tallahassee, Florida 32399-0450.

P. Plastics Pipe Institute, Handbook of Polyethylene Pipe, 1825 Connecticut Ave., NW, Suite 680, Washington, DC 20009.

Q. National Fire Protection Association, 1995 Edition of NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 1 Batterymarch Park, Quincy, MA 02169.

R. Collier County Water-Sewer District Utilities Standards Manual.

S. National Electrical Code, latest revisions of applicable requirements.

T. Metcalf and Eddy, Wastewater Engineering Treatment and Reuse, 4th Edition, McGraw-Hill, 2002.

U. Water Environment Federation, Manual of Practice No. 11, Operation of Municipal Wastewater Treatment Plants, 601 Wythe Street, Alexandria, VA 22314-1994.

1.6 REFERENCE STANDARDS

A. Latest Edition: Construe references to furnishing materials or testing, which conform to the standards of a particular technical society, organization, or body, to mean the latest standard, code, or specification of that body, adopted and published as of the date of bidding this Contract. Standards referred to herein are made a part of these Specifications to the extent that is indicated or intended.

B. Precedence: The duties and responsibilities of the COUNTY, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees are set forth in the Contract Documents, and are not changed or altered by any provision of any referenced standard specifications, manuals or code, whether such standard manual or code is or is not specifically incorporated by reference in the Contract Documents. Any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority, to undertake responsibility contrary to the powers of the ENGINEER as set forth in the Contract Documents cannot be assigned to the ENGINEER or any of the ENGINEER's consultants, agents or employees.

1.7 DEFINITIONS

A. In these Contract Documents the words furnish, install and provide are defined as follows:

1. Furnish (Materials): to supply and deliver to the project ready for installation and in operable condition.

2. Install (services or labor): to place in final position, complete, anchored, connected in operable condition.

3. Provide: to furnish and install complete. Includes the supply of specified services. When neither furnish, install or provide is stated, provided is implied.

4. COUNTY: Collier County Board of Commissioners, County Government Center, 3301 East Tamiami Trail, Naples, Florida 34112, or authorized staff or representatives.

5. ENGINEER: The terms Design Professional, Design Engineer, and Engineer are interchangeably used throughout the Contract Documents.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 014500

QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Submittals

B. Inspection Services

C. Inspection of Materials

D. Quality Control

E. Costs of Inspection

F. Acceptance Tests

G. Failure to Comply with Contract

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in the individual material sections.

B. Certificate Submittals: Furnish the ENGINEER authoritative evidence in the form of Certificates of Manufacture that the materials and equipment to be used in the Work have been manufactured and tested in conformity with the Contract Documents. Include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

1.3 INSPECTION SERVICES

A. COUNTY's Access: At all times during the progress of the Work, and until the date of final completion, afford the County Manager or designee and ENGINEER every reasonable, safe, and proper facility for inspecting the Work at the site. The observation and inspection of any work will not relieve the CONTRACTOR of any obligations to perform proper and satisfactory work as specified. Replace work rejected due to faulty design, inferior, or defective materials, poor workmanship, improper installation, excessive wear, or nonconformity with the requirements of the Contract Documents, with satisfactory work at no additional cost to the COUNTY. Replace as directed, finished or unfinished work found not

to be in strict accordance with the Contract, even though such work may have been previously approved and payment made therefor.

B. Rejection: The County's Manager or designee has the right to reject materials and workmanship which are defective or require correction. Promptly remove rejected work and materials from the site.

C. Inferior Work Discoveries: Failure or neglect on the part of the County Manager or designee to condemn or reject bad or inferior work or materials does not imply an acceptance of such work or materials. Neither is it to be construed as barring the County Manager or designee at any subsequent time from recovering damages or a sum of money needed to build anew all portions of the Work in which inferior work or improper materials were used.

D. Removal for Examination: Should it be considered necessary or advisable by the County Manager or designee, at any time before final acceptance of the Work, to make examinations of portions of the Work already completed, by removing or tearing out such portions, promptly furnish all necessary facilities, labor, and material, to make such an examination. If such Work is found to be defective in any respect, defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the cost of examination and restoration of the Work will be considered a change in the Work to be paid for in accordance with applicable provisions of the Contract.

E. Operation Responsibility: Assume full responsibility for the proper operation of equipment during tests and instruction periods. Make no claim, other than provided in the Contract Documents, for damage that may occur to equipment prior to the time when the County Manager or designee accepts the Work.

F. Rejection Prior to Warranty Expiration: If at anytime prior to the expiration of any applicable warranties or guarantees, defective equipment is rejected by the County Manager or designee, repay to the COUNTY all sums of money received for the rejected equipment on progress certificates or otherwise on account of the Contract lump sum prices, and upon the receipt of the sum of money, County Manager or designee will execute and deliver a bill of sale of all its rights, title, and interest in and to the rejected equipment. Do not remove the equipment from the premises of the COUNTY until the County Manager or designee obtains from other sources, equipment to take the place of that rejected. The County Manager or designee hereby agrees to obtain other equipment within a reasonable time and the CONTRACTOR agrees that the COUNTY may use the equipment furnished by the CONTRACTOR without rental or other charge until the other new equipment is obtained.

1.4 INSPECTION OF MATERIALS

A. Premanufacture Notification: Give notice in writing to the ENGINEER sufficiently in advance of the commencement of manufacture or preparation of materials

especially manufactured or prepared for use in or as part of the permanent construction. When required, notice to include a request for inspection, the date of commencement, and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, ENGINEER will arrange to have a representative present at such times during the manufacture or testing as may be necessary to inspect the materials, or will notify CONTRACTOR that the inspection will be made at a point other than the point of manufacture or testing, or that the inspection will be waived. Comply with these provisions before shipping any materials. Such inspection will not constitute a release from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

B. Testing Standards: Conduct tests of electrical and mechanical equipment and appliances in accordance with recognized, applicable test codes.

1.5 QUALITY CONTROL

A. Testing

1. Field and Laboratory

a. Provide personnel to assist the ENGINEER in performing the following periodic observation and associated services.

(1) Soils: Observe and test excavations, placement and compaction of soils. Determine suitability of excavated material. Observe subgrade soils and foundations.

(2) Concrete: Observe forms and reinforcement; observe concrete placement; witness air entrainment tests, facilitate concrete cylinder preparation and assist with other tests performed by ENGINEER.

(3) Masonry: Sample and test mortar, bricks, blocks and grout; inspect brick and block samples and sample panels; inspect placement of reinforcement and grouting.

(4) Structural Steel: Verify that all welders are certified; visually inspect all structural steel welds; mechanically test high-tensile bolted connections.

b. When specified in the Contract Documents, provide an independent laboratory testing facility to perform required testing. Qualify the laboratory as having performed previous satisfactory work. Prior to use, submit to the ENGINEER for approval.

c. Cooperate with the ENGINEER and laboratory testing representatives. Provide at least 24 hours notice prior to when specified testing is

required. Provide labor and materials, and necessary facilities at the site as required by the ENGINEER and the testing laboratory.

d. When an independent electrical testing agency is specified in the Contract Documents, provide a member of the National Electrical Testing Association to perform inspections and tests.

2. Equipment: Coordinate and demonstrate test procedures as specified in the Contract Documents and as required during the formal tests.

3. Pipeline and Other Testing: Conform to test procedures and requirements specified in the appropriate Specification Section.

4. Testing of Gravity Sanitary Sewer Lines

a. Watertight Construction: It is imperative that all sewers and force mains, manholes, and service connections be built watertight and that the CONTRACTOR adhere rigidly to the specifications for material and workmanship. Since all of the water and sewage in the lines will be treated at the treatment plant, special care and attention must be given to securing watertight construction. After completion, the sewers or sections thereof will be tested and gauged. If infiltration or exfiltration is above the limits specified, the sewer construction work will be rejected.

b. Cleaning: Exercise care during construction of the manhole to see that materials do not enter the sewer line. Keep the invert and shelf of the manhole clean of all mortar, broken brick, sand, or any other materials falling into the manhole. Immediately remove such material. Maintain this condition until final acceptance of the work. Prior to testing of gravity sanitary sewer lines, clean the lines using appropriate tools.

c. Gravity Sewers - Visual Inspections: On completion of each block or section of sewer, or at such other times as the County Manger or designee may direct, the block or section of sewer is to be cleaned, tested and inspected. Each section of the sewer is to show, on examination from either end, a full circle of light between manholes. Each manhole, or other appurtenance to the system, shall be of the specified size and form, be watertight, neatly and substantially constructed, with the rim set permanently to design position and grade. All repairs shown necessary by the inspection are to be made; broken or cracked pipe replaced, all deposits removed and the sewers left true to line and grade, entirely clean and ready for use.

d. Infiltration Limits: Provide the equipment necessary to check the lines for infiltration or exfiltration as directed by the County Manager or designee, before they are put in service. Infiltration in excess of fifty (50) gallons per day inch-mile of sewer will result in having the CONTRACTOR go over the lines, ascertain where the leakage exists, and repair the lines to the extent necessary to bring the infiltration down within acceptable limits. Observable inflow is not permitted.

e. Exfiltration Limits: The length of sewer subject to an exfiltration test shall be the distance between two (2) adjacent manholes. Close the inlets of the upstream and downstream manholes with watertight plugs and the test section filled with water until the elevation of the water in the upstream manhole is two (2) feet above the crown of the pipe in the line being tested, or two (2) feet above the existing groundwater in the trench, whichever is higher. A standpipe may be used instead of the upstream manhole for providing the pressure head when approved by the County Manager or designee. Measure exfiltration by determining the amount of water required to maintain the initial water elevation for one (1) hour period from the start of the test. The maximum allowable leakage, including manholes, shall be 50 gallon per inch for diameter per mile of pipe per day.

f. Air Testing: Air testing shall be required if, in the opinion of the County Manager or designee, conditions are such that infiltration measurements may be inconclusive. Conduct the test in the presence of the County Manager or designee and conform to the following requirements:

   (a) Test pressure shall be 3.5 psi increased by the groundwater pressure above the top of the sewer.

   (b) Pressure loss from shall not exceed 0.5 psi during the required testing time.

   (c) Testing time in minutes shall be calculated as 0.625 x nominal pipe size (inches).

g. Deformation Test

   (a) Deformation tests shall be performed on all gravity sewer lines. The test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.

   (b) No pipe shall exceed a deformation of five percent (5%). If deformation exceeds 5%, mechanical methods to correct deformation may be used. If mechanical methods are unsuccessful, the pipe shall be excavated. Replacement

or correction shall be accomplished in accordance with requirements in the approved specifications.

(c) The rigid ball or mandrel used for the deflection test shall have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specification, including the appendix, to which the pipe is manufactured. The test shall be performed without mechanical pulling devices.

B. Reports

1. Certified Test Reports: Where transcripts or certified test reports are required by the Contract Documents, meet the following requirements:

   a. Before delivery of materials or equipment submit and obtain approval of the ENGINEER for all required transcripts, certified test reports, certified copies of the reports of all tests required in referenced specifications or specified in the Contract Documents. Perform all testing in an approved independent laboratory or the manufacturer's laboratory. Submit for approval reports of shop equipment tests within thirty days of testing. Transcripts or test reports are to be accompanied by a notarized certificate in the form of a letter from the manufacturer or supplier certifying that tested material or equipment meets the specified requirements and the same type, quality, manufacture and make as specified. The certificate shall be signed by an officer of the manufacturer or the manufacturer's plant manager.

2. Certificate of Compliance: At the option of the ENGINEER, submit for approval a notarized Certificate of Compliance. The Certificates may be in the form of a letter stating the following:

   a. Manufacturer has performed all required tests

   b. Materials to be supplied meet all test requirements

   c. Tests were performed not more than one year prior to submittal of the certificate

   d. Materials and equipment subjected to the tests are of the same quality, manufacture and make as those specified

   e. Identification of the materials

1.6 COSTS OF INSPECTION

A. COUNTY's Obligation: Initial inspection and testing of materials furnished under this Contract will be performed by the County Manager or designee, or inspection bureaus without cost to the CONTRACTOR, unless otherwise expressly specified. If subsequent testing is necessary due to failure of the initial tests or because of rejection for noncompliance, reimburse the COUNTY for expenditures incurred in making such tests.

B. CONTRACTOR's Obligation: Include in the Contract Price, the cost of all shop and field tests of equipment and other tests specifically called for in the Contract Documents, except those tests described above under “COUNTY’s Obligation”. The County Manager or designee may perform tests on any material or equipment furnished under this Contract at any time during the Contract. If tests performed by the County Manager or designee result in failure or rejection for noncompliance, reimburse the COUNTY for expenditures incurred in making such tests. Tests performed by the County Manager or designee shall prevail in determining compliance with Contract requirements.

C. Reimbursements to the COUNTY:

1. Materials and equipment submitted by the CONTRACTOR as the equivalent to those specifically named in the Contract may be tested by the County Manager or designee for compliance. Reimburse the COUNTY for expenditures incurred in making such tests on materials and equipment that are rejected for noncompliance.

2. Reimburse the COUNTY for all costs associated with Witness Tests that exceed 5 Calendar Days per kind of equipment.

1.7 ACCEPTANCE TESTS

A. Preliminary Field Tests: As soon as conditions permit, furnish all labor and materials and services to perform preliminary field tests of all equipment provided under this Contract. If the preliminary field tests disclose that any equipment furnished and installed under this Contract does not meet the requirements of the Contract Documents, make all changes, adjustments and replacements required prior to the acceptance tests.

B. Final Field Tests: Upon completion of the Work and prior to final payment, subject all equipment, piping and appliances installed under this Contract to specified acceptance tests to demonstrate compliance with the Contract Documents.

1. Furnish all labor, fuel, energy, water and other materials, equipment, instruments and services necessary for all acceptance tests.

2. Conduct field tests in the presence of the ENGINEER. Perform the field tests to demonstrate that under all conditions of operation each equipment item:

   a. Has not been damaged by transportation or installation

   b. Has been properly installed

   c. Has been properly lubricated

   d. Has no electrical or mechanical defects

   e. Is in proper alignment

   f. Has been properly connected

   g. Is free of overheating of any parts

   h. Is free of all objectionable vibration

   i. Is free of overloading of any parts

   j. Operates as intended

3. Operate work or portions of work for a minimum of 100 hours or 14 days continuous service, whichever comes first. For those items of equipment that would normally operate on wastewater or sludge, plant effluent may be used if available when authorized by ENGINEER. If water cannot properly exercise equipment, conduct 100-hour test after plant startup. Conduct test on those systems that require load produced by weather (heating or cooling) exercise only when weather will produce proper load.

C. Failure of Tests: If the acceptance tests reveal defects in material or equipment, or if the material or equipment in any way fails to comply with the requirements of the Contract Documents, then promptly correct such deficiencies. Failure or refusal to correct the deficiencies, or if the improved materials or equipment, when tested again, fail to meet the guarantees or specified requirements, the County Manager or designee, notwithstanding its partial payment for work and materials or equipment, may reject said materials or equipment and may order the CONTRACTOR to remove the defective work from the site at no addition to the Contract Price, and replace it with material or equipment which meets the Contract Documents.

1.8 FAILURE TO COMPLY WITH CONTRACT

A. Unacceptable Materials: If it is ascertained by testing or inspection that the material or equipment does not comply with the Contract, do not deliver said material or equipment, or if delivered remove it promptly from the site or from the

Work and replace it with acceptable material without additional cost to the COUNTY. Fulfill all obligations under the terms and conditions of the Contract even though the County Manager or designee fail to ascertain noncompliance or notify the CONTRACTOR of noncompliance.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 015000

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Related Sections

C. Temporary Utilities

D. Temporary Construction

E. Barricades and Enclosures

F. Fences

G. Security

H. Temporary Controls

I. Traffic Regulation

J. Field Offices and Sheds

1.2 RELATED SECTIONS

A. Section 011000 - Summary of Work

B. Section 015526 – Traffic Regulations and Public Safety

C. Section 020500 – Connection to Existing Systems

D. Section 312319 – Groundwater Control for Open Cut Excavation

E. Section 320117 - Pavement Repair and Restoration

F. Section 330518 –Laying and Jointing Buried Pipelines

1.3 GENERAL REQUIREMENTS

A. Plant and Facilities: Furnish, install, maintain and remove all false work, scaffolding, ladders, hoistways, braces, pumping plants, shields, trestles,

roadways, sheeting, centering forms, barricades, drains, flumes, and the like, any of which may be needed in the construction of any part of the Work and which are not herein described or specified in detail. Accept responsibility for the safety and efficiency of such works and for any damage that may result from their failure or from their improper construction, maintenance or operation.

B. First Aid: Maintain a readily accessible, completely equipped first aid kit at each location where work is in progress.

C. Safety Responsibility: Accept sole responsibility for safety and security at the site. Indemnify and hold harmless the COUNTY and the County's Manager or designee, including the ENGINEER, for any safety violation, or noncompliance with governing bodies and their regulations, and for accidents, deaths, injuries, or damage at the site during occupancy or partial occupancy of the site by CONTRACTOR's forces while performing any part of the Work.

D. Hazard Communication: Furnish two copies of the CONTRACTOR's Hazard Communication Program required under OSHA regulations before beginning on site activities. Furnish two copies of amendments to Hazard Communications Program as they are prepared.

1.4 TEMPORARY UTILITIES

A. Water: Provide all necessary and required water without additional cost, unless otherwise specified. If necessary, provide and lay water lines to the place of use; secure all necessary permits; pay for all taps to water mains and hydrants and for all water used at the established rates.

B. Light and Power: Provide without additional cost to the COUNTY temporary lighting and power facilities required for the proper construction and inspection of the Work. If, in the ENGINEER's opinion, these facilities are inadequate, do NOT proceed with any portion of the Work affected thereby. Maintain temporary lighting and power until the Work is accepted.

C. Heat: Provide temporary heat, whenever required, for work being performed during cold weather to prevent freezing of concrete, water pipes, and other damage to the Work or existing facilities.

D. Sanitary Facilities: Provide sufficient sanitary facilities for construction personnel. Prohibit and prevent nuisances on the site of the Work or on adjoining property. Discharge any employee who violates this rule. Abide by all environmental regulations or laws applicable to the Work.

1.5 TEMPORARY CONSTRUCTION

A. Bridges: Design and place suitable temporary bridges where necessary for the maintenance of vehicular and pedestrian traffic. Assume responsibility for the

sufficiency and safety of all such temporary work or bridges and for any damage that may result from their failure or their improper construction, maintenance, or operation. Indemnify and save harmless the COUNTY and the COUNTY's representatives from all claims, suits or actions, and damages or costs of every description arising by reason of failure to comply with the above provisions.

1.6 BARRICADES, LIGHTS AND ENCLOSURES

A. Protection of Workmen and Public: Effect and maintain at all times during the prosecution of the Work, barriers, lights and enclosures necessary for the protection of workmen and the public. Perform all work within the County right-of-way in strict accordance with the COUNTY Maintenance of Traffic Policy and other applicable statutory requirements.

B. Provide suitable barricades, lights, signs and watchmen at excavation sites and all other places where the Work causes obstructions to normal traffic or constitutes in any way a hazard to the public.

1.7 FENCES

A. Existing Fences: Obtain written permission from property owner(s) prior to relocating or dismantling fences that interfere with construction operations. Reach agreements with the fence owner as to the period the fence may be left relocated or dismantled. Install adequate gates where fencing must be maintained. Keep gates closed and locked at all times when not in use.

B. Restoration: Restore all fences to their original or better condition and to their original location on completion of the Work.

1.8 SECURITY

A. Preservation of Property:

1. Preserve from damage, all property along the line of the Work, in the vicinity of or in any way affected by the Work, the removal or destruction of which is not called for by the Drawings. Preserve from damage, public utilities, trees, lawn areas, building monuments, fences, pipe and underground structures, and public streets. Note: Normal wear and tear of streets resulting from legitimate use by the CONTRACTOR are not considered as damage. Whenever damages occur to such property, immediately restore to its original condition. Costs for such repairs are incidental to the Contract.

2. In case of failure on the part of the CONTRACTOR to restore property or make good on damage or injury, the County Manager or designee may, upon 24 hours written notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any moneys due or which may become due the

CONTRACTOR under this Contract. If removal, repair or replacement of public or private property is made necessary by alteration of grade or alignment authorized by the County Manager or designee and not contemplated by the Contract Documents, the CONTRACTOR will be compensated, in accordance with the General Conditions, provided that such property has not been damaged through fault of the CONTRACTOR or the CONTRACTOR's employees.

B. Public Utility Installations and Structures:

1. Public utility installations and structures include all poles, tracks, pipes, wires, conduits, vaults, valves, hydrants, manholes, and other appurtenances and facilities, whether owned or controlled by public bodies or privately owned individuals, firms or corporations, used to serve the public with transportation, gas, electricity, telephone, storm and sanitary sewers, water, or other public or private utility services. Facilities appurtenant to public or private property that may be affected by the Work are deemed included hereunder.

2. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. Existing public utility installations and structures are indicated on the Drawings only to the extent such information was made available to, or found by, the ENGINEER in preparing the Drawings. These data are not guaranteed for completeness or accuracy, and the CONTRACTOR is responsible for making necessary investigations to become fully informed as to the character, condition, and extent of all public utility installations and structures that may be encountered and that may affect the construction operations.

3. Before starting construction, identify and mark all existing valves and maintain access to the valves at all times during construction.

4. Contact utility locating service sufficiently in advance of the start of construction to avoid damage to the utilities and delays to the completion date.

5. If existing utilities are damaged during the Work, immediately notify the owner of the affected utility. In coordination with or as directed by the owner, remove, replace, relocate, repair, rebuild, and secure any public utility installations and structures damaged as a direct or indirect result of the Work under this Contract. Costs for such work are incidental to the Contract. Be responsible and liable for any consequential damages done to or suffered by any public utility installations or structures. Assume and accept responsibility for any injury, damage, or loss that may result from or be consequent to interference with, or interruption or discontinuance of, any public utility service.

6. At all times in the performance of Work, employ proven methods and exercise reasonable care and skill to avoid unnecessary delay, injury, damage, or destruction to public utility installations and structures. Avoid unnecessary interference with, or interruption of, public utility services. Cooperate fully with the owners thereof to that end.

7. Provide notice to the County Manager or designee of any proposed connections to existing utilities, interruptions of service or shutdowns in accordance with Section 020500. Give written notice to the owners of all public utility installations and structures affected by proposed construction operations sufficiently in advance of breaking ground in any area or on any unit of the Work, to obtain their permission before disrupting the lines and to allow them to take measures necessary to protect their interests. Advise the Transportation Operations Department, Fire and Rescue Services of any excavation in public streets or the temporary shut-off of any water main. Provide at least 48 hours notice to all affected property owners whenever service connections are taken out of service.

C. Work on Private Property: Work on this project will require operations on private property, rights of way or easements. The County Manager or designee has secured the appropriate easements or rights of entry from the affected property owners. Comply with all easement or rights of entry provisions. Conduct operations along rights-of-way and easements through private property to avoid damage to the property and to minimize interference with its ordinary use. Upon completion of the Work through such property, restore the surface and all fences or other structures disturbed by the construction as nearly as possible to the preconstruction conditions. Do not remove any material from private property without the consent of the property owner or responsible party in charge of such property. Hold the COUNTY harmless from any claim or damage arising out of or in connection with the performance of work across and through private property.

D. Miscellaneous Structures: Assume and accept responsibility for all injuries or damage to culverts, building foundations and walls, retaining walls, or other structures of any kind met with during the prosecution of the Work. Assume and accept liability for damages to public or private property resulting therefrom. Adequately protect against freezing all pipes carrying liquid.

E. Protection of Trees and Lawn Areas:

1. Protect with boxes, trees and shrubs, except those ordered to be removed. Do not place excavated material so as to cause injury to such trees or shrubs. Replace trees or shrubs destroyed by accident or negligence of the CONTRACTOR or CONTRACTOR's employees with new stock of similar size and age, at the proper season, at no additional cost to the COUNTY. If required by Contract Documents, provide preconstruction audio-video recording of project in accordance with the Technical Specifications.

2. Leave lawn areas in as good condition as before the start of the Work. Restore areas where sod has been removed by seeding or sodding.

1.9 TEMPORARY CONTROLS

A. During Construction:

1. Keep the site of the Work and adjacent premises free from construction materials, debris, and rubbish. Remove this material from any portion of the site if such material, debris, or rubbish constitutes a nuisance or is objectionable.

2. Remove from the site all surplus materials and temporary structures when they are no longer needed.

3. Neatly stack construction materials such as concrete forms and scaffolding when not in use. Store pipe to be incorporated into the Work in accordance with AWWA standards. Promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.

4. Properly store volatile wastes in covered metal containers and remove from the site daily.

5. Do not bury or burn on the site or dispose of into storm drains, sanitary sewers, streams, or waterways, any waste material. Remove all wastes from the site and dispose of in a manner complying with applicable ordinances and laws.

B. Smoke Prevention:

1. Strictly observe all air pollution control regulations.

2. Open fires will be allowed only if permitted under current ordinances.

C. Noises:

1. In accordance with the COUNTY's Noise Ordinance, maintain acceptable noise levels in the vicinity of the Work. Limit noise production to acceptable levels by using special mufflers, barriers, enclosures, equipment positioning, and other approved methods.

2. Supply written notification to the County Manager or designee sufficiently in advance of the start of any work that violates this provision. Proceed only when all applicable authorizations and variances have been obtained in writing.

D. Hours of Operation:

1. Operation of construction equipment is only permitted Monday through Saturday, 7:00 AM to 7:00 PM. Obtain written consent from the County Manager or designee for operation of construction equipment during any other period.

2. Do not carry out non-emergency work, including equipment moves, on Sundays without prior written authorization by the County Manager or designee.

E. Dust Control:

1. Take measures to prevent unnecessary dust. Keep earth surfaces exposed to dusting moist with water or a chemical dust suppressant. Cover materials in piles or while in transit to prevent blowing or spreading dust.

2. Adequately protect buildings or operating facilities that may be affected adversely by dust. Protect machinery, motors, instrument panels, or similar equipment by suitable dust screens. Include proper ventilation with dust screens.

F. Temporary Drainage Provisions:

1. Provide for the drainage of stormwater and any water applied or discharged on the site in performance of the Work. Provide adequate drainage facilities to prevent damage to the Work, the site, and adjacent property.

2. Supplement existing drainage channels and conduits as necessary to carry all increased runoff from construction operations. Construct dikes as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect the COUNTY's facilities and the Work, and to direct water to drainage channels or conduits. Provide ponding as necessary to prevent downstream flooding.

3. Maintain excavations free of water. Provide, operate, and maintain pumping equipment. Dewater trenches in accordance with Sections 312319 and 330518.

G. Pollution: Prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. Do not permit sanitary wastes to enter any drain or watercourse other than sanitary sewers. Do not permit sediment, debris, or other substances to enter sanitary sewers. Take reasonable measures to prevent such materials from entering any drain or watercourse.

1.10 TRAFFIC REGULATION

A. Parking: Provide and maintain suitable parking areas for the use of all construction workers and others performing work or furnishing services in connection with the Contract, to avoid any need for parking personal vehicles where they may interfere with public traffic or construction activities.

B. Access: Conduct Work to interfere as little as possible with public travel, whether vehicular or pedestrian. Provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel. Whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, give reasonable notice to owners of private drives before interfering with them. Such maintenance of traffic will not be required when the CONTRACTOR has obtained permission from the owner or tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at the designated point.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 015526

TRAFFIC REGULATION AND PUBLIC SAFETY

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. General Requirements

B. Traffic Control

C. Public Safety

1.2 RELATED SECTIONS

A. Section 015000 – Construction Facilities and Temporary Controls

B. Section 320117 – Pavement Repair and Restoration

C. Section 330201 – Roadway Crossings by Open Cut

1.3 GENERAL REQUIREMENTS

A. Perform all work within COUNTY rights-of-way in strict accordance with the County's Maintenance of Traffic Policy and other applicable statutory requirements to protect the public safety.

B. Be responsible for providing safe and expeditious movement of traffic through construction zones. A construction zone is defined as the immediate areas of actual construction and all abutting areas which are used by the CONTRACTOR and which interfere with the driving or walking public.

C. Remove temporary equipment and facilities when no longer required. Restore grounds to original or specified conditions.

D. The requirements specified herein are in addition to the plan for Maintenance of Traffic as specified in Section 330201.

1.4 TRAFFIC CONTROL

A. Include as necessary precautions, not to be limited to, such items as proper construction warning signs, signals, lighting devices, marking, barricades, channelization, and hand signaling devices. Be responsible for installation and maintenance of all devices and requirements for the duration of the Construction period.

B. Provide notice, at least five (5) working days prior to construction, to the State or County Department of Transportation of the necessity to close any portion of a roadway carrying vehicles or pedestrians so that the final approval of such closings can be obtained at least 48 hours in advance. At no time will more than one (1) lane of roadway be closed to vehicles and pedestrians. With any such closings make adequate provision for the safe expeditious movement of each.

C. Be responsible for notifying Transportation Operations Department, Police, Fire, and other Emergency Departments whenever construction is within roadways and of the alternate routes.

D. Be responsible for removal, relocation, or replacement of any traffic control device in the construction area that exists as part of the normal pre-construction traffic control scheme.

E. Immediately notify the County Manager or designee of any vehicular or pedestrian safety or efficiency problems incurred as a result of the construction of the project.

F. Be responsible for notifying all residents of any road construction and limited access at least 72 hours in advance.

1.5 PUBLIC SAFETY (DURING CONSTRUCTION, ALTERATION OR REPAIR)

A. In areas of high vehicular traffic, provide a safe walkway around the work area.

B. Use barricades or other barriers to prevent any possibility of injury to the public caused by the CONTRACTOR's work.

C. Keep walk areas around the work areas clean of sand, stones, and any other material that could cause a pedestrian accident.

D. Barricade work areas left overnight. Install flashing warning lights in areas required by the COUNTY.

E. Unless an approved detour is provided at any open cut crossings, a minimum of one-way traffic will be maintained during the daylight hours and two-way traffic at night. All traffic detours will be restricted to limits of the Right-of-Way with necessary flagmen and/or marking devices. These detours shall be approved by the COUNTY. Detour of traffic outside of the Right-of-Way will be considered with the approval of local governmental agencies and private concerns involved.

F. Crossing and Intersections: Do not isolate residences and places of business. Provide access to all residences and places of business whenever construction interferes with existing means of access. Maintain access at all times. If pavement is disturbed, a cold mix must be applied at the end of the day.

G. Detours

1. Construct and maintain detour facilities wherever it becomes necessary to divert traffic from any existing roadway or bridge, or wherever construction operations block the flow of traffic. The location of all detours will require prior approval of the COUNTY.

2. Furnishing of Devices and Barriers: Furnish all traffic control devices (including signs), warning devices and barriers. Costs of such devices shall be incidental to construction and included in unit prices bid.

3. Maintenance of Devices and Barriers: Keep traffic control devices, warning devices and barriers in the correct position, properly directed, clearly visible and clean, at all times. Immediately repair replace or clean damaged, defaced or dirty devices or barriers as necessary.

H. Flagmen: Provide certified flagmen (flaggers) to direct traffic where one-way operation in a single lane is in effect and in other situations as may be required. Radios may be required if flagmen cannot maintain contact with each other.

I. Utilize all necessary signs, flagmen, and other safety devices during construction.

J. Perform all work with the requirements set forth by the Occupational Safety Health Administration.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 015713

TEMPORARY EROSION AND SEDIMENTATION CONTROL

FOR CONSTRUCTION ACTIVITIES IMPACTING LESS THAN ONE ACRE,

INCLUDING CONSTRUCTION REQUIRING DEWATERING

PART 1 GENERAL

1.1 DESCRIPTION

A. The work specified in this Section consists of designing, providing, maintaining and removing temporary erosion and sedimentation controls as necessary.

B. Temporary erosion controls include, but are not limited to rip rap channels, road stabilization, grassing, mulching, setting, watering, and reseeding onsite surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the COUNTY.

C. Temporary sedimentation controls include, but are not limited to; silt dams, traps, barriers, public and private on- and off-site storm sewer inlets protectors, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the COUNTY.

D. If required by regulation or COUNTY, CONTRACTOR is responsible for providing an approved Erosion Control Plan for effective temporary erosion and sediment control measures during construction or until final controls become effective.

1.2 REFERENCE DOCUMENTS

A. South Florida Building Code and Standard Building Code.

PART 2 PRODUCTS

2.1 EROSION CONTROL

A. Sodding and Seeding is specified in Section 329200.

B. Rip Rap Channel.

C. Road Stabilization.

D. Netting - fabricated of material acceptable to the County Manager or designee.

2.2 SEDIMENTATION CONTROL

A. Temporary Sediment Trap.

B. Sediment Fence.

C. Bales - clean, seed free pine needle or cereal hay type.

D. Netting - fabricated of material acceptable to the County Manager or designee.

E. Filter Stone - crushed stone conforming to Florida Department of Transportation specifications.

F. Concrete Block - hollow, non-load-bearing type.

G. Concrete - exterior grade not less than one inch thick.

PART 3 EXECUTION

3.1 EROSION CONTROL

A. Minimum procedures for grassing are:

1. Scarify slopes to a depth of not less than six inches and remove large clods, rock, stumps, roots larger than 1/2 inch in diameter and debris.

2. Sow seed within twenty-four (24) hours after the ground is scarified with either mechanical seed drills or rotary hand seeders.

3. Apply mulch loosely and to a thickness of between 3/4 inch and 1-1/2 inches.

4. Apply netting over mulched areas on sloped surfaces.

5. Roll and water seeded areas in a manner which will encourage sprouting of seeds and growing of grass. Reseed areas that exhibit unsatisfactory growth (less than 70 percent coverage). Backfill and seed eroded areas, removing eroded material from effected drainage facilities.

B. Minimum procedures for rip rap channel are:

1. Clear the foundation of all trees, stumps, and roots.

2. Excavate the bottom and sides of the channel 30 inches below grade at all points to allow for the placement of riprap as shown in the typical cross-section in the Standard Details.

3. Install extra strength filter fabric on the bottom and sides of the channel foundation, placing the upstream fabric over the downstream fabric with at least a 1 foot overlap on all joints. The fabric is to be securely held in place with metal pins.

4. Place riprap evenly to the lines and grades shown on the drawings and staked in the field. Place riprap immediately following the installation of the filter fabric.

5. Riprap shall meet the specification for F.D.O.T. Class 2 Riprap.

6. Restore all disturbed areas in accordance with a vegetation plan submitted in advance and approved by the County Manager or designee.

C. Minimum Procedures for road stabilization are:

1. Clear roadbed and parking areas of all vegetation, roots and other objectionable material.

2. Provide surface drainage.

3. Spread 6 inch course of lime rock evenly over the full width of road and parking area and smooth to avoid depressions.

4. After grading, seed or resod all disturbed areas adjoining roads and parking areas conforming to existing conditions prior to construction.

3.2 SEDIMENTATION CONTROL

A. Install and maintain silt dams, traps, barriers, and appurtenances as required. Replace deteriorated hay bales and dislodged filter stone.

B. Minimum requirements for sediment trap:

1. Clear, grub and strip the area under the embankment of all vegetation and root mat.

2. Clear retention area to elevation as approved by the County Manager or designee.

3. Use fill material free of roots, woody vegetation and organic matter. Place fill in lifts not to exceed 9 inches and machine compact.

4. Construct dam and stone spillway to dimensions, slopes and elevations shown.

5. Ensure that the spillway crest is level and at least 18 inches below the top of the dam at all points.

6. Stone used for spillway section - Class "B" erosion control stone.

7. Stone used on inside spillway face to control drainage - #67 washed stone.

8. Extend stone outlet section to vegetated road ditch on zero grade with top elevation of stone level with bottom of drain.

9. Ensure that the top of the dam at all points is 6 inches above natural surrounding ground.

10. Stabilize the embankment and all disturbed area above the sediment pools as shown in the vegetation plan.

C. Minimum requirements for sediment fence:

1. Construct sediment fence on low side of topsoil stockpile to prevent sediment from being washed into the drainage system. Fence to extend around approximately 70 percent of the perimeter of the stockpile. Fence must be unobstructed so as to maintain a minimum of 75 percent of its design flow rate.

2. Locate posts down slope of fabric to help support fencing.

3. Bury toe of fence approximately 8 inches deep to prevent undercutting.

4. When joints are necessary, securely fasten the fabric at a support post with overlap to the next post.

5. Filter fabric shall be of nylon, polyester, propylene or ethylene yarn with extra strength – 50 pounds per linear inch (minimum) - and with a flow rate of at least 0.30 gallons per foot per minute. Fabric should contain ultraviolet ray inhibitors and stabilizers.

6. Post to be 4-inch diameter pine with a minimum length of 4 feet.

D. Minimum Requirement for stormwater facilities protection:

1. Public and private stormsewer facilities, both on and offsite, shall be protected at all inlets affected by construction. Stormsewer facilities include streets, inlets, pipes, ditches, swales, canals, culverts, control structures, and detention/retention areas.

2. Grated drop inlets shall be rapped with filter fabric in a manner that allows removal of accumulated sediment from the fabric before removing the grate.

3. Curb inlets shall be protected from sediment, turbid water from stormwater or dewatering activities; also construction debris, concrete mix and rinsate, and any other pollution.

4. Stormwater runoff entering such stormsewer inlets and stormwater detention/retention facilities with a turbidity greater than 50 NTU shall be considered to be in non-compliance with these regulations.

3.3 PERFORMANCE

A. Should any of the temporary erosion and sediment control measures employed fail to produce results which comply with the requirements of the State of Florida, immediately take steps necessary to correct the deficiency at no expense to the COUNTY. Sedimentation or turbid water violations to stormwater facilities on or offsite shall require the contractor to remove all sediment from the affected facilities.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 016100

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description

B. Substitutions

C. Manufacturer's Written Instructions

D. Transportation and Handling

E. Storage, Protection and Maintenance

F. Manufacturer's Field Quality Control Services

G. Post Startup Services

H. Special Tools and Lubricating Equipment

I. Lubrication

1.2 DESCRIPTION

A. Proposed Manufacturers List: Within 15 calendar days of the date of the Notice to Proceed, submit to the ENGINEER a list of the names of proposed manufacturers, material men, suppliers and subcontractors, obtain approval of this list by the County Manager or designee prior to submission of any working drawings. Upon request submit evidence to ENGINEER that each proposed manufacturer has manufactured a similar product to the one specified and that it has previously been used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

B. All material and equipment designed or used in connection with a potable (drinking) water system shall conform to the requirements of the National Sanitation Foundation (NSF) Standard 61, “Drinking Water System Components – Health Effects.”

C. Furnish and install Material and Equipment which meets the following:

1. Conforms to applicable specifications and standards.

2. Complies with size, make, type, and quality specified or as specifically approved, in writing, by ENGINEER.

3. Will fit into the space provided with sufficient room for operation and maintenance access and for properly connecting piping, ducts and services, as applicable. Make the clear spaces that will be available for operation and maintenance access and connections equal to or greater than those shown and meeting all the manufacturers' requirements. If adequate space is not available, the CONTRACTOR shall advise the ENGINEER for resolution.

4. Manufactured and fabricated in accordance with the following:

   a. Design, fabricate, and assemble in accordance with best engineering and shop practices.

   b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

   c. Provide two or more items of same kind identical, by same manufacturer.

   d. Provide materials and equipment suitable for service conditions.

   e. Adhere to equipment capabilities, sizes, and dimensions shown or specified unless variations are specifically approved, in writing, in accordance with the Contract Documents.

   f. Adapt equipment to best economy in power consumption and maintenance. Proportion parts and components for stresses that may occur during continuous or intermittent operation, and for any additional stresses that may occur during fabrication or installation.

   g. Working parts are readily accessible for inspection and repair, easily duplicated and replaced.

5. Use material or equipment only for the purpose for which it is designed or specified.

1.3 SUBSTITUTIONS

A. Substitutions:

1. Make any CONTRACTOR's requests for changes in equipment and materials from those required by the Contract Documents in writing, for approval by the COUNTY. Such requests are considered requests for substitutions and are subject to CONTRACTOR's representations and review provisions of the Contract Documents when one of following conditions are satisfied:

a. Where request is directly related to an "or County approved equal" clause or other language of same effect in Specifications.

b. Where required equipment or material cannot be provided within Contract Time, but not as result of CONTRACTOR's failure to pursue Work promptly or to coordinate various activities properly.

c. Where required equipment or material cannot be provided in manner compatible with other materials of Work, or cannot be properly coordinated therewith.

2. CONTRACTOR'S Options:

a. Where more than one choice is available as options for CONTRACTOR's selection of equipment or material, select option compatible with other equipment and materials already selected (which may have been from among options for other equipment and materials).

b. Where compliance with specified standard, code or regulation is required, select from among products that comply with requirements of those standards, codes, and regulations.

c. Or County approved Equal: For equipment or materials specified by naming one or more equipment manufacturer(s) and "or County approved equal", submit request for substitution for any equipment or manufacturer not specifically named.

B. Conditions Which are Not Substitution:

1. Requirements for substitutions do not apply to CONTRACTOR options on materials and equipment provided for in the Specifications.

2. Revisions to Contract Documents, where requested by the County Manager or designee or ENGINEER, are "changes" not "substitutions".

3. CONTRACTOR's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute substitutions and do not constitute basis for a Change Order, except as provided for in Contract Documents.

1.4 MANUFACTURER'S WRITTEN INSTRUCTIONS

A. Instruction Distribution: When the Contract Documents require that installation, storage, maintenance and handling of equipment and materials comply with manufacturer's written instructions, obtain and distribute printed copies of such instructions to parties involved in installation, including six copies to ENGINEER.

1. Maintain one set of complete instructions at jobsite during storage and installation, and until completion of work.

B. Manufacturer's Requirements: Store, maintain, handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's written instructions and in conformity with Specifications.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult ENGINEER for further instructions.

2. Do not proceed with work without written instructions.

C. Performance Procedures: Perform work in accordance with manufacturer's written instructions. Do not omit preparatory steps or installation procedures, unless specifically modified or exempted by Contract Documents.

1.5 TRANSPORTATION AND HANDLING

A. Coordination with Schedule: Arrange deliveries of materials and equipment in accordance with Construction Progress Schedules. Coordinate to avoid conflict with work and conditions at site.

1. Deliver materials and equipment in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Protect bright machined surfaces, such as shafts and valve faces, with a heavy coat of grease prior to shipment.

3. Immediately upon delivery, inspect shipments to determine compliance with requirements of Contract Documents and approved submittals and that material and equipment are protected and undamaged.

B. Handling: Provide equipment and personnel to handle material and equipment by methods recommended by manufacturer to prevent soiling or damage to materials and equipment or packaging.

1.6 STORAGE, PROTECTION, AND MAINTENANCE

A. On-site storage areas and buildings:

1. Conform storage buildings to requirements of Section 015000.

2. Coordinate location of storage areas with ENGINEER and the COUNTY.

3. Arrange on site storage areas for proper protection and segregation of stored materials and equipment with proper drainage. Provide for safe

travel around storage areas and safe access to stored materials and equipment.

4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

5. Store materials such as pipe, reinforcing and structural steel, and equipment on pallets, blocks or racks, off ground.

6. PVC Pipe may be damaged by prolonged exposure to direct sunlight, take necessary precautions during storage and installation to avoid this damage. Store pipe under cover, and install with sufficient backfill to shield it from the sun.

7. Store fabricated materials and equipment above ground, on blocking or skids, to prevent soiling or staining. Cover materials and equipment that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

B. Interior Storage:

1. Store materials and equipment in accordance with manufacturer's instructions, with seals and labels intact and legible.

2. Store materials and equipment, subject to damage by elements, in weathertight enclosures.

3. Maintain temperature and humidity within ranges required by manufacturer's instructions.

C. Accessible Storage: Arrange storage in a manner to provide easy access for inspection and inventory. Make periodic inspections of stored materials or equipment to assure that materials or equipment are maintained under specified conditions and free from damage or deterioration.

1. Perform maintenance on stored materials of equipment in accordance with manufacturer's instructions, in presence of the County Manager or designee or ENGINEER.

2. Submit a report of completed maintenance to ENGINEER with each Application for Payment.

3. Failure to perform maintenance, to notify ENGINEER of intent to perform maintenance or to submit maintenance report may result in rejection of material or equipment.

D. COUNTY's Responsibility: The COUNTY assumes no responsibility for materials or equipment stored in buildings or on-site. CONTRACTOR assumes full responsibility for damage due to storage of materials or equipment.

E. CONTRACTOR's Responsibility: For COUNTY Capital Improvement Projects, the CONTRACTOR assumes full responsibility for protection of completed construction until facilities (or portions of facilities) are accepted for operation and placed in service. Repair and restore damage to completed Work equal to its original condition.

F. Special Equipment: Use only rubber tired wheelbarrows, buggies, trucks, or dollies to wheel loads over finished floors, regardless if the floor has been protected or not. This applies to finished floors and to exposed concrete floors as well as those covered with composition tile or other applied surfacing.

G. Surface Damage: Where structural concrete is also the finished surface, take care to avoid marking or damaging surface.

1.7 MANUFACTURER'S FIELD QUALITY CONTROL SERVICES

A. General:

1. Provide manufacturer's field services in accordance with this subsection for those tasks specified in other sections.

2. Include and pay all costs for suppliers' and manufacturers' services, including, but not limited to, those specified.

B. Installation Instruction: Provide instruction by competent and experienced technical representatives of equipment manufacturers or system suppliers as necessary to resolve assembly or installation procedures that are attributable to, or associated with, the equipment furnished.

C. Installation Inspection, Adjustments and Startup Participation:

1. Provide competent and experienced technical representatives of equipment manufacturers or system suppliers to inspect the completed installation as follows.

a. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions that may cause damage.

b. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

c. Verify that wiring and support components for equipment are complete.

d. Verify that equipment or system is installed in accordance with the manufacturer's recommendations, approved shop drawings and the Contract Documents.

e. Verify that nothing in the installation voids any warranty.

2. Provide manufacturer's representatives to perform initial equipment and system adjustment and calibration conforming to the manufacturer's recommendations and instructions, approved shop drawings and the Contract Documents.

3. Start-up of Equipment: Provide prior written notice of proposed start-up to the County Manager or designee and ENGINEER. Obtain ENGINEER's approval before start-up of equipment. COUNTY's departmental representative must be on-site during start-up. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.

4. Furnish ENGINEER with three copies of the following. When training is specified, furnish the copies at least 48 hours prior to training.

   a. "Certificate of Installation, Inspection and Start-up Services" by manufacturers' representatives for each piece of equipment and each system specified, certifying:

      (1) That equipment is installed in accordance with the manufacturers' recommendations, approved shop drawings, and the Contract Documents.

      (2) That nothing in the installation voids any warranty.

      (3) That equipment has been operated in the presence of the manufacturer's representative.

      (4) That equipment, as installed, is ready to be operated by others.

   b. Detailed report by manufacturers' representatives, for review by ENGINEER of the installation, inspection and start-up services performed, including:

      (1) Description of calibration and adjustments if made; if not in Operation and Maintenance Manuals, attach copy.

      (2) Description of any parts replaced and why replaced.

(3) Type, brand name, and quantity of lubrication used, if any.

(4) General condition of equipment.

(5) Description of problems encountered, and corrective action taken.

(6) Any special instructions left with CONTRACTOR or ENGINEER.

D. Field Test Participation: Provide competent and experienced technical representatives of all equipment manufacturers and system suppliers as necessary to participate in field testing of the equipment specified in Section 014500.

E. Trouble-Free Operation: Provide competent and experienced technical representatives of all equipment manufacturers and system suppliers as necessary to place the equipment in trouble-free operation after completion of start-up and field tests.

1.8 SPECIAL TOOLS AND LUBRICATING EQUIPMENT

A. General: Furnish, per manufacturer's recommendations, special tools required for checking, testing, parts replacement, and maintenance. (Special tools are those which have been specially designed or adapted for use on parts of the equipment, and which are not customarily and routinely carried by maintenance mechanics.)

B. Time of Delivery: Deliver special tools and lubricating equipment to the COUNTY when unit is placed into operation and after operating personnel have been properly instructed in operation, repair, and maintenance of equipment.

C. Quality: Provide tools and lubricating equipment of a quality meeting equipment manufacturer's requirements.

1.9 LUBRICATION

A. General: Where lubrication is required for proper operation of equipment, incorporate in the equipment the necessary and proper provisions in accordance with manufacturer's requirements. Where possible, make lubrication automated and positive.

B. Oil Reservoirs: Where oil is used, supply reservoir of sufficient capacity to lubricate unit for a 24-hour period.

1.10 WARRANTY

A. Provide copies of any warranties of materials or equipment to the County Manager or designee with documentation showing compliance with warranty requirements.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

CERTIFICATE OF INSTALLATION, INSPECTION AND START-UP SERVICES

Project

_____

Equipment

_____

Specification Section

_____

Contract

_____

I hereby certify that the named equipment has been inspected, adjusted and operated by the Manufacturers' Representative and further certify:

1. That the equipment is installed in accordance with the manufacturer's recommendations, approved shop drawings, and the Contract Documents.
2. That nothing in the installation voids any warranty.
3. That equipment has been operated in the presence of the manufacturer's representative.
4. That equipment, as installed, is ready to be operated by others.

MANUFACTURERS' REPRESENTATIVE

Signature _____ Date _____

Name (print) _____

Title _____

Representing _____

CONTRACTOR

Signature _____ Date _____

Name (print) _____

Title _____

Attach the detailed report called for by Specification Section 016100.

Complete and submit three copies of this form with the detailed report to ENGINEER as specified.

CERTIFICATE OF POST START-UP SERVICES

Project _____

Equipment

_____

Specification Section

_____

Contract _____

I hereby certify the Manufacturers' Representative has inspected this equipment, made adjustments and calibrations, and that it is operating in conformance with the design, specifications, and manufacturer's requirements. Detailed notation of improper operation with corresponding recommendations, if any, are made and attached to this form.

MANUFACTURERS' REPRESENTATIVE

Signature _____ Date _____

Name (print) _____

Title_____

Representing_____

CONTRACTOR

Signature _____ Date _____

Name (print) _____

Title_____

ENGINEER

Signature _____ Date _____

Name (print) _____

Title_____

Complete and submit three copies of this form to the County Manager or designee upon completion of 6 to 11 months reinspection as required by Specification Section 016100.

END OF SECTION

SECTION 017300

MISCELLANEOUS WORK AND CLEANUP

PART 1 GENERAL

1.1 SCOPE OF WORK

A. This Section includes operations that cannot be specified in detail as separate items but can be sufficiently described as to the kind and extent of work involved. Furnish all labor, materials, equipment and incidentals to complete the work under this Section.

B. The work of this Section includes, but is not limited to, the following:

1. Restoring of sidewalks, driveways, curbing and gutters.

2. Crossing utilities.

3. Relocation of existing water lines, low pressure, gas lines, telephone lines, electric lines, cable TV lines and storm drains as necessary, all as shown on the drawings.

4. Restoring easements and rights-of-ways.

5. Cleaning up.

6. Incidental work.

1.2 WORK SPECIFIED UNDER OTHER SECTIONS

A. Complete all work in a workmanlike manner by competent workmen in full compliance with all applicable sections of these Specifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials required for this Section shall be of at least the same type and quality as materials that are to be restored. Where possible, reuse existing materials that are removed and then replaced, with the exception of paving.

PART 3 EXECUTION

3.1 RESTORING OF CURBING, FENCES, AND GUARD RAILS

A. Protect existing curbing. If necessary, remove curbing from joint to joint and replace after backfilling. Replace curbing that is damaged during construction with curbing of equal quality and dimension.

3.2 CROSSING UTILITIES

A. This item shall include any extra work required in crossing culverts, water courses, drains, water mains, and other utilities, including all sheeting and bracing, extra excavation and backfill, or any other work required for the crossing, whether or not shown on the drawings.

3.3 RELOCATIONS OR REPLACEMENT OF EXISTING GAS LINES, TELEPHONE LINES, ELECTRIC LINES, CABLE TV LINES AND DRAINAGE CULVERT

A. Notify the proper authority of the utility involved when relocation or replacement of these lines is required. Coordinate all work by the utility so that the progress of construction will not be hampered.

B. Reference all side drains, side ditches, swales, and storm sewers as to grade and location prior to construction, maintain them during construction, and repair them as necessary after construction. Where drainage structures are disturbed and must be replaced, the minimum size replacement shall be twelve inches (12"). All drainage culverts installed shall have mitered ends in conformance with the Collier County Standard Details. Place the culvert to the specified elevations and regrade or reshape the swale and road shoulders that have been disturbed or damaged during construction.

3.4 PROTECTION AND RESTORATION OF PROPERTY

A. Protection and Restoration of Property: During the course of construction, take special care and provide adequate protection in order to minimize damage to vegetation, surfaced areas, and structures within the construction right-of-way, easement or site, and take full responsibility for the replacement or repair thereof. Immediately repair any damage to private property created by encroachment thereon. Should the removal or trimming of valuable trees, shrubs, or grass be required to facilitate the installation within the designated construction area, this work shall be done in cooperation with the County and/or local communities which the work takes place. Said valuable vegetation, removed or damaged, shall be replanted, if possible, or replaced by items of equal quality, and maintained until growth is re-established. Topsoil damaged in the course of work shall be replaced in kind with suitable material, graded to match existing grade. Following construction completion, the work area along the route of the installation shall be finish grade to elevations compatible with the adjacent surface, with grassing or hand raking required within developed areas.

B. Existing lawn surfaces damaged by construction shall be re-graded and re-sodded or re-seeded. These areas shall be maintained until all work under this Contract has been completed and accepted.

3.5 CLEANING UP

A. Remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall render the site of the work in a neat and orderly condition.

B. Work site clean-up shall follow construction operations without delay and in accordance with Section 017423.

3.6 INCIDENTAL WORK

A. Do all incidental work not otherwise specified, but obviously necessary for the proper completion of the Contract as specified and as shown on the drawings.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 017416

SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for clearing of all areas within the Contract limits and other areas shown, including work designated in permits and other agreements, in accordance with the requirements of Division 1.

B. Related Work Specified in Other Sections Includes:

1. Section 024100 – Demolition

2. Section 312316 - Excavation - Earth and Rock

3. Section 312323 – Backfilling

4. Section 329200 – Restoration by Sodding or Seeding

1.2 DEFINITIONS

A. Clearing: Clearing is the removal from the ground surface and disposal, within the designated areas, of trees, brush, shrubs, down timber, decayed wood, other vegetation, rubbish and debris as well as the removal of fences.

B. Grubbing: Grubbing is the removal and disposal of all stumps, buried logs, roots larger than 1-1/2 inches, matted roots and organic materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 PROTECTION OF EXISTING UTILITIES

A. Prior to site clearing, locate and mark all existing utilities in coordination with the COUNTY and other affected owners. Protect all existing utilities and markings from damage. In case of damage to existing utilities caused by construction activities, contact the owner of the utility or appropriate COUNTY department (Water or Wastewater) immediately. Repair any damage to existing utilities or markings caused by construction activities in coordination with or as directed by the owner of the utility.

3.2 TREE REMOVAL

A. Tree Removal Within Right-of-Way Limits: Remove trees and shrubs within the right-of-way unless otherwise indicated.

1. Remove trees and shrubs to avoid damage to trees and shrubs designated to remain.

2. Grub and remove tree stumps and shrubs felled within the right-of-way to an authorized disposal site. Fill depressions created by such removal with material suitable for backfill as specified in Section 312323.

B. Tree Removal Outside Right-of-Way Limits: Do not cut or damage trees outside the right-of-way unless plans show trees to be removed or unless written permission has been obtained from the property owner. Furnish three copies of the written permission before removal operations commence.

C. If the landowner desires the timber or small trees, cut and neatly pile it in 4 foot lengths for removal by the owner; otherwise, dispose of it by hauling it away from the project site. If hauled timber is of merchantable quality, credit shall accrue to the CONTRACTOR.

3.3 TREES AND SHRUBS TO BE SAVED

A. Protection: Protect trees and shrubs within the work limits that are so delineated or are marked in the field to be saved from defacement, injury and destruction.

1. Work within the limits of the tree drip line with extreme care using either hand tools or equipment that will not cause damage to trees.

a. Do not disturb or cut roots unnecessarily. Do not cut roots 1-1/2 inches and larger unless approved.

b. Immediately backfill around tree roots after completion of construction in the vicinity of trees.

c. Do not operate any wheeled or tracked equipment within drip line.

2. Protect vegetation from damage caused by emissions from engine-powered equipment.

3. During working operations, protect the trunk, foliage and root system of all trees to be saved with boards or other guards placed as shown and as required to prevent damage, injury and defacement.

a. Do not pile excavated materials within the drip line or adjacent to the trunk of trees.

b. Do not allow runoff to accumulate around trunk of trees.

c. Do not fasten or attach ropes, cables, or guy wires to trees without permission. When such permission is granted, protect the tree before making fastening or attachments by providing burlap wrapping and softwood cleats.

d. The use of axes or climbing spurs for trimming will not be permitted.

e. Provide climbing ropes during trimming.

4. Remove shrubs to be saved, taking a sufficient earth ball with the roots to maintain the shrub.

a. Temporarily replant if required, and replace at the completion of construction in a condition equaling that which existed prior to removal.

b. Replace in kind if the transplant fails.

5. Have any tree and shrub repair performed by a tree surgeon properly licensed by the State of Florida and within 24 hours after damage occurred.

3.4 CLEARING AND GRUBBING

A. Clearing: Clear all items specified to the limits shown and remove cleared and grubbed materials from the site.

1. Do not start earthwork operations in areas where clearing and grubbing is not complete, except that stumps and large roots may be removed concurrent with excavation.

2. Comply with erosion, sediment control and storm management measures as specified in Division 1.

B. Grubbing: Clear and grub areas to be excavated, areas receiving less than 3 feet of fill and areas upon which structures are to be constructed.

1. Remove stumps and root mats in these areas to a depth of not less than 18 inches below the subgrade of sloped surfaces.

2. Fill all depressions made by the removal of stumps or roots with material suitable for backfill as specified in Section 312323.

C. Limited Clearing: Clear areas receiving more than 3 feet of fill by cutting trees and shrubs as close as practical to the existing ground. Grubbing will not be required.

D. Dispose of all material and debris from the clearing and grubbing operation by hauling such material and debris away to an approved dump. The cost of disposal (including hauling) of cleared and grubbed material and debris shall be considered a subsidiary obligation of the CONTRACTOR; include the cost in the bid for the various classes of work.

3.5 TOPSOIL

A. Stripping: Strip existing topsoil from areas that will be excavated or graded prior to commencement of excavating or grading and place in well-drained stockpiles in approved locations.

END OF SECTION

SECTION 017423

CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. General Requirements

B. Disposal Requirements

1.2 GENERAL REQUIREMENTS

A. Execute cleaning during progress of the work and at completion of the work.

1.3 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 DURING CONSTRUCTION

A. Execute daily cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish, and windblown debris, resulting from construction operations.

B. Provide onsite containers for the collection of waste materials, debris and rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in onsite containers.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.2 FINAL CLEANING

A. Requirements: At the completion of work and immediately prior to final inspection, clean the entire project as follows:

1. Thoroughly clean, sweep, wash, and polish all work and equipment provided under the Contract, including finishes. Leave the structures and site in a complete and finished condition to the satisfaction of the ENGINEER.

2. Direct all subcontractors to similarly perform, at the same time, an equivalent thorough cleaning of all work and equipment provided under their contracts.

3. Remove all temporary structures and all debris, including dirt, sand, gravel, rubbish and waste material.

4. Should the CONTRACTOR not remove rubbish or debris or not clean the buildings and site as specified above, the OWNER reserves the right to have the cleaning done at the expense of the CONTRACTOR.

B. Employ experienced workers, or professional cleaners, for final cleaning.

C. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

D. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.

E. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior finished surfaces. Polish surfaces so designated to shine finish.

F. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.

G. Replace air-handling filters if units were operated during construction.

H. Clean ducts, blowers, and coils, if air-handling units were operated without filters during construction.

I. Vacuum clean all interior spaces, including inside cabinets.

J. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

K. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly-painted surfaces.

L. Clean interior of all panel cabinets, pull boxes, and other equipment enclosures.

M. Wash and wipe clean all lighting fixtures, lamps, and other electrical equipment that may have become soiled during installation.

N. Perform touch-up painting.

O. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

P. Remove erection plant, tools, temporary structures and other materials.

Q. Remove and dispose of all water, dirt, rubbish or any other foreign substances.

3.3 FINAL INSPECTION

A. After cleaning is complete the final inspection may be scheduled. The inspection will be done with the OWNER and ENGINEER.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 017823

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description

B. Quality Assurance

C. Format and Contents

1.2 DESCRIPTION

A. Scope: Furnish to the ENGINEER three (3) printed copies and one (1) electronic copy of an Operation and Maintenance Manual for all equipment and associated control systems furnished and installed.

1.3 QUALITY ASSURANCE

A. Reference Codes and Specifications: No current government or commercial specifications or documents apply.

1.4 FORMAT AND CONTENTS

A. Prepare and arrange each copy of the manual as follows:

1. One copy of an equipment data summary (see sample form) for each item of equipment.

2. One copy of an equipment preventive maintenance data summary (see sample form) for each item of equipment.

3. One copy of the manufacturer's operating and maintenance instructions. Operating instructions include equipment start-up, normal operation, shutdown, emergency operation and troubleshooting. Maintenance instructions include equipment installation, calibration and adjustment, preventive and repair maintenance, lubrication, troubleshooting, parts list and recommended spare parts. Include Manufacturer’s telephone numbers for Technical Support.

4. List of electrical relay settings and control and alarm contact settings.

5. Electrical interconnection wiring diagram for equipment furnished including all control and lighting systems.

6. One valve schedule giving valve number, location, fluid, and fluid destination for each valve installed. Group all valves in same piping systems together in the schedule. Obtain a sample of the valve numbering system from the ENGINEER.

7. Furnish all O&M Manual material on 8-1/2 by 11 commercially printed or typed forms or an acceptable alternative format.

B. Organize each manual into sections paralleling the equipment specifications. Identify each section using heavy section dividers with reinforced holes and numbered plastic index tabs. Use 3-ring, hard-back binders. Punch all loose data for binding. Arrange composition and printing so that punching does not obliterate any data. Print on the cover and binding edge of each manual the project title, and manual title, as furnished and approved by the ENGINEER.

C. Leave all operating and maintenance material that comes bound by the equipment manufacturer in its original bound state. Cross-reference the appropriate sections of the CONTRACTOR's O&M manual to the manufacturers' bound manuals.

D. Label binders Volume 1, 2, and so on, where more than one binder is required. Include the table of contents for the entire set, identified by volume number, in each binder.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

Collier County Utilities

_____

Equipment Data Summary

Equipment Name:	Specification Reference:
Manufacturer:	
Name:	
Address:	
Telephone:	
Number Supplied:	Location/Service:
Model No:	Serial No:
Type:	
Size/Speed/Capacity/Range (as applicable):	
Power Requirement (Phase/Volts/Hertz):	
Local Representative:	
Name:	
Address:	
Telephone:	
NOTES:	

Collier County Utilities

_____

Preventive Maintenance Summary

Equipment Name:	Location:
Manufacturer:	
Name:	
Address:	
Telephone:	
Model No:	Serial No:

Maintenance Task	Lubricant/Part	D W M Q SA A	O&M Manual Reference

NOTES:

*D-Daily W-Weekly M-Monthly Q-Quarterly SA-Semi-Annual A-Annual

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

Requirements for preparation, maintenance and submittal of project record documents. The Contractor's attention is specifically directed to Part 3.2.B. of this Section, which requires use of a Florida licensed surveyor to sign and seal all record drawings.

1.2 RELATED SECTIONS

A. Section 014500 – Quality Control

B. Section 022100 – Lines and Grades

1.3 SUBMITTALS

A. General: Provide all submittals as specified.

B. At Contract close out, three (3) sets of signed and sealed Record Drawings for the potable water OR non-potable irrigation water OR wastewater systems to be conveyed shall be submitted to the County or District. If potable water AND wastewater, AND/OR non-potable irrigation water systems or portion(s) thereof are being conveyed, five (5) sets of signed and sealed Record Drawings shall be submitted to the County.

C. Provide electronic submittal as specified in Part 3.2.B of this Section.

1.4 REQUIREMENTS (For County Capital Projects Only)

Contractor shall maintain at the site for the County one record copy of:

A. Drawings
B. Specifications
C. Addenda
D. Change orders and other modifications to the Contract
E. Design Engineer’s field orders or written instructions
F. Approved shop drawings, working drawings and samples
G. Field test records

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Project record documents shall be stored in Contractor's field office or other location approved by the County apart from documents used for construction

B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

C. Make documents and samples available at all times for inspection by the County.

3.2 RECORDING

A. General

1. Record Drawings shall accurately depict the constructed configuration of all potable water, non-potable irrigation water and/or wastewater systems or portion(s) thereof. All revisions to County staff approved construction drawings shall be precisely identified and illustrated on the Record Drawings. All Record Drawings of utility systems or portion(s) thereof that are not being conveyed to the Board shall bear, on the cover sheet, a prominently displayed DISCLAIMER, in bold lettering at least one-quarter (1/4) inch high, stating: "All on-site potable water, non-potable irrigation and/or wastewater systems shall be owned, operated and maintained by the private owner(s) and/or the master condominium/homeowners' association, successors or assigns" (or other comparable private ownership).
2. Label each document "PROJECT RECORD" or similar text in neat, large printed letters.
3. Survey information can be obtained as needed by the use of 2-inch PVC labeled pipes installed over underground improvements by the contractor during construction. This method is an adequate process for obtaining record information.
4. Record information in red ink.

B. Record Drawings

1. The Record Drawings require signed and sealed as-built information, including above and below ground improvements including underground piping, valves and ductbanks, by a Florida Licensed Land Surveyor.
2. The Record Drawings shall identify the entity that provided the record data.
3. Drawings shall be referenced to and tie-in with the state plane coordinate system, with a Florida East Projection, and a North American Datum 1983/1990 (NAD 83/90 datum), and with United States Survey Feet (USFEET) units, and North American Vertical Datum 1988 (NAVD 88), as established by a registered Florida surveyor and mapper.

4. Files shall be also submitted in two digital file formats, specifically Drawing File (DWG) format in AutoCAD Release 2004 or later version as well as PDF format (latest version).
5. Record drawings shall be submitted to the County staff within 60 days of the final construction completion date.
6. The following items shall be accurately depicted in vertical and horizontal directions on the Record Drawings:

    a) All associated rights-of-way and utility easements whether shown on the Contract Drawings, found during construction or added during the Work.

    b) Sewer system inverts, pipe slopes, manhole rims and run lengths.

    c) Sewer lateral locations stationed from the nearest downstream manhole.

    d) Sewer main stub extension inverts at both ends, pipe slope, run length and location.

    e) Tie-ins to all valves, air release assemblies, fire hydrants, manholes, blowoffs, etc.

    f) Top elevations of treatment plant structures and tanks.

    g) Manhole center for sanitary sewers and storm sewers as related to utility improvements.

    h) Pipe changes in direction or slope.

    i) Buried valves, tees and fittings.

    j) Pipe invert, or centerline, elevations at crossing with other pipe.

    k) Invert, or centerline, elevations and coordinates of existing exposed pipe at crossing with underground pipe installed under this project.

    l) Other horizontal and vertical record data pertinent to completed Work.

    m) Water meter box locations.

    n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables that will be conveyed to the County shall be depicted.
7. Each pipe elevation shall be clearly identified as to whether it is top of pipe, centerline of pipe or invert of pipe.
8. For County Capital Projects only, Record Drawings shall indicate all deviations from Contract Drawings including:

    a) Field changes.

    b) Changes made by Change Order.

    c) Details, utilities, piping or structures not on original Contract Drawings.

    d) Equipment and piping relocations.

C. Specifications and Addenda (For County Capital Projects Only)

Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.

2. Changes made by Field Order or Change Order.

D. Shop Drawings (For County Capital Projects Only)

1. Keep one copy of the final, approved shop drawing with the Record Documents.
2. Record documents should include all shop drawing information submitted. Additional information submitted during the review process should be filed with the appropriate submittal.

END OF SECTION

SECTION 020500

CONNECTIONS TO EXISTING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General Requirements

B. Submittals

C. Scheduling of Shutdown

1.2 RELATED SECTIONS

A. Section 011000 – Summary of Work

B. Section 015000 – Construction Facilities and Temporary Controls

C. Section 015526 – Traffic Regulations and Public Safety

D. Section 320117 – Pavement Repair and Restoration

1.3 GENERAL REQUIREMENTS

A. Be responsible for all connection to existing systems, cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:

1. Make its several parts fit together properly.

2. Uncover portions of the work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove and replace work not conforming to requirements of Contract Documents.

B. Coordination: Before connection is performed, verify and provide for any pipe restraint that may be required for the new connection. Perform all cutting, fitting or patching of the Work that may be required to make the several parts thereof join in accordance with the Contract Documents. Perform restoration with competent workmen skilled in the trade.

C. If changes to a “looped” water distribution system occurring during construction result in dead ends to any new or relocated water mains, connect such dead

ends to the nearest water main. In cases where no nearby water main is available, provide a flushing device in coordination with the COUNTY at no additional cost to the COUNTY.

D. Improperly Timed Work: Perform all cutting and patching required to install improperly timed work, to remove samples of installed materials for testing, and to provide for alteration of existing facilities or for the installation of new Work in the existing construction.

E. Limitations: Except when the cutting or removal of existing construction is specified or indicated, do not undertake any cutting or demolition, which may affect the structural stability of the Work or existing facilities without the ENGINEER's concurrence.

F. Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities (in accordance with pipe separation criteria located in the Design Criteria section). Any and all variations from this order must be approved by the Water or Wastewater Department.

2. **Before commencement of any excavation, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call, in accordance with State Statute Chapter 556 "Underground Facility Damage Prevention and Safety", after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.**

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits.

1.4 SUBMITTALS

A. Submit a written request to the ENGINEER well in advance of executing any cutting or alteration which affects:

1. Work of the COUNTY or any separate contractor.

2. Structural value or integrity of any element of the project or work.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Include in request:

1. Identification of the work.

2. Description of affected work.

3. The necessity for cutting, alteration or excavation.

4. Effect on work of the COUNTY or any separate contract, or on structural or weatherproof integrity of work.

5. Description of proposed work:

a. Scope of cutting, patching, alteration, or excavation.

b. Trades who will execute the work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate contractor whose work will be affected.

C. SUBMIT WRITTEN NOTICE TO THE ENGINEER DESIGNATING THE DATE AND THE TIME THE WORK WILL BE UNCOVERED.

1.5 SCHEDULING OF SHUTDOWN

A. Connections to Existing Facilities: If any connections, replacement, or other work

requiring the shutdown of an existing facility is necessary, schedule such work at times when the impact on the COUNTY's normal operation is minimal. If shutdown involves the water distribution or transmission system, provide notice to the COUNTY Water Department at least two (2) weeks prior to the proposed shutdown, including date, time and anticipated length of interruption of service. Overtime, night and weekend work without additional compensation from the COUNTY, may be required to make these connections, especially if the connections are made at times other than those specified. The connection of new or existing pipelines is prohibited from starting until CONTRACTOR assures that the system can receive the new flow.

B. Interruptions of Service: Perform cut-ins into lines at a time approved in writing by the County Manager or designee. Whenever it is required to turn off valves which may interrupt the water supply of residents or businesses, notify all concerned parties or agencies with personal contact, door hangers or written notice at least forty-eight (48) hours in advance of such cut-off, after having obtained the approval of the County Manager or designee. Provide a copy of the written notice to the Water Distribution Section by fax. ONLY COUNTY PERSONNEL MAY OPERATE COUNTY-OWNED VALVES. Maintain water service to existing connections during construction, under any and all conditions and at no additional cost to the COUNTY. Thoroughly clean and swab all pipe and fittings for cut-ins with a concentrated solution of calcium hypochlorite.

C. Request for Water System Shutdowns: When plans call for connection to existing water distribution facilities or the CONTRACTOR plans to shut down existing utilities or where damage to such facilities is likely in order to complete construction of items under this contract, furnish the County Manager or designee with a written request for connection. The COUNTY Water Distribution Section will identify the locations of all water valves needed to isolate the point of connection in the event that the existing facilities are damaged while making the connection. Identify in the request means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

D. Request for Wastewater Diversion: Submit a request for each diversion necessary during construction to the County Manager or designee and the ENGINEER sufficiently in advance of any required diversion. Identify in the request the valves, bypass piping, portable pumper trucks or any other means which the CONTRACTOR proposes to use in order to provide effective shutdown of the system. Include in a connection and shutdown schedule details of shutdown time and duration. No connections to existing utilities – or construction where shutdown of, or damage to, existing utilities may occur – shall commence prior to County Manager or designee approval of the connection and shutdown plan and schedule.

PART 2 PRODUCTS

2.1 MATERIALS

A. Comply with specifications and standards for each specific product involved.

PART 3 EXECUTION

3.1 INSPECTION

A. Inspect existing conditions of projects, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products, or performance of the work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with work until the ENGINEER has provided further instructions.

3.2 PREPARATION

A. In cases where service to utility customers is interrupted, provide adequate equipment with backup onsite to assure prompt restoration of service.

B. Provide adequate temporary support as necessary to assure structural value or integrity or affected portion of work.

C. Provide devices and methods to protect other portions of project from damage.

D. Provide protection from elements for that portion of the project that may be exposed by cutting and patching work, and maintain excavations free from water.

E. Material Removal: Cut and remove all materials to the extent shown or as required to complete the work. Remove materials in a careful manner with no damage to adjacent facilities. Remove materials that are not salvageable from the site.

3.3 PERFORMANCE

A. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed or moisture-resistant elements.

2. Sight-exposed finished surfaces.

D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

E. Restore work, which has been cut or removed; install new products to provide completed work in accord with requirements of contract documents.

F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish entire unit.

3.4 PAVEMENT RESTORATION

A. Restore all pavement or roadway surfaces in accordance with Section 320117 – Pavement Repair and Restoration.

B. Restore, replace or rebuild existing street paving, including underdrains, if any are encountered, where damaged, using the same type of construction as was in the original. Be responsible for restoring all such work, including subgrade, base courses, curb and gutter or other appurtenances where present. The County Manager or designee will obtain the permits listed in the Contract Documents. Obtain and pay for at CONTRACTOR’s expense any additional local or other governmental permits as may be required for the opening of streets and be satisfied as to any requirements other than those herein set forth which may affect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

C. This section does not describe the construction of new road surfaces or the complete resurfacing of existing pavements.

D. In all cases, the CONTRACTOR will be required to maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract for a period of 12 months after the acceptance of the Contract, including the removal and replacement of such work wherever surface depressions or underlying cavities result from settlement of trench backfill.

E. Perform all the final resurfacing or repaving of streets or roads, over the excavations made and be responsible for relaying paving surfaces of roads that have failed or been damaged at any time before the termination of the maintenance period on account of work done by him. Resurface or repave over any tunnel jacking, or boring excavation that settles or breaks the surface, repave to the satisfaction of the County Manager or designee and at the CONTRACTOR's expense. Conform backfilling of trenches and the preparation of subgrades to the requirements of excavation and backfilling of pipeline trenches.

F. Where pipeline construction crosses paved streets, driveways or sidewalks, the CONTRACTOR may elect, at no additional cost to the COUNTY, to place the pipe by the jacking and boring, horizontal direction drilling, or tunneling method in lieu of cutting and patching of the paved surfaces. Such work shall be accomplished in accordance with all applicable sections of the Contract Documents.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 022100

LINES AND GRADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. General

B. Surveys

C. Datum Plane

D. Protection of Survey Data

1.2 GENERAL

A. Construct all work in accordance with the lines and grades shown on the Drawings. Assume full responsibility for keeping all alignment and grade.

1.3 SURVEYS

A. Reference Points: The COUNTY will provide reference points for the work as described in the General Conditions. Base horizontal and vertical control points will be designated by the ENGINEER and used as datum for the Work. Perform all additional survey, layout, and measurement work.

1. Keep ENGINEER informed, sufficiently in advance, of the times and places at which work is to be performed so that base horizontal and vertical control points may be established and any checking deemed necessary by ENGINEER may be done, with minimum inconvenience to the ENGINEER and at no delay to CONTRACTOR. It is the intention not to impede the Work for the establishment of control points and the checking of lines and grades set by the CONTRACTOR. When necessary, however, suspend working operations for such reasonable time as the ENGINEER may require for this purpose. Costs associated with such suspension are deemed to be included in the Contract Price, and no time extension or additional costs will be allowed.

2. Provide an experienced survey crew including an instrument operator, competent assistants, and any instruments, tools, stakes, and other materials required to complete the survey, layout, and measurement of work performed by the CONTRACTOR.

1.4 DATUM PLANE

A. All elevations indicated or specified refer to the North American Vertical Datum 1988 (NAVD 88), of the United States Coast and Geodetic Survey and are expressed in feet and decimal parts thereof, or in feet and inches.

1.5 PROTECTION OF SURVEY DATA

A. General: Safeguard all points, stakes, grade marks, known property corners, monuments, and benchmarks made or established for the Work. Reestablish them if disturbed, and bear the entire expense of checking reestablished marks and rectifying work improperly installed.

B. Records: Keep neat and legible notes of measurements and calculations made in connection with the layout of the Work. Furnish copies of such data to the ENGINEER for use in checking the CONTRACTOR's layout. Data considered of value to the County Manager or designee will be transmitted to the County Manager or designee by the ENGINEER with other records on completion of the Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 022200

PRE-CONSTRUCTION AUDIO-VIDEO RECORDING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. The work specified in this section includes the requirements for pre-construction audio-video recordings necessary to document existing conditions on public and private property.

PART 2 PRODUCTS

2.1 CONTRACTOR REQUIREMENTS

A. The Contractor shall provide color videos showing pre-construction site conditions of all public and private property within the scope of construction. The videos shall be on DVD and electronic format indicating on the beginning and front of each DVD, the date, job title and location where the video was taken. The videos shall be clear and shall thoroughly document all existing structures and landscaping.

B. Two copies of the DVD and one electronic copy (on a USB flash drive or other appropriate device) shall be delivered to the County Manager or designee for review.

PART 3 EXECUTION

3.1 INSPECTION

A. Construction on private property shall not commence until the County Manager or designee has reviewed and approved the audio-video recording.

3.2 PERFORMANCE

A. The Contractor may be required to restore private properties to conditions better than existing, at no additional cost to the COUNTY, if the Contractor fails to sufficiently document existing conditions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 022501

LEAKAGE TESTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Testing for any signs of leakage in all pipelines and structures required to be watertight.

1. Test gravity sewers and drain lines by infiltration/exfiltration testing.

2. Test all other pipelines with water under the specified pressures.

B. Operation of Existing Facilities: Conduct all tests in a manner to minimize as much as possible any interference with the day-to-day operations of existing facilities or other contractors working on the site.

1.2 PERFORMANCE REQUIREMENTS

A. Written Notification of Testing: Provide written notice when the work is ready for testing, and make the tests as soon thereafter as possible.

1. Personnel for reading meters, gauges, or other measuring devices, will be furnished.

2. Furnish all other labor, equipment, air, water and materials, including meters, gauges, smoke producers, blower, pumps, compressors, fuel, water, bulkheads and accessory equipment.

1.3 REFERENCES

A. Codes and standards referred to in this Section are:

1. AWWA C 600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

1.4 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Testing Report: Prior to placing the sewer system in service submit for review and approval a detailed report summarizing the leakage test data, describing the test procedure and showing the calculations on which the leakage test data is based.

1. Reference Sewer Line Data

a. For Low Pressure Testing

(1) The length and diameter of the section of line tested (MH to MH), including any laterals.

(2) A complete description of the test procedure, including:

(a) Trench backfilling and sewer cleaning status

(b) Type of plugs used and where

(c) Depth of sewer, and ground water pressure over sewer pipe

(d) Stabilization time period and air pressure

(e) Actual air test pressures used if ground water is present

(f) The time allowed by specifications

(g) The actual test time

(h) The air pressure at beginning and end of test

(3) The name of the inspector/tester and the date(s) and time(s) of all testing performed, including any retesting.

(4) A description of any repairs made.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 LEAKAGE TESTING

A. All new sewer and water pipelines installed shall be tested for leakage. The test used will be Hydrostatic Testing for pressure lines and Infiltration/Exfiltration Testing for gravity lines. Tests to be performed will be indicated by the ENGINEER and witnessed by the ENGINEER and the County Manager or designee.

1. Flushing

a. Full-bore flush all mains to remove all sand and other foreign matter. Flushing shall be terminated at the direction of the ENGINEER. Dispose of the flushing water without causing nuisance or property damage. Full bore flushes on force mains shall only be required where sufficiently sized water mains are present.

b. Install temporary flush out connections on all dead end water mains at the locations shown on plans and in accordance with the Collier County Standard Details.

2. Hydrostatic Testing for DIP and PVC Pipelines:

Perform hydrostatic testing of the system as set forth in the following, and conduct said tests in the presence of the County Manager or designee and other authorized agencies, with 48 hours advance notice provided.

Piping and appurtenances to be tested shall be within sections between valves unless alternate methods have received prior approval from the County Manager or designee. Testing shall not proceed until concrete thrust blocks are in place and cured, or other restraining devices installed. Thoroughly clean and flush all piping prior to testing to clear the lines of all foreign matter. While the piping is being filled with water care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required.

Perform hydrostatic testing with a sustained minimum pressure of 150 psi for a period of not less than two (2) hours. If sustained pressure goes 5 psi above or below 150 psi during the first two (2) hours, the test fails (AWWA regulation). After two (2) hours, use the AWWA formula if less than 5 psi to determine whether test fails. Testing shall be in accordance with the applicable provisions as set forth in the most recent edition of AWWA Standards C600 for Ductile Iron Pipe and C605 for PVC Pipe. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formula:

$$L = \frac{SD\,(P)^{1/2}}{133{,}200}$$

Where,

L = Allowable leakage in gallons per hour;
S = Length of pipe tested in feet;
D = Nominal diameter of pipe in inches;
P = Average test pressure maintained during the leakage test in pounds per square inch

For 150 psi, $L = (9.195 \times 10^{-5})\,SD$

The testing procedure shall include the continued application of the specified pressure to the test system, for the one-hour period, by way of a pump taking supply from a container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced for the said container.

Should the test fail, repair the fault and repeat the test until results are within the established limits. Furnish the necessary labor, water, pumps, and gauges at specified location(s) and all other items required to conduct the required testing and perform necessary repairs.

General - All sanitary sewers and associated service lines shall be constructed watertight to prevent infiltration and/or exfiltration.

3. Hydrostatic Testing for HDPE Pipelines:

Perform hydrostatic testing of all HDPE pipelines as set forth in the following, and conduct said tests in the presence of the County Manager or designee and other authorized agencies, with 48 hours advance notice provided.

Provide all labor, equipment and material required for testing the pipeline upon completion of installation, pipe laying and backfilling operations, and placement of any required temporary roadway surfacing.

Disinfect all HDPE potable water mains prior to testing in accordance with the requirements of Section 025400 – Disinfection.

Test pipelines at 150 psi.

Field test all HDPE pipelines for leakage in accordance with manufacturer's recommendations for the size and class of pipeline installed. Unless other procedures recommended by the manufacturer are approved by the County Manager or designee, pressure test the pipeline as follows:

a. Fill pipeline slowly with water. Maintain flow velocity less than two (2) feet per second.

b. Expel air completely from the line during filling and again before applying test pressure. Expel air by means of taps at points of highest elevation.

c. Apply initial test pressure and allow to stand without makeup pressure for two (2) to three (3) hours, to allow for diametric expansion or pipe stretching to stabilize.

d. After this equilibrium period, apply the specified test pressure and turn the pump off. The final test pressure shall be held for not less than two (2) hours.

e. Upon completion of the test, the pressure shall be bled off from the location other than the point where the pressure is monitored. The pressure drop shall be witnessed by the County Manager or designee at the point where the pressure is being monitored.

Allowable amount of makeup water for expansion of the pipeline during the pressure test shall conform to Table III, Test Phase Make-up Amount, contained in the manual "Inspections, Test and Safety Considerations" published by the Plastics Pipe Institute, Inc.

If any test of pipeline installed exceeds the amount of makeup water as allowed above, locate and repair the cause of leakage and retest the pipeline, without additional cost to the COUNTY. Repair all visible leaks regardless of the amount of leakage.

4. Force Main Pressure Testing: All force mains shall be subject to pressure testing at 150 PSI.

Allowable leakage on force mains shall be computed utilizing the standards for water loss in conformance with AWWA C600, the latest revision thereof.

5. Infiltration/Exfiltration Testing for Gravity Lines

The allowable limits of infiltration or exfiltration for the entire system, or any portion thereof, shall not exceed a rate of 50 gallons per inch of inside pipe diameter per mile of pipe per 24 hours. No additional allowance shall be made for house service lines. Any part of or all of the system shall be tested for infiltration or exfiltration, as directed by the ENGINEER or as required by the County Manager or designee. The procedures and limitations for conducting infiltration/exfiltration tests shall be established at the pre-construction conference on a project-by-project basis. Air testing of gravity sewer mains may be required. All testing shall be run continuously for 24 hours, unless the County Inspector can visually verify that this test duration is not required due to the observed infiltration/exfiltration rate. The amounts of infiltration or exfiltration shall be determined by pumping water into or out of calibrated drums, or by other methods approved by the Public Utilities Division, such as in-line V-notch weirs. Where infiltration or exfiltration exceeds the allowable limits specified herein, locate and repair the defective pipe, joints or other faulty construction at no additional cost to the COUNTY. If the defective portions cannot be located, remove and reconstruct as much of the work as is necessary in order to conform to the specified allowable limits. All visible leaks shall be repaired regardless of the amount of leakage. Provide all labor, equipment and materials required and conduct all testing required under the direction of the ENGINEER.

a. Infiltration: Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of testing. The cumulative results of the entire collection system results shall not be a satisfactory method for gauging infiltration compliance. Each sewer section between manholes must permit infiltration no greater than the maximum allowable, as specified above.

b. Exfiltration: The exfiltration test, when required due to groundwater levels, will be conducted by filling the portion of the system being tested with water to a level 2 feet above the uppermost manhole invert in the section being tested. The cumulative results of the entire collection system results shall not be a satisfactory method for gauging exfiltration compliance. Each sewer section between manholes must permit exfiltration no greater than the maximum allowable, as specified above.

6. Low Pressure Air Testing

Contractor shall conduct air testing in accordance with ASTM specifications:

a. ASTM C-828 – for clay pipes.

b. ASTM C-924 – for concrete pipes.

c. ASTM F-1417 – for plastic pipes.

When low pressure air testing of gravity sewer mains is specifically required, all testing shall be run continuously for 24 hours, unless the County Inspector can visually verify that this test duration is not required due to the observed infiltration/exfiltration rate.

When air testing is specifically required, after completing backfill of a section of gravity sewer line, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the below stated equipment, according to state procedures and under the supervision of the ENGINEER and in the presence of the County Manager or designee, with 48 hours advanced notice.

d. Equipment:

(1) Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

(2) Pneumatic plugs shall resist internal bracing or blocking.

(3) All air used shall pass through a single control panel.

(4) Three individual hoses shall be used for the following connections:

(a) From control panel to pneumatic plugs for inflation.

(b) From control panel to sealed line for introducing the low-pressure air.

(c) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

e. Procedure:

All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psi. The sealed pipe shall be pressurized to 5 psi. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

After a manhole-to-manhole reach of pipe has been backfilled and cleaned and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psi. Low-pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psi greater than the average back pressure of any ground water that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psi minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of the line being tested shall be termed “Acceptable”, if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psi (greater than the average back pressure of any ground water that may be over the pipe) is greater than the time shown for the given diameters in the following table:

Pipe Diameter In Inches	Minutes
8	4.0
10	5.0
12	5.5
16	7.5
18	8.5
24	11.5

Time in Minutes = 0.472 D
D = Diameter of pipe in inches

In areas where ground water is known to exist, install capped pipe adjacent to the top of the sewer lines. This shall be done at the time of the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, and a measurement of the height in feet of water over the invert of the pipe shall be taken. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psi. This increases the 3.5 psi to 8.5 psi, and the 2.5 psi to 7.5 psi. The allowable drop of one pound and the timing remain the same).

If the installation fails to meet this requirement, determine the source of the leakage and repair or replace all defective materials and/or workmanship, all at no additional cost to the COUNTY.

B. DEP approval is required to use reclaimed (IQ) water for flushing and pressure testing of irrigation mains and potable water mains. The requirements for submitting a request to DEP are available from the County PUED.

3.2 LEAKAGE TESTS FOR STRUCTURES

A. Structure Leakage Testing: Perform leakage tests of manholes, wet wells, tanks, vaults and similar purpose structures before backfilling, by filling the structure with water to the overflow water level and observing the water surface level for the following 24 hours.

1. Make an inspection for leakage of the exterior surface of the structure, especially in areas around construction joints.

2. If visible leaks appear, repair the structure by removing and replacing the leaking portions of the structure, waterproofing the inside, or by other methods approved.

3. Water for testing will be provided by the COUNTY at the CONTRACTOR's expense.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 024100

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: All work necessary for the removal and disposal of structures, foundations, piping, equipment and roadways, or any part thereof including masonry, steel, reinforced concrete, plain concrete, electrical facilities, and any other material or equipment shown or specified to be removed.

B. Basic Procedures and Schedule: Carry out demolition so that adjacent structures, which are to remain, are not endangered. Schedule the work so as not to interfere with the day-to-day operation of the existing facilities. Do not block doorways or passageways in existing facilities.

C. Additional Requirements: Provide dust control and make provisions for safety.

D. Related Work Specified in Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 020500 – Connection to Existing Systems

1.2 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

B. Site Inspection: Visit the site and inspect all existing structures. Observe and record any defects that may exist in buildings or structures adjacent to but not directly affected by the demolition work. Provide the County Manager or designee with a copy of this inspection record and obtain the ENGINEER's and the County's Manager or designee approval prior to commencing the demolition.

1.3 QUALITY ASSURANCE

A. Limits: Exercise care to break concrete well for removal in reasonably small masses. Where only parts of a structure are to be removed, cut the concrete along limiting lines with a suitable saw so that damage to the remaining structure is held to a minimum.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 EXAMINATION OF EXISTING DRAWINGS

A. Available drawings of existing structures and equipment will be available for inspection at the office of the ENGINEER.

3.2 PROTECTION

A. General Safety: Provide warning signs, protective barriers, and warning lights as necessary adjacent to the work as approved or required. Maintain these items during the demolition period.

B. Existing Services: Undertake no demolition work until all mechanical and electrical services affected by the work have been properly disconnected. Cap, reroute or reconnect interconnecting piping or electrical services that are to remain in service either permanently or temporarily in a manner that will not interfere with the operation of the remaining facilities.

C. Hazards: Perform testing and air purging where the presence of hazardous chemicals, gases, flammable materials or other dangerous substances is apparent or suspected, and eliminate the hazard before demolition is started.

3.3 DEMOLITION REQUIREMENTS

A. Explosives: The use of explosives will not be permitted.

B. Protection: Carefully protect all mechanical and electrical equipment against dust and debris.

C. Removal: Remove all debris from the structures during demolition and do not allow debris to accumulate in piles.

D. Abandoned Pipelines: Fill all abandoned pipelines using grout in accordance with Section 033100.

E. Access: Provide safe access to and egress from all working areas at all times with adequate protection from falling material.

F. Protection: Provide adequate scaffolding, shoring, bracing railings, toe boards and protective covering during demolition to protect personnel and equipment against injury or damage. Cover floor openings not used for material drops with material substantial enough to support any loads placed on it. Properly secure the covers to prevent accidental movement.

G. Lighting: Provide adequate lighting at all times during demolition.

H. Closed Areas: Close areas below demolition work to anyone while removal is in progress.

I. Material Drops: Do not drop any material to any point lying outside the exterior walls of the structure unless the area is effectively protected.

J. Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions or government regulations as applicable.

3.4 ASBESTOS-CONCRETE (AC) PIPE

A. If existing asbestos-cement pipe is encountered during the course of construction, remove the AC pipe and replace it with C900 PVC pipe having a pressure rating as required elsewhere in these specifications. Replace the AC pipe with PVC pipe for a distance of 10 feet each way from the centerline of the pipe under construction or 5 feet beyond the length of AC pipe exposed by trench excavation, whichever is greater. A change order will be issued for required replacement of AC pipe not shown on the drawings.

B. Coordinate the shutdown of the AC pipeline with the County Manager or designee in accordance with Section 020500, including proper notice to the County Manager or designee and any customers that may be affected by the shutdown as required by these specifications and/or current Water Department policy. In the event of an unanticipated encounter with AC pipe, immediately recover and protect the pipe and notify the COUNTY Water Department.

C. Perform cutting of AC pipe by means of cutting wheels mounted in a chain wrapped around the pipe barrel. Do not use power driven saws with abrasive discs or any other means that produce concentrations of airborne asbestos dust.

3.5 DISPOSAL OF MATERIALS

A. Final Removal: Dispose of AC pipe in accordance with COUNTY special handling requirements and coordination with Collier County Solid Waste Management Department. Remove all other debris, rubbish, scrap pieces, equipment, and materials resulting from the demolition. Take title to all demolished materials and remove such items from the site.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 025400

DISINFECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Disinfection of all pipelines, tanks, structures, conduits and equipment that are to store, handle or carry potable water. Furnish all labor, water, chemicals and equipment, including taps, corporation stops, temporary pumps and other items necessary to perform the Work, except as otherwise specified.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. AWWA C651 - Disinfecting Water Mains

2. AWWA C652 - Disinfection of Water-Storage Facilities

1.3 QUALITY ASSURANCE

A. Disinfection Standards: Disinfect in accordance with AWWA C651 for water mains and AWWA C652 for water storage facilities and equipment.

B. Chlorinated Water Disposal: Dispose of old highly chlorinated water in accordance with applicable regulations.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 FLUSHING

A. After coordination with the COUNTY Water Distribution Section, perform all flushes, pigging or swabbing, disinfection and post flushes in the presence of Water department personnel. Fill all water lines with potable water, pig or swab and perform a line flushing. All lines larger than 12 inches in diameter shall be pigged to clear debris prior to flushing. Use a swab-type pig for HDPE pipe. Use a 5- to 7-lb. density poly-jacketed bullet style pig for all other pipe material. Under no circumstances is a pig or swab considered reusable. A section of pipe shall be

inserted in the gap specified in the jumper shown in the Standard Details to connect the new construction to the existing facilities for the purpose of accomplishing the full-bore flush. Immediately after completion of the flush, remove the connection. The facilities shall be capped and returned to the jumper connection shown in the Standard Details until final connection is permitted by County Manager or designee at the completion of construction and after finalization of all test procedures and bacterial clearance for new water facilities.

3.2 WATER MAIN DISINFECTION

A. Following acceptable pressure testing, disinfect all sections of the water distribution system and receive approval thereof from the appropriate agencies, prior to placing in service. Provide advance notice of 48 hours to the County Manager or designee before disinfecting procedures start. The disinfection shall be accomplished in accordance with the applicable provisions of AWWA Standard C651, "Disinfecting Water Mains" and all appropriate approval agencies.

B. The disinfecting agent shall be free chlorine in aqueous solution with sustained concentration for 48 hours of not less than 50 parts per million. After 48 hours, if chlorine solution contains at least 25 parts per million of chlorine, the line may then be flushed and samples taken at various points. Chlorine may be derived from Chlorine gas, or 70% (high test) calcium hypochlorite (HTH or Perchloron, or equal). Administration may be by any of the several methods described in AWWA Standard C651 as proposed by the CONTRACTOR and approved by the ENGINEER. Proposals as to method must be made prior to commencement of the disinfection process.

C. Following contact with chlorine solution, the system shall be thoroughly flushed out. Schedule water sampling in coordination with the COUNTY Water Distribution Section. The COUNTY Water Department will obtain all water samples for analysis.

D. If samples do not demonstrate satisfactory results, the line shall be flushed and a resample taken. If the samples fail on the second attempt, redisinfection per AWWA standards must be repeated until two satisfactory samples are obtained. The period between samples must be a minimum of 24 hours.

E. After approval of the samples, and before placing the system in service, perform another flushing of the water lines to remove any stagnant water.

3.3 WATER MAIN DISINFECTION (FOR FIRE LINE CONNECTIONS WITH NO TEMPORARY JUMPER)

A. In configurations where 20 feet or less of new pipe is installed between the existing COUNTY water main and the permanent above ground fire assembly, the temporary gap configuration assembly may be omitted if the following requirements are met:

1. The full interior of all new pipe between the existing COUNTY water main and the permanent above ground fire assembly shall be swabbed and disinfected using a chlorine solution with a concentration of not less than 200 parts per million.

2. The pipe must be flushed and bacteriological samples must be collected in accordance with this specification.

3. The tapping valve on the COUNTY water main shall remain closed until bacteriological clearance is achieved.

3.4 DISINFECTION PROCEDURES FOR TANKS

A. Disinfect potable water storage tanks and equipment in accordance with AWWA C652, Method 2 or 3, using sodium hypochlorite.

1. In Method 2, spray method, spray the entire interior surface of the tank with chlorinated water containing 200 mg/l of available chlorine. After spraying, allow the tank to stand at least two hours before filling with fresh water.

B. After disinfection, allow the tanks and equipment to overflow until the chlorine residual is approximately 2 mg/l.

3.5 BACTERIAL SAMPLE POINTS

A. For the purpose of new water main construction, bacterial sampling points shall be positioned at the beginning of each new system, at 1000-foot intervals and all dead ends unless otherwise directed. These sampling points will be utilized by Utilities personnel for water main bacterial clearance procedures. At the completion of the project, when authorization is given by the County Manager or designee, permanent sampling points shall remain every 3000 feet or one at 2/3 of the length from the point of connection to the COUNTY system if the line is less than 3000 feet long. All others shall be removed down to the main and properly capped by the CONTRACTOR. The permanent sampling points shall be constructed as shown in the Utility Detail Drawings. Collier County staff will review the permanent sampling point locations during final plans review.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 031100

CONCRETE FORMWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Provide concrete formwork for architectural concrete and structural concrete as specified to form concrete to profiles shown.

1. Provide concrete with smooth rubbed finish.

2. Structural concrete is defined as all concrete that is not architectural concrete.

B. Related Work Specified in Other Sections Includes:

1. Section 03200 - Concrete Reinforcement

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ACI 318 - Building Code Requirements for Reinforced Concrete

2. ACI SP-4 - Formwork for Concrete

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. CONTRACTORS Shop Drawings: Proposed form layout drawings and tie pattern layout drawings for Concrete. Review of these drawings does not relieve the CONTRACTOR of responsibility for adequately designing and constructing forms.

2. Samples: Pieces of each type of sheeting, chamfer strips, form ties, form liners and rustication strips

1.4 QUALITY ASSURANCE

A. Formwork Compliance: Use formwork complying with ACI SP-4, ACI 347 and ACI 303R.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. For acceptable manufacturers of concrete release agent, concrete form coating, concrete form liners, or concrete rustications see County Approved Product List, Appendix F.

2.2 MATERIALS

A. Structural Concrete: Provide structural concrete form materials as follows:

1. Obtain approval for form material before construction of the forms.

2. Use a barrier type form release agent.

3. Use form ties, hangers, and clamps of such type that, after removal of the forms, no metal will be closer than one inch from concrete surface. Wire ties will not be permitted.

4. Provide ties with swaged washers or other suitable devices to prevent seepage of moisture along the ties. Leave the ties in place.

5. Use lugs, cones, washers, or other devices that do not leave holes or depressions greater than 7/8-inch in diameter.

PART 3 EXECUTION

3.1 DESIGN

A. Design Responsibility: Be responsible for the design, engineering and construction of the architectural concrete formwork and the structural concrete formwork. Conform the work to the recommendations of ACI SP-4 and ACI 303R.

B. Setting Time and Slag Use: The presence of fly ash or ground granulated blast furnace slag in the concrete mix for architectural concrete and structural concrete will delay the setting time. Take this into consideration in the design and removal of the forms.

C. Responsibility During Placement: Assume and take sole responsibility for adequate design of all form elements for support of the wet concrete mixtures specified and delivered.

D. Consistency: Design forms to produce concrete members identical in shape, lines and dimensions to members shown.

3.2 CONSTRUCTION DETAILS FOR FORMWORK

A. Structural Concrete Details: Follow the following details for all structural concrete:

1. Provide forms that are substantial, properly braced, and tied together to maintain position and shape and to resist all pressures to which they may be subjected. Make forms sufficiently tight to prevent leakage of concrete.

2. Determine the size and spacing of studs and wales by the nature of the work and the height to which concrete is placed. Make forms adequate to produce true, smooth surfaces with not more than 1/8-inch variation in either direction from a geometrical plane. Provide horizontal joints that are level, and vertical joints, which are plumb.

3. Supply forms for repeated use in sufficient number to ensure the required rate of progress.

4. Thoroughly clean all forms before reuse and inspect forms immediately before concrete is placed. Remove deformed, broken, or defective forms from the work.

5. Provide temporary openings in forms at convenient locations to facilitate cleaning and inspection.

6. Coat the entire inside surfaces of forms with a suitable form release agent just prior to placing concrete. Form release agent is not permitted on the reinforcing steel.

7. Assume and take responsibility for the adequacy of all forms and remedying any defects resulting from their use.

3.3 FORM REMOVAL

A. Structural Concrete Form Removal: Do not remove forms for structural concrete until the concrete has hardened sufficiently to support its own load safely, plus any superimposed load that might be placed thereon.

3.4 TOLERANCES

A. Tolerance Limits: Design, construct and maintain concrete form and place the concrete to provide completed concrete work within the tolerance limits set forth in ACI SP-4.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 032000

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing concrete reinforcement as shown and specified herein. Reinforcement includes all steel bars, wire and welded wire fabric as shown and specified.

B. Related Work Specified in Other Sections Includes:

1. Section 031100 - Concrete Formwork

2. Section 034100 - Precast Concrete Structures

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1.	ACI SP66	-	ACI Detailing Manual
2.	ACI 318	-	Latest edition "Building Code Requirements for Reinforced Concrete"
3.	ASTM A 185	-	Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
4.	ASTM A 615/A615M	-	Deformed and Plains Billet-Steel Bars for Concrete
5.	ASTM A 706/A706M	-	Low Alloy Steel Deformed Bars for Concrete Reinforcement
6.	ASTM A 775/A775M	-	Epoxy Coated Reinforcing Steel Bars
7.	AWS D1.4	-	Structural Welding Code - Reinforcing Steel

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. Product Data and Information: Submit manufacturers literature with product data, and material description of fusion bonded epoxy coating for reinforcement and reinforcement accessories, including manufacturer's

recommendations for field touch-up of mars and cut ends when epoxy coated reinforcement is specified to be used.

2. CONTRACTORS' Shop Drawings: Submit checked Working Drawings, including bar lists, schedules, bending details, placing details and placing plans and elevations for fabrication and placing reinforcing steel conforming to "ACI Detailing Manual SP-66".

   a. Do not bill wall and slab reinforcing in sections. Show complete elevations of all walls and complete plans of all slabs, except that, when more than one wall or slab are identical, only one such elevation or plan is required. These plans and elevations need not be true views of the walls or slabs shown. Bill every reinforcing bar in a slab on a plan. Bill every reinforcing bar in a wall on an elevation. Take sections to clarify the arrangement of the steel reinforcement. Identify all bars, but do not bill on such sections.

   b. For all reinforcing bars, unless the location of a bar is clear, give the location of such bar or bars by a dimension to some structural feature that will be readily distinguishable at the time bars are placed.

   c. Make the reinforcing steel placing drawings complete for placing reinforcement including the location of support bars and chairs, without reference to the design drawings.

   d. Submit Detailer certification that every reinforcing steel placing drawing and bar list is completely checked and corrected before submittal for approval.

   e. If, after reinforcing steel placing drawings and bar lists have been submitted for approval, a review reveals that the drawings and lists obviously have not been checked and corrected they will be returned for checking and correcting by the Detailer.

3. Samples: Submit the following samples when epoxy coated reinforcement is specified to be used.

   a. 12-inch long epoxy-coated steel reinforcing bar, of any size typical to this Project

   b. One of each type of epoxy-coated reinforcement accessory used on this Project

   c. 12-inch long, nylon coated tie wire

4. Certificates: Test certificates of the chemical and physical properties covering each shipment of reinforcing steel bars. Test for bars 3/4 inches in diameter and larger shall consist of the bar being bent cold to 90 degrees

around a pin 3 times the diameter of the test bar without evidence of cracking.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all products and materials as specified in Division 1 (and as follows:)

1. Delivery Requirements: Have reinforcing steel delivered to the work in strongly tied bundles. Identify each group of both bent and straight bars with a metal tag giving the identifying number corresponding to the reinforcing steel placing drawings and bar lists.

2. Storage: Properly store all bars in an orderly manner, with all bars completely off the ground. Keep bars clean after delivery to the site of the work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The brand of manufacturer shall be legibly rolled on all bars, and when loaded for mill shipment, all bars shall be properly separated and tagged with manufacturer's test identification number.

B. For acceptable manufacturers of mechanical connections see County Approved Product List, Appendix F.

2.2 MATERIALS

A. Steel Bars: Use new billet steel bars, deformed bars, meeting the requirements of ASTM A615/A625M Grade 60 for reinforcing steel bars.

1. Roll all reinforcing steel bars with special deformations or identifying marks indicating the ASTM Specification and Grade.

2. Use bars free from defects, kinks and from bends that cannot be readily and fully straightened in the field.

3. Supply reinforcing bars in lengths that will allow convenient placement in the work and provide the required length of at least 40 diameters of lap of joints as shown. Provide dowels of proper length, size and shape for tying walls, beams, floors, and the like together.

B. Epoxy Coating: Conform fusion bonded epoxy coated reinforcing steel bars to ASTM A775/A775M when used. Leave portions of the reinforcing steel bars uncoated where mechanical connections are shown.

C. Welded Wire Fabric: Use welded wire fabric of the electrically welded type, with wires arranged in rectangular patterns, of the sizes shown or specified and meeting the requirements of ASTM A185.

D. Supports and Accessories: Provide bar supports and other accessories and, if necessary, additional supports to hold bars in proper position while concrete is being placed.

1. Use side form spacers against vertical or sloping forms to maintain prescribed side cover and cross position of bars.

2. Use individual hi-chairs with welded cross ties or circular hoops to support top bars in slabs thicker than 8 inches.

3. Bolsters, chairs and other accessories:

a. Use hot-dipped galvanized or provide plastic coated legs when in contact with forms for surfaces of concrete other than architectural surfaces.

b. Use stainless steel when in contact with forms for architecturally exposed surfaces.

c. Use epoxy coated bolsters, chairs and accessories including wire ties for epoxy coated reinforcing bars.

d. Use chairs of an approved type and space them properly to support and hold reinforcing bars in position in all beams and slabs including slabs placed directly on the subgrade or work mat. Do not use continuous hi-chairs for supporting of top bars in slabs over 8 inches in thickness.

E. Mechanical Connections: Provide mechanical connections that develop at least 125 percent of the specified yield strength of the bar in tension.

F. Stirrups and Ties: Provide stirrups and ties as shown and specified and meeting the requirements of ASTM A185.

2.3 FABRICATION

A. Drawing Review Prior to Fabrication: Do not fabricate any material before final review and approval of shop drawings.

B. Bending and Cutting: Cut bars to required length and bend accurately before placing. Bend bars in the shop unless written approval for field bending is obtained. If field bending is permitted, do it only when the air temperature, where

the bending operation is performed, is above 30 degrees F. Do not field bend bars that have been partially embedded in concrete.

C. Splices: Use lapped splices for tension and compression splices unless otherwise noted.

D. Cleaning: Clean and bend reinforcement in accordance with ACI 315 and ACI 318.

PART 3 EXECUTION

3.1 INSTALLATION

A. Placement: Place all bars in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars".

B. Tolerances: Place bars used for top reinforcement in slabs to a vertical tolerance of plus or minus 1/4-inch. Place all other reinforcement to the tolerances given to ACI 318.

C. Cleaning: Have reinforcing steel delivered without rust other than that accumulated during transportation to the work. At all times, fully protect reinforcing steel from moisture, grease, dirt, mortar and concrete. Before being placed in position, thoroughly clean reinforcing steel of all loose mill scale and rust and of any dirt, oil, grease coatings, or other material that might reduce the bond. If there is a delay in depositing concrete, inspect and satisfactorily clean the steel immediately before the concrete is placed.

D. Bar Positioning: Place bars in the exact positions shown with the required spacing and cross wire bars securely in position at intersections to prevent displacement during the placing of the concrete. Fasten the bars with annealed wire of not less than 17 gauge or other approved devices.

E. Bar Extension Beyond Formwork: On any section of the work where horizontal bars extend beyond the length of the forms, perforate the form or head against which the work ends or at the proper places to allow the bars to project through a distance at least equal to the lap specified.

F. Unacceptable Materials: Do not place reinforcing steel with damaged, unsuitably bonded epoxy coating or rusting. If approved, mars, exposed threads of mechanical connections and cut ends may be field coated with approved epoxy coating material.

G. Review of Placement: Have reinforcing placement reviewed by the ENGINEER before concrete is placed.

H. Welding - Not Approved: Do not use reinforcing bar assemblies made by welding of any kind, or accessories of any kind which require field welding to reinforcing bars.

I. Welding - Approved: Where welding of reinforcing steel is shown, AWS D1.4 "Structural Welding Code - Reinforcing Steel" applies.

J. Tension and Compression Lap Splices: Conform tension and compression lap splices to ACI 318 with all supplements. Avoid splices at points of maximum tensile stress wherever possible. Provide temperature bars with the clear spacing shown. Stagger all bar splices in hoop tension bars in circular tanks with not more than 50 percent of the bars spliced in any one direction. Have welded splices made by certified welders in accordance with AWS D1.4.

K. Welded Wire Fabric: Place welded wire fabric in the positions shown, specified or required to fit the work. Furnish and place suitable spacing chairs or supports, as specified for bars, to maintain the fabric in the correct location. Where a flat surface of fabric is required, provide flat sheets, when available. Otherwise reverse roll the fabric or straighten to make a perfectly flat surface before placing. Obtain approval for the length of laps not indicated.

L. Concrete Cover: Place reinforcing steel and welded wire fabric and hold in position so that the concrete cover, as measured from the surface of the bar or wire to the surface of the concrete, is as shown or specified.

END OF SECTION

SECTION 033100

CONCRETE, MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Cement, sand, aggregate admixtures and water for use in concrete, masonry mortar and grout.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM C 91 – Masonry Cement

2. ASTM C 144 – Aggregate for Masonry Mortar

3. ASTM C 150 – Portland Cement

4. ASTM C 207 – Hydrated Lime for Masonry Purposes

5. ASTM C 270 – Mortar for Unit Masonry

6. ASTM C 231 – Air Content of Freshly Mixed Concrete

7. ASTM C 404 – Aggregate for Masonry Grout

8. ASTM C 476 – Grout for Masonry

9. ASTM C 780 – Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

10. ASTM C 1019 – Sampling and Testing Grout

11. CRD C-619 – Specification for Grout Fluidifier.

12. CRD C-621 – Specification for Non-Shrink Grout.

13. Brick Institute of America Research Report No. 15

14. ACI 530.1/ASCE 6-92 – Specifications for Masonry Structures

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

B. Product Data and Information: Submit the following:

1. Furnish notarized certificates of manufacture as evidence that the cement conforms to the specified requirements. Include mill-test reports on the cement.

2. Furnish notarized certificates to verify that the hydrated lime and aggregates meet the specified requirements.

3. Furnish laboratory tests as evidence that the air content and masonry mortar compressive strength meet the requirements of ASTM 270 Type N and that the efflorescence tendency meets the requirements of the wick test in Brick Institute of America Research Report No. 15.

4. Furnish laboratory tests as evidence that the masonry grout compressive strength is equal to or greater than 2,500 psi at 28 days.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all mortar and grout materials as recommended by the manufacturers and as specified in Division 1 (and as follows:)

B. Cement: Store cement in weathertight buildings that will exclude moisture and contaminants. Do not use cement that has deteriorated from storage.

C. Hydrated Lime: Store hydrated lime in weathertight buildings which will exclude moisture and contaminants.

D. Aggregates: Keep aggregates clean and free from all other materials during transportation and handling. Stockpile aggregate in a manner to prevent segregation.

PART 2 PRODUCTS

2.1 CEMENT

A. Portland Cement shall be of a standard brand and shall conform to the requirements of ASTM C150-latest edition, except as hereinafter stated. One bag of cement shall be considered as weighing 94 pounds. Type I shall be used unless higher cement is specified, in which event Type III shall be used. For Type I, the maximum amount of tricalcium silicate shall be 60 percent. Cement may be shipped either in paper or cloth sacks and the package shall have the brand and name of manufacturer plainly marked on the outside. All cement shall be stored in weatherproof buildings in such a manner as will prevent absorption of moisture by the lower layers. Shipment shall be segregated by lot for identification. Type I

cement which has been in storage more than 90 days shall be re-tested before use. Where carload shipments are used, a certificate from an approved testing laboratory shall be submitted prior to use of such cement on the job.

2.2 AGGREGATE

A. Fine Aggregate:

1. Composition: Fine aggregate shall consist of natural sand and shall be graded from coarse to fine within the following limits shown in the table below. Sand failing to meet the minimum requirement for material passing the Number 50 and/or Number 100 Sieve may be used, provided other satisfactory inorganic fine materials are added. If two sands are used, each must be mixed, after separate weighing, in proportions approved by the County Manager or designee.

U.S. Standard Square Opening Sieve	Percent of Total By Weight Passing	
	Minimum	Maximum
No. 4	97	100
No. 8	80	100
No. 30	25	75
No. 50	10	30
No. 100	2	10
No. 200 (By Washing)	0	4

2. Stockpiling: Fine aggregate shall be stored on a well-drained site, which has been cleared, grubbed and cleaned. Stockpiles shall be built up so as to prevent segregation of large and small particles.

3. Unsuitable Materials in Fine Aggregate: Not more than one percent (1%) by weight of clay lumps or soft, disintegrated or coated grains shall be present in the fine aggregate. It shall also be free from foreign material such as dirt, wood, paper, burlap, or other unsuitable material. When tested in accordance with AASHTO T-21-27, it shall show a color not darker than standard. When tested for mortar strength in accordance with AASHTO T-71-38, the fine aggregate shall have a tensile strength at three (3) days (Type III), or at seven (7) days, (Type I); not less than 95 percent of that developed by mortar having the same water-cement ratio and consistency, made of the same cement and graded Ottawa Sand having a fineness modulus of 2.40, plus or minus 0.05.

B. Coarse Aggregate:

1. Composition: Coarse aggregate shall consist of crushed stone. It shall be washed to remove clay, loam and dust. At his/her discretion, the County Manager or designee may waive the washing requirement for stone having a loss of not more than 30 percent when tested in accordance with the provisions of AASHTO T-96-38.

2. Unsuitable Material in Coarse Aggregate: The coarse aggregate shall not contain more than the following percentages of deleterious material:

Soft Fibrous, Disintegrated Particles (Weight)	3.0%
Clay Lump (Weight)	0.2%
Finer Than No. 200 Sieve (Weight)	0.5%
Flat or Elongated Particles (Count)	10.0%

When subjected to AASHTO Test T-96-38, the aggregate shall have a loss not greater than 65 percent. Aggregate shall be free from loam, wood, leaves, or other foreign material.

3. Gradation: For unreinforced foundations, for paving or for other unreinforced mass concrete, the gradation of coarse aggregate shall be as shown in Table 1. For reinforced footings, reinforced walls over 6" in thickness, ordinary floor slabs and similar structures, the gradation shall be as shown on Table 2. For handrails, reinforced walls, thin reinforced floor slabs electrical conduit encasement, and similar construction, the gradation shall be as shown on Table 3.

Table 1	
Percent Passing Square Opening Sieve	**Percent By Weight**
2-1/2 inch	100
2 inch	95 – 100
1 inch	35 – 70
½ inch	10 – 30
No. 4	0 – 5

Table 2	
Percent Passing Square Opening Sieve	**Percent By Weight**
1-1/2 inch	100
1 inch	90 – 100
½ inch	25 – 60
No. 4	0 – 10
No. 8	0 – 5

Table 3

Percent Passing Square Opening Sieve	Percent By Weight
1 inch	100
¾ inch	90 – 100
3/8 inch	20 – 55
No. 4	0 – 10
No. 8	0 – 5

4. Stockpiles: Stockpiles shall be constructed in layers not exceeding three feet (3') in height, and material shall be deposited in such manner as to prevent segregation of coarse and fine materials. Each type of aggregate shall be placed in a separate stockpile. Stockpile sites shall be cleared, grubbed and drained before using.

2.3 HYDRATED LIME

A. Provide hydrated lime meeting the requirements of ASTM C 207.

2.4 WATER

A. Water shall be clean and free from salt, oil or organic substances. Laboratory tests shall be made to determine suitability of any water for use in concrete unless it is secured from a public water supply.

PART 3 EXECUTION

3.1 CONCRETE PROPORTIONING

A. Concrete aggregate shall be proportioned by weight. When the sources of supply shall have been determined by the CONTRACTOR and approved by the County Manager or designee, the mix shall be set by an approved testing laboratory. Mix shall be designed for a "slump" suitable for the character of structure in which the concrete is to be incorporated. All concrete shall be as specified herein.

B. After a suitable design mix has been approved by the County Manager or designee, it shall not be changed so long as materials of the same characteristics are used in the mix. Within the limits of the various cement factors shown above, the mix shall be varied until the homogenous workable mixture, suitable for the class of structure intended, has been obtained.

3.2 CONCRETE MIXING

A. Concrete mixing shall be by means of a modern batch mixer equipped with accurately operating water measuring device and an automatic time locking device.

B. Where a central batching plant is not operated, each mixer must have available an approved portable weighing device for use in proportioning. Each batch shall be mixed for one and one-half (1½) minutes after charging has been completed, and during such mixing period, that drum shall operate with a peripheral speed of not less than one-hundred and fifty-three (153), nor more than two-hundred and twenty-five (225) feet per minute. The number of revolutions per minute shall be between fourteen (14) and twenty (20). Retempering concrete or use of concrete in which initial set has taken place will not be allowed. Transit mixed concrete from an approved batching plant and suitable truck mixer may be approved by the County Manager or designee.

3.3 PIPE GROUT

A. Mix lean grout for backfilling the space surrounding the pipe sections in tunnel or other areas as specified or directed in the proportion of 1 part Portland cement to 12 parts sand by volume.

B. Mix grout to a consistency that can be pumped into the pipe. Use a grout fluidifier to reduce water quantity and improve workability.

3.4 TESTING

A. Masonry Mortar: Make and test specimens for preconstruction and construction evaluation of masonry mortar in accordance with the requirements of ASTM C 780.

B. Masonry Grout: Make and test specimens for preconstruction and construction evaluation of masonry grout in accordance with the requirements of ASTM C 1019.

C. Concrete shall contain cement, coarse aggregate, and fine aggregate meeting the Specifications contained in previous paragraphs of this Part. Unless otherwise specified or shown in the plans, the design strength of the several elements included in the plans shall be:

1. Four thousand (4,000) pounds minimum compressive strength per square inch at 28 days for all piers, reinforced walls, floors, slabs, precast structures and other special sections where specifically shown on the plans or Standard Details.

2. Two thousand five hundred (2,500) pounds minimum compressive strength per square inch at 28 days for all blocking, reinforced footings, for retaining walls not subject to hydrostatic pressure, or where specifically shown on the plans or shown in the Standard Details.

END OF SECTION

SECTION 034100

PRECAST CONCRETE STRUCTURES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all materials, labor, and equipment and construct manholes, wet wells, valve pits, meter pits, and accessory items, consisting of precast sections as shown on the Drawings and as specified herein.

B. The forms, dimensions, concrete, and construction methods shall be approved by the ENGINEER in advance of construction.

C. These specifications are intended to give a general description of what is required, but do not purport to cover all of the structural design details which will vary in accordance with the requirements of the equipment as offered. It is, however, intended to cover the furnishing, shop testing, delivery, and complete installation of all precast structures whether specifically mentioned in these specifications or not.

D. The supplier of the precast manholes, wet wells, valve pits, meter pits, and accessory items shall coordinate his work with that of the CONTRACTOR to the end that the unit will be delivered and installed in the excavation provided by the CONTRACTOR, in accordance with the CONTRACTOR's construction schedule.

E. Coordinate the precast structures fabrication with the equipment supplied to achieve the proper structural top slab openings, spacings, and related dimensions for the selected equipment frames and covers. The top slabs, frames, covers, and subsurface structures shall be capable of supporting a live load of 150 pounds per square foot.

1.2 SUBMITTALS

A. Submit to the ENGINEER, as provided in the General Conditions, shop drawings showing details of construction, reinforcing and joints.

B. Shop Drawings

1. Content

a. Dimensions and finishes

b. Estimated camber

c. Reinforcing and connection details

d. Anchors

e. Lifting and erection inserts

f. Other items cast into members

2. Show location of unit by same identification mark placed on member.

3. Include design calculations.

C. Manufacturer's Literature: Manufacturer's recommended installation instructions.

D. Manufacturer's certificates of material conformance with specifications.

E. Test Reports: Reports of tests on concrete.

F. Testing

1. Manholes and Valve Vaults: Four (4) concrete test cylinders shall be taken for every 50 cubic yards (cu. yds) for each type of precast structure.

2. Pump Stations: Four (4) concrete test cylinders shall be taken for each pump station wet well. Four (4) concrete test cylinders shall be taken for each pump station's top and bottom slabs.

3. Certification: The supplier shall provide the certified results of testing (7 day, 28 day) for the test cylinders stated herein. Random test cylinders may be taken at any time by the ENGINEER at the COUNTY's expense.

1.3 INSPECTION

A. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the ENGINEER, or the County Manager or designee. Such inspection may be made at the place of manufacture, or at the site after delivery, or at both places, and the sections shall be subject to rejection at any time on account of failure to meet any of the Specification requirements; even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All sections which have been damaged after delivery will be rejected, and if already installed, shall be repaired, if permitted and accepted by ENGINEER, or removed and replaced, entirely at the CONTRACTOR's expense.

B. At the time of inspection, the sections will be carefully examined for compliance with ASTM C478 designation and these Specifications, and with the approved

manufacturer's drawings. All sections shall be inspected for general appearance, dimension, "scratch-strength", blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.

C. Imperfections may be repaired, subject to the approval of the ENGINEER, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at the end of 7 days and 5,000 psi at the end of 28 days, Epoxy mortar may be utilized for repairs subject to the approval of the ENGINEER.

PART 2 PRODUCTS

2.1 PRECAST CONCRETE WET WELLS AND VALVE VAULTS

A. Precast submersible pump station wet wells shall consist of precast base, precast wet well sections, and top cover slab. Precast valve vaults shall consist of precast base, sidewalls and top slab. Concrete shall be air entrained at the time of delivery and shall have a minimum compressive strength of 4,000 psi at the end of 28 days.

B. Joints between precast concrete sections shall be set by plastic shims and fitted with non-metallic non-shrink grout as shown on the drawings.

C. The top slab sections shall be fitted with watertight hatches. The frames and covers will be sized for the openings shown on the drawings.

D. The various precast sections should have the inside dimensions and minimum thickness of concrete as indicated on the drawings. All precast and cast-in-place concrete members shall conform to the Building Code Requirements for Reinforced Concrete ACI 318.

E. A vent pipe shall be furnished and installed as shown on the drawings.

F. Fillets shall be provided and installed in the wet wells as shown on the drawings.

G. Precast structures shall be constructed to the dimensions as shown on the drawings and as specified in these Specifications.

H. Type II cement shall be used except as otherwise approved.

I. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section.

J. Sections shall be cured by an approved method and shall not be shipped until the minimum 7-day compressive strength has been attained.

K. Each pre-cast section manufactured in accordance with the drawings shall be clearly marked to indicate the intended pump station installation location. The CONTRACTOR shall be responsible for the installation of the correct pre-cast sections in their designated pump station locations.

L. Paint all exterior surfaces with two coats of coal tar bitumastic, each coat to be 9 mils each. All interior surfaces of valve vaults shall be coated with two coats of coal tar epoxy (9 mils each).

2.2 PRECAST CONCRETE SECTIONS FOR CIRCULAR WET WELLS

A. Wet wells shall meet the requirements of ASTM C478, Specification for Precast Reinforced Concrete Manhole Sections, with the exclusion of Section 10(a), except as modified herein. Cement shall meet the requirements of ASTM C150-74, Specification for Portland Cement, Type II. Concrete shall meet the minimum requirement for 4000 psi concrete. Minimum wall thickness shall be 8 inches or 1/8 the inside manhole diameter as shown, whichever is greater. The required minimum strength of concrete shall be confirmed by making and testing three standard cylinders at seven days. Rings shall be custom made with openings to meet indicated pipe alignment conditions and invert elevations. Submit shop drawings, consisting of manufacturers' standard details of various sections for approval prior to placing order for wet wells. Drawings of individual wet wells showing invert elevations, pipe sizes and similar details will not be required.

B. Joints

Form joint contact surfaces with machined castings. Surfaces shall be exactly parallel with nominal 1/16 inch clearing and the tongue equipped with a proper recess for the installation of an O-ring rubber gasket. Gaskets shall meet the requirements of Specification for Joint for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets. "RAM-NEK" sealing compound conforming to Federal Specification SSS-00210 (GSA-FSS), Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints may be used in lieu of O-ring rubber gaskets. If joints are sealed with "RAM-NEK" sealing compound the recess in the tongue for an O-ring gasket may be omitted.

C. Wet Well Liners and Coatings

Coat or line (see internal protection on County Approved Product List, Appendix F) the interior of all wet wells.

Furnish, install, test and inspect liners and coating in accordance with manufacturer’s recommendations, and in accordance with Section 099723 “Concrete Coatings”. Extend coating and liner and seal onto wet well hatch frame, around pipe openings and other protrusions to prevent contact of wet well surface

with corrosive sewer gases. Provide factory or field applied bituminous or epoxy sealer exterior coatings. If exterior coating is factory applied, CONTRACTOR shall provide field touch-up as required.

D. STEEL REINFORCED POLYMER CONCRETE STRUCTURES

As an alternative to the concrete coatings and linings described above, steel reinforced polymer concrete structures may be furnished and installed for pump station wet wells. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years' experience manufacturing polymer concrete. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

2.3 PIPE CONNECTIONS AT STRUCTURES

A. Where pipes are to extend into or through structures from the exterior, provide flexible connections (mechanical or push-on type joints) at the exterior wall face.

B. For pipes passing through structural walls, install wall pipes with water stops where the location is below the surface of the ground or at any point where fluid levels will exceed that elevation. Neoprene sleeves with watertight caulking and 316 Series SS stainless steel clamps will be suitable at other locations.

C. All of the following conditions apply to any proposed pipe penetration into an existing sanitary manhole:

1. The opening for the penetration must be core bored and fitted with a neoprene sleeve as specified above.

2. The core boring or penetration shall not affect a structural joint, and the boring edge must be no closer than six inches to an existing structural joint.

3. The proposed piping within the manhole must comply with all other provisions of these Utilities Standards.

4. Connections requiring drop pipes shall be constructed in accordance with these Utilities Standards and shall require two penetrations.

5. The existing manhole flume or invert must be modified as required to accept the discharge from the proposed pipe.

6. The interior lining of the existing structure including flume or invert shall be repaired by an approved applicator for the lining system.

7. Any damage to the exterior coating of the existing structure shall be repaired with two coats of coal tar epoxy (9 mils each) in accordance with the manufacturer's recommendations.

PART 3 EXECUTION

3.1 INSTALLATION

A. Control ground water to provide firm, dry subgrade for the structure, and prevent water rising on new poured in place concrete or grouted joint sections within 24 hours after placing. Guard against flotation or other damage resulting from ground water or flooding.

B. Place a 12-inch layer (minimum thickness) of crushed stone or shell as specified under Section 312323 as a foundation for the wet well base slabs, valve pits, and meter pits.

C. Provide backfill material around the wet well and above the pipe bedding as specified in Section 312323.

D. Precast bases, conforming to all requirements of ASTM C478 and above listed requirements for precast sections, may be used. Set the base in place on a thoroughly compacted crushed stone sub-base and adjust grade for the correct structure elevation.

E. Do not set the station into the excavation until the installation procedure and excavation have been approved by the County Manager or designee.

F. The base may be cast-in-place concrete as specified in Division 3, placed on a thoroughly compacted crushed stone sub-base. Shape the tops of the cast-in-place bases to mate with the precast barrel section, and adjust in grade so that the top slab section is at the approximately correct elevation.

G. Set the precast concrete structure sections so as to be vertical and with sections in true alignment with a 3 inch maximum tolerance to be allowed. Fill the outside and inside joint with a non-shrink grout and finish flush with the adjoining surfaces. Allow joints to set for 24 hours before backfilling. Backfill in a careful manner, bringing the fill up evenly on all sides. If leaks appear in the structures, caulk the inside joints with lead wool to the satisfaction of the ENGINEER. Install the precast sections in a manner that will result in a watertight joint.

H. Plug holes in the concrete sections required for handling or other purposes with a non-shrinking grout or by grout in combination with concrete plugs.

SECTION 055600

METAL CASTINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Miscellaneous ferrous and nonferrous castings.

1. This classification includes wheel guards, valve boxes, manhole frames and covers, manhole steps, stop plank grooves, brackets and supports for piping and gutter inlets, floor drains, cleanouts and special malleable iron castings and inserts.

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM A 27/A27M - Specification for Steel Castings, Carbon for General Applications
2. ASTM A 47 - Specification for Ferric Malleable Iron Castings
3. ASTM A 48 - Specifications for Gray Cast Iron Castings
4. ASTM A 148/A148M - Specifications for Steel Castings
5. ASTM A 536 - Specifications for Ductile Iron Castings
6. ASTM B 26/B26M - Aluminum
7. ASTM B 148 - Aluminum Bronze Sand Castings
8. ASTM B 584 - Manganese Bronze

PART 2 PRODUCTS

2.1 WORKMANSHIP

A. Provide castings accurately made to the approved dimensions, and plane or grind castings where marked or where otherwise necessary to secure flat and true surfaces. Make allowance in the patterns so that the specified thickness is not reduced. Provide manhole covers which conform to the details shown and which are true and seat at all points. Supply castings showing the name of the manufacturer and the country of manufacture. No plugging or welding of defective castings will be permitted.

2.2 WEIGHTS

A. Reject castings with a weight which is less than the theoretical weight based on required dimensions by more than 5 percent. Provide facilities at the site for weighing castings in the presence of the ENGINEER, or furnish invoices showing true weights, certified by the supplier.

PART 3 EXECUTION

3.1 INSTALLATION

A. Erect all castings to accurate grades and alignment, and when placing in concrete carefully support castings to prevent movement during concreting.

3.2 PAINTING

A. Deliver all manhole castings to the job site unpainted. If painting is specified, clean metal castings thoroughly before painting. Give manhole frames and covers and valve boxes one coat of primer and two coats of an approved asphaltum varnish or other approved coating at the point of manufacture. Paint all other castings as specified in the Collier County Standard Details.

END OF SECTION

SECTION 099723

CONCRETE COATINGS

PART 1 SEWPERCOAT LINING SYSTEM / IET COATING SYSTEM / RAVEN 405 LINING SYSTEM

1.1 SCOPE OF WORK

A. This section provides details for furnishing and installing the SewperCoat lining system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the lining system to be used.

B. This section provides details for furnishing and installing the Integrated Environmental Technologies (IET) coating system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the coating to be used.

C. This section provides details for furnishing and installing the Raven 405 coating system where shown on the drawings for protection of concrete structures against hydrogen sulfide corrosion. Perform installation by workers experienced in the application of the coating system to be used.

D. For sanitary sewer wet wells and manholes, steel reinforced polymer concrete structures may be provided in lieu of concrete coatings and linings as described in this section. See Sections 034100 and 333913 for further details and requirements.

PART 2 PRODUCTS

2.1 SEWPERCOAT LINING SYSTEM

A. The SewperCoat (calcium aluminate) lining system shall be as manufactured by Lafarge Calcium Aluminates, Chesapeake, VA.

B. Pure-fused Calcium Aluminate Cement Lining: The cement lining material shall be a pure fused calcium aluminate mortar with pure fused calcium aluminate aggregate equal to SewperCoat as manufactured by Lafarge Calcium Aluminates, Inc. The material shall be spray applied in accordance with the manufacturer's specifications.

1. The material shall be packaged from the manufacturer so as not to require field mixing of mortar and aggregate to obtain recommended composition.

2. The material shall form a mechanical and chemical bond to the wetwell surface with zero shrinkage. The material shall have a minimum 28-day compressive strength of 9000 psi.

3. The material shall be suitable for use in a severe hydrogen sulfide (H_2S) environment.

4. Provide documentation that the material has a minimum 5-year history in the reconstruction of sanitary sewer structures.

2.2 IET COATING SYSTEM

A. The IET Coating System shall be as manufactured by Integrated Environmental Technologies, Santa Barbara, CA.

B. Polymorphic Resin shall be a 100% solids, two-component, highly modified polyester resin system, exhibiting no adhesion-interfering shrinkage upon curing. Resin shall cure rapidly within fifteen minutes to one hour without the use of heat or cooling at surface temperatures ranging from –30 degrees Fahrenheit to over +150 degrees. Excellent resistance to a broad range of corrosive chemicals, including sulfuric acid created by hydrogen sulfide gas as well as other chemicals typically found in sanitary sewers, and impact and abrasion attack shall be provided.

2.3 RAVEN 405 COATING SYSTEM

A. The RAVEN 405 coating system shall be as manufactured by Raven Lining Systems, Broken Arrow, OK.

B. Raven 405 coating shall be 100% solids, solvent-free ultra high-build epoxy system exhibiting the following characteristics:

1. Product Type: amine cured epoxy

2. VOC Content (ASTM D2584): 0%

3. Compressive Strength, (ASTM D695): 18,000 psi

4. Tensile Strength, (ASTM D638): 7,600 psi

5. Flexural Modulus, (ASTM D790): 700,000 psi

6. Adhesion to Concrete, (ASTM D4541/7234): >200 psi with substrate (concrete) failure

7. Chemical Resistance (ASTM D543/G20) immersion service for:

a. Municipal sanitary sewer environment

b. Sulfuric Acid, 30%

c. Sodium Hydroxide, 10%

d. Sodium Hypochlorite, 3%

8. Successful Pass: Sanitation District of L.A. County Coating Evaluation Study and SSPWC 210.2.3.3 (Greenbook “Pickle Jar” Chemical Resistance test)

2.4 STEEL REINFORCED POLYMER CONCRETE STRUCTURES

A. As an alternative to the concrete coatings and linings described above, steel reinforced polymer concrete structures may be furnished and installed. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years’ experience manufacturing polymer concrete.

B. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

C. Approved manufacturers: See County Approved Product List, Appendix F.

PART 3 EXECUTION

3.1 SEWPERCOAT LINING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for “Confined Space Entry” equipment and permitting.

C. Prepare surface in accordance with the requirements of SewperCoat Data Sheets on Concrete Preparation. Interior surfaces of wetwell shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Interior surface of structure must be abrasive-blasted to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Abrasive-blast “new” structures to remove all oils and patch mud, and to open pinholes and expose aggregate.

2. Abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete. The finished interior of the structure shall be gray. Coat the exposed invert/floor also. Where there is severe deterioration of the mortar, place new concrete to match the original interior dimensions after abrasive blasting and removal of all loose material and by-products of corrosion. Restore invert/floor to the original elevation.

3. Vacuum to remove all abrasives and debris.

4. Condition of the wetwell may require the use of a 10% solution of hydrochloric (muriatic) acid over all surfaces or the use of a detergent. If an acid or detergent solution is used, the surface shall be thoroughly rinsed and neutralized prior to the installation of the liner system.

E. Repair all leaks by injecting grout using Avanti Multi-grout AV-202 or equivalent. Hydraulic cement shall not be used to stop any water leaks.

F. Spray Application: Mix and apply the pure fused calcium aluminate cement liner system in strict accordance with the manufacturer's written instructions using only manufacturers approved equipment. This includes the preparation, installation, curing and finish operation required for the completion of the process.

1. Wet gun: Spray the material directly to the damp wetwell surface in a two-coat application. Trowel the material smooth after each coat, completely covering the interior surface of the wetwell from the frame to the invert with a minimum thickness of 1 inch. Apply a "brushed" finish to the second coat after troweling.

2. Dry Gun: Spray the material directly to the damp wetwell surface in a one-coat application. Trowel the material smooth after the application, completely covering the interior surface of the wetwell from the frame to the invert with a minimum thickness of 1 inch. Apply a "brushed" finish after troweling.

G. Curing: The material shall cure in strict accordance with the manufacturer's recommendations and instructions.

H. Inspect lining system for holidays (i.e., discontinuity), cracks and pinholes. Take particular care to check lining over brick, block, heavy spalled surfaces, and other very rough surfaces and locate holes in the lining caused by voids in bricks, block, concrete and structure joints. Fill voids and holidays in accordance with the lining system manufacturer's instructions.

I. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the SewperCoat lining system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

3.2 IET COATING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for "Confined Space Entry" equipment and permitting.

C. Prepare surface in accordance with the requirements of IET Systems Data Sheets on Concrete Preparation. Interior surfaces of manhole shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Dry abrasive-blast Interior surface of structure to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Dry abrasive-blast “new” structures to remove all oils and patch mud, and to open pin holes and expose aggregate.

2. Dry abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete. The finished interior of the structure shall be gray. Coat the exposed invert/floor also. Where there is severe deterioration of the mortar, place new concrete to match the original interior dimensions after abrasive blasting and removal of all loose material and by-products of corrosion. Restore invert/floor to the original elevation.

3. Vacuum to remove all abrasives and debris.

E. Repair all leaks by injecting grout using Avanti Multi-grout AV-202 or equivalent. Hydraulic cement shall not be used to stop any water leaks.

F. Clean and remove dust material with pressure washing for maximum adhesion. Blow dry concrete at 250 cfm with 120 psi.

G. Apply IET Systems Coating by the use of the IET Systems Spray Unit and IET Systems Spincaster. Apply IET coating at least three different intervals – prime coat, intermediate coat and finish coat, per IET Systems manufacturer instructions and specifications. The total thickness of the IET coating shall be at least 125 mils.

H. Inspect lining system for holidays, cracks and pinholes. Take particular care to check lining over brick, block, heavy spalled surfaces, and other very rough surfaces and locate holes in the lining caused by voids in bricks, block, concrete and structure joints. Fill voids and holidays in accordance with the lining system manufacturer’s instructions.

I. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the IET coating system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

3.3 RAVEN 405 COATING

A. Plug or bypass all pipes in service before any work is started on the structure. No debris is to be flushed down the line.

B. Anyone entering the structure must conform to all OSHA requirements for “Confined Space Entry” equipment and permitting.

C. Prepare surface in accordance with the requirements of Raven Data Sheets on Concrete Preparation. Interior surfaces of structure shall be sound, porous, dry, and free of dust, dirt, oil, grease and other contaminants prior to application of lining.

D. Dry abrasive-blast Interior surface of structure to remove all loose patching, old coatings and any contamination in the concrete. Do not use silica sand.

1. Dry abrasive-blast “new” structures to remove all oils and patch mud, and to open pin holes and expose aggregate.

2. Dry abrasive-blast “rehab” structures to remove all loose patching, old coatings, and any contamination that penetrated the concrete.

3. Vacuum to remove all abrasives and debris.

E. New Portland concrete structures shall have a minimum of 28 days cure since manufacture prior to commencing coating installation.

F. Offset structural components, lids, covers, frames, etc. shall be repaired, replaced, or reset prior to the commencement of surface preparation.

G. Concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation shall be removed so that sound substrate remains.

H. In conditions where severe chemical/microbiological attack is present the prepared substrate shall exhibit a pH of 8-12. Additional cleaning and/or contaminated substrate removal may be required to achieve the specified pH level.

1. Prior to the application of the coating product repairs shall be completed to ensure the following:

2. All inflow and infiltration shall be eliminated by use of appropriate repair material(s), such as hydraulic cements and/or chemical grouts as described in Section 2.2.

3. All repairs to joints, pipe seals, steps, mechanical penetrations, benches, inverts, pipes or other appurtenances to be coated shall be completed and repaired surfaces prepared according to this section.

4. Benches or other horizontal surfaces shall have adequate slope (1” rise per lineal foot minimum) to minimize the retention of debris following surcharge.

5. Inverts or flow channels shall be smooth without lips, rough edges or other features which may cause debris to collect; contoured to minimize turbulent flow; and be sloped to promote adequate flow from the inlet(s) to the outlet pipe.

6. All joints, pipe seals, steps or other penetrations shall be sealed against inflow, infiltration and exfiltration and be adequately filled, smoothed and contoured to promote monolithic coating application.

I. Areas where reinforcing steel has been exposed shall be repaired in accordance with the Project Engineer's recommendations or at the minimum all exposed steel shall be prepared in accordance with Section 3.2 prior to coating with the coating product specified or other approved primer as specified by the coating product manufacturer.

J. Coating shall be applied to a minimum dry film thickness of 80 mils to surface profiles of CSP-4 to CSP-5 or 125 mils minimum DFT to surface profiles of CSP-6 or greater and in rehabilitated structures.

K. Subsequent top coating or additional coats of the coating product(s) shall occur within the products recoat window. Additional surface preparation procedures will be required if this recoat window is exceeded.

L. Provide a five (5) year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the Raven 405t lining system, and shall protect the structure for at least five (5) years from all leaks, and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.

END OF SECTION

SECTION 221336

DIESEL BACKUP PUMP

PART 1 GENERAL

1.1 SCOPE

A. Requirements for providing a permanently installed automatically starting pump station back-up pumpset.

B. Elevated platforms shall be provided where necessary to provide access to the diesel backup pump for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 GENERAL

A. The specifications herein state the minimum requirements of Collier County (the Owner). All bids must be regular in every respect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The Owner may consider as “irregular” or “non-responsive”, any bid not prepared and submitted in accordance with the bid documents and specification, or any bid lacking sufficient technical literature to enable the Owner to make a reasonable determination of compliance to the specification. It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (exception yes or no) will cause the proposal to be rejected, without review, as “non-responsive”. All variances, exceptions, and/or deviations shall be fully described in the appropriate section. Deceit in responding to the specification will be cause for rejection.

B. INTERPRETATIONS: In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specifications documents or any part thereof. Every request for each a consideration shall be made in writing to the Owner. Based upon such inquiry, the Owner may choose to issue an Addendum in accordance with local public contract laws.

C. GENERAL SPECIFICATIONS: Units described shall be new, unused, and of the current year’s production. The style of pump being bid must be in production for a minimum of 5 years (include users list). Unit shall be of the latest design and in current production completely serviced, ready for work and shall include all standard and optional equipment as specified herein. All bidders must have demonstrated the unit they are bidding, prior to bid date.

D. Bidders must have a fully stocked parts and service facility within 50 miles of the project site. The Owner shall have the right to inspect the office and shall be the sole judge of its adequacy to fulfill this requirement.

E. Bidders, on request of the Owner, must be prepared to review their specifications with the Owner and must, if requested, also be prepared to provide a unit for tangible evaluation purposes only. These services, if needed, are considered as part of the bidder's proposal and will be provided without cost or obligation to the Owner.

1.3 SYSTEM DESCRIPTION

A. The pumpset specified in this section will be used to pump wastewater from a Collier County pumping station (PS).

B. Pump shall be fitted with a fully automatic priming system capable of repeated priming from a completely dry pump casing.

C. The complete pump set shall be supplied by the pump manufacturer.

D. The pump offered shall be the manufacturer's standard production model. It shall have been in continuous use by municipal and industrial owners for a minimum of five years. A list of five user contacts including contact names and telephone numbers shall be provided with the bid submittal. Failure to supply a verifiable users list will be cause for rejection of the bid.

1.4 DESIGN REQUIREMENTS

1.4.1 All design requirements listed below must be clearly displayed on performance pump curves. These performance pump curves shall be based on testing standards established by the hydraulic institute.

DESIGN REQUIREMENTS	
OPERATING SPEED (MAXIMUM) (RPM)	
MAXIMUM SOLIDS HANDLING SIZE (INCHES)	
IMPELLER DIAMETER (INCHES)	
SUCTION SIZE (INCHES)	
DISCHARGE SIZE (INCHES)	
PRIMARY DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT PRIMARY DUTY POINT (FEET)	
MINUMUM EFFICENCY AT MAX DUTY POINT	
SECOND DUTY POINT (GPM @ TDH)	
MAXIMUM SUCTION LIFT AT SECOND DUTY POINT (FEET)	
MIMIMUM EFICENCY AT SECOND DUTY POINT	

1.5 REFERENCES

1. ANSI B16.1 - Standard for Cast Iron Pipe Flanges and Flanged Fittings.

PART 2 PRODUCTS

2.1 PRE-APPROVED ACCEPTABLE MANUFACTURERS:

1. GODWIN PUMPS OF AMERICA
2. THOMPSON PUMP & MANUFACTURING CO, INC.

A. All manufacturers shall be ISO 9001: 2008 certified. Certificates shall be made available to Collier County upon request. Bids will be accepted for consideration on any make and model that meets the requirements of the project specifications, as interpreted by the Owner. If a product proposed does not meet the requirements of this specification, the Contractor shall provide a unit which does, at no additional cost to the Owner. The Owner shall have the final decision on which products do and which products do not meet the project specifications.

2.2 EQUIPMENT

A. PUMPS: The pumps used in the diesel backup pump system shall be supplied directly by the manufacturer, not by a distributor. The pump itself and the diesel backup pump system as a whole shall come from a single manufacturer. “Packagers” of systems which incorporate pumps from a separate manufacturer to fabricate diesel backup pump systems shall not be allowed.

B. CASING, SUCTION COVER, SEPARATION TANK: Pump castings shall be cast iron or ductile iron with a minimum pressure rating of 100 psi. The pump casing shall be constructed so that the suction flow path is in axial alignment with the impeller eye. There shall be no turns, chambers, obstructions or straightening vanes between the suction line and the impeller. The pump casing shall be complete with a removable port for inspecting impeller/cut water area.

C. IMPELLERS: The pump impeller shall meet the criteria of one of the following:

1. An open, three-bladed, (or 2-bladed) non-clog type with pump-out vanes on the back shroud and fabricated from hardened cast- chromium steel construction (or other material to meet minimum Brinell Hardness 340 HB).

2. A high efficiency non-clog type, 2-vane, enclosed design with full front and rear shrouds, containing back pumpout vanes, constructed of high grade 65-45-12 ductile iron and capable of passing a 3” spherical solid.

D. WEARPLATES/WEAR RINGS: Shall be fully be replaceable, fabricated of cast iron. Wear plate/wear ring clearances shall have no relationship to the ability of the pump to achieve a prime.

E. BEARINGS AND SHAFTS: Pump shall be fitted with a bearing bracket to contain the shaft and bearings. Bearings shall be tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points. Minimum ISO L_{10} bearing life to be 100,000 hours. Impeller shafts shall be fabricated of high strength alloy steel, accurately machined, polished, and of sufficient size to transmit full driver output without excessive flexing or stress.

F. SEALS: Pump shall be capable of running dry, with no damage, for periods up to twenty-four hours. The pump seals shall be the requirements of one of the following:

1. Seal shall be high pressure, mechanical self-adjusting type with silicon carbide faces capable of withstanding suction pressures to 87 psi. The mechanical seal shall be cooled and lubricated in an oil bath reservoir, requiring no maintenance or adjustment. All metal parts shall be of stainless steel. Elastomers shall be Viton.

2. Pump seal shall be an inside-mounted, self-cleaning John Crane type 2 component style mechanical seal with tungsten carbide rotating and silicon carbide stationary faces with Viton elastomers and stainless steel spring and hardware.

G. PUMP SUCTION AND DISCHARGE FLANGES: Shall be cast iron ANSI (B16.1) Class 150, raised faced.

H. PUMP GASKETS: Shall be compressed fiber and/or Teflon.

I. PUMP O RINGS: Shall be Buna-N.

J. PRIMING SYSTEM: Pump shall be fitted with a fully automatic priming system incorporating a air compressor, venturi (with lifetime warranty), priming chamber, and discharge check valve assembly. The compressor shall be installed on the engine auxiliary drive and shall be gear driven, lubricated and cooled from the engine. Installed system design shall prevent any carryover of the pumping fluid onto the ground. Priming system may require additional drainage pipelines to be constructed to re-circulate pumping fluid back to sump area. The pump must be capable of running totally dry for periods up to 24 hours, then re-priming and returning to normal pumping volumes. Pump and priming system is capable of priming the pump from a completely dry pump casing. The pump shall be capable of static suction lifts to 28 vertical feet, at sea level. It shall also be capable of operation using extended suction lines, and pump shall be capable of priming and re-priming without any user intervention. Equipment acceptance shall be contingent upon the pump's ability to run continuously at full speed in a completely dry condition. The engineer may require a demonstration. Priming systems that incorporate the use of a positive displacement diaphragms OR oil-cooled vacuum pumps will not be accepted.

K. CHECK VALVE: The priming system shall include a discharge check valve to prevent pulling air through the discharge line during priming and prevent in-line return of flow when the pump is shut off. Non-return check valve shall be constructed of cast iron with Nitrile rubber and shall be field replaceable. Check valve shall be vacuum-tested by the factory, and test results shall be provided.

L. DRIVE UNIT: The drive unit shall be a diesel water-cooled engine. The engine shall drive the pump by use of direct-connected intermediate drive plate. Starter shall be twelve-volt electric. Low oil pressure safety shutdown, high temperature shutdown, tachometer, and hour-meter shall be integrated into engine control panel. Battery shall have 180-amp hour rating. A certified continuous-duty engine curve shall be supplied to the owner/engineer.

M. GOVERNOR: Governor shall be an electronic or mechanical type. Engine speed shall be adjustable to operate the pump between maximum and minimum design operation speeds in manual mode. See section 2.3 for Automatic mode.

N. FUEL SOURCE: Integral skid fuel tank capacity shall be sufficient to provide at least seventy-two (72) hours of continuous operation at full load. The minimum tank size shall be 150 gallons and the maximum tank size shall be 550 gallons. The engine shall be capable of operating satisfactorily on a commercial grade of distilled No. 2 fuel oil.

O. EXHAUST: Exhaust system shall include a hospital grade muffler housed in a separate chamber within the enclosure. All exhaust piping and manifolds shall be encased in fitted acoustic blankets. They shall be constructed of high-density fiberglass material with waterproof jacketing.

P. SOUND ATTENUATED ENCLOSURE: The entire unit including the pump and engine shall be completely enclosed in a lockable enclosure. The enclosure shall be constructed with a modular galvanized steel frame and galvaneel panels. Acoustical material shall be installed as required to reduce pump and engine noise. Maximum sound ratings for specific pump sizes are shown in the table below. These sounds rating shall be the maximum dBA rating measured at 7 meters @ both duty points specified.

Pump Outlet Size	Maximum Sound Rating Allowed
4”	68 dBA
6”	70 dBA
8”	72 dBA
10”	72 dBA
12”	72 dBA

Q. Units not meeting this requirement shall not be considered. The enclosure shall be removable for easy access to the engine / pump for maintenance and repair. The enclosure doors shall all be equipped with latches that are keyed alike. For maintenance and service needs, the enclosure sides shall have hinged doors for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters. The enclosure shall be coated in epoxy based primer and paint to a total dry film thickness of 5 mils.

R. UL LISTED SKID BASE

1. The pump base tank shall be a UL-142 approved double wall design constructed in accordance with Flammable and Combustible Liquids Code, NFPA 30; The Standard for Installation and use of Stationary Combustible Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110. Pumps installed within 25 feet of a building shall be equipped with UL-2085 fire resistant fuel tanks. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

2. The tank design shall be a Closed Top Dike Pump Base Tank. It shall be of double

wall construction having a primary tank to contain the diesel fuel, held within another tank or dike, which is intended to collect and contain any accidental leakage from the primary fuel tank. The completed base tank assembly is to incorporate pump mounting locations and must be able to support four times the rated load.

3. The primary tank shall be designed to withstand normal and emergency internal pressures and external loads. It shall be capable of withstanding internal air pressures of 3 to 5 psig without showing signs of excessive or permanent distortion and 25 psig hydrostatic pressures without evidence of rupture or leakage.

4. The primary and secondary tanks or dike shall have venting provisions to prevent the development of vacuum or pressure capable of distorting them as a result of the atmospheric temperature changes or while emptying or filling. The vent shall also permit the relief of internal pressures caused by exposure to fires. The vent size shall be determined by using the calculated wetted surface area in square feet (the top is excluded) in conjunction with venting capacity table 10.1of UL-142. The tank's vent shall also be equipped with a coupling device and shall be located to facilitate connection to a vent piping system. The dike's vent may be an opening for venting directly to the atmosphere and protection from the entrance of natural elements or debris shall be provided.

5. The primary and outer tanks are to be constructed of 304 stainless steel, 7 gauge minimum. Internal baffles or reinforcement plates shall be located on a maximum of 24 inch centers in tanks up to 60 inch width and on a maximum of 19.5 inch centers in tanks over 60 inch width. At least one baffle shall separate the fuel suction pipe from the fuel return line.

6. The outer tank is to be constructed in a manner to be able to support four times the wet load of the pump and housing. The entire load is to be carried by the outer tank so no load or vibration stress is placed on the primary tank. If the pump base tank is wider than the pump set to be supported, structural rails are to be incorporated to span the width of the base tank so that the load is transferred to the side rails of the tank. Vertical reinforcements shall be welded to the outer sides of the secondary tank or dike at a maximum of 45 inch centers on tanks up to 30 inches high and on 24 inch centers on tanks greater than 30 inches high. At least one vertical reinforcement shall be positioned adjacent to each mounting hole location. Provide level monitoring and interstitial space leak monitoring.

7. Both primary and secondary tanks shall be fitted with the proper welded pipe fittings to accommodate the requirements for the fill port and normal and emergency venting.

8. The completed assembly is to be cleaned with a heated pressure wash followed by a chromium free post treatment to ensure proper paint adhesion. The tank assembly is to be painted with an epoxy ester primer and high quality polyurethane enamel with a minimum dry film thickness of 3.5 mils.

9. All tanks shall be tested in accordance with **NFPA 30 TO INCLUDE ON SITE**

TIGHTNESS TESTING in accordance with NFPA 30 Section 21.5. This requirement shall not apply to portable trailer mounted diesel pumps.

10. Manufacturing and testing of this system shall be performed within the scope of Underwriters Laboratories, Inc. “Standard for Safety UL 142.”, or UL 2085, as applicable. A UL label shall be permanently attached to the tank system showing the following information:

    i. The registered UL mark and the name: Underwriters Laboratories, Inc.
    ii. A control number and the word “listed”
    iii. The product’s name as identified by Underwriters Laboratories Inc.
    iv. The serial number assigned by Underwriters Laboratories, Inc.
    v. Other manufacturer’s information may also be included.

S. PORTABLE TRAILER (FOR TRAILER MOUNTED UNITS ONLY):

1. The complete pump set shall be factory mounted on a highway trailer meeting NHTSA, DOT Part 571 standards 108, 119 and 120.

2. Trailers with loads of 5,000 pounds or less with fuel tank filled, shall have a flat bed, single axle, two 15-inch wheels with 6-ply tires. Axle ratings shall be a minimum of 5,000 pounds.

    i. Trailers with loads from 5,000 to 10,000 pounds with fuel tank filled, shall have a flat bed, 2-axle, four 15-inch or 16-inch wheels with 10-ply tires. Axle rating shall be a minimum of 10,000 pounds.
    ii. Trailers above shall have following accessories. Ring and pintal hitch including safety chain and fasteners, electric brakes shall be provided on all wheels, and all required ICC lights such as tail, brake, direction signals, license holder and light, etc., shall be provided; jacks and sand shoes for front and rear corners shall be provided so that unit can be completely supported.
    iii. The diesel backup pump engine shall be balanced mounted on trailer. All necessary service and checkout of diesel backup pump set shall be performed prior to delivery.

T. FACTORY PAINTING: Pump, engine, and base shall be shop primed and finish painted at the place of manufacturer.

2.3 AUTOMATIC STARTING CONTROL SYSTEM

A. The engine control panel shall be provided in a NEMA 3R enclosure mounted on rubber isolators to reduce vibration, equipped with a factory installed microprocessor-based controller designed to start/stop the engine at a signal supplied by high and low level floats or a 4-20 mA transducer.

B. The control system shall be able to start/stop the engine a via a signal supplied by a primary level transducer and back-up high and low level floats for redundant automatic operation.

C. ENGINE / PUMP CONTROL SPECIFICATIONS

1. The engine shall be started, stopped, and controlled by a digital controller. The controller shall be weather proof enclosed, and contain an external weatherproof 12-position keypad accessible without the need to remove or open any protective cover or enclosure. It shall be designed to start/stop the engine based on relay contact closure provided by others. The controller shall provide the following functions without modification, factory recalibration, or change of chips or boards, by simply accessing the keypad:

D. The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, and maintain complete weather-tight sealing of the controller.

E. In automatic mode, the unit shall conserve energy and go to "sleep".

F. The controller shall function interchangeably from remote contact closure, as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.

G. The start function can be programmed to provide two separate functions each day for seven days (i.e. a start, exercise cycle on two separate days at different times and for a varying length of time all via the keypad).

H. Manual-Automatic Button:

1. In Manual Mode, manual "Start" button starts engine and runs until "Stop" or "Off" button is depressed or an emergency shutdown occurs.

2. In Automatic Mode, start/stop sequencing is initiated by a signal from a digital input.

I. The controller shall integrate the engine safety shut-off for low and high oil temperature, and provide over-speed protection.

J. The controller shall include standard, field-adjustable parameters for engine cycle crank timer, and shutdown time delay.

K. The controller shall have only one circuit board with eight built-in relays. Three (3) of the relays shall be programmable to output desired parameter on display and to be used as dry-contacts for communication with Collier County's SCADA system, all via the keypad without changing relays, chips, printed circuits, or any hardware or software. Relays will monitor the following:

1. Low Battery Charge
2. Low Fuel Level (Less than 25 gallons)
3. Diesel Pump Engine Start

L. Standard components shall consist of one of the following set ups:

1. (24) Digital inputs, (7) analog inputs, (1) magnetic pick-up input, (8) 20-amp form “C” relays, (1) RS232 port, (1) RS485 port, (1) RS232/RS485 port, (1) J1939 port, and (1) 64X128 pixel full graphic LCD display with backlight.

2. (8) Digital inputs, (5) analog inputs, (8) digital outputs, (1) RS232 port, (1) RS485 port, (1) J1939 port, (76) selectable features, (32) alarm event history.

M. The industrially-hardened Controller shall withstand vibration of 3 g, 3 axis, frequency swept 10-1000 Hz, in an operating temperature range of 4° to 176°F (-20° to 80°C) and an operating humidity range of 0-95% non-condensing.

2.4 OPTIONS

A. FULLY AUTOMATIC TRICKLE CHARGER: The unit shall include a fully automatic trickle charger powered by 6-amps, 115 VAC.

B. LIGHT: The unit shall include a single switch operated 12VDC light within the enclosure.

C. FLOATS: The unit shall be supplied with one (1) float assembly including two (2) N/O floats which shall integrate with the engine control panel via a single multi-pin plug.

D. LEVEL TRANSDUCER: The unit shall be supplied with (1) one Teflon diaphragm sewage compatible level transducer assembly including a single 4-20 mA level transducer with leveling guard (0-15 psig), which shall integrate with the engine control panel via a single multi-pin plug.

E. AUTO THROTTLE: The unit/s shall include one (1) automatic throttle controller integrated into (1) relays in the electronic engine control panel. The auto-throttle control panel combination shall allow the pump to ramp up to the target RPM given a start command and ramp down to idle given a stop command via the 4-20 mA level transducer

F. DC / AC INVERTOR: The unit/s shall include one (1) 12VDC to 110VAC volt single-phase inverter, 1750 watts, mounted inside enclosure, single 15-amp GFI outlet, and one (1) fusible link.

2.5 ACCESS PLATFORM

A. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

B. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.1 MANUFACTURERS SERVICES

A. The manufacturer shall furnish the services of a competent factory representative to do the following:

1. The complete pump set shall be factory tested according to ANSI/HI 1.6¬1994 by a certified quality technician. The pump shall be sound tested according to ISO 3744, ANSI/HI9.4 and CPB Sound Level Measurement Standard.

2. Instruct the Owner's operating personnel in the proper operation and maintenance of the system for a period of not less than one-half day.

3.2 TOOLS AND SPARE PARTS

A. The manufacturer shall furnish the following on delivery of the pumping system;

1. A recommended list of spare parts.

2. Two (2) replacement mechanical seals

3. An Operations and Maintenance manual for the pump and engine.

4. A fuel polishing system capable of below 1 micron filtration equipped with a fuel-water separator and 12V DC fuel pump rated at 40 GPH minimum. The system shall be a standard commercial or industrial off the shelf unit intended for portable use of diesel fuel polishing. The fuel polishing system shall include 6 spare filters and an operations and maintenance manuals.

3.3 WARRANTY

A. The manufacturer shall furnish the following to the owner:

1. A copy of the engine manufacturer's parts and labor warranty.

2. A 3-year Parts and Labor Warranty issued by the manufacturer on the Diesel Pump System. This warranty must cover all pump parts.

3. The venturi shall have a minimum five (5) year warranty to include parts and labor.

END OF SECTION

SECTION 263213.13

STANDBY DIESEL GENERATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Extent of diesel generator set work as indicated by Drawings and Schedules, and is hereby defined to include, but not by way of limitation:
   1. Diesel engine.
   2. Electrical generator.
   3. Engine starting system.
   4. Batteries.
   5. Instrument control panel.
   6. Sound Attenuating Enclosure.
   7. Sub-Base Fuel Tanks.
   8. Exhaust silencer.
   9. Wall thimble.
   10. Additional accessories.
   11. Automatic transfer switch (ATS).
   12. Access platform and stairs.

B. Types of generator sets required include:
   1. Permanent Diesel Engine-driven Generator.

1.02 SUBMITTALS

A. Shop Drawings: Submit in accordance with Section 013400, Shop Drawings covering the items included under this Section. Shop Drawing submittals shall include:
   1. Product Data: Submit manufacturer's data on diesel engine-driven generator sets and components.
      a. Generator dimensions.
      b. Generator weight.
      c. Generator rating.
      d. Alternator rating.
      e. Generator Starting System Data:
         1) Battery size and ratings.
         2) Charging system capacity.
         3) Battery heater data.
         4) Battery warranty.
      f. Generator Control Panel Data:
         1) Layout.
         2) Wiring diagrams.
         3) Control interconnection.
         4) Instrumentation.
      g. Exhaust System Data:
         1) Muffler size.
         2) Decibel reduction curve.

3) Fuel system data.

h. Cooling System Data:
   1) Radiator capacity.
   2) Cooling reduction capacity

i. Enclosure Data:
   1) Materials.
   2) Size.
   3) Assembly/disassembly instructions.
   4) Door locations.
   5) Noise reduction.
   6) Color.

j. Sub-Base Fuel Tank:
   1) Capacity.
   2) Fuel usage calculations.
   3) Coating.

k. ATS Data:
   1) Enclosure Material.
   2) Dimensions.
   3) Factory test report.

l. Warranty data.

m. Accessory and miscellaneous equipment.

2. Wiring Diagrams: Submit wiring diagrams for diesel engine-driven generator units showing connections to electrical power panels, feeders, and ancillary equipment. Differentiate between portions of wiring that are manufacturer installed and portions that are field installed.
3. Agreement to Maintain: Prior to time of final acceptance, Installer shall submit 4 copies of an agreement for continued service and maintenance of diesel engine-driven generator sets for OWNER's possible acceptance. Offer terms and conditions for furnishing parts and providing continued testing and servicing, including replacement of materials and equipment, for 1-year period with option for renewal of Agreement by OWNER.
4. Certifications: Provide diesel engine-driven generator sets certified test record of the following final production testing:
   a. Single-step load pickup.
   b. Transient and steady-state governing.
   c. Safety shutdown device testing.
   d. Voltage regulation.
   e. Rated power.
   f. Maximum power.
   g. Provide certified test record prior to engine-driven generator set being shipped from factory to Project location.
5. Spare Parts Data: Submit a list of spare parts for the equipment specified.
6. Operating and Maintenance Instruction Manuals:
   a. Operating instruction manuals outlining step-by-step procedures required for system startup and operation.
   b. Manufacturer's name, model number, service manual parts list.
   c. Brief description of equipment and basic operating features.
   d. Maintenance instruction manuals outlining maintenance procedures.

e. Troubleshooting guide listing possible breakdown and repairs.
f. Point-to-point connection wiring diagram for the system.
g. Performance Test Reports: Upon completion of installed system, submit in booklet form all shop and field tests performed to prove compliance with specified performance criteria.
h. Provide OWNER with two (2) electronic copies of O&M manuals on CD's.

1.03 QUALITY ASSURANCE

A. Codes and Standards:
1. NFPA Compliance: Comply with applicable requirements of NFPA 37, "Installation and Use of Stationary Combustion Engines and Gas Turbines," NFPA 99, "Standard for Health Care Facilities," and NFPA 101, "Code for Safety to Life from Fire in Buildings and Structures."
2. UL Compliance: UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," UL 2200, "Standard for Safety for Stationary Engine Generator Assemblies," rated 600 volts or less. UL 1008, "Automatic Transfer Switches," and UL 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors." Provide transfer switches and components which are UL listed and labeled.
3. ANSI/NEMA Compliance: Comply with applicable requirements of ANSI/NE MA MG1, "Motors and Generators," and MG2, "Safety and Use of Electric Motors and Generators." NEMA Standards Pub/Nos. ICS 2, "Industrial Control Devices, Controllers and Assemblies," ICS 6 and 250, pertaining to transfer switches.
4. IEEE Compliance: Comply with applicable portions of IEEE Standard 446, "IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications."

B. Submittal information shall be generated from a representative located within Collier County who has knowledge of Local and State code requirements.
C. Warranty: Submit in accordance with requirements of Section 01740, warranties covering the items included under this Section. Unit shall be provided with a full comprehensive warranty of 5 years or 1500 running hours from date of ENGINEER's acceptance. Response time shall be a maximum of 3 hours. Provide label on inside of generator with description of warranty period and contact information.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufactured material shall be adequately packed to prevent damage during shipping, handling, storage and erection. Material shipped to site shall have approval of OWNER prior to shipping. All shipped material shall be packed in a container properly marked for identification. Blocks and padding shall be used to prevent movement.
B. CONTRACTOR shall inspect the material prior to removing it from carrier. If damage is observed, CONTRACTOR shall immediately notify carrier so that a claim can be made. If no such notice is given, material shall be assumed to be in undamaged condition, any subsequent damage that occurs to the equipment shall be the responsibility of CONTRACTOR.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:
   1. Standby Diesel Generator Sets:
      a. Caterpillar.
      b. Cummins.
   2. Automatic Transfer Switches:
      a. Caterpillar.
      b. Cummins

2.02 GENERATOR SETS

A. Except as otherwise indicated, provide manufacturer's standard diesel engine-driven generator set and auxiliary equipment as indicated by published product information, and as required for a complete installation. Generator set shall be rated to continuously power the total accumulated load and starting load shown on Schedule at 100 degrees F ambient temperature and at altitude where installed.

B. Diesel Engine: Provide a 4-cycle, compression ignition type engine for operation on a commercial grade of petroleum fuel oil such as No. 2 fuel oil. Engine operating speed shall not exceed 1,800 rpm and shall be controlled by a governor to maintain alternator frequency within plus or minus 3 Hertz of 60 hertz from no load to full load. Frequency shall recover to steady-state tolerance within 5 seconds after application of 90 percent rated load.

C. Starting System: Provide engine-generator unit with 12- or 24-volt, negative ground, starting system including positive engagement solenoid shift-starting motor, batteries, and 35-ampere, or greater, automatic battery charging alternator with solid-state voltage regulator. Mount batteries in a plastic- or epoxy-coated metal platform near the starter but not on the generator and coat battery terminals with an anti-oxidant. Generator sets rated 150 kW or less shall have a battery rated 650 amperes cold cranking at 0 degree F and 170 minutes reserve capacity by SAE Standard J-537. Larger generators shall have a battery rated either 220 ampere-hours or 900 amperes cold cranking, and 430 minutes reserve capacity. Batteries shall have a 12-month full warranty and 60-month prorated warranty.

D. Battery Charger: Provide a solid-state, current limiting, float-type SENS model #NRG22-10-RC battery charger with 10-ampere minimum capacity. Charger shall operate from 120-volt AC single phase, 60 hertz power and shall automatically keep batteries at full charge. Equip charger with ammeter and voltmeter. Battery charger shall be located within the generator enclosure.

E. Alternator: Provide a single bearing brushless, self-excited alternator with inherently regulated rotating rectifier exciter system or a revolving field design with a temperature compensated solid-state voltage regulator. Connect the alternator housing directly to the

engine flywheel housing. Couple the alternator rotor directly to engine flywheel with a semi-flexible steel disk coupling.

1. Provide windings with Class F insulation with epoxy impregnation and fungus-resistant coating. Temperature rise shall be as defined in NEMA Standard MG1-22.40.
2. The alternator shall be capable of starting load given for site with 35 percent maximum instantaneous voltage dip. Instantaneous voltage dip shall only be 20 percent when there is a VFD. Recovery to stable equation within plus or minus 5 percent of rated voltage shall occur within 3 seconds.

F. Engine Cooling Radiator: Provide a complete engine cooling system equipped with a radiator and blower type fan sized to maintain safe operation, 190 degrees F engine outlet water temperature at 100 degrees F maximum ambient temperature. The engine cooling system shall be filled with a solution of 50 percent ethylene glycol.

G. Instrument Control Panel: Provide engine-generator unit with engine oil-pressure and water-temperature indicators, reset circuit breaker, static voltage regulator, voltage-adjusting rheostat, voltmeter, ammeter with phase selector switch with an OFF position, and with running time indicator and frequency meters. Select circuitry of plug-in design capable of quick replacement, and capable of accepting a plug-in device which allows maintenance to test control panel performance without operating the engine.

1. Provide a cranking limiter to open starting circuit in 45 to 90 seconds if engine has not started within that time or after a series of 3 or more cranking intervals separated by 2 or more rest periods.
2. Provide engine safety devices to shut unit down on high engine temperature, low oil pressure, overspeed, and overcrank. Provide, for each of these conditions, an alarm light and an unpowered, normally open contact for remote use. Provide an audible alarm with silence switch which is activated by any alarm condition. Provide additional unpowered, normally open contact for remote use that indicates general generator alarm. General alarm contact will be for any alarms associated with the generator and not pre-assigned to a specific alarm. Sacrificing a specific alarm in order to receive the general alarm contact is not acceptable.
3. Provide a relay with 2 normally open and 2 normally closed contacts rated 5A at 120 volts AC and which is energized when unit is running. Wire these contacts to terminal strips for remote use.
4. Provide a RUN-OFF-AUTO switch. In AUTO position unit shall start when a remote contact closes and stop when contact opens. In RUN position unit shall start and run until OFF position is selected.
5. Mount instrument control panel on unit such that it is isolated from generator set vibration.

2.03 PERMANENT ENGINE-GENERATOR SET ACCESSORIES

A. Enclosure Design: Generator set shall be provided with a skin tight outdoor enclosure. Enclosure roof and side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. Side panels shall be constructed from a minimum of 0.090 Marine Grade Aluminum. The Side Walls shall be complete with necessary access doors and ventilating louvers. There shall be at least 2 access doors on each side of enclosure and

one at the generator control panel for access to the controls. Doors shall be capable of full-range of motion. CONTRACTOR shall coordinate final location of generator to accommodate door swings. Any changes due to generator clearances shall be at the expense of the CONTRACTOR. Doors shall be hung on full-length piano hinge assembly. All hinge hardware shall be stainless steel. Finish paint shall be powder-coated over epoxy primer. Doors shall be equipped with handles. Louvers shall be stationary type and shall be arranged to provide adequate protection against rainfall at 15 degrees from vertical. Air of intake louvers shall be sized so not to exceed .5 inches of water column while providing the required genset cooling and combustion air flow. Enclosure shall be of bolted formed panel type construction. Exhaust shall be provided within the enclosure unless otherwise directed by the ENGINEER. Roof shall have sufficient strength to support an exhaust silencer. Enclosure shall be large enough to fully enclose all components necessary to the system. All doors shall be capable of being locked or have provisions for padlocks. Door hardware shall be stainless steel.

1. All raceway and conduits within the enclosure shall be sealed-tight flexible conduit or rigid aluminum or galvanized steel with malleable iron boxes and compression type fittings as appropriate for the raceways used under NEC. EMT and flex or “Greenfield” conduits are not acceptable.
2. When this outdoor enclosure is specified, the temperature specifications for unit shall be 0 degrees F to 120 degrees F with ambient air at radiator intake being 100 degrees F maximum.
3. Modular enclosures shall comply with DCA, Florida Building Code and have a minimum sustained wind rating of 150 MPH.
4. The CONTRACTOR is responsible for verifying the impact rating requirements under Florida Building Code and shall provide a generator enclosure in compliance to these standards.
5. Consult the ENGINEER prior to bid when generator is located within any “Zone 4 impact area under FBC”.
6. Enclosure shall match footprint of sub base fuel tank.

B. Sound Attenuation: Enclosure shall be insulated to attenuate sound and include sound attenuating features that direct radiant cooling air in a route to minimize ambient noise when generator is running.

C. Operational noise shall not exceed 75 dBA at 23 feet (in Free Field Conditions). Additional sound attenuation references or limitations may be required. See drawings for additional details. If generator is located within 50 feet of a commercial or residential unit, then operational noise shall not exceed 55 dBA.

D. Source dBA and sound attenuation shall be as measured and defined under ANSI S12.34-1998 and SIO 3744 as applicable. Additional local codes and standards may apply for generator operational noise. The CONTRACTOR is responsible for compliance to all local standards without change order or additional payment.

E. Fuel System: Provide unit with a UL142 compliant double-wall skid base type integral fuel tank that is “skid” mounted, unless otherwise directed by the ENGINEER’s drawings or addenda. Tank capacity shall be a maximumum of 550 gross volume gallons. The

tank capacity shall be calculated assuming the tank is 90% full and based on the generator running at full load/speed continuously for three (3) days.

F. The ENGINEER has projected fuel use estimates using equipment listed as the basis of design. The CONTRACTOR is responsible for providing the manufacturer's fuel usage calculations with submittal documents for ENGINEER's review.

G. The fuel tank shall be furnished with UL142 and FDEP required accessories to include a fuel site gauge, normal and emergency vents and fuel cap having padlocking provisions. All necessary fuel supply and return line shall be furnished pre-assembled to unit. The Fuel Tank shall meet all applicable State and local standards for the volume of fuel the tank will hold.

H. Sub base fuel tank size shall be provided and sized as shown on the contract documents and within the specifications.

I. Sub base fuel tank shall not allow pooling or ponding of water on top once generator is mounted on top.

J. Tank shall be made by a manufacturer with minimum of (10) ten years' experience in the design and construction of UL Listed, FDEP and NFPA compliant sub base fuel tanks. Manufacturer of the fuel tank must be approved and registered with the State of Florida, and have their required "EQ" file number on the supplied fuel tank. The installing CONTRACTOR is responsible for supplying fuel for the field testing.

K. The fuel tank shall be mounted under the generator skid rails, consisting of a dual wall design constructed to UL142 and standards applicable to this application under FS-62-762, NFPA 30, NFPA 37 and NFPA 110. All fuel tanks shall comply with the requirements set forth by Collier County Pollution Control.

L. Sub base fuel tank shall be rectangular in shape and include reinforced steel box channel for generator support.

M. Both the inner and outer tanks shall be constructed of 304 stainless steel.

N. The outer wall shall be prepared before & after primer. Prime with one coat of epoxy primer to a thickness of 12-15 mils (DFT). Outer wall finish coat shall be a high gloss, black, UV blocking epoxy primer applied to a minimum thickness of 3.5 mils (DFT). All welds and fasteners connecting the generator skid base to the fuel tank shall be similarly primed and finished. Primers shall not be electrostatically or powder applied. Primers shall be hand applied & dried in a drying booth.

O. Fuel tank shall be equipped with a magnetic liquid level fuel gauge as manufactured by Rochester Gauges, Inc. Fuel tank level shall be output as a 4-20mA signal from the generator control panel.

P. Sub base fuel tank shall have a 4 point lifting system in place when shipped to the site. It shall be the responsibility of the Generator manufacturer to recommend a lifting system along with instructions for the CONTRACTOR on site.

Q. Sub base tank testing shall consist of primary and secondary tank containment basin and shall be pressurized at 3-5 psi and leak checked to ensure integrity of sub base weld seams per UL-142 standards. A copy of this report shall accompany close-out documents. Fuel containment basin shall be sized as a minimum of 110% of the tank capacity to prevent escape of fuel into the environment in the event of a tank rupture. Provide a fuel containment basin leak detector switch.

R. The sub base tank fittings shall include the following:
   1. Appropriately sized NPT fuel supply.
   2. Fuel return fitting
   3. 2” NPT for normal vent
   4. NPT for emergency vent, sized as appropriate
   5. 2” NPT for manual fill.
   6. NPT for level gauge, sized as appropriate.
   7. 3/8” NPT basin drain
   8. 2” NPT for level alarm.
   9. NPT fitting for leak detection alarm

S. Coolant Heater: Provide engine coolant heater that operates from 120-volt AC single phase, 60 hertz power with thermostatic controls to maintain engine coolant at proper temperature to fulfill start-up requirements of NFPA 99.

T. Inlet and Exhaust Systems: Silencers and exhaust ducting to silencers shall be self-supporting when assembled. Provide all necessary supporting members for ductwork between silencer and outlet. Provide all required cutting as shown on Drawings and noted herein. The unit shall be complete with raincap. All exhaust duct shall be Schedule 10 steel pipe, minimum. Inlet silencer and filter to be self-supporting. Provide necessary supports for all intake ductwork. All intake ducts shall be Schedule 10 steel pipe, minimum.
   1. Provide a silencer which meets sound standards of a critical area. Silencer shall provide attenuation (input to output) of 25 dB or greater at frequencies of 125 hertz to 8 kilohertz. A curve shall be submitted with Shop Drawings showing attenuation (input to output) in dB versus frequency. Curve shall be on manufacturer's standard data sheet or from an independent test lab. A spiral or bellows-type flexible section of pipe shall be installed in the exhaust line between the muffler and engine manifold connection. An insulated thimble section shall be provided where exhaust line passes through roof or wall. Exhaust lines shall be pitched and a condensation trap provided at non-draining low points in line.

U. Circuit Breaker: A generator power circuit breaker shall be installed as a manual load circuit interrupter and an automatic overload and short circuit protection device.
   1. The circuit breaker shall be a solid-state trip type for all sizes rated 200 amps continuous and larger. Solid-state trip shall include Long-time, Short-time, and Instantaneous. Ground fault trip required on breakers 1,000 amps and above.

2. 100% ratings under UL shall be required as noted on ENGINEER's drawings.
3. AIC rating for generator power circuit breaker shall meet or exceed that of the upstream service entrance rating.
4. Generator power circuit breaker shall be UL listed as short circuit, service entrance rated device under UL and NEC.
5. Trip settings for all breakers shall be selected for the rating of the generator power circuit as indicated on Drawings.
6. Provide breaker and alternator trip curves in the submittal. Show coordination of curves for equipment provided.

V. Provide protective relays to protect the generator system/alternator.

W. Alternator protection equipment as basis of design shall be equal to "Amp Sentry" protection by Cummins Power Generation with the following features: Over current and short-circuit shut down - Over current warning -Single and three phase fault regulation - Over and under voltage shut down - *Over and under frequency shut down - Overload warning with alarm contact - Reverse power and reverse* Var shut down - Excitation fault. Equipment other than basis of design is subject to ENGINEER's approval. Provide full submittal and comparison data for ENGINEER's review on equipment as provided.

X. Any pump station requiring a generator shall also have a generator receptacle located on the pump control panel for a portable generator, coordinate exact model with OWNER.

2.04 AUTOMATIC TRANSFER SWITCHES

A. Automatic Transfer Switch: UL listed and 600 volt-rated with amperage rating shown on Drawings and shall be the mechanically held, electrically operated type rated for continuous duty in an unventilated sheet metal enclosure.

B. Switch shall be double throw, with an off position, having electrical operated normal-emergency positions inherently interlocked mechanically, and with main contacts mechanically attached to a common shaft. Main contacts shall be silver alloy wiping-action type. They shall be protected by arcing contacts.

C. Heavy duty emergency pushbuttons shall be provided. Emergency pushbuttons shall reset when pulled out.

D. Switch and Relay Contacts, Coils, Springs, and Control Elements: Removable from front of transfer switch without removal of the switch panels from enclosure and without disconnection of drive linkages or power conductors. Sensing and control relays shall be continuous duty industrial control type with 600 volt, 10 amp rated contacts.

E. Transfer switch internal wiring shall be composed of pre-manufactured harnesses that are permanently marked for source and destination. Harnesses shall be connected to the control system by means of locking disconnect plug(s), to allow the control system

to be easily disconnected and serviced without disconnecting power from the transfer switch mechanism.

F. Power transfer switch shall be provided with flame retardant transparent covers to allow viewing of switch contact operation but prevent direct contact with components that could be operating at line voltage levels.

G. Transfer switches that are designated on the drawings as 3-pole shall be provided with a neutral bus and lugs. The neutral bus shall be sized to carry 100% of the current designated on the switch rating.

H. Field control connections shall be made on a common terminal block that is clearly and permanently labeled.

I. Upon drop in normal voltage of 83-85 percent of rated voltage, and after an override delay of 3 seconds nominal, switch shall start generator and transfer the load to emergency source, provided emergency source voltage and frequency are 90 percent of rated or higher.

J. Upon return of normal source voltage for 5 seconds nominal, to 92-95 percent of rated, switch shall retransfer load to normal source after a minimum transfer time or if emergency source fails. Provide a 5- to 60-second adjustable time delay to maintain transfer switch in the "Off" position during transfer to either source.

K. Sensing relays shall operate without contact chatter or false response when voltage is slowly varied to dropout and pickup levels.

L. Four auxiliary contacts shall be provided: Two for transfer switch position indicating use, and two auxiliary contacts, one N.O. and one N.C. to operate after completion of the 3-second override delay for starting generator. All auxiliary contacts shall be 600 volt, 10 amp continuous rating.

M. Operator Panel. Each transfer switch shall be provided with a control panel to allow the operator to view the status and control operation of the transfer switch. The operator panel shall be a sealed membrane panel rated NEMA 3R/IP53 or better (regardless of enclosure rating) that is permanently labeled for switch and control functions. The operator panel shall be provided with the following features and capabilities:
   1. High intensity LED lamps to indicate the source that the load is connected to (source 1 or source 2); and which source(s) are available. Source available LED indicators shall operate from the control microprocessor to indicate the true condition of the sources as sensed by the control
   2. High intensity LED lamps to indicate that the transfer switch is “not in auto” (due to control being disabled or due to bypass switch (when used) enabled or in operation) and “Test/Exercise Active” to indicate that the control system is testing or exercising the generator set.
   3. “OVERRIDE” pushbutton to cause the transfer switch to bypass any active time delays for start, transfer, and retransfer and immediately proceed with its next logical operation.

4. “TEST” pushbutton to initiate a preprogrammed test sequence for the generator set and transfer switch. The transfer switch shall be programmable for test with load or test without load.
5. “RESET/LAMP TEST” pushbutton that will clear any faults present in the control, or simultaneously test all lamps on the panel by lighting them.
6. The control system shall continuously log information on the number of hours each source has been connected to the load, the number of times transferred, and the total number of times each source has failed. This information shall be available via a PC-based service tool and an operator display panel.
7. Vacuum fluorescent alphanumeric display panel with push-button navigation switches. The display shall be clearly visible in both bright (sunlight) and no light conditions. It shall be visible over an angle of at least 120 degrees. The Alphanumeric display panel shall be capable of providing the following functions and capabilities:
    a. Display source condition information, including AC voltage for each phase of normal and emergency source, frequency of each source. Voltage for all three phases shall be displayed on a single screen for easy viewing of voltage balance. Line to neutral voltages shall be displayed for 4-wire systems.
    b. Display source status, to indicate source is connected or not connected.
    c. Display load data, including 3-phase AC voltage, 3-phase AC current, frequency, KW, KVA, and power factor. Voltage and current data for all phases shall be displayed on a single screen.
    d. The display panel shall allow the operator to view and make the following adjustments in the control system, after entering an access code:
        1) Set nominal voltage and frequency for the transfer switch.
        2) Adjust voltage and frequency sensor operation set points.
        3) Set up time clock functions.
        4) Set up load sequence functions.
        5) Enable or disable control functions in the transfer switch, including program transition.
        6) Set up exercise and load test operation conditions, as well as normal system time delays for transfer time, time delay start, stop, transfer, and retransfer.
    e. Display Real time Clock data, including date, and time in hours, minutes, and seconds. The real time clock shall incorporate provisions for automatic daylight savings time and leap year adjustments. The control shall also log total operating hours for the control system.
    f. Display service history for the transfer switch. Display source connected hours, to indicate the total number of hours connected to each source. Display number of times transferred, and total number of times each source has failed.
    g. Display fault history on the transfer switch, including condition, and date and time of fault. Faults to include controller checksum error, low controller DC voltage, ATS fail to close on transfer, ATS fail to close on retransfer, battery charger malfunction, network battery voltage low, and network communications error.

N. The transfer switch control system shall be configurable in the field for any operating voltage level up to 600VAC. Provide RMS voltage sensing and metering that is accurate to within plus or minus 1% of nominal voltage level. Frequency sensing shall be accurate to within plus or minus 0.2%. Voltage sensing shall be monitored based on the normal

voltage at the site. Systems that utilize voltage monitoring based on standard voltage conditions that are not field configurable are not acceptable.

O. Transfer switch voltage sensors shall be close differential type, providing source availability information to the control system based on the following functions:
   1. Monitoring all phases of the normal service (source 1) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of normal voltage level).
   2. Monitoring all phases of the emergency service (source 2) for under voltage conditions (adjustable for pickup in a range of 85 to 98% of the normal voltage level and dropout in a range of 75 to 98% of pickup voltage level).
   3. Monitoring all phases of the normal service (source 1) and emergency service (source 2) for loss of a single phase.

P. The transfer switch shall be configurable to control the operation time from source to source (program transition operation). The control system shall be capable of enabling or disabling this feature, and adjusting the time period to a specific value. The transfer switch shall incorporate adjustable time delays for generator set start (adjustable in a range from 0-15 seconds); transfer (adjustable in a range from 0-120 seconds); retransfer (adjustable in a range from 0-30 minutes); and generator stop (cooldown) (adjustable in a range of 0-30 minutes).

Q. The transfer switch shall be configurable to accept a relay contact signal and a network signal from an external device to prevent transfer to the generator service.

R. The control system shall be designed and prototype tested for operation in ambient temperatures from -40C to +70C. It shall be designed and tested to comply with the requirements of the noted voltage and RFI/EMI standards.

S. The control shall have optically isolated logic inputs, high isolation transformers for AC inputs, and relays on all outputs, to provide optimum protection from line voltage surges, RFI and EMI.

T. Enclosures shall be UL listed. The enclosure shall provide wire bend space in compliance to the latest version of NFPA70. The cabinet door shall include permanently mounted key type latches.

U. Transfer switch equipment shall be provided in a NEMA 4X enclosure.

V. The enclosure shall provide code-required wire bend space at point of entry as shown on the drawings. Manual operating handles and all control switches (other than key-operated switches) shall be accessible to authorized personnel only by opening the key-locking cabinet door. Transfer switches with manual operating handles and/or non key-operated control switches located on outside of cabinet do not meet this specification and are not acceptable.

W. Transfer switch normally connects an energized utility power source (source 1) to loads and a generator set (source 2) to the loads when normal source fails. The normal

position of the transfer switch is source 1 (connected to the utility), and no start signal is supplied to the genset.

X. Generator Set Exercise (Test) With Load Mode. The control system shall be configurable to test the generator set under load. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate to connect the loads to the generator set by opening the normal source contacts, and closing the alternate source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   5. The generator set shall operate connected to the load for the duration of the exercise period. If the generator set fails during this period, the transfer switch shall automatically reconnect the generator set to the normal service.
   6. On completion of the exercise period, the transfer switch shall operate to connect the loads to the normal source by opening the alternate source contacts, and closing the normal source contacts a predetermined time period later. The timing sequence for the contact operation shall be programmable in the controller.
   7. The transfer switch shall operate the generator set unloaded for a cooldown period, and then remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Y. Generator Set Exercise (Test) Without Load Mode. The control system shall be configurable to test the generator set without transfer switch load connected. In this mode, the transfer switch shall control the generator set in the following sequence:
   1. Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program, or when manually initiated by the operator.
   2. The transfer switch shall issue a compatible start command to the generator set, and cause the generator set to start and run at idle until it has reached normal operating temperature.
   3. When the generator set has reached normal operating temperature or after an adjustable time period (whichever is shorter), the control system shall accelerate the generator set to rated voltage and frequency.
   4. When the control systems senses the generator set at rated voltage and frequency, it shall operate the generator set unloaded for the duration of the exercise period.
   5. At the completion of the exercise period, the transfer switch shall remove the start signal from the generator set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set.

Z. Factory Testing. The transfer switch manufacturer shall perform a complete operational test on the transfer switch prior to shipping from the factory. A certified test report shall be provided to OWNER & ENGINEER upon delivery of generator. Test process shall include calibration of voltage sensors.

AA. The manufacturer of the transfer switch and generator set shall maintain service parts inventory at a central location (within 50 miles of the city) which is accessible to the service location 24 hours per day, 365 days.

BB. The transfer switch shall be serviced by a local service organization that is trained and factory certified in both generator set and transfer switch service. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

CC. The manufacturer shall maintain model and serial number records of each transfer switch provided for at least 20 years.

DD. Accessory devices shall be provided as follows:

1. Time delay to override harmless power dips and outages. (Inverse time characteristic with voltage.)
2. Test switch.
3. Auxiliary contacts (as specified herein).
4. Selector relay (as specified herein).
5. Lockout relay (sensitive to voltage and frequency).
6. Full phase protection with nominal 75-80 percent dropout and 92-95 percent pickup on phase relay.
7. Adjustable time delay on retransfer to normal source. Minimum retransfer of 2 minutes and maximum of 25 minutes. Built-in circuitry to nullify the retransfer time delay if the emergency source fails and the normal source is available.
8. Adjustable (10-20 minutes) time delay for running generator unloaded after transfer for cool down.
9. Adjustable time delay or delays (5 to 60 seconds) for holding transfer switch in the "Off" position when switching from standby source to normal and normal source to standby.
10. Engine starting contact.
11. A selector switch shall permit generator to be exercised with or without load.

2.05 ACCESS PLATFORM

A. Elevated platforms shall be provided where necessary to provide access to the generator for operation and maintenance. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

B. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered

Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

C. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

PART 3 EXECUTION

3.01 INSTALLATION OF DIESEL ENGINE-DRIVEN GENERATOR SETS

A. Install diesel engine-driven generator units as indicated, in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that engine-generator units fulfill requirements. Comply with NFPA and NEMA standards pertaining to installation of engine-generator sets and accessories.

B. Coordinate with other work, including raceways, electrical boxes and fittings, fuel tanks, piping, and accessories, as necessary to interface installation of engine generator equipment work with other work.

C. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B, and the National Electrical Code.

D. Install units on steel spring type vibration isolators fastened to an inertia base in accordance with manufacturer's instructions.

E. Connect fuel piping to generator equipment as indicated, and comply with manufacturer's installation instructions.

3.02 GROUNDING

A. Provide equipment grounding connections for diesel engine-driven generator unit and automatic transfer switch as indicated. Connect generator equipment ground to ground ring around generator pad. Ground ring shall have a minimum of four (4) 5/8" x 20' copper-clad ground rods. Connect ground ring to sites counterpoise. Connections to ground ring, counterpoise and ground rods shall be exothermically welded. Add additional ground rings as required to meet five (5) ohm (or less) specified resistance. Tighten connections to comply with tightening torques specified in UL Standard 486A to ensure permanent and effective grounding.

3.03 FIELD QUALITY CONTROL

A. Start-up Testing:
   1. Engage local equipment manufacturer's representative to perform start-up and building load tests upon completion of installation, with ENGINEER in attendance; provide certified test record. Tests are to include the following:
      a. Check fuel, lubricating oil, and antifreeze in liquid-cooled models for conformity to manufacturer's recommendations under environmental conditions present.
      b. Test prior to cranking engine for proper operation, accessories that normally function while the set is in a standby mode. Accessories include: alternator strip heater, engine coolant heater, and battery charger.
      c. Check, during start-up test mode, for exhaust leaks, cooling air flow, movement during starting and stopping, vibration during running, normal and emergency line-to-line voltage, and phase rotation.
      d. Test, by means of simulated power outage, automatic start-up by remote-automatic starting, transfer of load, and automatic shutdown. Prior to this test, adjust for proper system coordination, transfer switch timers. After installation inspection and fine adjustments have been completed, the Generator set shall be connected to resistive type load banks, matching the full rated output of this installed generator set.

         1) A four (4) hour 100% resistive load bank test, matching the full rated output of this installed generator set, is to be performed after installation in the presence of the ENGINEER, OWNER, and any required Authority. Coordinate with ENGINEER, OWNER, and any required Authority for appropriate test date and time. During this load bank test, monitor the engine temperature, oil pressure, battery charge level, generator voltage, amperes, and frequency. Voltage dip will be observed with a recording oscilloscope furnished by supplier for this test only. Voltage dip is defined as the peak-to-peak voltage minimum, at starting compared to the average peak-to-peak voltage with the starting load running. The difference shall be less than 25 percent of the running P-P voltage.
         2) Provide a test of safeties and transfer under NFPA-110 criteria.
         3) Provide all tests in the presence of an OWNER representative.
            Upon completion of installation and testing, demonstrate capability and compliance of system with requirements. Where possible, correct malfunctioning units at Site, then retest to demonstrate compliance; otherwise, remove and replace with new units, and proceed with retesting. Initial testing and retesting to be at no cost to OWNER.

3.04 QUALITY ASSURANCE

A. Commissioning and Qualifications shall be performed by Manufacturer's authorized and factory certified trained for installation of units personnel.

B. Maintenance Proximity: The commissioning and selling manufacturer office location shall not be more than two hours' normal travel time from the project site.

C. Access to Service & Parts: Manufacturer for the Generator shall maintain a full

operational facility, with service, parts and distribution center within 50 miles of the Project Site. A 'sales office' will not qualify as a service & parts facility. A "dealer" that buys product from a Factory Distributor does not qualify.

D. Manufacturer's Qualifications: The manufacturer shall be in the business of manufacturing power generation systems under ISO-9001 certification process for over 10 years. The manufacturer shall employ service, engineering, and parts staff within a factory-owned or authorized service center, within 50 miles of Project site.

E. When an "upfitter" is used for a fuel tank or generator enclosure, the manufacturer shall be located in the same state as the Project Site.

F. Upfitters shall provide their UL Listing number on all documentation of compliance. UL as an "assembly" under the generator manufacturer's main UL Listing is not acceptable.

G. cUL (or other) listing or compliance shall not be accepted in lieu of UL listing and label.

H. Manufacturer Service Qualifications: The generator manufacturer shall have a service center within a 2-hour driving distance from the project site. This service center shall have engineering, application support, on-site rental, start-up, commissioning, and replacement parts and labor for the maintenance and repair of the same brand of power generation system equipment as supplied on the Project.

I. Source Limitations: Obtain all equipment under this section through one source as practical and possible under the limitations of the manufacturer's ability to provide equipment.

J. The equipment under this Section must be sold to the installer or the OWNER by an entity operating from within the project State.

K. The equipment under this Section must be installed by a CONTRACTOR operating from offices located within the Project state.

L. Equipment under this section shall be provided by a single manufacturer, so as to provide only one source of warranty and responsibility whenever possible.

M. Generator engine, alternator, and generator controller shall be provided by a single manufacturer exceptions must be noted in submittal. The ENGINEER reserves the right to reject exceptions based on the equipment used as the basis of design in comparison.

3.05 PERSONNEL TRAINING

A. Building Operating Personnel Training: Train OWNER's building personnel in procedures for starting-up, testing, and operating diesel engine-driven generator sets. In addition, train OWNER's personnel in periodic maintenance of batteries.

END OF SECTION

SECTION 312316

EXCAVATION - EARTH AND ROCK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for performing opencut excavations to the widths and depths necessary for constructing structures and pipelines, including excavation of any material necessary for any purpose pertinent to the construction of the Work.

B. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 033100 – Concrete, Masonry, Mortar and Grout

3. Section 312319 – Groundwater Control for Open Cut Excavation

4. Section 312323 – Backfilling

5. Section 314000 – Shoring, Sheeting and Bracing

1.2 DEFINITIONS

A. Earth: "Earth" includes all materials which, in the opinion of the ENGINEER, do not require blasting, barring, wedging or special impact tools for their removal from their original beds, and removal of which can be completed using standard excavating equipment. Specifically excluded are all ledge and bedrock and boulders or pieces of masonry larger than one cubic yard in volume.

B. Rock: "Rock" includes all materials which, in the opinion of the ENGINEER, require blasting, barring, wedging and/or special impact tools such as jack hammers, sledges, chisels, or similar devices specifically designed for use in cutting or breaking rock for removal from their original beds and which have compressive strengths in their natural undisturbed state in excess of 300 psi. Boulders or masonry larger than one cubic yard in volume are classed as rock excavation.

1.3 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Engage the services of a Professional Engineer who is registered in the State of Florida to design all cofferdam and sheeting and bracing systems which the CONTRACTOR feels necessary for the execution of his work. Submit to the ENGINEER a signed statement that he has been employed by the CONTRACTOR to design all sheeting and bracing systems. After the systems have been installed, furnish to the ENGINEER an additional signed statement that the cofferdams and sheeting and bracing systems have been installed in accordance with his design.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.4 SITE CONDITIONS

A. Geotechnical Investigation: A geotechnical investigation may have been prepared by the COUNTY and ENGINEER in preparing the Contract Documents.

1. The geotechnical investigation report may be examined for what ever value it may be considered to be worth. However, this information is not guaranteed as to its accuracy or completeness.

2. The geotechnical investigation report is not part of the Contract Documents.

B. Actual Conditions: Make any geotechnical investigations deemed necessary to determine actual site conditions.

C. Underground Utilities and Collier County Damage Prevention Policy:

1. This policy has been put in place to avoid damage to Collier County underground utilities. A minimum distance of five feet (5') horizontally and eighteen inches (18") vertically must be maintained away from Collier County utilities. Any and all variations from this order must be the Water or Wastewater Department.

2. Before commencement of any excavation at road crossings or any boring or any drilling, the contractor shall mark the proposed run alignment with white paint or flags. Subsequent to placement of the white markings, the existing underground utilities in the area affected by the work must be marked by Sunshine One Call after proper notification to them by either calling 811 in Florida or toll free at 1-800-432-4770. Visit www.sunshine811.com for more information. Before commencing excavation for the work, potholing of all potential conflicts must be performed.

3. All lines in conflict must be physically located by the contractor. Any conflict shall be reported to the utility and Collier County Public Utilities. Utilities under concrete or pavement may require soft dig vacuum locates which also is the contractor's responsibility to perform. All utilities will be field marked per Sunshine State One Call's statutes and guidelines. For line verification or any

other information concerning locates, please call the Locate Department at 239-252-5922 during normal business hours. For line verification or emergency locates after hours, call emergency number 239-825-1444. **In the event the potholing and/or vacuum soft dig does not locate the marked utility, work must be stopped and the affected utility owner contacted.** Failure to comply with this policy and obtain required signature(s) may result in revocation of existing right-of-way permits.

4. The contractor must comply with all provisions of Florida Statute 556, the Underground Facility Damage Prevention and Safety Act.

D. Quality and Quantity: Make any other investigations and determinations necessary to determine the quality and quantities of earth and rock and the methods to be used to excavate these materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 GENERAL

A. Clearing: Clear opencut excavation sites of obstructions preparatory to excavation. Clearing in accordance with Section 017416, includes removal and disposal of vegetation, trees, stumps, roots and bushes, except those specified to be protected during trench excavation.

B. Banks: Shore or slope banks to the angle of repose to prevent slides or cave-ins in accordance with Section 314000.

C. Safety: Whenever an excavation site or trench is left unattended by the CONTRACTOR or when an area is not within 100 feet of observation by the CONTRACTOR, the excavation site or trench shall be filled and/or, at the County's Manager or designee discretion, protected by other means to prevent accidental or unauthorized entry. Include barricades and other protection devices requested by the ENGINEER or County Manager or designee, including temporary fencing, snow fencing, or temporary "structure" tape. Such safety items shall not relieve the CONTRACTOR of any site safety requirements or liabilities established by Federal, State and local laws and agencies, including OSHA, but is intended as additional safety measures to protect the general public.

D. Hazardous Materials: If encountered, take care of hazardous materials not specifically shown or noted in accordance with Section 015000.

E. During excavation and any site work, take storm water pollution prevention measures to ensure that water quality criteria are not violated in the receiving water body and all state and local regulatory requirements are met.

3.2 STRUCTURE EXCAVATION

A. Excavation Size: Provide excavations of sufficient size and only of sufficient size to permit the Work to be economically and properly constructed in the manner and of the size specified.

B. Excavation Shape: Shape and dimension the bottom of the excavation in earth or rock to the shape and dimensions of the underside of the structure or drainage blanket wherever the nature of the excavated material permits.

C. Compaction: Before placing foundation slabs, footings or backfill, proof roll the bottom of the excavations to detect soft spots.

1. For accessible areas, proof roll with a ten wheel tandem axle dump truck loaded to at least 15 tons or similarly loaded construction equipment.

2. For small areas, proof roll with a smooth-faced steel roller filled with water or sand, or compact with a mechanical tamper.

3. Make one complete coverage, with overlap, of the area.

4. Overexcavate soft zones and replace with compacted select fill.

3.3 TRENCH EXCAVATION

A. Preparation: Properly brace and protect trees, shrubs, poles and other structures which are to be preserved. Unless shown or specified otherwise, preserve all trees and large shrubs. Hold damage to the root structure to a minimum. Small shrubs may be preserved or replaced with equivalent specimens.

B. Adequate Space: Keep the width of trenches to a minimum, however provide adequate space for workers to place, joint and backfill the pipe properly.

1. The minimum width of the trench shall be equal to at least 3.5 feet or the outside diameter of the pipe at the joint plus 8-inches for unsheeted trench or 12 inches for sheeted trench, whichever is greater. Conform the trench walls to OSHA Regulations.

2. In sheeted trenches, measure the clear width of the trench at the level of the top of the pipe to the inside of the sheeting.

C. Depth:

1. Excavate trenches to a minimum depth of 8 inches, but not more than 12 inches, below the bottom of the pipe so that bedding material can be placed in the bottom of the trench and shaped to provide a continuous, firm bearing for pipe barrels and bells.

2. Standard trench grade shall be defined as the bottom surface of the utility to be constructed or placed within the trench. Trench grade for utilities in rock or other non-cushioning material shall be defined as additional undercuts backfilled with crushed stone compacted in 6-inch lifts, below the standard 8-inches minimum trench undercut. Backfill excavation below trench grade not ordered in writing by the ENGINEER with acceptable Class I, II or III embedment material to trench grade and compact to density equal to native soil.

D. Unstable or Unsuitable Materials: If unstable or unsuitable material is exposed at the level of the bottom of the trench excavation, excavate the material in accordance with the subsection headed "Authorized Additional Excavation".

1. Remove material for the full width of the trench and to the depth required to reach suitable foundation material.

2. When in the judgment of the ENGINEER the unstable or unsuitable material extends to an excessive depth, the ENGINEER may advise, in writing, the need for stabilization of the trench bottom with additional select fill material, crushed stone, washed shell, gravel mat or the need to provide firm support for the pipe or electrical duct by other suitable methods.

3. Crushed stone, washed shell and gravel shall be as specified in Section 312323.

4. Payment for such trench stabilization will be made under the appropriate Contract Items or where no such items exist, as a change in the Work.

E. Length of Excavation: Keep the open excavated trench preceding the pipe laying operation and the unfilled trench, with pipe in place, to a minimum length which causes the least disturbance. Provide ladders for a means of exit from the trench as required by applicable safety and health regulations.

F. Excavated Material: Neatly deposit excavated material to be used for backfill at the sides of the trenches where space is available. Where stockpiling of excavated material is required, obtain the sites to be used and maintain operations to provide for natural drainage and not present an unsightly appearance.

G. Water: Allow no water to rise in the trench excavation until sufficient backfill has been placed to prevent pipe flotation. Provide trench dewatering in accordance with Section 312319.

3.4 EXCAVATION FOR JACKING AND AUGERING

A. Jacking and Augering Requirements: Allow adequate length in jacking pits to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Provide sufficient pit width to allow ample working space on each side of the jacking frame. Allow sufficient pit depth such that the invert of the pipe, when placed on the guide frame, will be at the elevation desired for the completed line. Tightly sheet the pit and keep it dry at all times.

3.5 ROCK EXCAVATION

A. Rock Excavation: Excavate rock within the boundary lines and grades as shown, specified or required.

1. Rock removed from the excavation becomes the property of the CONTRACTOR. Transport and dispose of excavated rock at an off site disposal location. Obtain the off site disposal location.

2. Remove all shattered rock and loose pieces.

B. Structure Depths: For cast-in-place structures, excavate the rock only to the bottom of the structure, foundation slab, or drainage blanket.

C. Trench Width: Maintain a minimum clear width of the trench at the level of the top of the pipe of the outside diameter of the pipe barrel plus 2 feet, unless otherwise approved.

D. Trench Depth: For trench excavation, in which pipelines are to be placed, excavate the rock to a minimum depth of 8 inches below the bottom of the pipe or duct encasement. Provide a cushion of sand or suitable crushed rock. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material in the appropriate Contract Items.

E. Manhole Depths: For manhole excavation, excavate the rock to a minimum depth of 8 inches below the bottom of the manhole base for pipelines 24 inches in diameter and larger and 6 inches below the bottom manhole base for pipelines less than 24 inches in diameter. Refill the excavated space with pipe bedding material in accordance with Section 312323. Include placing, compacting and shaping pipe bedding material for manhole bases in the appropriate Contract Items.

F. Over-excavated Space: Refill the excavated space in rock below structures, pipelines, conduits and manholes, which exceeds the specified depths with 2,500 psi concrete, crushed stone, washed shell, or other material as directed. Include refilling of over-excavated space in rock as part of the rock excavation.

G. Other Requirements: Follow, where applicable, the requirements of the subsections on "Trench Excavation" and "Structure Excavation".

H. Payment: No additional payment will be made for rock excavation.

3.6 FINISHED EXCAVATION

A. Finish: Provide a reasonably smooth finished surface for all excavations, which is uniformly compacted and free from irregular surface changes.

B. Finish Methods: Provide a degree of finish that is ordinarily obtainable from blade-grade operations and in accordance with Section 312323.

3.7 PROTECTION

A. Traffic and Erosion: Protect newly graded areas from traffic and from erosion.

B. Repair: Repair any settlement or washing away that may occur from any cause, prior to acceptance. Re-establish grades to the required elevations and slopes.

C. It shall be the CONTRACTOR’s responsibility to acquaint himself with all existing conditions and to locate all structures and utilities along the proposed utility alignment in order to avoid conflicts. Where actual conflicts are unavoidable, coordinate work with the facility owner and perform work so as to cause as little interference as possible with the service rendered by the facility disturbed in accordance with Section 020500. Repair and/or replace facilities or structures damaged in the prosecution of the work immediately, in conformance with current standard practices of the industry, or according to the direction of the owner of such facility, at the CONTRACTOR’s expense.

D. Other Requirements: Conduct all Work in accordance with the environmental protection requirements specified in Division 1.

3.8 AUTHORIZED ADDITIONAL EXCAVATION

A. Additional Excavation: Carry the excavation to such additional depth and width as authorized in writing, for the following reasons:

1. In case the materials encountered at the elevations shown are not suitable.

2. In case it is found desirable or necessary to go to an additional depth, or to an additional depth and width.

B. Refill Materials: Refill such excavated space with either authorized 2500 psi concrete or compacted select fill material, in compliance with the applicable provisions of Section 312323.

C. Compaction: Compact fill materials to avoid future settlement. As a minimum, backfill layers shall not exceed 6-inches in thickness for the full trench width and compaction shall equal 95% of maximum density, or 98% if under paved area of roadway, as determined by using ASTM D 1557. Perform compaction density tests at all such backfill areas with spacing not to exceed 100 feet apart and on each 6-inch compacted layer.

D. Payment: Additional earth excavations so authorized and concrete or select fill materials authorized for filling such additional excavation and compaction of select fill materials will be paid for under the appropriate Contract Items or where no such items exist, as a change in the Work.

3.9 UNAUTHORIZED EXCAVATION

A. Stability: Refill any excavation carried beyond or below the lines and grades shown, except as specified in the subsection headed "Authorized Additional Excavation", with such material and in such manner as may be approved in order to provide for the stability of the various structures.

B. Refill Materials: Refill spaces beneath all manholes, structures, pipelines, or conduits excavated without authority with 2500 psi concrete or compacted select fill material, as approved.

C. Payment: Refill for unauthorized excavation will not be measured and no payment will be made therefor.

3.10 SEGREGATION STORAGE AND DISPOSAL OF MATERIAL

A. Stockpiling Suitable Materials: Stockpile topsoil suitable for final grading and landscaping and excavated material suitable for backfilling or embankments separately on the site in approved locations.

B. Stockpile Locations: Store excavated and other material a sufficient distance away from the edge of any excavation to prevent its falling or sliding back into the excavation and to prevent collapse of the wall of the excavation. Provide not less than 2 feet clear space between the top of any stockpile and other material and the edge of any excavation.

C. Excess Materials: Be responsible for transport and disposal of surplus excavated material and excavated material unsuitable for backfilling or embankments at an off site disposal location secured by the CONTRACTOR.

3.11 REMOVAL OF WATER

A. Water Removal: At all times during the excavation period and until completion and acceptance of the WORK at final inspection, provide ample means and equipment with which to remove promptly and dispose of properly all water entering any excavation or other parts of the WORK.

B. Dry Excavations: Keep the excavation dry, in accordance with Section 312319.

C. Water Contact: Allow no water to rise over or come in contact with masonry and concrete until the concrete and mortar have attained a set and, in any event, not sooner than 12 hours after placing the masonry or concrete.

D. Discharge of Water: Dispose of water pumped or drained from the Work in a safe and suitable manner without damage to adjacent property or streets or to other work under construction.

E. Protection: Provide adequate protection for water discharged onto streets. Protect the street surface at the point of discharge.

F. Sanitary Sewers: Discharge no water into sanitary sewers.

G. Storm Sewers: Discharge no water containing settleable solids into storm sewers.

H. Repair: Promptly repair any and all damage caused by dewatering the Work.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 312319

GROUNDWATER CONTROL FOR OPEN CUT EXCAVATION

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. This section provides for furnishing all permits, labor, materials, equipment, power and incidentals for performing all operations necessary to dewater, depressurize, drain and maintain excavations as described herein and as necessary for installation of pipeline and appurtenances. Included are installing, maintaining, operating and removing dewatering systems and other approved devices for the control of surface and groundwater during the construction of pipelines and appurtenances, open cut excavations, directional drilling. Included also are protecting work against rising waters and repair of any resulting damage.

1.2 CONTRACTOR'S RESPONSIBILITY

A. It is the sole responsibility of the CONTRACTOR to identify groundwater conditions and to provide any and all labor, material, equipment, techniques and methods to lower, control and handle the groundwater as necessary for his construction methods and to monitor the effectiveness of this installed system and its effect on adjacent facilities.

B. Operate, maintain and modify the system(s) as required to conform to these Specifications. Upon completion of the Construction, remove the system(s). The development, drilling and abandonment of all wells used in the dewatering system shall comply with regulations of the Florida Department of Environmental Protection and the governing Water Management District.

C. Assume sole responsibility for dewatering systems and for all loss or damage resulting from partial or complete failure of protective measures and any settlement or resultant damage caused by the dewatering operation.

1.3 PLANS AND OTHER DATA TO BE SUBMITTED

A. Prior to commencement of work, submit complete drawings, details and layouts showing the proposed dewatering plans in sufficient detail (i.e., general arrangements, procedures to be used, etc.) so as to allow the ENGINEER to evaluate the proposed dewatering systems. Include the following, as required by the CONTRACTOR's proposed operation:

1. Names of equipment suppliers.

2. Names of installation subcontractors.

3. Plan for dewatering at access shafts and control of surface drainage.

4. Plan for dewatering for cut-and-cover excavations, or otherwise controlling groundwater.

5. Eductor system layout and details.

6. Deep well locations and details.

7. Well point system layout and details.

8. Installation reports for eductors, deep wells and well points.

9. Water level readings from piezometers or observation wells, and method of maintenance.

10. As part of his request for approval of a dewatering system, demonstrate the adequacy of the proposed system and well point filler sand by means of a test installation.

PART 2 PRODUCTS

A. Select equipment including but not limited to pumps, eductors, well points and piping and other material desired.

PART 3 EXECUTION

3.1 DEWATERING EXCAVATIONS

A. Obtain all permits necessary for dewatering operations and file a copy of all such permits with the County Manager or designee and ENGINEER.

B. Furnish, install, operate and maintain all necessary equipment for dewatering the various parts of the Work and for maintaining free of water the excavations and such other parts of the Work as required for Construction operations. Dewatering system should provide for continuous operation including nights, weekends, holidays, etc. Provide appropriate backup if electrical power is primary energy source for dewatering system.

C. Continue dewatering in all required areas, until the involved work is completed, including the placing and compaction of backfill materials.

D. Provide a uniform diameter for each pipe drain run constructed for dewatering. Remove the pipe drain when it has served its purpose. If removal of the pipe is impractical, provide grout connections at 50-foot intervals, and fill the pipe with clay grout or cement and sand grout when the pipe has served its purpose.

3.2 DEWATERING TRENCH

A. Dewatering Excavation Plan: Develop an excavation dewatering plan that considers site ground and groundwater conditions, the type and arrangement of the equipment to be used and the proper method of groundwater disposal. Prepare the dewatering plan before beginning excavations below groundwater. Maintain one copy of the dewatering plan at the project site to be available for inspection while all dewatering operations are underway.

B. Do not lay any pipeline in a trench in the presence of water. Remove all water from the trench sufficiently ahead of the pipeline placing operation. The ENGINEER shall have full and final authority to require dewatering of the trench to ensure a dry, firm bed on which to place the pipeline. As a minimum, maintain water levels at least 6 inches below the bottom of the trench. Continue to dewater trench until trench backfilling operations have been completed.

1. If a dry trench bottom has not been obtained with usual methods of trench dewatering, then the order to excavate below grade and place sufficient select fill material, crushed stone, or 2500 psi concrete over the trench bottom may be given.

2. If all efforts fail to obtain a stable dry trench bottom, and it is determined that the trench bottom is unsuitable for pipe foundation, present an alternate system for stabilization to the Engineer of Record for approval by the County Manager or designee on a case-by-case basis.

C. Removal of water may be accomplished by pumping in connection with well point installation as the particular situation may warrant.

D. If the soils encountered at the trench grade are suitable for the passage of water, without destroying the sides or utility foundation of the trench, sumps may be provided at intervals at the side of the main trench excavation. Use pumps to lower the water level by taking their suction from said sumps.

3.3 REQUIREMENTS FOR EDUCTOR, WELL POINTS OR DEEP WELLS

A. Eductor, well points or deep wells, where used, must be furnished, installed and operated by a reputable CONTRACTOR regularly engaged in this business, and approved.

3.4 DURATION OF DRAINAGE

A. In areas where concrete is to be placed, carry out the foundation drainage so that the required lowering of the water table will be effected prior to placing reinforcing steel. Keep foundation beds free from water to the same levels for 3 days after placing concrete.

3.5 PROTECTION OF STRUCTURES

A. Provide adequate protection for all structures to avoid damage to concrete.

B. Operate construction equipment over completed concrete slabs or structures only with approval. Rubber tire equipment heavier than 5 tons and crawlers heavier than 7 tons will require adequate load spreading by sand fill or other means.

3.6 DISCHARGE OF WATER

A. Do not discharge pumped drainage water into the sanitary sewer system or inhibit pedestrian or vehicular traffic with the groundwater control system.

B. Discharge pumped drainage water into the storm sewer system or drainage ditch by direct means (i.e., discharge hose to inlet, burying header, etc.). Monitor the discharged water to determine that soil particles are not being removed.

C. Conform all discharge to current South Florida Water Management District and Collier County Department of Stormwater Management rules, regulations, procedures and regulatory permits and if discharged into receiving waters, shall not exceed 29 N.T.U.'s above background.

3.7 REPAIR OF DAMAGE

A. Assume full responsibility for all loss and damage due to flooding, rising water or seepage resulting from dewatering operations in any part of the work. Repair any damage to partially completed work from these or other causes, including the removal of slides, repair of foundation beds and performance of any other work necessitated by lack of adequate dewatering or drainage facilities.

END OF SECTION

SECTION 312323

BACKFILLING

PART 1 GENERAL

1.1 SUMMARY

A. General Requirements: Backfill all excavation to the original surface of the ground or to such other grades as may be shown or required. For areas to be covered by topsoil, leave or stop backfill (12) inches below the finished grade. Obtain approval for the time elapsing before backfilling against masonry structures. Remove from all backfill, any compressible, putrescible, or destructible rubbish and refuse and all lumber and braces from the excavated space before backfilling is started. Leave sheeting and bracing in place or remove as the work progresses.

B. Equipment Limitations: Do not permit construction equipment used to backfill to travel against and over cast-in-place concrete structures until the specified concrete strength has been obtained, as verified by concrete test cylinders. In special cases where conditions warrant, the above restriction may be modified providing the concrete has gained sufficient strength, as determined from test cylinders, to satisfy design requirements for the removal of forms and the application of load.

C. Related Work Specified In Other Sections Includes:

1. Section 017416 – Site Clearing

2. Section 312316 – Excavation – Earth and Rock

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 1557 - Standard Test Methods for Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 in Drop

PART 2 PRODUCTS

2.1 BACKFILL MATERIAL - GENERAL

A. General: Refer to Utilities Standards and Procedures Ordinance Section 9.1.2 for laying and backfilling requirements. Backfill with sound materials, free from waste, organic matter, rubbish, boggy or other unsuitable materials. Acceptable backfill shall not contain rocks or stones larger than 2 inches in size.

B. General Materials Requirements: Conform materials used for backfilling to the requirements specified. Follow common fill requirements whenever drainage or select fill is not specified. Determine and obtain the approval of the appropriate test method where more than one compaction test method is specified.

C. Classification of Approved Embedment Materials: Embedment materials listed here include a number of processed materials plus the soil types defined according to the Unified Soil Classification System (USCS) in ASTM D2487. These materials are grouped into 5 broad categories according to their suitability for this application.

1. Class I: Angular, 0.25 inch to 1.5 inch (6 to 40 mm) graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed shells and crushed stone. (Note: The size range and resulting high void ratio of Class I material makes it suitable for use to dewater trenches during pipe installation. This permeable characteristic dictates that its use be limited to locations where pipe support will not be lost by migration of fine grained natural material from the trench walls and bottom or migration of other embedment materials into the Class I material. When such migration is possible, the material's minimum size range should be reduced to finer than 0.25 inch (6 mm) and the gradation properly designed to limit the size of the voids. An alternative to modifying the gradation is to use a geotextile fabric as a barrier to migration to fines.)

2. Class II: Coarse sands and gravels with maximum particle size of 1.5 inches (40 mm), including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW and SP are included in this class. (Note: Sands and gravels, which are clean or borderline between clean and with fines, should be included. Coarse-grained soils with less than 12 percent, but more than 5 percent fines are neglected in ASTM D2487 and the USCS, but should be included. The gradation of Class II material influences its density and pipe support strength when loosely placed. The gradation of Class II material may be critical to the pipe support and stability of the foundation and embedment, if the material is imported and is not native to the trench excavation. A gradation other than well graded, such as uniformly graded or gap graded, may permit loss of support by migration into void spaces of a finer grained natural material from the trench wall and bottom. An alternative to modifying the gradation is to use a geotextile fabric as a barrier to migration of fines.)

3. Class III: Fine sand and clayey (clay filled) gravels, including fine sands, sand-clay mixtures and gravel-clay mixtures. Soil Types GM, GC, SM and SC are included in this class.

4. Class IV: Silt, silty clays and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this class. (Note: Use caution in the design and selection of the degree and method of compaction for Class IV soils because of the difficulty in properly controlling the moisture content under field conditions. Some Class IV soils with medium to high plasticity and with liquid limits greater than 50 percent (CH, MH, CH-MH) exhibit reduced strength when wet and should only be used for bedding, haunching and initial backfill in arid locations where the pipe embedment will not be saturated by groundwater, rainfall or exfiltration from the pipe. Class IV soils with low to medium plasticity and with liquid limits lower than 50 percent (CL, ML, CL-ML) also require careful consideration in design and installation to control moisture content, but need not be restricted in use to arid locations.)

5. Class V: This class includes the organic soils OL, OH and PT as well as soils containing frozen earth, debris, rocks larger than 1.5 inches (40 mm) in diameter and other foreign materials. Do not use these materials for bedding, haunching or backfill.

2.2 SELECT FILL

A. Materials for Select Fill: Use clean gravel, crushed stone, washed shell, or other granular or similar material as approved which can be readily and thoroughly compacted to 95 percent of the maximum dry density obtainable by ASTM D 1557.

1. Allowed Materials: Grade select fill between the following limits:

U.S. Standard Sieve	Percent Passing By Weight
2 inch	100
1-1/2 inch	90-100
1 inch	75-95
1/2 inch	45-70
#4	25-50
#10	15-40
#200	5-15

2. Unallowed Materials: Very fine sand, uniformly graded sands and gravels, sand and silt, soft earth, or other materials that have a tendency to flow under pressure when wet are unacceptable as select fill.

2.3 COMMON FILL

A. Materials for Common Fill: Material from on-site excavation may be used as common fill provided that it can be readily compacted to 90 percent of the maximum dry density obtainable by ASTM D 1557, and does not contain unsuitable material. Select fill may be used as common fill at no change in the Contract Price.

B. Granular Materials On-Site: Granular on-site material, which is fairly well graded between the following limits may be used as granular common fill:

U.S. Standard Sieve	Percent Passing by Weight
2 inch	100
#10	50-100
#60	20-90
#200	0-20

C. Cohesive Materials On-Site: Cohesive site material may be used as common fill.

1. The gradation requirements do not apply to cohesive common fill.

2. Use material having a liquid limit less than or equal to 40 and a plasticity index less than or equal to 20.

D. Material Approval: All material used as common fill is subject to approval. If there is insufficient on-site material, import whatever additional off-site material is required which conforms to the specifications and at no additional cost.

2.4 UTILITY PIPE BEDDING

A. Gradation for Small Piping: For pipe 18 inches or less in diameter, use pipe bedding of material 90 percent of which will be retained on a No. 8 sieve and 100 percent of which will pass a 1/2-inch sieve and be well graded between those limits.

B. Gradation for Large Piping: For pipe larger than 18 inches in diameter, use the same pipe bedding material as specified for smaller pipe or use a similar well graded material 90 percent of which will be retained on a No. 8 sieve and 100 percent of which will pass a 1-inch sieve.

C. Provide a minimum of six (6) inches bedding material under all gravity sewer piping. In areas where poor soil conditions or rock exist, provide a minimum of six (6) inches of pipe bedding material under water or force main pressure pipe.

PART 3 EXECUTION

3.1 PRECAST MANHOLE BEDDING

A. Bedding Compaction: Bed all precast manholes in well graded, compacted 12-inch layer of crushed stone. Compact bedding thickness no less than 6 inches for precast concrete manhole bases.

B. Concrete Work Mats: Cast cast-in-place manhole bases and other foundations for structures against a 2500 psi concrete work mat in clean and dry excavations.

C. Bedding Placement: Place select fill used for bedding beneath precast manhole bases, in uniform layers not greater than 9 inches in loose thickness. Thoroughly compact in place with suitable mechanical or pneumatic tools to not less than 95 percent of the maximum dry density as determined by ASTM D 1557.

D. Use of Select Fill: Bed existing underground structures, tunnels, conduits and pipes crossing the excavation with compacted select fill material. Place bedding material under and around each existing underground structure, tunnel, conduit or pipe and extend underneath and on each side to a distance equal to the depth of the trench below the structure, tunnel, conduit or pipe.

3.2 PIPE BEDDING AND INITIAL BACKFILL

A. Placement: Place backfill for initial pipe backfill from top of bedding to 1 foot over top of pipes in uniform layers not greater than 8 inches in loose thickness. Tamp under pipe haunches and thoroughly compact in place the backfill with suitable mechanical or pneumatic tools to not less than 98 percent of the maximum dry density as determined by ASTM D 1557.

B. Foundation Bedding: Place bedding, to a depth specified by the County Manager or designee, as a foundation in wet, yielding or mucky locations. Construct foundation bedding by removal of the wet, yielding or mucky material and replacement with sufficient Class I material to correct soil instability.

C. Stone Placement: Do not place large stone fragments in the pipe bedding or backfill within 2 feet over or around pipelines, or nearer than 2 feet at any point from any casing pipe, conduit or concrete wall.

D. Machine Compaction: Machine Compaction of initial backfill is prohibited unless adequate cover as deemed by the County Manager or designee is provided. In no case shall adequate cover be less than 12 inches.

E. Unallowed Materials: Pipe bedding containing very fine sand, uniformly graded sands and gravels, sand and silt, soft earth, or other materials that have a tendency to flow under pressure when wet is unacceptable.

3.3 TRENCH BACKFILL

A. General: Backfill trenches from 1 foot over the top of the pipe, from the top of electrical duct bedding or as shown to the bottom of pavement base course, subgrade for lawns or lawn replacement, to the top of the existing ground surface or to such other grades as may be shown or required.

B. Materials: All backfill material shall be acceptable dry materials, and shall be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks, or stones, or other deleterious material which in the opinion of the County Manager or designee is unsuitable.

C. Depth of Placement - Place trench backfill in uniform layers not greater than 12 inches in loose thickness and that can be thoroughly compacted in place using suitable mechanical or pneumatic equipment to not less than 98 percent of the maximum dry density as determined by ASTM D 1557.

D. Depth of Placement - Undeveloped Areas: In nondeveloped areas and where select fill material or hand-placed backfill are not specified or required, place suitable job-excavated material or other approved backfill in lifts not exceeding 12 inches in loose thickness. Lifts of greater thickness may be permitted by the County Manager or designee if the CONTRACTOR demonstrates compliance with required densities. When the trench is full, consolidate the backfill by jetting, spading, or tamping to ensure complete filling of the excavation. Mound the top of the trench approximately 12 inches to allow for consolidation of backfill.

E. Compaction: Compact backfill as a percentage of the maximum density at optimum moisture content as determined by the standard proctor test, ASTM D698 as demonstrated in the following table:

Area	(Mod.) ASTM D1557
Around and 1’ (Min) above top of pipe	98
Remaining Trench	98
Pavement Sub-Grade and Shoulders (Last 3’ of Fill)	98
Base Material and Pavement	98
Adjacent to Structures (Areas not Paved)	98
Under Structures	98
Sub-Base	98

F. Density Tests: Density tests will be made at the request of the County Manager or designee. Deficiencies will be corrected at the expense of the CONTRACTOR.

G. Dropping of Material on Work: Do trench backfilling work in such a way as to prevent dropping material directly on top of any conduit or pipe through any great vertical distance.

H. Distribution of Large Materials: Break lumps up and distribute any stones, pieces of crushed rock or lumps which cannot be readily broken up, throughout the mass so that all interstices are solidly filled with fine material.

3.4 STRUCTURE BACKFILL

A. Use crushed stone underneath all structures, and adjacent to structures where pipes, connections and structural foundations are to be located within this fill. Use crushed stone beneath all pavements, walkways, and railroad tracks, and extend to the bottom of pavement base course or ballast.

1. Place backfill in uniform layers not greater than 8 inches in loose thickness and thoroughly compact in place with suitable approved mechanical or pneumatic equipment.

2. Compact backfill to not less than 95 percent of the maximum dry density as determined by ASTM D 1557.

B. Use of Common Fill: Use common granular fill adjacent to structures in all areas not specified above. Select fill may be used in place of common granular fill at no additional cost.

1. Extend such backfill from the bottom of the excavation or top of bedding to the bottom of subgrade for lawns or lawn replacement, the top of previously existing ground surface or to such other grades as may be shown or required.

2. Place backfill in uniform layers not greater than 8 inches in loose thickness and thoroughly compact in place with suitable equipment, as specified above.

3. Compact backfill to not less than 90 percent of the maximum dry density as determined by ASTM D 1557.

3.5 COMPACTION EQUIPMENT

A. Equipment and Methods: Carry out all compaction with suitable approved equipment and methods.

1. Compact clay and other cohesive material with sheep's-foot rollers or similar equipment where practicable. Use hand held pneumatic tampers elsewhere for compaction of cohesive fill material.

2. Compact low cohesive soils with pneumatic-tire rollers or large vibratory equipment where practicable. Use small vibratory equipment elsewhere for compaction of cohesionless fill material.

3. Do not use heavy compaction equipment over pipelines or other structures, unless the depth of fill is sufficient to adequately distribute the load.

3.6 FINISH GRADING

A. Final Contours: Perform finish grading in accordance with the completed contour elevations and grades shown and blend into conformation with remaining natural ground surfaces.

1. Leave all finished grading surfaces smooth and firm to drain.

2. Bring finish grades to elevations within plus or minus 0.10 foot of elevations or contours shown.

B. Surface Drainage: Perform grading outside of building or structure lines in a manner to prevent accumulation of water within the area. Where necessary or where shown, extend finish grading to ensure that water will be carried to drainage ditches, and the site area left smooth and free from depressions holding water.

3.7 RESPONSIBILITY FOR AFTERSETTLEMENT

A. Aftersettlement Responsibility: Take responsibility for correcting any depression which may develop in backfilled areas from settlement within one year after the work is fully completed. Provide, as needed, backfill material, pavement base replacement, permanent pavement, sidewalk, curb and driveway repair or replacement, and lawn replacement, and perform the necessary reconditioning and restoration work to bring such depressed areas to proper grade as approved.

3.8 INSPECTION AND TESTING OF BACKFILLING

A. Sampling and Testing: Provide sampling, testing, and laboratory methods in accordance with the appropriate ASTM Standard Specification. Subject all backfill to these tests.

B. Correction of Work: Correct any areas of unsatisfactory compaction by removal and replacement, or by scarifying, aerating or sprinkling as needed and recompaction in place prior to placement of a new lift.

C. Testing Schedule:

1. Compaction Schedule

2. Optimum Moisture Content (Proctor Test)

END OF SECTION

SECTION 314000

SHORING, SHEETING AND BRACING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Work required for protection of an excavation or structure through shoring, sheeting, and bracing.

B. Related Work Specified In Other Sections Includes:

1. Section 312316 – Excavation – Earth and Rock

2. Section 312323 – Backfilling

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. CONTRACTOR's Submittals: All sheeting and bracing shall be the responsibility of the CONTRACTOR to retain qualified design services for these systems, and to be completed with strict adherence to OSHA Regulations. Submit complete design calculations and working drawings of proposed shoring, sheeting and bracing which have been prepared, signed and sealed by a Licensed Professional Engineer experienced in Structural Engineering and registered in the State of Florida, before starting excavation for jacking pits and structures. Use the soil pressure diagram shown for shoring, sheeting and bracing design. ENGINEER's review of calculations and working drawings will be limited to confirming that the design was prepared by a licensed professional engineer and that the soil pressure diagram shown was used.

1.3 REFERENCES

A. Design: Comply with all Federal and State laws and regulations applying to the design and construction of shoring, sheeting and bracing.

B. N.B.S. Building Science Series 127 "Recommended Technical Provisions for Construction Practice in Shoring and Sloping Trenches and Excavations."

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Do work in accordance with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54), and the Florida

Trench Safety Act. Observe 29 CFR 1910.46 OSHA regulations for Confined Space Entry.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND MATERIALS

A. Material Recommendations: Use manufacturers and materials for shoring, sheeting and bracing as recommended by the Licensed Professional Engineer who designed the shoring, sheeting, and bracing.

1. Wood Materials: Oak, or treated fir or pine for wood lagging.

PART 3 EXECUTION

3.1 SHORING, SHEETING AND BRACING INSTALLATION

A. General: Provide safe working conditions, to prevent shifting of material, to prevent damage to structures or other work, to avoid delay to the work, all in accordance with applicable safety and health regulations. Properly shore, sheet, and brace all excavations which are not cut back to the proper slope and where shown. Meet the general trenching requirements of the applicable safety and health regulations for the minimum shoring, sheeting and bracing for trench excavations.

1. CONTRACTOR's Responsibility: Sole responsibility for the design, methods of installation, and adequacy of the shoring, sheeting and bracing.

B. Arrange shoring, sheeting and bracing so as not to place any strain on portions of completed work until the general construction has proceeded far enough to provide ample strength.

C. If ENGINEER is of the opinion that at any point the shoring, sheeting or bracing are inadequate or unsuited for the purpose, resubmission of design calculations and working drawings for that point may be ordered, taking into consideration the observed field conditions. If the new calculations show the need for additional shoring, sheeting and bracing, it should be installed immediately.

D. Monitoring: Periodically monitor horizontal and vertical deflections of sheeting. Submit these measurements for review.

E. Accurately locate all underground utilities and take the required measures necessary to protect them from damage. Keep all underground utilities in service at all times as specified in Division 1.

F. Driven Sheeting: Drive tight sheet piling in that portion of any excavation in paved or surface streets City collector and arterial streets and in State and County highways below the intersection of a one-on-one slope line from the nearest face of the excavation to the edge of the existing pavement or surface.

G. Sheeting Depth: In general drive or place sheeting for pipelines to a depth at elevation equal to the top of the pipe as approved.

1. If it is necessary to drive sheeting below that elevation in order to obtain a dry trench or satisfactory working conditions, cut the sheeting off at the top of the pipe and leave in place sheeting below the top of the pipe.

2. Do not cut the sheeting until backfill has been placed and compacted to the top of the pipe.

H. Sheeting Removal: In general, remove sheeting and bracing above the top of the pipe as the excavation is refilled in a manner to avoid the caving in of the bank or disturbance to adjacent areas or structures. Remove sheeting as backfilling progresses so that the sides are always supported or when removal would not endanger the construction of adjacent structures. When required to eliminate excessive trench width or other damages, shoring or bracing shall be left in place and the top cut off at an elevation 2.5 feet below finished grade, unless otherwise directed.

1. Carefully fill voids left by the withdrawal of the sheeting by jetting, ramming or otherwise.

2. No separate payment will be made for filling of such voids.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 320117

PAVEMENT REPAIR AND RESTORATION

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and remove and replace pavements over trenches excavated for installation of pipelines as shown on the drawings and/or specified herein.

1.2 GENERAL

A. Repair all damage, as a result of work under this project, done to existing pavement, driveways, paved areas, curbs and gutters, sidewalks, shrubbery, grass, trees, utility poles, utility pipe lines, conduits, drains, catch basins, or stabilized areas or driveways and including all obstructions not specifically named herein, in a manner satisfactory to the ENGINEER. Include in the bid price, the furnishing of all labor, materials, equipment, and incidentals necessary for the cutting, repair, and restoration of the damaged areas unless pay items for specific types of repair are included in the Bid Form.

B. Keep the surface of the backfilled area of excavation in a safe condition and level with the remaining pavement until the pavement is restored in the manner specified herein. All surface irregularities that are dangerous or obstructive to traffic are to be removed. Conform the repair to applicable COUNTY or State requirements for pavement repair and as described herein.

C. The COUNTY reserves the right to require soil bearing or loading tests or materials tests, should the adequacy of the foundation or the quality of materials used be questionable. Costs of these tests shall be the responsibility of the COUNTY, if found acceptable; the costs of all failed tests shall be the responsibility of the CONTRACTOR.

D. Make all street and road repair in accordance with the details indicated on the drawings and in accordance with the applicable requirements of these Specifications and meeting the permit requirements and approval of the governing Department of Transportation agencies.

E. Replace pavement or roadway surfaces cut or damaged in equal or better condition than the original, including stabilization, base course, surface course, curb and gutter or other appurtenances. Obtain the necessary permits prior to any roadway work. Provide advance notice to the appropriate authority, as required, prior to construction operations.

1. Roadway Restoration (within Collier County Department of Transportation & Engineering jurisdiction): Perform restoration in accordance with the requirements set forth in the “Right-of-Way Utility Construction Activities Policy” and these Standards. Obtain prior approval from Collier County DOT for the materials of construction and method of installation, along with the proposed restoration design for items not referred or specified herein.

    a. Where existing pavement is to be removed, mechanical saw cut the surface prior to trench excavation, leaving a uniform and straight edge parallel or perpendicular to the roadway centerline with minimum disturbance to the remaining adjacent surfacing. Provide minimal width of cut for this phase of existing pavement removal.

    b. Immediately following the specified backfilling and compaction, apply a temporary sand seal coat surface to the cut areas. For this temporary surfacing, provide a smooth traffic surface with the existing roadway and maintain until final restoration. Ensure that surfacing remains for a minimum of ten (10) days in order to assure the stability of the backfill under normal traffic conditions. Thirty (30) days following this period and prior to sixty (60) days after application: remove the temporary surfacing and perform final roadway surface restoration.

    c. In advance of final restoration, remove the temporary surfacing and mechanically saw the existing pavement straight and clean to the stipulated dimensions, if needed. Following the above operation, proceed immediately with final pavement restoration in accordance with the requirements set forth by Collier County Department of Transportation.

    d. No layer shall be greater than two inches (2") when compacted. Where a surface course is constructed to a thickness greater than two inches (2"), construct it in approximately equal layers, each not exceeding two inches (2").

    e. Where necessitated by traffic conditions, lay mixture in strips in such manner as to provide for the passage of traffic. Where the road is closed to traffic, mixture may be laid to the full width, by machines traveling in parallel.

2. Roadway Restoration (outside Collier County Department of Transportation jurisdiction) – Conform work within the rights-of-way of public thoroughfares which are not under jurisdiction of Collier County to the requirements of the Governmental agency having jurisdiction or the Florida Department of Transportation, if no governmental agencies have jurisdiction. Work within State Highway right-of-way shall be in full compliance with all requirements of the permit drawings, and to the satisfaction of the Florida Department of Transportation.

1.3 QUALITY ASSURANCE

A. Applicable provisions of the latest version of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", and Supplemental Specifications hereunder govern the work under this Section. The Florida Department of Transportation will hereafter be referred to as FDOT.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials for flexible base pavement and base course as specified in the latest version of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction".

PART 3 EXECUTION

3.1 CUTTING PAVEMENT

A. Cut and remove pavement to straight edges, 6 inches outside each edge of proposed trench to avoid pavement damage during installation of the new pipelines and appurtenances and for making connections to existing pipelines.

B. Before removing pavement, mark the pavement for cuts nearly paralleling pipelines and existing street lines. Cut asphalt pavement along the markings with a jackhammer, rotary saw, or other suitable tool.

C. No pavement shall be machine pulled until completely broken and separated along the marked cuts.

D. The pavement adjacent to pipeline trenches shall neither be disturbed nor damaged. If the adjacent pavement is disturbed or damaged, irrespective of cause, remove the damaged pavement replace it at CONTRACTOR’s expense.

3.2 GENERAL RESTORATION

A. Restore, replace or rebuild existing street paving, driveways, etc., using the same type of construction as was in the original. Be responsible for restoring all such work, including sub-grade and base courses where present. Obtain and pay for such local or other governmental permits as may be necessary for the opening of streets. Meet any requirements other than those herein set forth which may affect the type, quality and manner of carrying on the restoration of surfaces by reason of jurisdiction of such governmental bodies.

B. In all cases, maintain, without additional compensation, all permanent replacement of street paving, done by him under this Contract until accepted by the County Manager or designee, including the removal and replacement of such

work wherever surface depressions or underlying cavities result from settlement of trench backfill.

C. Complete all the final resurfacing or re-paving of streets or roads, over the excavations and relay paving surfaces of roadbed that have failed or been damaged prior to acceptance by the County Manager or designee. Conform backfilling of trenches and the preparation of sub-grades to the requirements of Section 312323.

D. Do all re-paving or resurfacing in accordance with Florida Department of Transportation Specifications, to which the following requirement of trench backfill will be added: Where pipeline construction crosses paved areas such as streets, backfill the top 24 inches of trench below the road bases or concrete slabs with compacted A-4 or better material that will provide a bearing value of not less than 75 when tested by the Florida Department of Transportation Soil Bearing Test Methods.

3.3 PRIME AND TACK COATS

A. Apply bituminous prime and tack coats on the previously prepared base course in accordance with Section 300 of the FDOT Specifications.

3.4 WEARING COURSE

A. Use plant-mixed hot bituminous pavement to the thickness indicated in the drawings conforming to Type III asphaltic concrete in accordance with Section 333 of the FDOT Specifications. The requirements for plant and equipment are specified in Section 320 and the general construction requirements for asphaltic concrete pavement are contained in Section 330 of the FDOT specifications.

3.5 TESTING

A. Perform all field-testing at an independent laboratory employed by the COUNTY. Test and certify all materials by the producer. Repeat tests of sub-grade or base not meeting specified compaction at the CONTRACTOR's expense.

3.6 MISCELLANEOUS RESTORATION

A. Restore sidewalks, cut or damaged by construction, in full sections or blocks to a minimum thickness of four inches. Restore concrete curb or curb gutter to the existing height and cross section in full sections or lengths between joints. Concrete shall be as specified on the drawings. Restore grassed yards, shoulders and parkways to match the existing sections with grass seed or sod of a type matching the existing grass.

3.7 CLEANUP

A. After all repair and restoration or paving has been completed, remove all excess asphalt, dirt, and other debris from the roadways. Check and clean all existing storm sewers and inlets of any construction debris.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 321300

SIDEWALKS, DRIVEWAYS AND CURBS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Sidewalks, sidewalk ramps, driveways, curbs and drive approaches complete with concrete materials, concrete curing compounds, joint materials, field quality control and appurtenances.

1.2 REFERENCES

A. Reference Standards: Conform the work for this Section to the applicable portions of the following standard Specifications.

1. ASTM - American Society of Testing and Materials

2. AASHTO - American Association of State Highway and Transportation Officials

3. FDOT - Florida Department of Transportation - Standard Specifications for Road and Bridge Construction.

4. FAC - Florida Accessibility Code.

5. ADAAG - American with Disabilities Act Accessibility Guidelines

6. UFAS - Uniform Federal Accessibility Standards

1.3 SUBMITTALS

A. Reports: Written permission for the use of all local disposal sites Furnish copies to the ENGINEER.

B. Test Reports:

1. Thickness and Compressive Strength: Provide the ENGINEER with two (2) certified copies of the test results. Perform the tests by a laboratory approved by the ENGINEER.

1.4 JOB CONDITIONS

A. Environmental Requirements:

1. Temperature: Comply with the requirements for concrete installation due to outside ambient air temperatures as specified under Article 3.3.I of this Section.

B. Protection:

1. Protection Against Rain: Comply with the requirements for protecting new work against damage from Rain, as specified under Article 3.3.I of this Section.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete: Use 2,500-psi concrete except as modified herein.

B. Ready-Mixed Concrete: Use ready-mixed concrete that conforms to ASTM C94, Alternate 2.

C. Water: Use water for mixing and curing concrete reasonably clean and free from oil, salt, acid, alkali, chlorides, sugar, vegetable, or other substances injurious to the finished product. Waters from sources approved by the local Health Department as potable may be used without test. Test water requiring testing in accordance with the current Method of Test for Quality of Water to be Used in Concrete, AASHTO T-26.

D. Concrete Curing Compounds: Use white membrane curing compound for curing concrete that conforms to AASHTO M148, Type 1 clear, or Type 2 while per FDOT Section 925.

E. Premolded Joint Filler: Use fiber joint filler that conforms to ASTM D1751. Use filler of the thickness, as specified herein, or as directed by the ENGINEER.

F. Steel Hook Bolts: Use hook bolts that conform to ASTM A706, or for Grade 60 of ASTM A615, A616, or A617. Use 5/8-inch diameter hook bolts self-tapping.

G. Joint Sealant: Use hot-poured type joint sealant that conforms to ASTM D1190.

PART 3 EXECUTION

3.1 CONTRACTOR'S VERIFICATION

A. Excavation and Forming: Prior to the installation of any concrete, examine the excavation and forms for the proper grades, lines, and levels required to receive the new work. Ascertain that all excavation and compacted subgrades are adequate to receive the concrete to be installed.

1. Correct all defects and deficiencies before proceeding with the work.

B. Existing Improvements: Investigate and verify location of existing improvements to which the new work is to be connected.

1. Making necessary adjustment in line and grade to align the new work with the existing improvements must be approved by the ENGINEER prior to any change.

3.2 PREPARATION

A. Forms: Use wood or metal forms, straight and free from warp, clean, and sufficient strength to resist springing during the process of depositing concrete against them.

1. Use full depth of the concrete forms.

3.3 INSTALLATION

A. Sidewalks, Sidewalk Ramps, Driveways and Driveway Approaches: Construct all sidewalks and sidewalk ramps four (4) inches thick except at driveways and alleys. Construct thickness of the sidewalks six (6) inches at driveways and alleys. Construct sidewalks five (5) feet wide unless otherwise noted on the Plans, and slope 1/4-inch per foot towards the center of the road. Normally, sidewalks will be located within the right-of-way, parallel the property lines, at a distance of 1-foot from the property line.

1. Construct alleys, driveways and approaches six (6) inches thick. Construct the width of the driveways and driveway approaches as shown on the Plans or as directed by the ENGINEER.

B. Removal of Existing Curb for Sidewalk Ramps and Driveway Approaches: Conform construction of sidewalk ramps within street intersections where curbed pavement existing to the current FDOT Roadway and Traffic Design Standards.

1. Saw cut, to full depth of pavement, and remove a minimum of an 18-inch wide curb and gutter section where there is no proper curb drop for the sidewalk ramp or driveway approach. When mountable curbs are present, remove a 24-inch wide curb and gutter section for the construction of sidewalk ramps, as specified above.

2. Remove curb and gutter as determined by the ENGINEER in the field but remove curb and gutter at least as wide as the proposed sidewalk ramp plus 1-foot on each side.

3. Replace the removed curb and gutter section with materials, equal to what was removed and seal joint with hot poured rubber asphalt.

C. Install 5/8-inch diameter self-tapping hook bolts, in the existing concrete pavement as indicated on the Plans prior to placing concrete for the removed curb and gutter section.

D. Placement of Forms: Use wood forms, straight and free from warp, of nominal depth for sidewalk sections less than 25 feet in length.

1. Stake forms to line and grade in a manner that will prevent deflection and settlement.

2. When unit slab areas are to be poured, place slab division forms such that the slab division joints will be straight and continuous.

3. Set forms for sidewalk ramps to provide a grade toward the centerline of the right-of-way in accordance with current standards. Use a uniform grade, except as may be necessary to eliminate short grade changes.

4. Oil forms before placing concrete. Leave forms in place at least 12 hours after the concrete is placed. Place forms ahead of the pouring operations to maintain uninterrupted placement of concrete.

5. The use of slip form pavers can be allowed when approved by the ENGINEER in lieu of the construction system described above.

E. Joints: Construct transverse and longitudinal expansion and plane-of-weakness joints at the locations specified herein, or as indicated on the Plans or as directed by the ENGINEER.

1. Place the transverse expansion joints for the full width and depth of the new work. Use transverse expansion joints placed against an existing pavement a minimum of six (6) inches deep but no less than the thickness of the concrete being placed.

2. Conform longitudinal expansion joints to the requirements as transverse expansion joints.

3. Construct joints true to line with their faces perpendicular to the surface of the sidewalk. Install the top slightly below the finished surface of the sidewalk. Construct transverse joints at right angles to the centerline of the sidewalk and construct longitudinal joints parallel to the centerline or as directed by the ENGINEER.

4. Place transverse expansion joints, 1/2-inch thick, through the sidewalk at uniform intervals of not more than 50 feet and elsewhere as shown on the Plans, or as directed by the ENGINEER.

5. Place expansion joints, 1/2-inch thick, between the sidewalk and back of abutting parallel curb, buildings or other rigid structures, concrete driveways and driveway approaches. When directed by the ENGINEER, place the expansion joint between sidewalks and buildings 1-foot from the property line and parallel to it.

6. Form plane-of-weakness joints every five (5) feet. Form joints by use of slab divisions forms extending to the full depth of the concrete or by cutting joints in the concrete, after floating, to a depth equal to 1/4 the thickness on the sidewalk. Construct cut joints not less than 1/8-inch or more than 1/4-inch in width and finish smooth and at right angles to the centerline on the sidewalk.

F. Placing and Finishing Concrete: Place all concrete on a prepared unfrozen, smooth, leveled, rolled and properly compacted base. Place concrete on a moist surface with no visible water present.

1. Deposit the concrete, in a single layer to the depth specified. Spade or vibrate and compact the concrete to fill in all voids along the forms and joints. Strike off the concrete with a strike board until all voids are removed and the surface has the required grade and cross section as indicated on the Plans, or as directed by the ENGINEER.

2. Float the surface of the concrete just enough to produce a smooth surface free from irregularities. Round all edges and joints with an edger having a 1/4-inch radius.

3. Broom the surface of sidewalks, driveways and approaches to slightly roughen the surface.

4. Texture the surface of the sidewalk ramps with a coarse broom transversely to the ramp slope, and coarser roughen than the remainder of the sidewalk. Contract the ramp slope in color (using a brick-red dye or approved equal) from the remainder of the sidewalk. Comply with minimum color contract and slope requirements from FAC, UFAS, ADAAG, Local Government Standards, or as directed by the ENGINEER.

G. Curing: After finishing operations have been completed and immediately after the free water has left the surface, completely coat and seal the surface of the concrete (and sides if slip-forming is used) with a uniform layer of white membrane curing compound. Do not thin the curing compound. Apply the curing compound at the rate of one gallon per 200 square feet of surface.

H. Barricades: Place suitable barricades and lights around all newly poured sidewalks, sidewalk ramps, driveways, driveway approaches and curb and gutter sections in order to protect the new work from damage from pedestrians, vehicles and others until the concrete has hardened.

1. Leave barricades in place for a minimum of two (2) days, except for driveway approaches and curb and gutter sections. Leave barricades in place for a minimum of three (3) days.

2. Remove and replace any concrete that suffers surface or structural damage at no additional cost.

I. Protection:

1. Against Rain: Protect new concrete from the effects of rain before the concrete has sufficiently hardened. Have available on the job site at all times enough burlap or 6-mil thick polyurethane film to cover and protect one day's work. Stop work and cover completed work when rain appears eminent. As soon as the rain ceases, uncover the concrete and burlap drag the surface where necessary. Apply curing compound to any areas where the compound has been disturbed or washed away.

2. Against Cold Weather: If concrete is placed between December 15 and February 15, have available on the site sufficient amount of clean, dry straw or hay to cover one (1) day's production. If the temperature reaches 40 degrees F and is falling, place the hay or straw 12 inches thick, immediately after the curing compound is applied.

3. Concrete Temperature Limitations: Do not place concrete when the temperature of the concrete at the point of placement is above 90 degrees F.

J. Cleanup: After the concrete has gained sufficient strength, but no sooner than within 12 hours, remove the fixed forms and backfill the spaces on both sides with sound earth of topsoil quality. Compact, level and leave backfill in a neat condition.

K. Gutters and Curbs: Construct gutters and curbs in accordance with Section 520 FDOT Standard Specifications for Road and Bridge Construction, latest edition, including supplements.

3.4 FIELD QUALITY CONTROL

A. Concrete Delivery Ticket: Use a ticket system for recording the transportation of concrete from the batching plant to point of delivery. Issue this ticket to the truck operator at the point of loading and give to the ENGINEER upon delivery.

B. Concrete Delivery Rejection: Remove concrete not permitted for inclusion in the work by the ENGINEER from the site. Rejection of concrete will be determined through Field Quality Control and elapsed time from mixer charging to delivery.

C. Concrete Testing at Placement: Perform tests of each batch of concrete delivered, each 50 cubic yards, or whenever consistency appears to vary. The

sampling and testing of slump, air content and strength will be performed at no cost to the CITY.

1. Sampling: Secure composite samples in accordance with the Method of Sampling Fresh Concrete, ASTM C172.

2. Slump Test: Test in accordance with ASTM C143. Use the least slump possible consistent with workability for proper placing of the various classifications of concrete.

    a. Place structural concrete for walls and slabs, by means of vibratory equipment, with a slump of four (4) inches.

    b. A tolerance of up to 1-inch above the indicated maximum will be allowed for individual batches provided the average for all batches or the most recent ten (10) batches tested, whichever is fewer, does not exceed the maximum limit.

3. Air Content: Determine air content of normal weight concrete in accordance with Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method, ASTM C23 1, or by the volumetric method, ASTM C 173, for each strength test.

4. Compressive Strength: Make two (2) strength tests of three (3) samples each for each 50 cubic yards, or fraction thereof, of each mix design of concrete placed in any one (1) day.

    a. Handling Samples: Mold and cure three (3) specimens from each sample in accordance with Method of Making and Curing Concrete Test Specimens in the Field, ASTM C31. Record any deviations from the requirements of this Standard in the test report.

    b. Testing: Test specimens in accordance with Method of Test for Compressive Strength of Cylindrical Concrete Specimens, ASTM C39. Test one (1) specimen at seven (7) days for information and test two (2) at 28 days for acceptance. Use the average of the strengths of the two (2) specimens tested at 28 days. Discard results if one (1) specimen in a test manifests evidence of improper sampling, molding or testing, and use the strength of the remaining cylinder. Should both specimens in test show any of the above defects, discard the entire test.

    c. Acceptance of Concrete: The strength level of the concrete will be considered satisfactory so long as the averages of all sets of three consecutive strength test results equal or exceed the specified 28-day strength and no individual strength test results falls below the specified 28-day strength by more than 500 psi. If the strength test is not acceptable, perform further testing to qualify the concrete.

d. Concrete Temperature: Determine the temperature of concrete sample for each strength test.

D. Reductions due to deficiencies in thickness or compressive strength are additive, that is, if an area is deficient by 3/8 inch and under strength by 200 psi, the total reduction is 20% plus .02% or .40% reduction.

END OF SECTION

SECTION 323113

CHAIN LINK FENCING AND GATES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing vinyl coated galvanized steel chain link fencing and gates.

B. Related Work Specified in Other Sections Includes:

1. Section 033100 – Concrete, Masonry, Mortar and Grout

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM 1043 - Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework

2. ASME B36.10M - Welded and seamless wrought steel pipe

3. FS RR-F-191 - Fencing, Wire and Post, Metal

1.3 DESIGN

A. General: Provide fencing of the chain-link type and six (6) feet high with six (6) feet of diamond mesh woven wire fabric. Locate the fence as shown.

B. Fabric, Supports and Fittings: Provide steel fabric, supports and fittings except as specified.

C. Fabric, Supports and Fittings: Provide green or black color coated steel fabric, supports and fittings. Coat the framework, posts and hardware except hinges and latches to match the fabric with thermoplastic or thermoset resins and provide oven-baked materials to a minimum dry coating of seven mils. Color coat all accessories except hinges and latches to match the fence. Provide aluminum hinges and latches.

D. Pipe Sizes and Weights: Provide pipe sizes and weights meeting the requirements of ASME B 36.10, Table 2 and ASTM A 53, Table 1. All pipe sizes listed are nominal, unless otherwise indicated.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers are listed in the County Approved Product List, Appendix F. Other manufacturers of equivalent products may be submitted.

2.2 FABRIC

A. Provide fabric that is a one piece woven 2-inch mesh chain link of 6-gauge steel wire with a minimum breakload of 1800 lbs/ft. and which is interwoven to form a continuous fabric with no splices and is coated after weaving. Provide the top selvage knuckled for fabric 60 inches high and under, and the bottom selvage twisted and barbed for fabric over 60 inches high. Clean the fabric of all grease and foreign matter before coating and shipping. Stretch the fabric tightly approximately three inches above grade level and attach the fabric to the terminal or gateposts using beveled tension bands and tension bars.

1. Provide galvanized fabric that is fusion coated with a minimum seven-mil coating of polyvinyl chloride (PVC) applied over a thermoset plastic bonding agent. Conform the PVC to Federal Specification RR-F-191.

2. Vinyl coat all cut ends.

3. Conform aluminum fabric to Fed. Spec. RR-F-191.

2.3 TENSION WIRE

A. For the tension wire for the fence bottom use minimum 6-gauge galvanized coil spring steel fusion color coated as specified for the fabric.

2.4 TOP AND BRACE RAILS

A. General: Furnish the top rail in approximately 20-foot lengths with couplings approximately 6 inches long for each joint. Provide one coupling in each 5 with an expansion spring. Provide the rail continuous from end-to-end for each run of fence. Provide brace rails at all terminal posts, locate the rails midway between the top and bottom of the fabric and extend from the terminal post to the first adjacent line post. Securely fasten rails at both ends. Provide top and brace rails that are galvanized steel fusion color coated as specified for framework in Subsection 1.03 C.

B. Pipe Type: 1-1/4-inch, Schedule 40 pipe or a 1.625- by 1.25-inch roll-formed section with minimum bending strength of 192 pounds on 10-foot span.

2.5 POSTS

A. General: Provide all posts that are coated as specified for vinyl-coated framework, posts and hardware in Subsection 1.03 C.

B. Pipe Posts: Provide pipe posts as follows:

1. For end, corner and pull posts use 2-1/2-inch, Schedule 40 pipe

2. For line posts use 2-inch, Schedule 40 pipe

3. For gate posts use the following pipes for different leaves:

   a. For leaves up to 6 feet wide, use 2-1/2-inch Schedule 40 pipe

   b. For leaves over 6 feet to 12 feet wide, use 3-1/2-inch Schedule 40 pipe

   c. For leaves over 12 feet to 18 feet wide, use 6-inch Schedule 40 pipe

C. Bending Strength: Provide materials with the minimum bending strength based on a 6-foot cantilever for rolled formed or tube posts as follows:

	Galvanized Steel
1. End, Corner and Pull Posts:	
2.875" O.D. roll formed or	444
2-1/2-inch square tube	547
2-1/2-inch square, heavy wall extrusion	
2. Line Posts:	
For fences 8 feet maximum height 1.875- by 1.625-inch C-Section	245
For fences over 8 feet high 2.25- by 1.703-inch C-Section	347
3. Gate Posts:	
For leaves up to 6 feet wide (2.875-inch O.D. roll formed or	444
2-1/2-inch square tube	645

2.6 GATES

A. General: For the perimeter construction of gates with leaves up to 6 feet wide, use 1-1/2-inch Schedule 40 pipe or 1-1/2-inch square steel tube, and for gates with leaves greater than 6 feet wide, use 2-inch Schedule 40 pipe or 2-inch square steel tube.

B. Braces: Provide the gates with sufficient horizontal and vertical members and bracing to ensure structural stability to prevent sagging and to provide for the attachment of fabric, hardware and accessories. Provide gates with diagonal cross bracing consisting of 3/8-inch diameter adjustable length truss rods where necessary to provide frame rigidity without sag or twist.

C. Cantilever Sliding Gates: Furnish cantilever overhang as follows:

Gate Leaf Size	Overhang
6'-0" to 10'-0"	6'-6"
11'-0" to 14'-0"	7'-6"
15'-0" to 22'-0"	10'-0"
12'-0" to 30'-0"	12'-0"

1. For gates leaf sizes 23'-0" to 30'-0", add one additional 2-inch square lateral support rail welded adjacent to the top horizontal rail. Make the bottom rail of 2" x 4" tubing weighing 1.71 pounds per foot.

2. Provide all cantilever overhang frames having 3/8-inch (galvanized steel) (aluminum) brace rods.

3. Provide the enclosed track made of a combined track and rail aluminum extrusion having a total weight of 3.72 pounds per foot and designed to withstand a reaction load of 2,000 pounds.

4. Provide each gate leaf with two swivel type zinc die cast trucks having four sealed lubricant ball-bearing wheels, 2-inch in diameter by 9/16-inch in width, with two side rolling wheels to insure alignment of the truck in the track. Hold trucks to post brackets by 7/8-inch diameter ball bolts with 1/2-inch shank. Design truck assemblies to take the same reaction load as the track.

5. Install gates on 8.625-inch OD Schedule 40 (galvanized)) posts. Use three posts for single slide gate and four posts for double slide gate.

6. Provide guide wheel assemblies for each supporting post. Provide each assembly consisting of two rubber wheels 4 inches in diameter attached to a post so that the bottom horizontal member will roll between the wheels which can be adjusted to maintain gate frames plumb and in proper alignment.

D. Gate Accessories: Equip gates with hinges, latches, center stops, hasps, holdbacks, and padlocks. Provide hinges, latches, center stops, hasps, and holdbacks that are aluminum. Provide double gates with a center drop bar and gate holdbacks.

E. Latches: Provide gate latches that are positive locking, pivoting type with the padlocking arrangement accessible from either side of the gate.

F. Hinges: Hang all gates on offset hinges to permit swinging the gate through a 180-degree arc to lie, when not obstructed, along and parallel to the line of the fence.

2.7 ATTACHMENTS

A. General: Provide all attachments fabricated of coated to match the fabric as specified for framework, posts and hardware in Subsection 1.03, except provide aluminum hinges and latches.

B. Tension Bars: Provide 3/16-inch by 3/4-inch galvanized carbon steel tension bars attached to the terminal posts by means of beveled edge bands.

C. Truss Rods: Provide 3/8-inch diameter galvanized carbon steel truss rods. Securely mount truss rods between the line post end of the brace rail and the base of the terminal post.

D. Post Tops: Provide post tops of galvanized pressed steel or malleable iron to form weathertight caps for post or tube posts. Make provisions for installation or passage of the top rail.

E. Brace and Tension Bands: Provide galvanized steel brace bands and tension bands, of the "unclimbable" beveled edge type with 3/8-inch diameter square shouldered aluminum carriage bolts, nonremovable from outside of the fence.

F. Rail Couplings: Provide rail couplings of the outside sleeve type, not less than six inches long, self-centering, which allows for expansion and contraction. Provide aluminum galvanized steel rail couplings.

G. Fabric Ties: Provide 9-gauge galvanized steel fabric ties.

H. Hog Rings: Provide 9-gauge wire, aluminum alloy, Type 6061-T6 hog rings.

I. Extension Arms: Provide galvanized pressed steel extension arms for supporting the barbed wire where used. Design the arms with an adequate cross section to withstand without failure or permanent deflection a perpendicular force of 250 pounds applied at the end of the arm when the arm is securely attached to the post. Construct extension arms to be slanted out.

PART 3 EXECUTION

3.1 INSTALLATION

A. General: Install all fencing and accessories according to the manufacturer's recommendations. Do not begin installation and erection before final grading is completed, unless otherwise approved.

B. Excavation: Drill or hand excavate (using post hole digger) holes for posts to the diameter and spacing indicated, in firm, undisturbed or compacted soil.

1. If not indicated, excavate holes for each post to the minimum diameter recommended by the fence manufacturer, but not less than four times the largest cross-section of the post.

2. Unless otherwise indicated excavate the hole depths approximately 3 inches lower than the post bottom, with the bottom of posts set not less than 36 inches below the finished grade surface.

C. Tension Wire: Attach the tension wire to the bottom of the fabric by hog rings spaced at 24-inch intervals and to terminal posts by brace bands.

D. Posts: Set posts plumb in concrete encasement at not more than 10-foot centers in the line of the fence with the tops properly aligned. Extend concrete encasement for line posts a minimum of three feet below finish grade with a minimum diameter of ten inches. Extend concrete encasement for terminal, corner and gate posts 40 inches below finished grade, except gate posts for leaves greater than 6 feet, for which extend the encasement 54 inches below grade. Provide the minimum diameter of encasement for terminal, corner and gateposts to be sufficient to provide not less than four inches between any part of the post and the face of the concrete and in no case provide the diameter to be less than 12 inches. Set line posts 32 inches into the concrete and set all other posts 36 inches, except gate posts for leaves greater than 6 feet wide, which are to be set 48 inches into the concrete. Slope the top exposed surface of the concrete to shed water and provide a neat appearance.

1. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold posts in position during placement and finishing operations.

a. Unless otherwise indicated, extend the concrete footing 2 inches above grade and trowel to a crown to shed water.

2. Where aluminum is in contact with concrete, coat the aluminum.

E. Fabric Ties: Space fabric ties approximately 12 inches apart on the line posts and 12 inches apart on the rails. (For clips used with C-section posts, use galvanized 11-gauge steel wire.)

F. Fabric: Leave approximately 3 inches between finished grade and the bottom selvage, unless otherwise indicated. Pull the fabric taut and tie to posts, rails, and tension wires. Install the fabric on the security side of the fence, and anchor the fabric to the framework so that the fabric remains in tension after the pulling force is released.

G. Fasteners: Install nuts for tensions bands and hardware bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent nut removal.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 329200

RESTORATION BY SODDING OR SEEDING

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The work in this section consists of furnishing all labor, material and equipment to restore all areas disturbed during construction to match preconstruction conditions. Establish a stand of grass within the areas disturbed by furnishing and placing grass sod where required, or by seeding and mulching areas not requiring sod.

1.2 REFERENCE DOCUMENTS

A. Use materials conforming to the requirements of Florida Department of Transportation Standard Specifications for Road and Bridge Construction as follows:

1. Section 570 – Grassing (by Seeding)

2. Section 575 – Sodding

3. Section 981 – Grassing and Sodding Materials

4. Section 982 – Commercial Fertilizer

5. Section 983 – Water for Grassing

1.3 SUBMITTALS

A. Submit certifications and identification labels for all sodding supplied in accordance with General Conditions.

PART 2 PRODUCTS

2.1 SODDING

A. Types: Sod may be of either St. Augustine or Argentine Bahia grass or as that disturbed, as established prior to construction. Use well matted sod with roots. When replacing sod in areas that are already sodded, use sod of the same type as the existing sod.

B. Provide sod as required in accordance with Florida Department of Transportation Specifications 575 and 981. Furnish sod equal to and similar in type as that disturbed. Place and water in accordance with FDOT Specifications Section 575.

C. Use sod in commercial-size rectangles, preferably 12-inch by 24-inch or larger, except where 6-inch strip sodding is called for.

D. Use sod that is sufficiently thick to secure a dense stand of live grass. Use sod that is live, fresh and uninjured at the time of planting, having a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. It shall be reasonably free of weeds and other grasses. Plant sod as soon as possible after being dug, and shade and keep moist from the time it is dug until it is planted.

E. Handle sod in a manner to prevent breaking or other damage. Do not handle by dumping from trucks or other vehicles. Use care at all times to retain the native soil on the roots of each sod roll during stripping and handling. Sod that has been damaged by handling during delivery, storage or installation will be rejected.

F. Swales: Place sod to the proper grade and cross section in all flow areas to ensure the design flow of water in the ditch. In excavating for the placement of sod, provide a minimum of 3 inches of undercut.

2.2 FERTILIZER

A. Supply chemical fertilizer in suitable bags with the net weight certification of the shipment. Fertilizer shall be 12-8-8 and comply with Section 982 of the FDOT Standard Specification for Road and Bridge Construction.

B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid and (3) water soluble potash, contained in the fertilizer.

C. The chemical designation of the fertilizer shall be 12-8-8, with at least 50 percent of the nitrogen from a nonwater-soluble organic source. The nitrogen source may be a unreaformaldehyde source provided it is not derived from a waste product of the plastic industry.

2.3 EQUIPMENT

A. Spread fertilizer uniformly at the specified rate.

2.4 NETTING

A. See County Approved Product List, Appendix F.

2.5 SEEDING

A. Seed all unpaved areas disturbed during construction that do not require sod. Complete all seeding in conformance with FDOT Specifications Sections 570 and 981. Mulch and fertilize the grassed areas shall be mulched and fertilized in accordance with FDOT Specifications.

B. Provide mulch material free of weeds. Mulch shall be oat straw or rye, Pangola, peanut, Coastal Bermuda, or Bahia grass hay.

C. All seeds must have been tested within 6 months of planting. Submit a seed bag tag with final payment requests from each type or mixture of seed used.

2.6 TOPSOIL

A. Topsoil stockpiled during excavation may be used. If additional topsoil is required to replace topsoil removed during construction, it shall be obtained off site at no additional cost to the COUNTY. Topsoil shall be fertile, natural surface soil, capable of producing all trees, plants, and grassing specified herein.

2.7 MULCH

A. Furnish small grain straw mulch. Apply mulch at a rate of 1.5 tons per acre, corresponding to a depth not less than 1-inch or more than 3-inches according to texture and moisture content of mulch material. Apply asphalt emulsion at a rate of 150 gallons per ton of straw to anchor the straw applied.

2.8 WATER

A. It is the CONTRACTOR'S responsibility to supply all water to the site, as required during seeding and sodding operations and through the maintenance period and until the work is accepted. Make whatever arrangements may be necessary to ensure an adequate supply of water to meet the needs for the work. Furnish all necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required. Water shall be suitable for irrigation and free from ingredients harmful to plant life.

2.9 SOIL IMPROVEMENTS

A. Apply lime at the rate of 1 to 1.5 tons per acre. Apply 10-10-10 commercial fertilizer at the rate of 800 pounds per acre and work well into the top inch of topsoil.

PART 3 EXECUTION

3.1 SOD BED PREPARATION

A. Clear areas to be sodded and/or seeded of all rough grass, weeds, and debris, and bring soil to an even grade.

B. Thoroughly till soil to a minimum 4-inch depth.

C. Bring area to proper grade, free of sticks, stones, or other foreign matter over 1-inch in diameter or dimension. The surface shall conform to finish grade, less the thickness of sod, free of water-retaining depressions, the soil friable and of uniformly firm texture.

3.2 INSPECTION

A. Verify that soil preparation and related preceding work has been completed.

B. Do not start work until conditions are satisfactory.

3.3 SOD HANDLING AND INSTALLATION

A. During delivery, prior to planting, and during the planting of sod areas, protect the sod panels at all times from excessive drying and unnecessary exposure of the roots to the sun. Stack sod during construction and planting so as not to be damaged by sweating or excessive heat and moisture.

B. After completion of soil conditioning as specified above, lay sod panels tightly together so as to make a solid sodded lawn area. On mounds and other slopes, the long dimension of the sod shall be laid perpendicular to the slope. Immediately following sod laying, roll the lawn areas with a lawn roller customarily used for such purposes, and then thoroughly water.

C. Place sod at all areas where sod existed prior to construction, on slopes of 3 horizontal to 1 vertical (3:1) or greater, in areas where erosion of soils will occur, and as directed by the ENGINEER. On areas where the sod may slide, due to height and slope, the ENGINEER may direct that the sod be pegged, with pegs driven through the sod blocks into firm earth, at suitable intervals.

3.4 USE OF SOD ON ROADWAY PROJECTS

A. In accordance with the FDOT District One Standard Practice, establish permanent green grass at the completion of roadway construction and maintenance work. The following shall apply to all restoration involving State or County roadways:

1. Use sod in lieu of seed and mulch on all roadways with urban (raised curb) typical sections.

2. One inch water per week shall be required for a minimum of four (4) consecutive weeks for the purpose of establishing sod. This can be waived during construction, if and only if there is a minimum of one inch of rain per week on all sod on the project.

3. Placed sod on slopes 1:3 or greater. Stake sod on slopes 1:2 or greater.

4. On all curves with superelevation, place sod from the edge of pavement to the toe of slope on the downhill side(s) for the entire length of the superelevated roadway. On multi-lane divided rural facilities, place sod in the median and on the inside of the curve in the superelevated areas. This does not apply to reverse crowns.

5. Use sod for all projects with less than 10,000 square yards grass area.

6. On tangent sections and on outside of curves, use sod between the edge of pavement and a point 4 feet beyond the shoulder break point.

7. The entire width of sod should not exceed 15 feet from the edge of pavement.

8. Sod is to be used to eliminate narrow seed and mulch areas. Sod areas less than 6 feet in width.

9. Place sod around drainage structures as per the standard Indexes and extend to the edge of pavement.

3.5 SOD MAINTENANCE

A. The sod shall produce a dense, well-established growth. Repair and re-sod all eroded or bare spots until project acceptance. Repair to sodding shall be accomplished as in the original work.

B. Perform sufficient watering to maintain adequate moisture for optimum development of the seeded and sodded areas, and no less than 1.5 inches of water per week for at least 2 weeks. Thereafter, apply water for a minimum of 60 days as needed until the sod takes root and starts to grow or until final acceptance, whichever is latest.

3.6 GUARANTEE

A. Guarantee a live and vigorous stand of permanent grass at the time of acceptance of the work consisting of 80 percent minimum coverage for seeded grass areas with no bare spots greater than 5 square feet.

3.7 CLEANING

A. Remove debris and excess materials from the project site.

END OF SECTION

SECTION 330130.16

TELEVISING AND INSPECTION OF GRAVITY SEWER SYSTEMS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. Work specified herein:

1. Furnish all labor, tools, test equipment and materials, including any and all permits required to televise, inspect, video tape, still photograph and document the gravity wastewater collection systems.

1.2 QUALITY ASSURANCE

A. Utilize services of competent personnel in the field of TV/video inspection of wastewater collection systems.

B. Schedule all work with ENGINEER.

C. Equipment used shall be in good working order and provide continuous operation during TV/video tape inspection.

D. VHS videotapes or DVD recording media shall be of good visual quality capable of slow motion and pausing without significant reduction of visual quality.

1.3 SUBMITTALS

A. Submit to the County Manager or designee a list of equipment and materials to be used on the project, including all permits obtained prior to commencing with the Work.

B. Submit to the County Manager or designee a copy of all television inspection log sheets and VHS videotapes or DVD recording media completed.

PART 2 MATERIALS

2.1 GENERAL

A. Equipment used shall be designed for use in gravity wastewater collection systems. CONTRACTOR has the option of a County approved equal device or other material than that which is specified. Submittals are required prior to commencement of work.

2.2 TELEVISION CAMERA

A. Camera used shall be 360 degree COLOR RVC camera. Camera shall be operative in 100% relative humidity and be specifically designed for the environment. Camera shall have an integral lighting system capable of producing clearly focused, well-defined images of the entire periphery of the pipe. Camera shall have an integral depth measurement device capable of clearly showing the depth of vertical dips. The quality of video picture and definition provided shall be to the satisfaction of the ENGINEER and, if unsatisfactory, equipment shall be removed and replaced with satisfactory equipment.

2.3 MONITOR

A. A high resolution TV monitor screen shall be used. Quality of monitor shall be to the satisfaction of the County Manager or designee.

2.4 VIDEO TAPE EQUIPMENT

A. Furnish videotape equipment to provide a visual and audio recording of all areas in the pipe. Videotape system at the site shall be capable of rewind, play back, slow motion and stop motion. The videotape shall be 1/2-inch color VHS, with an audio channel for clearly recording the camera locations and operator observations (cracks, leaks, service connections, etc.). The system shall continuously indicate distance, in feet, from manhole to manhole and the manhole-to-manhole run numbers on the video recording.

2.5 WINCHES

A. Furnish variable speed powered remote controlled winches for upstream and downstream manhole locations to control two-way movement of the camera. If a self-propelled camera is used, winches are not necessary.

2.6 POWER SUPPLY

A. Power supply shall be continuous. If night operations occur, supply all labor, power and lighting equipment for operations, traffic safety, permits, etc.

PART 3 EXECUTION

3.1 GENERAL

A. All sanitary sewer gravity lines shall be televiewed at the CONTRACTOR's expense; and a videotape of the subject mains provided prior to preliminary acceptance and at the 1-year warranty inspection by Collier County Utilities. Televiewing may only occur after the stabilized subgrade has been installed and satisfactory density tests have been submitted to Collier County Utilities. The sewer video inspection shall include rotating the camera lens to inspect the interior of each sewer lateral.

B. Demonstrate the ability of the TV/video equipment (camera/light/video tape/audio/ photograph system) to the satisfaction of the County Manager or designee. Distance meter shall be furnished on the video tape recording. Meter shall be checked using distances between manholes. Meter distances and actual distances shall be consistent. Depth measurement device shall be visible in the video recording during movement of the camera in the pipe.

3.2 TELEVISING/INSPECTION

A. Inspection shall be done one manhole section at a time. Stop flow into the section being inspected prior to video inspection, unless otherwise approved in writing by the County Manager or designee.

B. Locate video vehicle on upstream side of manhole. Video tape in the downstream direction such that camera movement is with the flow.

C. Insert the camera in the upstream manhole after flow restrictions required have been accomplished. Flow into the system being inspected shall be stopped, with the exception of service laterals into the system being inspected. Move camera through the pipe lines at a moderate speed not exceeding 30 feet per minute. Stop camera at locations where one or more of the following conditions is observed:

1. Infiltration/inflow sources.

2. Service Laterals.

3. Structural defects including broken pipe; collapsed or collapsing pipe, cracks, deterioration, punctures, etc.

4. Abnormal joint conditions such as misalignments, open joints and joints not sealed.

5. Unusual conditions such as root intrusion, protruding pipes, in-line pipe size changes, mineral deposits, grease and obstructions.

D. Stop camera long enough for a thorough visual inspection of the conditions. All such conditions as specified above shall be audio recorded on videotape and the inspection log sheet. Move the camera and rotate to obtain optimum view of the conditions. If requested by the County Manager or designee, view problem areas in the opposite direction by pulling the TV camera from the opposite direction at no additional cost to the COUNTY.

E. While the camera is stopped at each service connection, rotate the camera so as to be able to view the service connection for a length of time that enables a good visual inspection of the service connection for damage and infiltration. Be responsible for measurements such as service lateral locations, if used for subsequent rehabilitation work.

F. When, during the inspection operation, the television camera will not pass through the entire manhole-to-manhole section, set up equipment so that the inspection can be performed from the opposite manhole at no additional cost to the COUNTY.

G. Prior to the end of the one-year warranty period, all manholes will be televised and inspected. The complete interior of each manhole shall be inspected and video recorded after interior coating has been completed. Manhole identification number shall be displayed on the video recording, and the recording shall accompany the submittal of the gravity lines inspection. Any deficiencies shall be corrected prior to acceptance by the County.

3.3 DOCUMENTATION

A. Furnish a detailed report and videotapes of the system inspected. The minimum information supplied shall be the following:

1. Name and address of CONTRACTOR and the ENGINEER.

2. Name of OWNER, system(s) inspected, and OWNER's representative involved.

3. Log reports:

a. Log sheet for each section of pipe

b. Separate line for each deficiency and location

c. Corresponding videotapes and location of each section of pipe and deficiencies on tape.

4. Video tapes shall be labeled with the following information:

a. System that is video taped (street name and manhole to manhole numbers) and log report number corresponding to video tape

b. Date video was taped

c. CONTRACTOR's name and representative

d. OWNER's name

B. All tapes shall be rendered unable to be taped over after they are completed.

3.4 MAINTENANCE OF TRAFFIC

A. Be responsible for all maintenance of traffic around work site. CONTRACTOR shall maintain traffic in accordance to all federal, state and local regulations. At no additional cost to the COUNTY, submit a Maintenance of Traffic Plan, for review and approval by Collier County DOT as necessary, prior to commencing work. Obtain all necessary permits prior to commencing work, at no additional cost to the COUNTY.

B. MOT shall also include construction and maintenance of any necessary detour facilities, furnishings, installing and maintaining of traffic control and safety devices during construction, control of dust, and any other special requirements for safe and expeditious movement of traffic around or through the work site.

C. Be responsible for coordination with all affected agencies when roadways will be closed or traffic will be detoured. No detours or roadway closings shall be permitted unless specifically approved in writing by the County Manager or designee or ENGINEER.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330201

ROADWAY CROSSINGS BY OPEN CUT

PART 1 GENERAL

1.1 SCOPE OF WORK

Provide all labor, materials, equipment, supervision and incidentals required to install the pipeline as shown on the Drawings in Collier County Streets by method of open cut.

Note: Open cutting of existing pavement will generally not be allowed, but may be considered under one or more of the following conditions:

1. Subsurface obstructions including rock;

2. Extreme high water table;

3. Limited space for jack and bore pits;

4. Condition of roadway surface - including imminent resurfacing and rebuilding, provided inspection and approval beforehand is made by the affected Transportation Department; or

5. Extreme economic hardship is proven with adequate supportive data.

1.2 SUBMITTAL

A. Submit shop drawings to the ENGINEER for review.

B. Before starting work, submit to the Collier County Department of Transportation, with copy to the ENGINEER, a detailed schedule of his operations a minimum of fourteen (14) days prior to beginning work for approval. This shall include, but not be limited to, type and extent of temporary paving, and drawings and lists describing materials and traffic control methods to be used. Approval shall not relieve the CONTRACTOR of his obligation to provide a safe and proper crossing.

C. If a detour is required, submit a traffic control plan for approval to Collier County and/or the Florida Department of Transportation.

D. Submit a plan for maintenance of traffic in accordance with Index 600 through 650 of the Florida Department of Transportation Specifications.

PART 2 PRODUCTS

2.1 MATERIALS

A. Use materials specified in other applicable portions of this Specification.

PART 3 EXECUTION

3.1 GENERAL

A. Trench dimensions for open cutting of road crossings are shown on the Standard Details.

B. Where possible, limit the completion of the open-cut road crossing to a 24-hour period. Perform all work in accordance with the approved traffic control plan.

C. Notify Collier County DOT forty-eight (48) hours in advance of starting construction.

3.2 INSTALLATION

A. Temporary Roadways

1. For temporary roadways required for traffic relocation use materials meeting the requirements of the FDOT. Use temporary roadways when crossing a state highway right-of-way or at the direction of the ENGINEER.

2. Maintain temporary roadways in good condition throughout their use.

3. Maintain drainage through all existing ditches by the use of culvert pipe as necessary.

4. Submit drawings indicating the type and location of temporary roadways for approval prior to beginning work.

5. Provide all necessary barricades and signs where detours are permitted as required to divert the flow of traffic. Notify Collier County DOT and ENGINEER in advance of planned detours. While traffic is detoured, expedite construction operations to minimize the period of detour.

6. Perform and complete all work at the roadway crossing in a manner fully satisfactory to Collier County DOT.

B. Maintenance of Traffic

1. The requirements specified herein are in addition to the plan for Maintenance of Traffic as specified in Section 015526.

2. Furnish during construction and any subsequent maintenance within State secondary road right-of-ways and Collier County streets, proper signs, signal lights, flagmen, and other warning devices for the protection of traffic all in conformance with the latest Manual on Uniform Traffic Control and Safe Streets and Highways, and the Florida Manual of Traffic Control and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations. Information as to the above may be obtained from FDOT Division engineers. The ENGINEER, County Engineer, or FDOT Manager of the right-of-way of their representatives reserves the right to stop any work for non-compliance.

3. Take precautions to prevent injury to the public due to open trenches. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. Be fully responsible for damage or injuries whether or not police protection has been provided.

4. Unless permission to close a County street is received in writing from the proper authority, place all excavated material so that vehicular and pedestrian traffic may be maintained at all times. Repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the ENGINEER if the CONTRACTOR's operations cause traffic hazards.

5. Be fully responsible for the installation of adequate safety precautions, for maintenance of the channelization devices, and for the protection of the traveling public.

6. Maintain at all open cut crossings, a minimum of one-way traffic during the daylight hours, and two-way traffic at night.

C. Installation of Pipeline

1. Meet the requirements of the applicable portions of this specification for pavement removal, sheeting, shoring and bracing, excavation and backfill, and dewatering.

2. Install the pipe in accordance with Division 2 of these Specifications.

3. Backfill the trench in accordance with the requirements of Section 312323.

4. Replace pavement in accordance with the requirements of Section 320117.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330502

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required to install High Density Polyethylene (HDPE) pressure pipe, fittings, and appurtenances as shown on the Drawings and specified in the Contract Documents.

B. High Density Polyethylene (HDPE) – Collier County Utilities has the option of approving the use of HDPE for pipeline crossings of roadways, ditches, canals, and environmentally sensitive lands. HDPE mains shall have the same equivalent internal diameter and equivalent pressure class rating as the corresponding PVC pipe, unless otherwise approved by the County Manager or designee. For all roadway crossings requiring casing pipe, a steel or DR 11 HDPE casing pipe must be provided. The Department of Transportation having jurisdiction of said road and right-of-way must grant specific approval.

1.2 REFERENCED STANDARDS

A. All standard specifications, i.e., Federal, ANSI, ASTM, etc., made a portion of these Specifications by reference, shall be the latest edition and revision thereof.

1.3 QUALIFICATIONS

A. Furnish all HDPE pipe, fittings, and appurtenances by a single manufacturer who is fully experienced, reputable and qualified in the manufacture of the items to be furnished.

1.4 SUBMITTALS

A. Submit to the ENGINEER, a list of materials to be furnished, the names of the suppliers, and the appropriate shop drawings for all HDPE pipe and fittings.

B. Submit the pipe manufacturer's certification of compliance with the applicable sections of the Specifications.

C. Submit shop drawings showing installation method and the proposed method and specialized equipment to be used.

1.5 INSPECTIONS AND TESTS

A. All work shall be inspected by the County Manager or designee who shall have the authority to halt construction if, in his opinion, these specifications or standard construction practices are not being followed. Whenever any portion of these specifications is violated, the County Manager or designee, may order further construction to cease until all deficiencies are corrected.

1.6 WARRANTY AND ACCEPTANCE

A. Warrant all work to be free from defects in workmanship and materials for a period of one year from the date of completion of all construction. If work meets these specifications, a letter of acceptance, subject to the one year warranty period, shall be given at the time of completion. A final acceptance letter shall be given upon final inspection at the end of the one year warranty period, provided the work still complies with these specifications. In the event deficiencies are discovered during the warranty period, the CONTRACTOR shall correct them without additional charge to the COUNTY before final acceptance. During the warranty period, the ENGINEER will determine if warranty repairs or replacement work shall be performed by the CONTRACTOR. The decision of the ENGINEER shall be binding upon the CONTRACTOR.

B. Installer Certification for The CONTRACTOR installing thermal butt fused HDPE pipe.

PART 2 PRODUCTS

2.1 POLYETHYLENE PIPE AND FITTINGS

A. Provide polyethylene pressure pipe manufactured from PE4710 polyethylene meeting AWWA C906 standards. When specified by the ENGINEER on the construction drawings, as an alternate to PVC, HDPE (ductile iron pipe sized) piping can be used for buried applications. Iron pipe sized (IPS) HDPE piping can be used for below-ground applications as determined by the ENGINEER.

B. The diameter of DR 11 HDPE casing pipe provided for roadway crossings or other purposes shall conform to the following.

For HDPE pressure carrier pipes, casing spacers are not required when HDPE DR11 (or DR17 for 42” to 54” or DR21 for 63”) casing is used. The casing inside diameter shall be a minimum of two inches larger than the carrier pipe’s outside diameter.

C. HDPE to HDPE pipe connections shall be by thermal butt fusion. Thermal fusion shall be accomplished in accordance with the pipe manufacturer and fusion equipment supplier specifications. The CONTRACTOR installing thermal butt

fused HDPE pipe shall be certified in this type of work and have a minimum of five years experience performing this type of work. The CONTRACTOR shall provide certification to the Engineer of Record, who will provide the Engineering Review Services Department with the certification.

D. Qualification of Manufacturer: The Manufacturer shall have manufacturing and quality control facilities capable of producing and assuring the quality of the pipe and fittings required by these specifications. The Manufacturer's production facilities shall be open for inspection by the County Manager or designee. Qualified manufacturers shall be approved by the County Manager or designee.

E. See the County Approved Product List, Appendix F, for manufacturers that are qualified. Products from other manufacturers proposed for the work must receive approval from the County Manager or designee prior to ordering.

F. Materials: Materials used for the manufacture of polyethylene pipe and fittings shall be PE4710 high density polyethylene meeting cell classification 445574C or 445574E per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting manufacturer in PPI (Plastics Pipe Institute) TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

G. Polyethylene Pipe: Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter or ASTM D3035, Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, (from pipe) dimensions and either quick burst or ring tensile strength (equipment permitting).

H. Color Identification: HDPE must have at least three equally spaced horizontal colored marking stripes. Permanent identification of piping service shall be provided by adhering to the following colors.

Blue – potable water (Underground HDPE pipe shall be one of the following:

a. Solid-wall blue pipe;
b. Co-extruded blue external skin; or
c. White or black pipe with blue stripes incorporated into, or applied to, the pipe wall.

White – raw water
Green – wastewater, sewage
Pantone Purple – non-potable irrigation, reclaimed or reuse water

I. Polyethylene Fittings and Custom Fabrications: Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Pressure de-rated fabricated fittings are prohibited.

J. Molded Fittings: Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the tests required under ASTM D3261.

K. X-Ray Inspection: The Manufacturer shall submit samples from each molded fittings production lot to x-ray inspection for voids, and shall certify that voids were not found.

L. Fabricated Fittings: Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16” IPS and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets. Part drawings shall be submitted for the approval of the ENGINEER.

M. Polyethylene Flange Adapters: Flange adapters shall be made with sufficient through-bore length to be clamped in a butt fusion joining machine without the use of a stub-end holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasketless sealing, or to restrain the gasket against blow-out.

N. Back-up Rings and Flange Bolts: Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. The lap joint flange bore shall be chamfered or radiused to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

2.2 MANUFACTURER’S QUALITY CONTROL

A. The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rate, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer’s Quality Control. Incoming materials shall be approved by Quality Control before processing into finished goods. Outgoing materials shall be checked for:

1. Outside diameter, wall thickness, and eccentricity as per ASTM D2122 at a frequency of at least once/hour or once/coil, whichever is less frequent.

2. Out of Roundness at frequency of at least once/hour or once/coil, whichever is less frequent.

3. Straightness, inside and outside surface finish, markings and end cuts shall be visually inspected as per ASTM F714 on every length of pipe.

B. Quality Control shall verify production checks and test for:

1. Density as per ASTM D1505 at a frequency of at least once per extrusion lot.

2. Melt Index as per ASTM D1238 at a frequency of at least once per extrusion lot.

3. Carbon content as per ASTM D1603 at a frequency of at least once per day per extrusion line.

4. Quick burst pressure (sizes thru 4-inch) as per ASTM D1599 at a frequency of at least once per day per line.

5. Ring Tensile Strength (sizes above 4-inch equipment permitting) as per ASTM D2290 at a frequency of at least once per day per line.

6. ESCR (size permitting) as per ASTM F1248 at a frequency of at least once per extrusion lot.

C. X-ray inspection shall be used to inspect molded fittings for voids, and knit line strength shall be tested. All fabricated fittings shall be inspected for joint quality and alignment.

2.3 COMPLIANCE TESTS

A. In case of conflict with Manufacturer's certifications, the CONTRACTOR, ENGINEER, or County Manager or designee may request re-testing by the manufacturer or have re-tests performed by an outside testing service. All re-testing shall be at the requestor's expense, and shall be performed in accordance with the Specifications.

B. Installation shall be in accordance with Manufacturer's recommendations and this specification. All necessary precautions shall be taken to ensure a safe working environment in accordance with the applicable codes and standards.

PART 3 EXECUTION

3.1 INSTALLATION OF HIGH DENSITY POLYETHYLENE PRESSURE PIPE AND FITTINGS

A. Install all high density polyethylene (HDPE) pressure pipe by direct bury, directional bore, or a method approved by the COUNTY or ENGINEER prior to construction. If directional bore is used, or if directed by the County Manager or designee or ENGINEER, surround the entire area of construction by silt barriers.

Install all high density polyethylene pressure pipe and fittings in accordance with Manufacturer's recommendations, and this specification. Take all necessary precautions to ensure a safe working environment in accordance with the applicable codes and standards.

3.2 HEAT FUSION JOINING

A. Make joints between plain end pipes and fittings by butt fusion, and joints between the main and saddle branch fittings by using saddle fusion using only procedures that are recommended by the pipe and fitting Manufacturer. Ensure that persons making heat fusion joints have received training and certification for heat fusion in the Manufacturer's recommended procedure. Maintain records of trained personnel, and shall certify that training was received not more than 12 months before commencing construction. External and internal beads shall not be removed.

3.3 MECHANICAL JOINING

A. HDPE pipe and fittings shall be fused together by heat welding when possible. HDPE pipe and fittings may be joined together or to other materials by means of flanged connections with back-up rings, by mechanical joint adapter with glands, or mechanical couplings designed for joining HDPE pipe or for joining HDPE pipe to another material. A stainless steel sleeve insert shall be used with a mechanical coupling. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins.

3.4 BRANCH CONNECTIONS

A. Make branch connections to the main with saddle fittings or tees. Saddle fuse polyethylene saddle fittings to the main pipe.

3.5 EXCAVATION

A. Excavate trenches in conformance to this specification, the plans and drawings, or as authorized in writing by the County Manager or designee, and in accordance

with all applicable codes. Remove excess groundwater. Where necessary, shore or reinforce trench walls.

3.6 LARGE DIAMETER FABRICATED FITTINGS

A. Butt fuse fabricated directional fittings 16" IPS and larger to the end of a pipe. Make up the flanged directional outlet connections in the trench.

3.7 MECHANCIAL JOINT AND FLANGE INSTALLATION

A. Install mechanical joints and flange connections in accordance with the Manufacturer's recommended procedure. Center and align flange faces to each other before assembling and tightening bolts. Do not use the flange bolts to draw the flanges into alignment. Lubricate bolt threads, and fit flat washers under the flange nuts. Tighten bolts evenly according to the tightening pattern and torque step recommendations of the Manufacturer. At least one hour after initial assembly, re-tighten flange connections following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be 100 ft-lbs or less as recommended by the Manufacturer.

3.8 FOUNDATION AND BEDDING

A. Lay pipe on grade and on a stable foundation. Remove unstable or mucky trench bottom soils, and install a 6-inch foundation or bedding of compacted Class I material to pipe bottom grade. Remove excess groundwater from the trench before laying the foundation or bedding and the pipe. A trench cut in rock or stony soil shall be excavated to 6 inches below pipe bottom grade, and brought back to grade with compacted Class I bedding. Remove all ledge rock, boulders, and large stones.

3.9 PIPE HANDLING

A. When lifting with slings, use only wide fabric choker slings to lift, move, or lower pipe and fittings. Do not use wire rope or chain. Slings shall be of sufficient capacity for the load, and shall be inspected before use. Do not use worn or defective equipment.

3.10 TESTING

A. Hydrostatic Pressure Testing: Pressure test and flush HDPE pipes after swabbing in accordance with Section 022501 and 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330503

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing buried PVC pipe, fittings and appurtenances.

1. Provide PVC pipe and fittings complete with all necessary jointing facilities and materials, specials, adapters and other appurtenances required for installation in and completion of the pipelines to be constructed.

2. Provide plain end or rubber gaskets (push-on or mechanical joint) of the types, sizes and classes shown or specified.

B. Related Work Specified In Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 330504 – Ductile Iron Pipe and Fittings

4. Section 330518 – Laying and Jointing Buried Pipelines

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D3034 - Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings

2. ASTM F679 - Polyvinyl Chloride (PVC) Large Diameter Plastic Gravity Sewer Pipe and Fittings

3. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. through 60 In., for Water Distribution

4. AWWA C907 - Polyvinyl Chloride (PVC) Pressure Fittings for Water - 4 In. through 8 In.

5. ASTM D2321 - Underground Installation of Flexible Thermoplastic Sewer Pipe

6. ASTM F477 - Elastomeric Seals (Gaskets) For Joining Plastic Pipe

7. ANSI A21.10 - Ductile-Iron and Gray-Iron Fittings 3 inches through 48 inches, for Water and Other Liquids

8. ANSI A21.11 - Rubber-Gasket Joints for Ductile-Iron and Gray Iron Pressure Pipe and Fittings

9. Uni-Bell B-11

1.3 SYSTEM DESCRIPTION

A. Gravity Sewer Pipe - PVC pipe shall be of the integral wall bell and spigot joint type, which meets or exceeds all requirements set forth in ASTM D3034, latest revision. Minimum wall thickness shall conform to ASTM SDR 26. PVC pipes used for gravity sewers shall be green in color. Fittings shall be made of PVC plastic as defined by ASTM SDR 26 1784, latest revision. Flexible gasketed joints shall be compression type conforming to ASTM D3201, latest revision. Elastomeric joint gaskets shall conform to ASTM F477, latest revision. At all conflict crossings using 4"-12" substitute C900 PVC, Class 305, DR 14 and for PVC pipe 14" and larger use C900 PVC, Class 235, DR 18.

B. Force Main Pipe – PVC pipe meeting the latest revision of AWWA C900 shall be provided. For installation of 4" – 12" pipe, the pressure class shall be 235 with a DR of 18. For installation of 14" – 24" pipe, use pressure class 165, DR 25, meeting or exceeding the requirements of Uni-Bell B-11. PVC pipes used for force mains shall be green in color. Outside diameters shall be equivalent to ductile iron pipe of the same nominal size. Joints between successive lengths of straight PVC pipe shall be compression type using a single elastomeric gasket, per ASTM C-3139 and F477. Fittings for C900 pipe shall be C900 rated PVC. Joint restraint devices shall be provided for horizontal or vertical alignment changes using uni-flange type collars, epoxy coated, with high strength, and low alloy hardware (see County Approved Product List, Appendix F). PVC pipe direct buried beneath roadways, parking lots or parking lot entrances shall meet AWWA Specification C900, latest revision. All 4" to 12" pipe in such locations shall be a minimum of Class 305, DR 14, and all 14" to 24" pipe shall be a minimum of Class 235, DR 18. Pressure Class 250 ductile iron pipe may be used instead of PVC in these locations if approved by the County Manager or designee.

C. Potable, Raw and Non-Potable Irrigation Water Main Pipe - PVC shall conform to AWWA Specification C900, latest revision. All 4" to 12" pipe shall be a minimum of Class 235, DR 18 and all 14" to 24" pipe shall be a minimum of Class 165, DR 25 and shall meet or exceed Uni-Bell B-11. All potable water pipe shall bear the seal of the National Sanitation Foundation (NSF) for potable water pipe. All pipe shall be marked with the manufacturer's name, nominal size, type of plastic and pressure rating. All PVC pipe used for potable water lines shall be predominately

blue in color. Underground PVC pipes used for potable water lines shall be solid-wall blue pipe, will have a co-extruded blue external skin, or will be white or black pipe with blue stripes incorporated into, or applied to, the pipe wall. PVC pipes used for raw water shall be white in color. PVC pipes used for non-potable irrigation, reclaimed or reuse water shall be purple in color. Pipe O.D. shall be equivalent to cast iron pipe of the same nominal size. PVC pipe direct buried beneath roadways, parking lots or parking lot entrances shall meet AWWA Specification C900, latest revision. All 4" to 12" pipe in such locations shall be a minimum of Class 305, DR 14, and all 14" to 24" pipe shall be a minimum of Class 235, DR 18. Pressure Class 250 ductile iron pipe may be used instead of PVC in these locations if approved by the County Manager or designee.

D. Provide pipe of the various sizes and classes as specified in the schedule or shown. Restrain all pressure pipe joints.

E. Construct concrete encasements only with written permission from the Water Director.

1.4 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Submit the following shop drawings:

1. Pipe joints, fittings, sleeves and cleanouts. Where special designs or fittings are required, show the work in large detail and completely describe and dimension all items.

2. Fully dimensioned drawings of piping layouts, including fittings, couplings, sleeves, cleanouts, valves, supports and anchors. Label pipe size, materials, type, and class on drawings and include the limits of each reach of restrained joints. Provide cross sections showing elevations of cleanouts, pipes, fittings, sleeves, and valves.

3. Catalog data for pipe, joints, fittings, sleeves, harnessing and cleanouts.

C. Quality Control: Submit certificate of compliance for pipe, fittings, gaskets, coatings, specials, sleeves and cleanouts in accordance with this Section.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all pipe, fittings and appurtenances as specified in Division 1 and Section 330518.

PART 2 PRODUCTS

2.1 MATERIALS

A. PVC Pipes and Fabricated Fittings: PVC pipe and fabricated fittings shall be made from virgin PVC resin that has been compounded to provide physical and chemical properties that equal or exceed cell class 12454-B as defined in ASTM D1784, and shall qualify for a hydrostatic design basis of 4,000 psi (27.58 MPa) at 73.4°F (23°C) per the requirements of PPI TR-3.

B. Fittings for Pressure Pipe: Provide all fittings meeting the requirements of Sections 330504.

C. Joints and Fittings for Gravity Sewer Pipe: Provide all fittings meeting the requirements of ASTM D 3034 and ASTM F 679. Provide joints that are a molded integral part of the pipe section. Do not use joints or couplings furnished loose. Provide joints with elastomeric gasket joints.

D. Joints for Pressure Pipe: Provide pipe with bell ends in accordance with AWWA C900. Provide joints with elastomeric gasket joints.

E. Elastomeric Gasket Joints: Provide elastomeric gasket joints in accordance with ASTM F 477.

F. Rubber Gasket Joints: Provide mechanical joints meeting the requirements of ANSI A21.11.

G. Color: Provide pipe made of 100 percent of the color specified. Provide green sewer or force main pipe. Provide blue potable water pipe. Provide white raw water pipe. Provide purple non-potable irrigation, reclaimed or reuse water pipe.

H. Pipe Marking: Provide mark on each pipe at internals of 5 feet or less to designate compliance with applicable ASTM or AWWA specification.

I. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed and are not ready to connect.

1. Remove all temporary bulkheads when they are no longer needed.

J. Date of Manufacturer: Provide pipe and fitting manufactured no earlier than 12 month period proceeding the date of the Agreement.

K. Wall Thickness for Pressure Pipe:

1. 4 through 12 inches diameter – provide AWWA-C900 DR 14, Class 305 for pressure pipe installed under pavement.

2. 14 through 24 inches diameter – provide AWWA-C905 DR 18, Class 235 for pressure pipe installed under pavement.

L. Restraining Devices: Joint restraining devices (see County Approved Product List, Appendix F) shall be placed at all bends, tees, plugs, reducers, and other fittings to provide lateral support, and shall conform to the Collier County Standard Details. Concrete thrust blocks shall only be utilized if approved by Collier County Utilities.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all buried PVC pipe and fittings in accordance with the manufacturer's recommendations, approved shop drawings, as specified in Division 1, and Section 330518. For horizontal directional drilling of Fusible PVC, see Section 330502 for casing and execution requirements.

3.2 LEAKAGE TESTING

A. Cleaning: Flush clean and test all pipes after installation.

B. Testing: Test pipes for leaks and repair or tighten as required.

C. Procedures: Conduct tests in accordance with Section 022501.

3.3 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water before they are placed in service as specified in Section 025400.

3.4 SCHEDULES

A. Refer to the Schedules contained in Section 330518 Laying and Jointing Buried Pipelines for information on the piping that is to be constructed using the pipe materials and methods specified herein.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330504

DUCTILE IRON PIPE (DIP) AND FITTINGS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required, and install ductile iron pipe, fittings and appurtenances as shown on the Drawings and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 330518 - Laying and Jointing Buried Pipe

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards: (Latest Revision)

1.	ANSI/AWWA C104/A21.4	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
2.	ANSI/AWWA C105/A21.5	Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.
3.	ANSI/AWWA C110/A21.10	Ductile-Iron Fittings, 3 in. Through 48 Inches, for Water and Other Liquids. (C110 2-48 inches).
4.	ANSI/AWWA C111/A21.11	Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5.	ANSI/AWWA C115/A21.15	Flanged Ductile-Iron Pipe with Threaded Flanges.
6.	ANSI/AWWA C150/A21.50	Thickness Design of Ductile-Iron Pipe.
7.	ANSI/AWWA C151/A21.51	Ductile-Iron Pipe, Centrifugally Cast for Water or Other Liquids.
8.	ANSI/AWWA C153/A21.53	Ductile-Iron Compact Fittings
9.	AWWA C600	Installation of Ductile Iron Water Mains and Their Appurtenances.
10.	Collier County	Utilities Standards and Procedures Ordinance

1.4 CONTRACTOR SUBMITTALS

A. Shop Drawings: Submit shop drawings of pipe and fittings in accordance with the requirements in the General Conditions, the requirements of the referenced standards and the following supplemental requirements as applicable:

1. Certified dimensional drawings of all valves, fittings, and appurtenances.

2. In all cases, a line layout to indicate the limits of each reach of restrained joints or of concrete encasement shall be supplied. (NOTE: Obtain COUNTY Water Director's approval of all proposed concrete encasement of ductile iron pipe.)

B. Certifications: Furnish a certified affidavit of compliance for all pipe and other products or materials furnished under this Section of the Specifications, which indicates that all tests have been made and that all results comply with the requirements of AWWA C151, including but not necessarily limited to the following:

1. Acceptance Tests.

2. Hydrostatic Tests.

3. Impact Tests.

C. Additional Documentation: Upon request, furnish foundry records in the form of written transcripts.

D. All expenses incurred for certification, testing, and data submittal shall be borne by the CONTRACTOR or the Supplier.

1.5 QUALITY ASSURANCE

A. Inspection: All pipe shall be available for inspection at the place of manufacture prior to shipping in accordance with the provisions of the referenced standards. Notify the ENGINEER in writing not less than 10 calendar days prior to the shipping of the pipe.

B. The ENGINEER shall be given access to all areas where manufacturing and testing is performed and shall be permitted to make all inspections necessary to confirm manufacturer compliance with these Specifications.

C. Tests: Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the referenced standards as applicable.

D. Provide data on material tests at no additional cost to the COUNTY.

E. In addition to those tests specifically required, the ENGINEER may request additional samples of any material including lining and coating samples for testing by the COUNTY. Furnish the additional samples at no additional cost to the COUNTY.

1.6 CORROSION PROTECTION

A. If specifically approved by Collier County Utilities for use, provide exterior protection for underground ductile iron pipe and fittings within areas of severe corrosive conditions. This shall be accomplished by the installation of polyethylene encasement through the area of concern. The soil test evaluation to determine the necessity for extra protection in suspect areas shall be those set forth in ANSI Standard A21.5. Additionally, where other existing utilities are known to be cathodically protected, ductile iron pipe crossing said utility shall be protected for a distance of 20 feet to each side. If ductile iron pipe is to be installed parallel to and within 10 feet of cathodically protected pipe, then protection shall be provided for the entire length. Do not install steel pipe in severe corrosion areas.

PART 2 PRODUCTS

2.1 GENERAL

A. Protective Lining for Water Mains: Cement mortar lined ductile iron pipe shall conform to ANSI/AWWA C151 and C104, subject to the following supplemental requirements. The pipe shall be of the diameter and class shown, shall be furnished complete with rubber gaskets as indicated in the Contract Documents, and all specials and fittings shall be provided as required under the Contract Documents.

B. Protective Lining for Force Mains and Sewers: Where lining is shown, specified or required, for the protection of pipelines carrying sewage from corrosive gases, line the pipe using protective ceramic epoxy coating (see County Approved Product List, Appendix F) in accordance with the manufacturer's written instructions. For ceramic epoxy lining, abrasive blast clean pipe and fittings to a near white surface to SSPC SP-10 and provide 40 mils minimum of dry film thickness of ceramic epoxy lining.

C. Handling and Storage: Handle the pipe by using wide slings, padded cradles, or other devices designed and constructed to prevent damage to the pipe and its lining. The use of equipment or handling, which might injure the pipe and its lining, will not be permitted. Stockpiled pipe shall be suitably supported and shall be secured to prevent accidental rolling. Assure that all other pipe handling equipment and methods is acceptable to the ENGINEER.

D. Laying lengths: Maximum pipe laying lengths shall be 20 feet.

E. Finish: The pipe shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing and roughness, in accordance with ANSI/AWWA C104.

F. Closures and Correction Pieces: Provide closures and correction pieces as required so that closures may be made due to different headings in the pipe laying operation and so that correction may be made to adjust the pipe laying to conform to pipe stationing shown on the Drawings or line layouts where applicable.

2.2 PIPE DESIGN CRITERIA

A. General: Ductile Iron pipe shall be designed in accordance with the requirements of ANSI/AWWA C150 as applicable and as modified in this Section.

B. Pipe Wall Thickness for Internal Pressure: The pipe shall be designed with a net thickness to withstand the design internal pressure in accordance with the hoop stress formula. In addition to the requirements of the Section, the minimum wall thickness shall be in accordance with the minimum thickness wall depicted in table 50.5 of ANSI/AWWA C150.

C. Potable, Raw and Non-Potable Irrigation Water Mains:

1. Ductile Iron Pipe shall be a minimum pressure Class 250 and will be accepted in any diameter for use within the water distribution system.

2. All aboveground potable water main pipe shall be painted Federal Safety Blue. All aboveground raw water main pipe shall be painted white. All aboveground non-potable irrigation, reclaimed or reuse water main pipe shall be painted Pantone Purple 522C. The pipe wall thickness shall not be less than that required by a working pressure of 250 psi in laying condition Type 4 “B” with 5-foot cover in conformance with ANSI Standard A21.50.

D. Force Mains and Gravity Sewers:

1. Ductile Iron Pipe shall be a minimum pressure Class150 and will be accepted in any diameter for use within the wastewater collection system.

2. Ductile iron pipe for Gravity Sewer applications in not permitted unless the ENGINEER can demonstrate that C900 PVC pipe, Class 150 or 200, cannot be utilized from a structural standpoint.

3. All aboveground force main pipe shall be painted Safety Green. The pipe wall thickness shall not be less than that required by a working pressure of 150 psi.

2.3 MATERIALS

A. Ductile Iron Pipe: Pipe materials shall conform to the requirements of ANSI/AWWA C151.

B. Adapters to connect ductile iron pipe or fittings to pipe or fittings of dissimilar materials shall be supplied by the CONTRACTOR in accordance with ASTM specifications and the pipe manufacturer recommendations, and as approved by the ENGINEER.

C. Water Mains:

1. All water mains shall contain cement for mortar lining conforming to the requirements of ANSI/AWWA C104. Cement for mortar lining shall be Type II or V. A fly ash or pozzolan shall not be used.

2. All Ductile Iron buried water main pipelines shall have blue stripes applied to the pipe wall. Stripe width shall comply with AWWA standards. The stripes shall be applied during installation and shall incorporate blue tape or blue paint. The tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and be located along the top of the pipe.

3. All pipe with an internal diameter of 24” or greater, tape or paint shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe.

D. Force Mains and Gravity Sewer:

1. All Ductile iron pipe used within the wastewater system shall be lined with a ceramic epoxy, (see County Approved Product List, Appendix F). Pipe and fittings shall be lined as specified herein. Each piece of pipe shall bear a marking denoting the class to which it belongs.

2.4 SPECIALS AND FITTINGS

A. Fittings for Potable, Raw, Non-Potable Irrigation, Reclaimed and Reuse Water Systems:

1. Fittings for ductile iron pipe shall conform to the requirements of ANSI/AWWA C153/A21.53 or ANSI/AWWA C110/A21.10 for diameters 3 inches through 48 inches and shall have a minimum pressure rating of 350 psi for pipe sizes 6 inches through 24 inches and 250 psi for sizes larger than 24 inches. Ductile iron fittings shall be double cement lined, seal coated and outside coated with an asphaltic material in accordance with AWWA C104 as specified.

B. Fittings for Wastewater System:

1. All pipe and fittings in direct contact with wastewater shall be interior coated with a 40 mil thickness of ceramic epoxy coating (see County Approved Product List, Appendix F). Pipe and fittings shall have an outside asphaltic coating as specified in AWWA Standard C151. Each piece of pipe shall bear a marking denoting the class to which it belongs.

2.5 DESIGN OF PIPE

A. General: The pipe furnished shall be ductile iron pipe, lined as specified, with rubber gasketed joints.

B. The pipe shall be designed, manufactured, tested, inspected, and marked according to applicable requirements previously stated and except as hereinafter modified, shall conform to ANSI/AWWA C150 and ANSI/AWWA C151.

C. Pipe Dimensions: The pipe shall be of the diameter and class shown. The minimum wall thickness for each pipe size shall be as specified herein or shown on the Drawings.

D. Fitting Dimensions: The fittings shall be of the diameter shown and class specified.

E. Joint Design: Ductile Iron pipe and fittings shall be furnished with mechanical joints, push-on joints and flanged joints as follows:

1. For buried pipe applications, unless otherwise indicated, mechanical and push-on joints shall conform to ANSI/AWWA C111/A21.11, with the minimum pressure rating of 350 psi.

2. For above-ground or buried vault applications, unless otherwise indicated, flanged joints shall conform to ANSI/AWWA C115/A21.15, with the minimum pressure rating of 250 psi. All above-ground fittings shall be painted blue.

3. Use manufactured, labeled gasket lubricant for push on joints with trade name and pipe manufacturer name, other lubricants are prohibited.

4. Nuts and bolts for flanged joints shall be 304 stainless, as specified by the COUNTY, and conform to ANSI/AWWA C111.

F. Restraining Devices: Joint restraining devices (see County Approved Product List, Appendix F) shall be placed at all bends, tees, plugs, reducers, and other fittings to provide lateral support, and shall conform to the Collier County Standard Details. Concrete thrust blocks shall only be utilized if approved by Collier County Utilities.

G. For bell-and-spigot ends with rubber gaskets, the clearance between the bells and spigots shall be such that when combined with the gasket groove configuration and the gasket itself will provide watertight joints under all operating conditions

when properly installed. Require the pipe manufacturer to submit details complete with significant dimensions and tolerances and also to submit performance data indicating that the proposed joint has performed satisfactorily under similar conditions. In the absence of a history of field performance, the results of a test program shall be submitted.

H. Gaskets shall be a Buna N, Neoprene, or a Nitryl-based rubber product. Gaskets shall have clean tips unless otherwise specified. Elastomeric gaskets conforming to ASTM F-477 shall also be acceptable.

I. Shop-applied interior linings and exterior coatings shall be applied evenly to the nominal thickness specified. Exterior coatings: asphalt coating for buried pipe or primed pipe cannot be furnished holiday free.

2.6 CEMENT-MORTAR LINING

A. Cement-Mortar Lining For Shop Application: Except as otherwise provided herein, interior surfaces of all ductile iron pipe shall be cleaned and lined in the shop with cement-mortar lining applied centrifugally in conformity with ANSI/AWWA C104. Ductile-Iron pipefittings need not have the cement-mortar lining applied centrifugally. The lining machines shall be of a type that has been used successfully for similar work. Every precaution shall be taken to prevent damage to the lining. If lining is damaged or found faulty at delivery site, the damaged or unsatisfactory portions shall be repaired in the filed in accordance with ANSI/AWWA C104.

B. The nominal wet lining thickness shall be as follows:

Nominal Factory Nominal Replacement		
Nominal Pipe Diameter (in.)	Applied Lining Thickness (in.)	Lining Thickness (in.)
3-12	1/8	1/8
14-24	3/16	3/16
30-64	1/4	1/4

C. Protection of Pipe Lining/Interior: All shop-applied cement mortar lining shall be given a seal coat of asphaltic material in conformance with ANSI/AWWA C104.

2.7 EXTERIOR COATING OF PIPE

A. Exterior Coating of Buried Piping: The exterior coating shall be an asphaltic coating approximately 1 mil thick, conforming to ANSI/AWWA C151.

2.8 CORROSION PROTECTION

A. If specifically approved by Collier County Utilities for use, exterior protection shall be provided for underground ductile iron pipe and fittings within areas of severe

corrosive conditions. This shall be accomplished by the installation of polyethylene encasement through the area of concern. The soil test evaluation to determine the necessity for extra protection in suspect areas shall be those set forth in ANSI Standard A21.5. Additionally, where other existing utilities are known to be cathodically protected, ductile iron pipe crossing said utility shall be protected for a distance of 20 feet to each side. If ductile iron pipe is to be installed parallel to and within 10 feet of cathodically protected pipe, then protection shall be provided for the entire length. Steel pipe shall not be installed in severe corrosion areas.

PART 3 EXECUTION

3.1 INSTALLATION OF PIPE

A. Handling and Storage: Carefully handle and protect all pipe, fittings, etc., against damage, impact shocks, and free fall and in accordance with ANSI/AWWA C600. Do not place pipe directly on rough rocky ground, but in such instances support the pipe in a manner that will protect the pipe against injury whenever stored at such trench site or elsewhere. Do not install any pipe where the lining or coating show defects that may be harmful as determined by the ENGINEER. Repair such damaged lining or coating, or furnish and install a new undamaged pipe.

B. Repair or replace all pipe damaged prior to Substantial Completion or during warrantee period.

C. Inspect each pipe and fitting prior to installation to insure that no damaged portions of pipe are installed.

D. Before placement of pipe in the trench, thoroughly clean each pipe or fitting of any foreign substance that may have collected therein, and keep the pipe clean at all times thereafter. For this purpose, close the openings of all pipes and fittings in the trench during any interruption to the work.

E. Pipe Laying: Install the pipe in accordance with ANSI/AWWA C600.

F. Lay pipe directly on the bedding material. Refer to the Utilities Standards and Procedures Ordinance Section 9.1.2 for laying and backfilling requirements. No blocking will be permitted, and the bedding shall be such that it forms a continuous, solid bearing for the full length of the pipe. Make excavations as needed to facilitate removal of handling devices after the pipe is laid. Form bell holes at the ends of the pipe to prevent point loading at the bells or couplings. Make excavations as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coating on field joints.

G. Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the ENGINEER may change the alignment and/or the grades. Such

change may be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed 70 percent of the maximum deflection recommended by the pipe manufacturer. No joint shall be misaligned any amount which will be detrimental to the strength and water tightness of the finished joint.

H. Pipe and Specials Protection: Protect the openings of all pipe and specials with suitable bulkheads to prevent unauthorized access by persons, animals, water, or any undesirable substance. At all times, provide means to prevent the pipe from floating.

I. Pipe Cleanup: As pipe laying progresses, keep the pipe interior free of all debris. Completely clean the interior of the pipe of all sand, dirt, mortar splatter and any other debris following completion of pipe laying, pointing of joints, and any necessary interior repairs per ANSI/AWWA C600 and C602 prior to testing and disinfecting the completed pipeline. For pipe larger than 12" diameter, utilize a polyurethane foam plug "Poly Pig" to remove all debris from main.

3.2 RUBBER GASKETED JOINTS

A. Rubber Gasketed Joints: Immediately before jointing pipe, thoroughly clean the bell end of the pipe, and place a clean rubber gasket in the bell groove. Carefully clean the bell and spigot end of push-on joint pipe, and lubricate with a vegetable-based lubricant or per manufacturer's recommendation. Insert the spigot end of the pipe section into the bell of the previously laid joint and telescope into the proper position. Do not tilt the pipe to insert the spigot into the bell.

3.3 INSTALLATION OF PIPE APPURTENANCES

A. Installation of Valves: Handle all valves in a manner to prevent any injury or damage to any part of the valve. Thoroughly clean and prepare all joints prior to installation. Adjust all stem packing and operate each valve prior to installation to insure proper operation.

B. Install all valves so that the valve stems are plumb and in the location shown on the Drawings.

C. Mechanical joints consisting of bell, socket, gland, gasket, bolts, and nuts shall conform to ANSI Standard A21.11. Bolts and nuts shall be high strength, low alloy, Cor-Ten, T-Head Type having hexagonal nuts. Bolts and nuts shall be machined through and nuts shall be tapped at right angles to a smooth bearing surface. Single sealed gasket push-on type joints (see County Approved Product List, Appendix F) shall conform to the requirements of ANSI A21.11.

D. Mechanical joint retainer glands may be used to restrain mechanical joint pipe and fittings to the plain end of ductile iron pipe and fittings when used in conjunction with thrust blocks of reduced size. The Utilities ENGINEER must approve thrust block size. Maintain joint flexibility.

3.4 TESTING AND DISINFECTION

A. Test completed water or force main pipeline in accordance with Section 022501. Disinfect completed water pipeline in accordance with Section 025400.

END OF SECTION

SECTION 330518

LAYING AND JOINTING BURIED PIPELINES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Installation of all underground pipelines. Provide pipeline materials, coatings and linings as specified and pipe of the types, sizes and classes shown or specified.

1. Use proper and suitable tools and appliances for the safe and convenient cutting, handling, and laying of the pipe and fittings.

2. Use suitable fittings where shown and at connections or where grade or alignment changes require offsets greater than those recommended and approved.

3. Lay all underground pipelines not supported on piles or concrete cradle in select fill bedding material.

4. Close off all lines with bulkheads when pipe laying is not in progress.

B. Related Work Specified in Other Sections Includes:

1. Section 022501 – Leakage Tests

2. Section 025400 – Disinfection

3. Section 312316 – Excavation - Earth and Rock

4. Section 312319 – Groundwater Control for Open Excavation

5. Section 312323 – Backfilling

6. Section 330502 – High Density Polyethylene (HDPE) Pipe and Fittings

7. Section 330503 - Polyvinyl Chloride (PVC) Pipe and Fittings

8. Section 330504 - Ductile Iron Pipe (DIP) and Fittings

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM D 2774 - Practice for Underground Installation of Thermoplastic Pressure Piping

2. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances

3. ASTM A 307 - Specification for Carbon Steel Bolts and Studs, 60000 psi Tensile

4. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, C25, 125, 250, 800

5. ASME B16.21 - Nonmetallic Flat Gaskets for Pipe Flanges

6. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings

7. AWWA C115/A21.15 - Flanged Ductile-Iron Pipe With Threaded Flanges

8. Uni-Bell - Handbook of PVC Pipe

9. Collier County - Utilities Standards and Procedures Ordinance

1.3 DELIVERY, STORAGE AND HANDLING

A. General: Deliver, store and handle all products and materials as specified in Division 1 and as follows:

B. Transportation and Delivery: Take every precaution to prevent injury to the pipe during transportation and delivery to the site.

C. Loading and Unloading: Take extreme care in loading and unloading the pipe and fittings.

1. Work slowly with skids or suitable power equipment, and keep pipe under perfect control at all times.

2. Under no condition is the pipe to be dropped, bumped, dragged, pushed, or moved in any way that will cause damage to the pipe or coating.

D. Sling: When handling the pipe with a crane, use a suitable sling around the pipe.

1. Under no condition pass the sling through the pipe. Interior of pipe is to be kept free of dirt and foreign matter at all times.

2. Use a nylon canvas type sling or other material designed to prevent damage to the pipe and coating.

3. When handling reinforced concrete pipe or uncoated steel or ductile iron pipe, steel cables, chain or like slings are acceptable.

E. Damaged Piping: If in the process of transportation, handling, or laying, any pipe or fitting is damaged, replace or repair such pipe or pipes.

F. Blocking and Stakes: Provide suitable blocking and stakes installed to prevent pipe from rolling.

1. Obtain approval for the type of blocking and stakes, and the method of installation.

G. Storage for Gaskets: Store gaskets for pipe joints in a cool place and protect gaskets from light, sunlight, heat, oil, or grease until installed. Store gaskets in a sealed container (such as a vented drum). When long-term storage with exposure to direct sunlight is unavoidable, PVC pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excessive heat accumulation (Uni-Bell PVC Handbook).

1. Do not use any gaskets showing signs of cracking, weathering or other deterioration.

2. Do not use gasket material stored in excess of six months without approval.

1.4 FIELD CONDITIONS

A. Repair of Sanitary Sewers and Services: Rebed, in compacted select fill material, sanitary sewers which cross over the new pipe or which cross under the new pipe with less than 12 inches clear vertical separation. Compact the bedding to densities required for new pipeline construction and extend bedding below the sewer to undisturbed earth. Reconstruct sewers damaged by pipeline construction.

1. Furnish and install all materials and do all work necessary for the reconstruction or repairs of sanitary sewers and services.

2. Provide pipe for reconstruction of sanitary sewers and services meeting the appropriate specification requirements.

3. Provide pipe of the same size as the existing sewer or when the same size is not available, use the next larger size of pipe. Obtain approval of joints made between new pipe and existing pipe.

PART 2 PRODUCTS

A. The materials allowed for buried sewer pipes are PVC, HDPE or Ductile Iron Pipe.

PART 3 EXECUTION

3.1 PREPARATION

A. Dry Trench Bottoms: Lay pipe only in dry trenches having a stable bottom.

1. Where groundwater is encountered, make every effort to obtain a dry trench bottom in accordance with Section 312319.

2. Perform trench excavation and backfill in accordance with Sections 312316 and 312323.

3.2 INSTALLATION

A. General: Install all piping in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1. Where pipe joint deflections are used, do not exceed 80 percent of the maximum deflection limits shown in AWWA C600. Gravity systems shall contain no joint deflection.

1. Arrange miscellaneous pipelines, which are shown in diagram form on the Plans, clear of other pipelines and equipment.

2. Gravity systems shall not contain vertical dips greater than one inch (1.0”).

B. Code Requirements: Provide pipeline installations complying with AWWA C600 for iron pipe, AWWA Manual M11 for steel pipe, ASTM D 2774 for thermoplastic pressure piping, and as modified or supplemented by the Specifications.

C. Pipe Laying - General:

1. Thoroughly inspect all pipe for damage and cleanliness. If found to be defective, tag, remove and replace pipe with satisfactory pipe or fittings at no additional charge to COUNTY.

2. Generally, lay all pipe with bells pointing ahead.

3. Carefully place all pipe, pipe fittings, valves and hydrants into trench by means of a derrick, ropes or other suitable tools or equipment in such a manner as to prevent damage and check for alignment and grade.

4. Make adjustments to bring pipe to line and grade by scraping away or filling in select fill material under the body of the pipe.

5. Wedging or blocking up the pipe barrel is not permitted.

6. Bring the faces of the spigot ends and the bells of pipes into fair contact and firmly and completely shove the pipe home.

7. As the work progresses, clean the interior of pipelines of all dirt and superfluous materials of every description.

8. Keep all lines absolutely clean during construction.

9. Lay pipelines accurately to line and grade.

10. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other material from entering the pipe.

D. Pipe Laying - Trenches:

1. Carefully lay all pipelines in trench excavations piece by piece using suitable tools or equipment on select fill bedding (refer to Utilities Standards and Procedures Ordinance, Section 9.1.2), concrete cradle or other foundations as shown, specified or ordered in writing. Prevent damage to materials, protective coatings and linings.

2. Do not dump or drop pipe or pipe materials into trench.

3. Properly secure the pipe against movement and make the pipe joints in the excavation as required.

4. Carefully grade and compact pipe bedding.

5. Bell Holes:

a. Cut out bell holes for each joint as required to permit the joint to be properly made and allow the barrel of the pipe to have full bearing throughout its length.

b. Thoroughly tamp bell holes full of select fill material following the making of each joint to provide adequate support to the pipe throughout its entire length.

E. Other Foundations: Install pipelines laid on other types of foundations as specified for such other foundations or as ordered in writing.

F. Field Cuts of Pipelines: For shorter than standard pipe lengths, make field cuts in a manner producing a cut square and perpendicular to the pipe axis. Remove any sharp, rough edges which otherwise might injure the gasket.

G. Procedure for sealing cut ends and repairing field damaged areas of polyethylene lined pipe and fittings is as follows:

1. Remove burrs caused by field cutting of ends or handling damage and smooth out edge of polyethylene lining if made rough by field cutting or handling damage.

2. Remove oil or lubricant used during field cutting operations.

3. Areas of loose lining associated with field cutting operation must be removed and exposed metal cleaned by sanding or scraping. For larger areas, remove loose lining and dirt, then roughen bare pipe surface by scratching or gouging with a small chisel to provide an anchor pattern for the epoxy. It is recommended that the polyethylene lining be stripped back by chiseling, cutting, or scraping about 1 inch to 2 inches into well adhered lined area before patching. This ensures that all areas of undercutting have been removed. Be sure to roughen an overlap of 1 inch to 2 inches of polyethylene lining in area to be epoxy coated. This roughening should be done with a rough grade emery paper (40 grit), rasp, or small chisel. Avoid honing, buffing, or wire brushing since these tend to make surface to be repaired too smooth for good adhesion.

4. With area to be sealed or repaired clean and suitably roughened, apply a thick coat of a two-part coal tar epoxy (see County Approved Product List, Appendix F). The heavy coat of epoxy must be worked into the scratched surface by brushing. Mixing and application procedure for the epoxy must follow the epoxy manufacturer's instructions.

5. It is important that the entire freshly cut, exposed metal surface of the cut pipe be coated. To ensure proper sealing, overlap at least 1 inch of the roughened polyethylene lining with this two-part epoxy system.

H. Ductile Iron Pipe Mechanical Joints:

1. Assembly: In making up mechanical joints, center the spigot in the bell.

   a. With a wire brush just prior to assembly of the joint thoroughly brush 8 inches outside of spigot and inside of bell with which the rubber gasket comes in contact. Remove all oil, grit, tar (other than standard coating) and other foreign matter from joint.

   b. Brush lubricant over the gasket just prior to installation. (Note: There is only one rubber gasket size for each diameter of pipe.)

   c. Press the gasket into place within the bell and move the gland into position, bolts inserted, and the nuts tightened finger tight.

   d. Tighten the nuts with a torque wrench so that the gland is brought up toward the pipe evenly. Torque wrenches shall be set as specified in AWWA C111. Spanner type wrenches not longer than specified in

AWWA C111 may be used with the permission of County Manager or designee.

e. Tighten all nuts 180 degrees apart alternately in order to produce equal pressure on all parts of the gland.

2. Torques: Apply the following range of bolt torques:

Size Inches	Range of Torque - ft. lbs
5/8	40 - 60
3/4	60 - 90
1	70 - 100
1-1/4	90 - 120

3. Remaking of Joints: If effective sealing is not obtained at the maximum torque listed above, disassemble and reassemble the joint after thorough cleaning.

I. Ductile Iron Pipe Rubber Gasket Joints:

1. Assembly: In making up the rubber gasket joint, brush the gasket seat in the socket thoroughly with a wire brush and wipe the gasket with a cloth.

a. Place the gasket in the socket with the large round end entering first so that the groove fits over the bead in the seat.

b. Apply a thin film of lubricant (AWWA C600) to the inside surface of the gasket that will come in contact with the entering pipe.

c. Brush the plain end of the pipe to be entered thoroughly with a wire brush and place it in alignment with the bell of the pipe to which it is to be joined.

d. Exert sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket to make the joint.

2. Positioning: Before proceeding with backfilling, feel completely around the joint using a feeler gauge to confirm that the gasket is in its proper position.

a. If the gasket can be felt out of position, withdraw the pipe and examine the gasket for cuts or breaks.

b. If the gasket has been damaged, replace it with a new one before re-installing the pipe.

3. Optional Mechanical Joints: Use mechanical joint fittings that meet the requirements of Section 330504 with the rubber gasket joint pipe when specified or when rubber gasket fittings are not available.

J. Temporary Bulkheads: Provide temporary bulkheads at the ends of sections where adjoining pipelines have not been completed, and in connections built into pipelines where adjoining pipelines or structures have not been completed and are not ready to be connected.

1. Remove bulkheads encountered in connecting sewers or structures included in this Contract, or in pipelines or structures previously built, when they are no longer needed or when ordered.

K. Temporary Blow-Off Assembly: Dead-end water lines shall be temporarily ended with a blow-off as shown in Collier County Standard Details. After full bore flush replace with a fire hydrant meeting the requirements of Section 331619.

L. Sleeve Type Couplings: For sleeve type couplings, equally tighten diametrically opposite bolts on the connection so that the gaskets will be brought up evenly all around the pipe.

1. Torque Wrenches: Do the final tightening with torque wrenches set for the torque recommended by the coupling manufacturer.

M. Concrete Encasement: Concrete encasement shall be constructed in accordance with Collier County Standard Details when:

1. A potable water main crosses at a depth that provides less than 18 inches clear distance from sewer lines in which case a Deviation Form request should be completed. Encase the sewer main unless specifically approved by Collier County Utilities. Encasement shall extend a minimum 10 feet on each side of the point of crossing. Pressure test both pipelines to 150 psi after the concrete has properly cured.

2. A water main running parallel to a sewer line provides less than 10 feet separation from sewer lines, in which case a Deviation Form Request needs to be completed. Encase the sewer main unless specifically approved by Collier County Utilities.

3. The ENGINEER has ordered the line encased. NO POTABLE WATER MAIN SHALL BE ENCASED IN CONCRETE UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY MANAGER OR DESIGNEE.

The points of beginning and ending of pipe encasement shall be not more than 6 inches from a pipe joint to protect the pipe from cracking due to uneven settlement of its foundation or the effects of superimposed live loads.

N. Valve Box Setting: Install valve boxes vertical and concentric with the valve stem.

1. Adjust valve-box to final grade at the time designated by the County Manager or designee.

2. Build a collar, as shown in the standard details, 18 inches by 18 inches by 6 inches or 24 inch diameter round by 6 inches flush to grade of top of box. Similar collar shall be poured flush with grade and top of unpaved areas.

3. Satisfactorily reset any valve box that is moved from its original position, preventing the operation of the valve.

4. Replace any valve box that has been damaged.

O. Identification:

1. Metallized Warning Tape: For DIP and PVC pipe (other than gravity sewer pipe and laterals) to be installed, 3-inch detectable marking tape, of appropriate color and appropriate warning statement, shall be placed along the entire pipe length. In all cases, marking tape shall be installed two feet (2') below grade or one-half the pipe's bury, whichever is less, during backfill operations (refer to Utilities Standards Manual Section 1 – 1.1 and 2.2.1). All PVC pipe, PVC fittings, and identification tape shall be color-coded per Collier County Standards. HDPE pipe installed by horizontal directional drilling will not be required to be marked with metalized warning tape.

2. Electronic Markers (see County Approved Product List, Appendix F): Install electronic markers twenty-four inches (24") below final grade, above pipe, at all bends or changes in alignment and every two hundred and fifty feet (250') along the pipe between bends.

P. Separation From Other Pipe Systems:

1. Parallel Water and Sewer or Non-Potable Lines: Sanitary sewer lines, storm sewers or force mains shall be separated from water mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 10 feet. Non-potable, reclaimed or reuse water mains shall be separated from water mains, gravity sewers or force mains by a minimum clear vertical distance of 18 inches and a horizontal distance of 5 feet center to center or 3 feet outside to outside. When this standard cannot be maintained, the sewer line shall be concrete encased for a distance of 10 feet each way from the water line and any other conduit, with a minimum vertical clearance of 12 inches being provided at all times. See Section 1 - Design Criteria, Subsection 1.2.3.

2. Crossing Water and Sewer or Non-Potable Lines: Water mains crossing over a sewer or non-potable water line shall be (bottom of water main to top of sewer) separated by at least 18 inches unless local conditions or barriers

prevent an 18 inch vertical separation. All crossings with vertical clearance less than 18 inches shall be made using sewer pipe thickness Class 200 AWWA C900 PVC pipe, and water pipe of Class 51 Ductile iron pipe, for a distance of 10 feet on each side of the crossing. The gravity sewer pipe in these locations shall be backfilled with USCS Class I bedding stone to a height of 6 inches above the crown of the pipe. When water mains cross under a sewer, both mains shall be constructed of C900 Class 200 PVC pipe with joints equivalent to water main standards for a distance of 10 feet on each side of the point of crossing with no intermediate joints. Additionally, a section of water main pipe shall be centered at the point of crossing. See Section 1 – Design Criteria, Subsection 1.3.

Q. Aerial Crossings:

1. Pipes spanning elevated pier crossings shall be flanged ductile iron Pressure Class 350 pipe conforming to AWWA C115, C150 & C151. Pipe spanning on piers spaced further apart than normal pipe length of 18 or 20 ft. shall be multiple length pipe with interior flanged joints with a rubber gasket pipe (see County Approved Product List, Appendix F). The pipe wall thickness and flanged joints shall be designed to safely span the elevated piers under working pressure without exceeding the allowable stresses and conform to AWWA C150. Limit pipe deflection at center of span with pipe full of water to 1/720 of span length. Provide expansion joints for between above ground and below ground wastewater lines.

2. Flanges shall conform to AWWA C150 and C115. All bolts and nuts used in aerial crossings shall be 304 stainless steel. Gaskets shall be full faced or recessed "O-Ring" type to prevent leaks in pipe under stress in the aerial crossing.

3. Outside surface of all pipe, flanges or spool pieces shall be shop coated with zinc primer, High Build Epoxy protective coat and a finish coat of polyurethane high gloss. Color shall be Federal Safety Blue for potable water mains and Pantone Purple 522 C for non-potable irrigation water mains.

4. Install operating valves or other flow regulating devices on each shoreline or at a safe distance from each shoreline to prevent discharge in the event the line is damaged.

5. Install supports for all joints in pipes utilized for aerial crossings and to prevent overturning and settlement. Expansion jointing is specified between above ground and below ground sewers and force mains.

3.3 FIELD QUALITY CONTROL

A. Testing: Test pipelines in accordance with Section 022501.

1. Test valves in place, as far as practicable, and correct any defects in valves or connections.

2. Gravity Sewer Lines: Test in accordance with Section 022501

B. Inspection: Clean, inspect, and examine each piece of pipe and each fitting and special for defects before it is installed.

1. Cut away any lumps or projections on the face of the spigot end or the shoulder.

2. Do not use any cracked, broken, or defective pieces in the work.

3. If any defective piece should be discovered after having been installed, remove and replace this piece with a sound piece in a satisfactory manner at no increase in Contract Amount.

3.4 CLEANING

A. General: Thoroughly clean all pipe before it is laid and keep it clean until it is accepted in the completed work.

B. Removal of Materials: Exercise special care to avoid leaving bits of wood, dirt, and other foreign particles in the pipe. If any particles are discovered before the final acceptance of the work, remove and clean the pipe.

3.5 DISINFECTION

A. General: Disinfect all pipelines that are to carry potable water in accordance with Section 025400.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330520

PIPE REMOVAL AND ABANDONMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Removal and abandonment of piping and appurtenances, wholly or in part, as required to complete Work as shown on the Drawings and specified in this Section.

B. Related Work Specified in other Sections Includes:

1. Section 020500 – Connection to Existing Systems

2. Section 033100 – Concrete, Masonry Mortar and Grout

3. Section 312316 – Excavation – Earth and Rock

4. Section 312323 – Backfilling

1.2 SUBMITTALS

A. General: Provide all submittals, including the following, as specified in Division 1.

B. Submit the following:

1. Proposed methods for pipe removal and abandonment;
2. Equipment proposed to be used to do pipe removal and abandonment work;
3. Resume of pipe grouting subcontractor;
4. Pipe removal and abandonment schedule/sequence.

C. If a detour is required, submit a traffic control plan for approval to County Manager or designee and/or the Florida Department of Transportation as described in Section 015526.

1.3 SITE CONDITIONS

A. General

1. Prior to any work, a proper and approved maintenance of traffic plan (MOT) shall be submitted to the engineer and the County.

2. Execute pipe removal and abandonment so that there is no injury to persons or damage to adjacent buildings, structures, equipment, materials, piping, wiring, pavement, fences, trees, guardrails, and other adjacent improvements. Execute demolition and abandonment so that access to facilities that are in operation and to residences and businesses is free and safe.

3. Execute pipe removal and abandonment so that interference to vehicular traffic and personnel traffic does not exceed scheduled interference. Do not place rubble,

excavation, piping, or other materials removed on roadways, drives, or sidewalks that are to remain in service.

PART 2 - PRODUCTS

2.1 TEMPORARY MATERIALS

A. Provide temporary fencing, barricades, barriers, piping, valves, pumps, power and controls, and water necessary to meet the requirements of this Section.

B. Temporary fencing, barricades, barriers, and enclosures shall be suitable to the purpose intended.

2.2 REPAIR AND REPLACEMENT MATERIALS

For repair or replacement of existing facilities or improvements to remain, use materials identical to, or equal to, materials used in existing work when new.

PART 3 – EXECUTION

3.1 GENERAL

A. Conduct pipe removal and abandonment as shown and specified in the Contract Documents.

B. Conduct pipe removal and abandonment so that existing equipment, piping, wiring, structures, and other improvements to remain are not damaged. Repair or replace equipment, piping, wiring, structures, and other improvements damaged at no additional cost to the County.

C. Do not remove equipment, piping, wiring, structures, or other improvements not shown or specified to be removed. If equipment, piping, wiring, structures, or other improvements not shown or specified to be removed is removed, replace equipment, piping, wiring, structures, or other improvements at no additional cost to the County.

3.2 DISCONNECTIONS

A. Prior to starting pipe removal or abandonment, check underground and exposed existing utilities, piping, and equipment within the limits of pipe removal or abandonment. Prior to starting, check underground and exposed existing utilities, piping connected to and associated with existing pipe to be removed or abandoned. Verify the following:

1. Piping is inactive (abandoned);
2. Other utilities which may be in conflict have been permanently or temporarily disconnected, if required:

B. Do not proceed with salvage or demolition if piping is active or utilities have not been disconnected.

3.3 ABANDONMENT

A. The Contractor shall, as described on the Drawings and as may be directed by the County, abandon in place the following existing utility improvements:

1. All water mains, reuse water mains and raw water mains that are designated to be abandoned shall be filled with grout. Refer to Section 033100 – Concrete, Masonry Mortar and Grout.

2. All sewer lines, force mains, laterals and services that are designated to be abandoned shall be flushed clean and filled with grout. Prior to grout fill, sewer lines, force mains, laterals and services to be abandoned shall be flushed clean to remove wastewater and solids. Contractor is responsible for securing and providing flushing water, collection of flush water/wastewater, and disposal. The cleaning of these piping systems shall comply with all local and DEP requirements.

3. Sewer manholes designated to be abandoned shall have the top two feet removed. The remainder of each manhole shall be abandoned and filled with grout or flowable fill. The excavation or pit shall be backfilled with select fill and compacted in accordance with Section 312323 – Backfilling and the trenching details on the Drawings.

B. Appurtenances: All water hydrants, ARV valves and other appurtenances on abandoned lines shall be removed to the main and the fitting at the main shall be capped or plugged. All valves shall have the valve box, pad and operator removed, with the valve left in the open position unless specifically noted otherwise.

C. Preparation:

1. The County shall be notified at least 72 hours in advance of grouting operations.

2. Bulkheads shall be spaced at intervals of not more than 1,000 feet. If the line to be abandoned is longer, bulkheads shall be inserted in the pipe to maintain the required maximum spacing between bulkheads.

3. Temporary vents shall be installed in the line to be filled at a maximum spacing of 150 ft. The vents shall be capable of being capped to allow further grouting operations.

D. Equipment:

1. The materials shall be mixed or delivered in equipment of sufficient size and capacity to provide the desired amount of grout material for each stage in a single operation. The equipment shall be capable of mixing the grout at densities required for the approved procedure and shall also be capable of changing density as dictated by field conditions any time during the grouting operation.

2. Mixers and Pumps - The grout shall be delivered to the injection point at a steady pressure with a non-pulsating centrifugal or triplex pump. Means shall be provided to increase or decrease the water-cement ratio. The system shall mix the grout to a homogeneous consistency. Means of accurately measuring grout component quantities, pumping pressures, and volumes pumped shall be provided.

3. Pressure Gauges - CONTRACTOR shall provide one pressure gauge at the point of injection and one pressure gauge at the grout pump. Grouting shall not proceed without appropriate calibrated gauges in place and in working order. Pressure gauges shall be equipped with diaphragm seals, have a working range between 1.5 to 2.0 times the design grout pressure, and have an accuracy within 0.5 percent of full range. Pressure gauges shall be instrument oil filled and attached to a saddle-type diaphragm seal to prevent clogging with grout.

E. Grouting:

Once grouting operations begin, grouting shall proceed uninterrupted from bulkhead to bulkhead. Grout placement shall not be terminated until both of the following conditions have been met, unless otherwise approved by the County: a) The estimated volume of grout to fill the line has been injected; and, b) grout has been expelled from the furthest vent or bulkhead. Bulkheads and temporary vents shall not be removed until the grout has set.

F. Testing and Sampling:

1. Take four test specimens for each 50 cubic yards of grout or for each four hours of placing.

2. Test in accordance with ASTM C109 except:

   a. The specimens shall be 3 inch by 6 inch cylinders covered after casting to prevent damage and loss of moisture. Moist cure specimens for a period up to 7 days prior to a 28-day compressive strength test.

   b. Do not oven dry specimens that are load tested. Specimens may be tested at any age to monitor compressive strength. The material may require special handling and testing techniques.

G. The CONTRACTOR may remove the pipe in accordance with the Paragraph 3.04 in lieu of abandonment if acceptable to the County. Such removal, however, will be paid at the same price for pipe abandonment.

H. All work under this Section shall comply with City, County, State and Federal regulations.

3.4 REMOVAL AND DISPOSAL

A. The Contractor shall, as described on the Drawings and as may be directed by the County, remove the following existing utility improvements:

1. All water mains, reuse water mains and raw water mains that are designated to be removed.

2. All sewer lines, sewer manholes, force mains, laterals and services that are designated to be removed shall be flushed clean with water prior to removal. Contractor is responsible for securing and providing flushing water, collection of flush water/wastewater, and disposal. The cleaning of these piping systems shall comply with all local and DEP requirements.

B. The pipe removal and disposal shall include all valves, fittings and appurtenances.

3.5 SALVAGE OF EQUIPMENT, PIPING, AND MATERIALS

A. Remove items identified on the drawings or specified to remain the property of the County. Do not damage equipment, piping, and materials to be salvaged.

B. Following removal or equipment, piping, and materials to be salvaged, place equipment, piping, and materials in a location within the County limits as designated by the County.

3.6 REPAIRS

Repair structural elements, equipment, piping, conduit, and other improvements to remain that are damaged during demolition. Use workers specifically qualified in trade, or trades, involved to repair damaged work.

3.7 DISPOSAL

A. Remove and dispose of all equipment, piping, and materials from the jobsite not specifically designated to be retained by the County.

B. Contractor shall not accumulate or store debris from demolition on the project site.

C. The disposal of the piping, manholes and appurtenances shall be in accordance with County, State and Federal laws.

3.8 BACKFILLING

A. Backfill excavations, trenches, and pits resulting from abandonment and removal according to Section 312323 – Backfilling.

B. Backfill of the pipe trenches shall be according to the County details for pipe trench backfill. Pipe trenches for removed pipes that were within 3 horizontal feet of the edge of pavement shall be backfilled according to the detail for the type of roadway.

3.9 CLEANUP AND CLOSURE

A. Following pipe abandonment or removal, clean-up areas where other work is to be done as specified in this Section, or Sections applicable to work to be done.

B. Following pipe abandonment or removal, clean-up areas where no other work is to be done under this Contract. Remove debris and rubbish, temporary facilities, and equipment. Level surface irregularities to eliminate depressions. Leave work in a neat and presentable condition.

C. In locations where a pipe to be abandoned or removed connects to a pipe that remains in service, the Contractor shall install a suitable cap or plug on the end of the active pipe.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 330523.13

HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. The requirements of this section are applicable to all horizontal directional drills where the carrier pipe is 3” in nominal diameter and larger.

B. Provide all necessary tools, materials, labor, supervision and equipment to successfully complete the installation of directionally drilled piping as specified herein and shown on the drawings. The CONTRACTOR shall be responsible for the final constructed product, and for furnishing the qualified labor and superintendence necessary for this method of construction.

C. Furnish all items necessary to perform the horizontal directional drilling operation and construct the pipe to the lines and grade shown on the drawings. Project work tasks include completion of the drilling, pulling operations, horizontal directional drilling installation pressure testing, and final connection of piping installed as part of the horizontal directional drilling to open-cut piping. Horizontal directional drilling shall include the following work elements:

1. Drilling of the pilot hole and the reaming of the hole sufficient to install the HDPE pipe.
2. Provide, assemble, and install HDPE pipe including:
    a. Thermal fusion welding the HDPE pipe sections for temporary staging.
    b. Pulling the HDPE fused pipe stringout, in a continuous pullback operation with one fuse pipe cartridge.
3. Following HDPE pipe pullback, cut the HDPE pipe stubouts and install a temporary thermal fusion welded HDPE cap on both ends of the HDPE pipe stubouts, and perform pressure testing with water to verify pipeline integrity in accordance with the requirements of Section 022501 for HDPE product pipe material.

D. Use techniques of creating or directing a borehole along a predetermined path to a specified target location. Use mechanical and hydraulic deviation equipment to change the boring course and use instrumentation to monitor the location and orientation of the boring head assembly along a predetermined course.

1. Develop, provide, and operate a Drill Fluid Loss Monitoring Program as follows:

   a. Drill Fluid Loss Monitoring Program shall insure the following:

      1) Site specific storm water control measures meet the requirements of the FDEP Best Management Practices guidelines. Storm water control measures shall include, as a minimum, onsite silt fence and sandbags or other mechanical means located between the construction operations and any adjacent water body. Storm water control measures shall provide positive containment of uncontrolled fluids on the site resulting from spills or overtopping of drill pits from heavy rainfall and prevent the fluids from reaching adjacent water body, or bodies.

      2) Positive containment of uncontrolled fluids on the site resulting from spills or overtopping of drill pits from heavy rainfall.

      3) Fluids are prevented from reaching the adjacent water bodies, per FDEP ERP permit requirements.

   b. Drill Fluid Loss Monitoring Program shall include the following:

      1) Observations along the drill path during drilling and reaming operations;

      2) Equipment for spill control remediation including, but not necessarily limited to, vac trucks, sand bags, and pumps; emergency spill and leakage control materials and equipment including diapers, absorbent material and other fuel and oil spill containment and cleanup materials;

      3) Drill fluid loss monitoring and containment including downhole verification of annular drill fluid pressure with continual and immediate reading capability of the pressure monitor;

      4) Drill rig instrumentation, including remote-monitoring electronic data recording features, to monitor drill fluid pressures and rates at pits, tanks, pumps, and drill rig operations;

      5) Drill fluid properties measuring equipment; and

      6) Trained field personnel to monitor and maintain the instrumentation.

   c. Provide drill fluid Loss Circulation Materials (LCM's) on site ready for use if needed.

2. Equipment shall be in functional order during all drilling operations.

3. Data shall be provided to the OWNER's representative daily or on request and a complete package of the recorded data will be provided to the OWNER following completion of the drill.

E. Accomplish drilling with fluid-assist mechanical cutting. Use a mixture of bentonite and water or polymers and additives. Use bentonite sealants and water to lubricate and seal the mini-tunnel. Use minimum pressures and flow rates during drilling operation as not to fracture the sub-grade material around and or above the bore.

F. Utilize small diameter fluid jets to fracture and mechanical cutters to cut and excavate the soil as the head advances forward.

G. Install an offset section of drill stem that causes the cutter head to turn eccentrically about its centerline when it is rotating for steering. When steering adjustments are required, rotate the cutter head offset section toward the desired direction of travel and advance the drill stem forward without rotation. Control of tunnel line and grade shall meet the requirements of this section.

H. The mobile drilling system shall be capable of being launched from the surface at an inclined angle and drilling a pilot hole with a diameter appropriate to the size, length, and configuration of the directional drill. The pilot hole shall then be enlarged with reamers as required. Pilot holes are not required on drills 4" and smaller.

I. Develop and provide certified as-built plans, signed and sealed by a Professional Land Surveyor licensed in the State of Florida, in accordance with this Section

1.2 REFERENCE STANDARDS

A. See Section 330502 for casing and carrier pipe diameter requirements.

B. American Association of State Highway and Transportation Officials (AASHTO).

C. Occupational Safety and Health Administration (OSHA).

D. ASTM Standards:

1. ASTM D 3261 Standard Specification for Butt Heat Fusion Polyethylene (PE)Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

2. ASTM F 1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

1.3 DEFINITIONS

A. CONTRACTOR's Construction Drawings shall be defined as drawings by which the CONTRACTOR proposes to construct, operate, build, etc., the referenced item. Submit Construction Drawings for the sole purpose of providing the sufficient details to verify that the CONTRACTOR's work in progress is in accordance with the intent of the design.

1.4 SUBMITTALS

A. The ENGINEER will base the review of submitted details and data on the requirements of the completed work, safety of the work in regards to the public, potential for damage to public or private utilities and other existing structures and facilities, and the potential for unnecessary delay in the execution of the Work. Such review shall not be construed to relieve the CONTRACTOR in any way of his responsibilities under the contract. Do not commence work on any items requiring CONTRACTOR's Construction Drawings or other submittals until the drawings and submittals are reviewed and accepted by the ENGINEER.

B. The CONTRACTOR shall:

1. Submit for review complete construction drawings in plan and profile view identifying details of the proposed method of construction and the sequence of operations to be performed during construction only if deviations from the contract plans are proposed. The drawings shall be sufficiently detailed to demonstrate to the ENGINEER whether the proposed materials and procedures will meet the requirements of the Contract Documents.

2. Submit manufacturer's data for the HDPE pipeline, as outlined in Section 330502 for HDPE product pipe material.

3. Submit the directional boring locating equipment proposed for use, method of locating to be used, and the proposed sequence and method of construction, for approval by the ENGINEER in accordance with the plans and specifications. Include information on how the bore is to be steered, the information recorded, and the pipe location verified for record drawings. Include proposed pilot bore tunnel size, proposed drilling fluid composition and Material Safety Data Sheets (MSDS), proposed viscosities, proposed pre-ream procedures, and final tunnel size. Submit proposed Temporary Traffic Control (MOT) plans for FDOT right-of-way work and for Collier County DOT right-of-way work.

4. Submit a work sequence and schedule. Provide a list of key personnel for the project including superintendent, driller, and tracking specialists.

5. Prior to approval for directional boring, the CONTRACTOR shall submit the names of supervisory field personnel and historical information of directional boring experience.

6. Drill Method Submittal: Submit a minimum of 20 days before starting drilling for review and approval. This submittal shall include the following information:

    a. Drawings. Submit scaled plan showing the following: the work zone equipment configuration at each end of the drill; staging and storage areas; and the location of drill fluid, HDPE pipe, water supply for drilling, cuttings, pit spoil handling areas; and storm water containment measures, devices and locations.

    b. Drilling Procedure. It is recognized and accepted that the CONTRACTOR may need to adjust drilling procedures and equipment as new information is developed during the drill. The intent of this requirement is to provide the CONTRACTOR's initial approach to the project specific subsurface and permit conditions.

    c. Maximum Pipe Pull-back Forces: Submit anticipated maximum pipe pull-back forces based on proposed drill path plan and profile.

    d. Drill Fluid Loss Monitoring/Frac-Out Plan. Submit materials list including bentonite and bentonite additives for the project along with respective MSDS for all materials used on the site.

7. Tracking Coordination Submittal: Provide this submittal a minimum of 20 days prior to drilling. The intent of this submittal is to coordinate the contractor activities with the tracking specialist. Include manufacturer's data sheets and calibration on the tracking equipment and sample data recording log sheets.

8. The CONTRACTOR shall bring to the attention of the ENGINEER any known design issues based on CONTRACTOR's proposed drilling methods and/or procedures. This shall be stated in writing to the ENGINEER no later than the preconstruction meeting.

9. CONTRACTOR's construction drawings shall be submitted on the following items only if deviations from the Contract plans are proposed.

    a. Proposed contingency plans for critical phases and areas of directional drilling.

    b. Any proposed deviations from the Contract construction plans.

    c. Any proposed deviations from the Contract construction specifications.

10. Quality Control Methods. CONTRACTOR shall submit a description of his quality control methods he proposes to use in his operations to the ENGINEER. The submittal shall describe:

a. Procedures for controlling and checking line and grade.

b. Equipment specifications for checking line and grade.

c. Field forms for establishing and checking line and grade.

d. Actual product pipe pullback forces.

1.5 QUALITY CONTROL

A. Low Pressure Air Test. Before the OWNER accepts the installation of each HDD, the CONTRACTOR shall perform a low-pressure air test of each of the HDPE fused pipe string-out cartridges prior to pipe pullback. Low pressure testing of the above ground pipes to be 10 psig for 60 minutes duration, soap all joints to test for leaks, and test pressure to remain within 2 PSI of original applied pressure for acceptance.

B. Annular Pressure Monitoring. Annular pressure shall be monitored and recorded using equipment constructed for that purpose, and shall include a fully-instrumented remote-monitoring data recording package, such as PASON or equal. Annular pressures shall be monitored and recorded in the Annular Pressure Report. Annular pressure shall be recorded during active drilling of the pilot hole and during the first ream pass. The minimum and maximum annular pressure experienced during the joint shall also be recorded; the minimum and maximum pressures are not necessarily the pressures recorded at the start, middle and end of each joint, but shall be maximum values as measured throughout the whole joint. The time of each recorded measurement shall be recorded. The annular pressure measurements shall be indexed to the rod being drilled. The trends of the circulating pressure information will be assessed and corrective action shall be taken when appropriate. Drilling shall be stopped when required to prevent excess annular pressure. Drilling may resume once the cause of the excess down-hole pressure has been identified and corrected.

C. Pipe Pull-back Forces. Force applied to pipe during pull-back shall not exceed the values shown on the Drawings.

D. ENGINEER Authority for Directional Drilling. Directional drilling shall be performed in accordance with approved submittals. ENGINEER will have the authority to interpret and make decisions with respect to drilling activities should specification interpretation be required or unanticipated conditions occur.

1.6 JOB CONDITIONS

A. Safety Requirements

1. Perform work in a manner to maximize safety and reduce exposure of men and equipment to hazardous and potentially hazardous conditions, in accordance with applicable safety standards.

2. Whenever there is an emergency or stoppage of work which is likely to endanger the excavation or adjacent structures, operate a full work force for 24 hours a day, including weekends and holidays, without intermission until the emergency or hazardous conditions no longer jeopardize the stability and safety of the work.

B. Air Quality.

1. Conduct directional drilling operations by methods and with equipment, which will positively control dust, fumes, vapors, gases or other atmospheric impurities in accordance with applicable safety requirements.

C. Geotechnical Investigation

1. Make any geotechnical investigations deemed necessary to determine actual site conditions.

D. Unanticipated Conditions

1. Notify ENGINEER of unexpected subsurface conditions and discontinue work in affected area until notified by ENGINEER to resume work.

2. Take emergency measures as required to protect persons and improvements.

1.7 UTILITY PROTECTION

A. Utility lines and structures indicated on the drawings, which are to remain in service, shall be protected by the CONTRACTOR from any damage as a result of their operations. Where utility lines or structures not shown on the drawings are encountered, the CONTRACTOR shall report them to the ENGINEER before proceeding with the work. The CONTRACTOR shall bear the cost of repair or replacement of any utility lines or structures, which are broken or damaged by their operations.

B. All utilities that may be impacted by the HDD shall be exposed through a “pot-hole” or other opening, in accordance with state utility locate laws and regulations, to ensure, through visual inspection, that the drill, reamer, or product pipe will not cause damage to the utility.

1.8 PERMITS

A. Obtain any and all other permits required for prosecution of the work.

PART 2 PRODUCTS

2.1 GENERAL

A. Refer to Section 330502 for HDPE pipe material.

B. Use a high quality bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling, and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil based drilling fluids or fluids containing additives that can contaminate the soil or groundwater will not be considered acceptable substitutes. Composition of the fluid shall comply with all federal and local environmental regulations.

1. Disposal of drilling fluids shall be the responsibility of the CONTRACTOR and shall be conducted in compliance with all relative environmental regulations, right-of-way and workspace agreements and permit requirements.

2. Drilling fluid returns can be collected in the entrance pit, exit pit, or spoils recovery pit. The CONTRACTOR shall immediately clean up any drilling fluid spills or overflows from these pits.

PART 3 EXECUTION

3.1 GENERAL

A. The CONTRACTOR shall be responsible for his means and methods of directional drilling construction and shall ensure the safety of the work, the CONTRACTOR's employees, the public, and adjacent property, whether public or private.

B. Obtain locations of all existing utilities within the horizontal directional drilling project area, whether shown on the plans or not, in coordination with the owners of such utilities. Be responsible for protection of such utilities from damage, and repair of any utilities damaged during or as a result of construction.

C. Anticipate that portions of the drilled excavation will be below the groundwater table.

D. Comply with all local, state and federal laws, rules and regulations at all times to prevent pollution of the air, ground and water.

E. A pilot hole shall be drilled such that the required vertical clearances from ditch, river, or wetland bottoms and utilities and horizontal clearances from jurisdictional or buffer lines and utilities are maintained. If the pilot hole exits in jurisdictional or buffer areas they shall be responsible to grout hole to satisfaction of the environmental regulators and the ENGINEER.

F. The boring hole shall then be reamed to be 120% to 150% oversized than the HDPE product pipe OD. Drilling mud, usually fluidized bentonite clay, shall be used to stabilize the hole and remove soil cuttings. The CONTRACTOR shall monitor and record the reamed hole location and depth at the same intervals as the bore hole.

G. The pull-back operations shall include pulling the entire pipe stringout, in one segment back through the reamed hole and drilling mud. The pull-back operations shall include filling the product pipe with water to reduce the buoyancy and to reduce the pull-back forces required to pull-back the product pipe in the borehole. Proper pipe handling, cradling, bending minimization, surface inspection, and fusion welding procedures (for HDPE) shall be followed in accordance with this specification and Section 330502. Note that anticipated pullback speed is typically 1 to 2 feet per minute. Pull-back operation shall be continuous with no stoppage. If conditions exist where the pull-back cannot be continuous, the Contractor shall submit an alternative plan to the Engineer for review and approval prior to commencing the drill.

H. Any soil borings required for the CONTRACTOR's detailed designs shall be included in the bid. The CONTRACTOR is fully responsible to obtain this information.

I. CONTRACTOR shall be responsible for design and construction of the drill entrance and exit pits. Supports may be required to maintain safe working conditions, ensure stability of the pit, minimize loosening, and minimize soil deterioration and disturbance of the surrounding ground.

J. CONTRACTOR shall be required to locate all utilities prior to start of excavation or drilling. All utilities crossed or approached within 48 inches in a lateral direction shall be exposed to verify location. In addition, visual verification shall be required that the drill, reamer, or product pipe has missed the utility as it passes. Damage to utilities shall be the responsibility of the CONTRACTOR.

K. Immediately upon completion of work, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean, and acceptable condition.

L. "Frac-outs" or "Blow holes" of drilling fluid to the surface shall be immediately reported to the ENGINEER and the OWNER's representative, and shall be cleaned up immediately and the surface area washed and returned to original condition. All drilling fluids, spoils, and separated material shall be disposed of in compliance with federal and local environmental regulations.

M. If, during boring, an obstruction is encountered which prevents completion of the bore in accordance with the design location and specification, and the product pipe is abandoned in place and taken out of service, the failed bore shall be filled with cement grout. The record drawings shall show the failed bore path along with the final bore path on the as-built plans. Should the HDD crossing be lost or damaged while the CONTRACTOR is engaged in the performance of the work, all such lost or damage to the hole shall be borne by the CONTRACTOR. Failure to complete the crossing or partially completed crossing by directional drilling or as approved by ENGINEER and OWNER will result in forfeiture of all payment.

3.2 EQUIPMENT

A. Diesel, electrical, or air-powered equipment will be acceptable, subject to applicable federal and state regulations.

B. Any method or equipment that the CONTRACTOR can demonstrate will produce the specified results will be considered.

C. Employ equipment that will be capable of handling the various anticipated ground conditions. In addition, the equipment shall:

1. Be capable of minimizing loss of ground ahead of and around the machine and providing satisfactory support of the excavated face at all times.

2. Provide a system to indicate whether the amount of earth material removed is equivalent to that displaced by the advance of the machine such that the advance rate may be controlled accordingly.

D. Provide adequate secondary containment for any and all portable storage tanks.

E. Provide down-hole annular pressure monitoring equipment, including remote monitored electronic data recording package, such as PASON, or equal.

3.3 DIRECTIONAL DRILLING DATA

A. Submit daily logs of construction location, progress and events, including observations on the following:

1. Drill thrust pressure.

2. Drill pullback pressure.

3. Annular pressure.

3.4 CONTROL OF THE TUNNEL LINE AND GRADE

A. Construction Control.

1. Establish and be fully responsible for the accuracy of control for the construction of the pipeline to be installed, including structures, tunnel line and grade.

2. Establish control points sufficiently far from the tunnel operation so as not to be affected by construction operations.

3. Maintain daily records of alignment and grade and submit three copies of these records to the ENGINEER. However, the CONTRACTOR remains fully responsible for the accuracy of his work and the correction of it, as required.

4. Check, monitor, and record control for the bore alignment against an above ground undisturbed reference at least once each hour and at least once for each drill rod length interval. CONTRACTOR shall immediately report bore alignment location to ENGINEER after each control check. The location shall be reported based on the approved bore alignment, i.e. horizontal distance and direction from approved bore alignment and vertical distance and direction from approved bore alignment length from the entry or exit point along the bore path, and horizontal distance from the entry of exit point.

5. The pilot hole shall be drilled on bore path with no deviations greater than 10 percent of depth of the bore path as shown on the Drawings or approved CONTRACTOR submittal drawings. In the event that pilot hole deviates from bore path more than 10 percent of depth, CONTRACTOR shall notify ENGINEER and ENGINEER may require CONTRACTOR to pull-back and re-drill from the location along bore path before the deviation. The depth of the bore path is the vertical distance from the drill head to the surface of the earth, i.e. ground, pavement, water surface. Any deviations greater than 10 percent shall be reviewed by the ENGINEER. Excessive deviation may be grounds for rejection of the bore. All minimum vertical separations and clearances must be maintained regardless of the allowable drill path deviations.

6. Pilot hole shall be drilled on bore path with no deviations greater than 10 feet horizontally along the path of the drill. Excessive deviation may be grounds for rejection of the bore. Regardless of the tolerance achieved, right-of-way and easement restrictions shall take precedence over the listed tolerances. Listing of tolerances does not relieve CONTRACTOR from responsibility for safe operations or damage to adjacent utilities and structures.

7. Record survey of the pilot hole shall be submitted in State Plane Coordinate system using NAVD 1988 datum.

3.5 INSTALLATION OF TRACKING/LOCATING WIRE

A. Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two (2) separate and continuous conductive tracking (tone wire) materials, either externally, internally or integral with the product. The ends of the tone wire shall be stubbed up through a one-inch (1") diameter SCH 80 PVC pipe which shall be installed in the concrete valve pad adjacent to the valve box on both sides of the directional drill. Use either a continuous green-sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Conductors must be located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp, or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of three (3) inches overlap. Test conductors for continuity. Each conductor that passes must be identified as such by removing the last six (6) inches of the sheath. No deductions are allowed for failed tracking conductors. Conductor ends must be stubbed out through the PVC conduit at the isolation valve box at the terminus of the drill.

3.6 DEWATERING

A. Where such effort is necessary, cost for groundwater control during the course of the directional drilling work shall be included in the unit contract price for the work.

B. Dewatering required during the course of the project to lower water table, to remove standing water, surface drainage seepage, or to protect ongoing work against rising waters or floods shall be considered incidental to the work being performed.

3.7 DISPOSAL OF EXCESS MATERIAL

A. Dispose of excess material, including, but not necessarily limited to, drill fluid, casing water, cuttings and pit spoil, off of the project site.

B. Non-hazardous waste meeting the requirements of a Class III Waste shall be disposed of in a FDEP permitted Class III Landfill.

C. Non-hazardous waste meeting the requirements of a Class I or II waste shall be disposed of in a FDEP permitted Class I or Class II landfill.

3.8 DOCUMENTATION REQUIREMENTS OF RECORD DRAWINGS

A. Provide the ENGINEER a complete set of As-Built Plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract plans and include utility and/or topography plan and profile, cross-section, boring location and subsurface conditions as directed by the ENGINEER. As-Built Plans shall show appropriate elevations and be referenced to two permanent benchmarks as shown on the drawings, and in a State Plane grid system and NAVD 88 datum, as designated on the Contract plans. As-Built Plans shall be same scale in black ink on white paper, of the same size and weight as the Contract Drawings. Submittal of electronic plans data in addition to hard copy plans is required and shall be compatible with the industry standard CAD software. As-Built Plans shall be signed and sealed by a Professional Land Surveyor licensed in the State of Florida. Specific plans content requirements include but may not be limited to the following:

1. The Contract plan view showing the center line location of each facility installed, or installed and placed out of service, to an accuracy of 0.1 feet at the ends and other points physically observed in accordance with the bore path report.

2. As directed by the ENGINEER, provide a plan and profile for each bore path. Show the ground or pavement surface and center line elevation of each facility installed, or installed and placed out of service, to an accuracy of within 0.1 feet at the ends and other exposed locations. Each bore path shall be depicted on the Contract plans using the same datum as the Contract plans.

3. Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

4. Include bore notes on each plan stating the final bore path diameter, product pipe diameter and type, drill entry and exit angles, and installed bore path radius for each pipeline installed by HDD.

3.9 CLEANING

A. General. Directional drilling operation site cleaning shall meet the requirements of Section 017423 Cleaning.

B. Spillage. Clean spillage, on adjacent streets, from construction operations on a daily basis, if spillage occurs.

END OF SECTION

SECTION 330523.16

JACKING, AUGERING AND MINING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Pipeline installation in casing pipe beneath highways, railroads and other structures may be installed by jacking and augering or by jacking and mining.

B. Related Work Specified in Other Sections Includes:

1. Section 033100 – Concrete, Masonry, Mortar and Grout

2. Section 312316 – Excavation - Earth and Rock

3. Section 314000 – Shoring, Sheeting and Bracing

1.2 REFERENCES

A. Codes and standards referred to in this Section are:

1. ASTM C 76 - Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
2. ASTM A 139 - Specification for Electric-Fusion (Arc) -Welded Steel Pipe (NPS in 4 in. and Over)
3. OSHA PL-91-596 - Occupational Safety Health Act of 1970 Public Law 91-596

1.3 SUBMITTALS

A. Provide all submittals, including the following, as specified in Division 1.

1. Working drawings of the jacking pipe, jacking frame, jacking head, reaction blocks, sheeting, including design calculations and the complete jacking installation.

2. Necessary permit applications and approvals by the appropriate authority.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle all products and materials as specified in Division 1.

PART 2 PRODUCTS

2.1 MATERIALS

A. General: Use the following for casing piping.

1. Spiral Weld or smooth wall steel pipe, meeting the requirements of ASTM A 139, Grade B. The minimum casing pipe size shall be determined by maintaining a minimum of a four inch (4") difference between the carrier pipe's largest outside diameter (including restraints) and the casing pipe's inside diameter. The wall thickness shall be a minimum of .25 inches for up to twenty inch casings, .312 inches for twenty-four to thirty-six inch casings, and .50 inches for forty-two inch and larger casings. For special design considerations, obtain approval from Collier County Utilities.

B. Fill Material: Use fill material consisting of 1-1/4 pounds of Bentonite per gallon of water during jacking to fill any voids between pipe and the earth.

PART 3 EXECUTION

3.1 INSTALLATION

A. Casing Pipe:

1. Install all casing pipe in accordance with the manufacturer's recommendations and approved shop drawings and as specified in Division 1.

2. The provisions of this section shall represent the minimum standards for the installation of casing pipe for sewer force main or water main pipeline.

3. Install all sewer force mains and water mains in a casing to be placed under all present and future Collier County Department of Transportation & Engineering roadways. Conform steel casing procedures to the requirements of Collier County DOT. All work and materials shall be subject to inspection by DOT. Restore the Department's property and surface conditions to the original condition in keeping with the Department's specifications and standards.

4. In general, install all underground sewer force mains and water mains crossing all existing Collier County roadways, Florida State Highways and railroads within steel casing pipe extending at least five (5) feet beyond pavement edge. Obtain specific crossing requirements in advance from the authority having jurisdiction.

5. Submit the necessary permit documents and data to the appropriate authority and receive approval thereof. Maintain traffic on the roadway and

keep all workmen and equipment clear of the travelway during the work. Comply with all Federal, State and County safety regulations and any permit(s).

6. Locate casing pipes crossing under State and County roadways at suitable approved alignments in order to eliminate possible conflict with existing or future utilities and structures with a minimum 36 inches depth of cover between the top of the casing pipe and the surface of the roadway. Conduct boring operations in such a manner as not to create hazardous conditions or impede traffic flow.

7. For casing pipe crossing under roadways, railroads, or other installations not within the jurisdiction of Collier County, comply with the regulations of said authority in regard to design, specifications and construction. State Highway casing installations shall be as specified in the FDOT, "Utility Accommodation Guide", and for railroads, the American Railway Engineering Association, Part 5, Section 5.2, "Specifications for Pipelines Conveying Nonflammable Substances", shall be applicable. However, in no case shall the minimum casing pipe diameter and wall thickness, for a specific carrier pipe size, be less than that specified above.

8. Use a simultaneous and continuous installation of any dry boring and jacking operation until the casing pipe is in final position. Maintain correct line and grade. Use full-ring welded add-on sections of casing pipe, developing water-tight total pipe strength joints. Use pipe lengths of at least 18 feet. Casing welders shall be certified welders. A copy of the certification shall be obtained by the Engineer of Record and given to the County Manager or designee prior to the welding procedure. Produce no upheaval, settlement, voids, cracking, movement or distortion of the existing roadbed or other facilities during the casing installation. Fill any voids with 1:3 portland cement grout at sufficient pressure for roadway protection. Following placement of the carrier pipe within the steel casing, install masonry plugs at each open end. Plugs shall be suitable for restraining the external earth load, while allowing internal drainage.

9. Mechanically bore casing pipe holes through the soil by a cutting head on a continuous auger mounted inside the pipe. Extend the auger a maximum of 2 inches beyond the end of the casing pipe to preclude formation of voids outside the pipe shell. Auger should not be of a greater diameter than the outside diameter of the encasement.

10. Adequately protect the casing pipe to prevent crushing or other damage under jacking pressures. Provide backstops for adequately distributing the jack thrust without causing deformation of the soil or other damage. Replace damaged casing pipe if not installed; however, if installed, abandon encasement pipe in place, suitably plug, and install an alternate installation, as directed by the County Manager or designee.

11. In the event of obstruction, withdraw auger, cut and cap excess pipe and fill void with 1:3 portland cement grout under sufficient pressure

12. Excavate and maintain required boring or jacking pits or shafts to the minimum dimension. Adequately barricade, sheet, brace and dewater excavation as required.

13. Deviation from approved jack and bore methods and above specifications is grounds for work stoppage and line replacement at the expense of the CONTRACTOR.

B. Casing Spacers:

Use Stainless Steel Casing Spacers (see County Approved Product List, Appendix F) being on center and restrained as the preferred method for installing the carrier pipe. Use skids installed with 6 ft to 10 ft spacing as recommended by the manufacturer. After the carrier pipe has been tested for leakage, block the casing ends with either an 8" wall of brick masonry with a weep hole installed near the bottom of each wall or casing spacer end seals (see County Approved Product List, Appendix F) with stainless steel bands.

C. Augering: Conduct augering with the proper equipment and procedure such that the carrier pipe and the casing pipe can be installed to the grades specified without disturbing the adjacent earth. Submit all equipment and procedures for prior approval.

D. Hand Mining: Conduct hand mining only in casings that are sufficiently large enough to permit such operation. Provide adequate fresh air supply within the casing pipe and conduct all operations in accordance with the requirements of the U.S. Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act 7 1970 (PL-91-596).

E. Jacking Pit: Make the jacking pit of adequate length to provide room for the jacking frame, the jacking head, the reaction blocks, the jacks, auger rig, and the jacking pipe. Make the pit sufficiently wide to allow ample working space on each side of the jacking frame. Make the depth of the pit such that the invert of the pipe, when placed on the guide frame, is at the elevation desired for the completed line. Provide excavation in conformance with Section 312316.

F. Sheeting: Sheet the jacking pit tightly and keep it dry at all times. Conform sheeting to Section 314000. Have complete design calculation for sheeting the jacking pit sealed and submitted by a Professional Engineer registered in the State of Florida.

G. Jacking Frame: Use a jacking frame that applies a uniform pressure over the entire pipe wall area of the pipe to be jacked.

H. Reaction Blocks: Use reaction blocks designed to carry the thrust of the jacks to the soil without excessive soil deflection and in such a manner as to avoid any disturbance of adjacent structures or utilities.

I. Operation: Use hydraulic jacks in the jacking operation. Use extreme care to hold the pipe to exact line and grade. Advance the excavation at the heading manually or with an auger. Do not allow the advance to exceed one foot ahead of the casing pipe. Make every effort to avoid loss of earth outside the casing.

J. Safety Railing: Provide a safety railing all around the top of the pit at all times.

K. Restore property and surface conditions to the original condition in accordance with Collier County DOT specifications and standards.

L. Carrier Pipe:

Utilize joint restrained pipe for the entire water main or force main pipe length inside the casing. Use special supporting of the carrier pipe within the casing with a design approved by the County Manager or designee.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 331200

WATER VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals required and install complete and ready for operation all valves and appurtenances as shown on the Drawings and as specified herein.

1.2 REFERENCES

A. Codes, specifications, and standards referred to by number or title form a part of this Section to the extent required by the references to codes, specifications, and standards. Latest revisions, as of the date of bid opening, apply, unless otherwise noted on the Drawings or specified in this Section.

B. Standards

Designation	Title
ANSI/AWWA C111/A21.11	Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
ANSI/AWWA C500	Gate Valves
ANSI/AWWA C509	Resilient-Seated Gate Valves 3 through 12 NPS, for Water and Sewage Systems
ANSI/AWWA C512	Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service
ANSI/B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 125
ANSI/B16.3	Malleable Iron Threaded Fittings, Class 150 and 300
ANSI/B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
ASTM A276	Specification for Stainless and Heat-Resisting Steel Bars and Shapes
ASTM A231	Specification for Steel Casting, Austenitic, for High-Temperature Service

ASTM A743	Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, and Nickel-Base Corrosion-Resistant for General Application
MSS SP-60	Connecting Flange Joint Between Tapping Sleeves and Tapping Valves

1.3 DEFINITIONS

A. References to valve sizes on the Drawings and in the Specifications are intended to be nominal size, and shall be interpreted as nominal size.

1.4 SUBMITTALS

A. General: as specified in:

1. General Conditions;

2. Supplementary General Conditions;

1.5 QUALITY ASSURANCE

A. Testing: Test valves as specified in this Section.

PART 2 PRODUCTS

2.1 GENERAL:

A. All valves and appurtenances shall be of the size shown on the Drawings and if possible all equipment of the same type shall be from one manufacturer.

B. All valves and appurtenances shall have the name of the maker and the working pressure for which they are designed cast in raised letters on the body.

C. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

2.2 MANUFACTURERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

2.3 DESIGN

A. Resilient, Wedge or Gate Valves and Boxes

1. Valves for pipe less than 2 inches in diameter shall conform to the requirements of AWWA C509 (latest revisions) and shall be cast iron, single wedge, non-rising stem, screwed bonnet, 125 pounds S.P., 200 pounds W.O.G with stuffing box repackable under pressure and all parts renewable.

Ends shall be as shown or indicated on the drawings. For approved air release line valves, bacterial sampling station line valves, curb stops, corporation stops, and ball valves see County Approved Product List, Appendix F.

2. Resilient, wedge or gate valves 2 inches in diameter and larger shall be ductile iron body, non-rising stem, bronze mounted gate valves, mechanical joint conforming to requirements of the AWWA C515 and shall be provided with a 2 inch square operating nut with the word “open” and an arrow cast in the metal to indicate direction. Valves shall be vertical resilient, wedge, or gate type and shall turn to the left (counter clockwise) to open. The wedge or gate shall be ductile iron per ASTM A536, minimum 65,000-psi strength and, completely encapsulated with urethane rubber, permanently bonded to the wedge or gate to meet ASTM test for rubber metal bond, ASTM D429. The valve stems for non-rising stem assemblies shall be cast bronze with integral collars in full compliance with AWWA. OS & Y stems shall be on bronze bar stock. The NRS stem stuffing box shall be the O-ring seal type with two rings located above thrust collar; the two rings shall be replaceable with valve fully open and subjected to full rated working pressure. The minimum safe working pressure shall be 200 psi. All valves thirty inches (30”) or larger shall have a concrete slab placed under the valve to help distribute the total weight of the valve and reduce line sagging. The concrete slab shall have 6”x6” 10/10 welded wire mesh, have lifting eyes, constructed using 3,000 psi concrete, be six inches (6”) thick, and sized according to the following table:

Valve Size	Length	Width
30”	42”	30”
36”	48”	36”
42”	54”	42”
48” – 54”	60”	48”
60” – 66”	78”	60”

3. There shall be two low torque thrust bearings located above and below the stem collar. The stem nut shall be independent of wedge and shall be made of solid bronze. There shall be a smooth unobstructed waterway free of all pockets, cavities and depressions in the seat area. The body and bonnet shall be coated with fusion-bonded epoxy both interior and exterior. Each valve shall have the manufacturers name, pressure rating and year manufactured cast on body. The valve shall be designed and tested to be opened and closed under a differential pressure of at least twice the working pressure.

B. Valves for Buried Service

1. Valves for buried service shall meet all the requirements as specified herein but shall have mechanical joint ends and stainless steel cover bolts.

2. All buried valves shall have cast-iron two-piece valve boxes (see County Approved Product List, Appendix F). Valve boxes shall be provided with suitable heavy bonnets to extend to such elevation at the finished grade surface as directed by the ENGINEER. The barrel shall be two-piece, screw type. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling, shall be designed so as to prevent the transmission of surface loads directly to the valve or piping, and shall be complete with cast iron covers. Covers shall have "WATER" cast into the top. The covers shall be so constructed as to prevent tipping or rattling. All valve boxes located in paved roadways or sidewalks shall have locking covers.

3. Where valves are located out of pavement, the boxes shall be adjusted to finished grade with a concrete collar as shown in the Details.

4. Valve boxes shall be of the heavy duty, traffic bearing cast iron, adjustable screw type with a drop cover. The valve box assembly shall consist of a bottom section, top section and cover which is cast from gray iron, formulated to ASTM specification A-48 latest revision, minimum tensile of 21,000 psi and shall be free from blowholes, shrinkage or other imperfections not true to pattern. The shaft size shall be 5 1/4" and the adjustable length shall be from 18" to 36". The wall thickness shall be 1/4". The weight of the assembly shall be 61 pounds $\pm$ 2 pounds, with the cover weight being a minimum of 13 pounds.

5. The name of the manufacturer and foundry of origin shall be cast into each of the components of the assembly in legible form. The assembly shall be suitable for highway traffic wheel loads of 16,000 pounds and shall withstand a proof load test of 25,000 pounds without failure or permanent deflection.

C. Check Valves

1. All check valve bodies shall be cast iron per ASTM A126 Class B, having integral (not wafer) flanges.

2. The seat shall be centrifugally cast bronze with an O-ring seal and be locked in place with stainless steel lock screws and be field replaceable, without the use of special tools.

3. Swing check valves shall have a shaft of single and continuous stainless steel, extending both sides of the body with a lever and weight. The air cushion cylinder, when specifically required, shall be constructed of corrosion resistant material and the piston shall be totally enclosed within the cylinder and not open at one end. The air cushion cylinder assembly shall be externally attached to either or both sides of the valve body and shall permit adjustability to cushion the closure of the valve. Cushioning shall be by air trapped in the cushion cylinder, which shall be fitted with a one-way adjustable control check valve to cushion disc contact to the seat at

the shut-off point. The bottom cylinder head shall be swivel mounted and not rigid to follow the change of force angles as the lever raises or lowers to open or close the check valve. Valve shall prevent backflow on normal pump shut off or power failure, at zero velocity and be watertight. The disc shall be cast iron utilizing a double clevice hinge connected to a ductile iron disc arm. The disc arm assembly shall be suspended from a stainless steel shaft, which passes through a seal retainer on both sides of the valve body.

4. Rubber flapper swing valves shall have a heavily constructed cast iron body and cover. The body shall be long pattern design (not wafer) with integrally cast-on end flanges. The flapper shall be Buna-N having an O-ring seating edge and be internally reinforced with steel. Flapper shall be captured between the body and the body cover in a manner to permit the flapper to flex from closed to full open position. Flapper shall be easily removed without the need to remove the valve from line. The check valves shall have full pipe size flow area. Seating surface to be on a 45° angle requiring the flapper to travel only 35° from closed to full open position for minimum head loss. Valve has non-slam closure characteristics. Flapper shall create an elastic spring effect to assist the flapper to close against a slight head to prevent or minimize slamming. Valve shall be designed for 175 psi working pressure for water. The valve shall be suitable for buried service.

5. Valve exterior to be painted with Red Oxide Phenolic Primer Paint as accepted by the FDA for use in contact with Potable Water. Materials shall be certified to the following ASTM specifications:

   a. Body, cover & disc - Cast Iron - ASTM A126, Class B

   b. Disc Arm - Ductile Iron - ASTM A536

   c. Seat - Aluminum Bronze or Stainless Steel - ASTM B148, ASTM A276

   d. Disc Seat - Buna-N or metal

   e. Cushion cylinder - Corrosion-resistant Commercial material

D. Backflow Prevention Devices

1. Backflow prevention devices shall be reduced pressure principle assemblies and shall be USC approved, and shall meet all requirements of the Collier County Cross-Connection Control/Backflow Prevention Ordinance, as then amended. Refer to Section 3, Utility Detail Drawings.

E. Combination Air Release Valves for Potable Water and Non-Potable Irrigation Systems

1. Air release valves shall exhaust large quantities of air during the filling of a pipeline or vessel. The valve shall be capable of venting air up to sonic

velocity without blowing shut; closing only after all the air has been vented. The valve shall continue to release small quantities of air under pressure as often as needed to keep the system free of accumulated air. The valve shall automatically open to allow air to re-enter during draining or whenever a negative pressure occurs.

2. Combination air valves shall be of the size shown on the plans and conform to the requirements of AWWA C512 and be of the “Kinetic” design capable of exhausting air at up to sonic velocity without blowing shut.

3. Body and cover shall be ASTM A126 Class B cast iron with stainless steel floats and replaceable seats of Buna-N or other suitable material. Internal linkage mechanism shall be 18-8 stainless steel. Plastic or bronze components are not acceptable. Air release orifice shall be suitable for 300 PSI maximum working pressure. Screens shall be installed on the opening of all air release valves.

4. Valves 3-inch size and smaller shall have a threaded inlet connection, and larger valves shall have a flanged inlet faced and drilled per ANSI B16.1 Class 250.

5. Valves shall have a threaded outlet on valves to 4-inch size and a protective cowl on larger sizes.

6. 1 inch NPT inlet and outlet shall be provided, unless otherwise specified on the drawings.

7. Connections from corporation stops to air release valves shall be brass for rigidity.

F. Tapping Valves and Sleeves

1. All tapping sleeve and valve assemblies shall meet the requirements of AWWA Standard C500, latest revision. Cast iron tapping sleeves or stainless steel wrap-around sleeves, and cast iron valves shall be used to make live taps into the existing water mains where shown on the drawings. Flanges must conform to AWWA C207 Class D ANSI 150# drilling. Mechanical Joint (MJ) tapping sleeves are also acceptable. All bolts and nuts shall be stainless steel.

2. CONTRACTOR shall verify type of existing main prior to ordering. The tapping valve shall have an inlet flange to match the sleeve and a mechanical joint outlet for connection to water main pipe. Tapping valve shall meet the requirements for gate valves specified herein. The sleeve shall have provisions for a tap and shall be pressure tested at 150 psi for a minimum of 30 minutes prior to tapping.

G. Service Connection Materials

1. Service Saddles (see County Approved Product List, Appendix F)

    a. Service saddles or fittings shall be used with taps to all types of pipe. Gasket shall be cemented in place and confined in a retaining groove. Saddles shall be cast iron saddles with double brass straps.

    b. Tapping sleeves and valves shall be used for all taps.

2. Water Meters

    a. Potable Water Meters: Potable water meters provided for service connections to the COUNTY water distribution system shall be designed to accept an encoder compatible with the COUNTY Automatic Meter Reading (AMR) system. The COUNTY will install the meter and the AMR encoder unit on 2" and smaller meters. AMRs 3" and larger shall be turned over to the technician doing the full bore flush. All potable water meters larger than 2" shall be installed above ground. These meters shall be equipped with a backflow preventer and installed by the CONTRACTOR at his expense, including the AMR encoder unit. The type of backflow device utilized for potable lines shall be on the Water Department approved list of backflow preventers, Appendix G. All potable water meters 3" or greater shall be purchased by the owner and installed by the CONTRACTOR. The master meter assemblies shall be built in accordance with the design details in Section 3 – Utilities Detail Drawings. The location of all meters shall be clearly shown on the construction plans.

    b. Non-Potable Irrigation Water Meters: Non-potable water meters provided for service connections to the COUNTY non-potable reclaimed distribution system shall be designed to accept an encoder compatible with the COUNTY Automatic Meter Reading (AMR) system. The COUNTY will install the meter and the AMR encoder unit on 2" and smaller meters. All non-potable water meters 3" or greater shall be purchased by the owner and installed by the CONTRACTOR. The master meter assemblies shall be built in accordance with the design details in Section 3 – Utilities Detail Drawings. The location of all meters shall be clearly shown on the construction plans.

3. Corporation Stops for Service Connections

    a. Corporation stops (see County Approved Product List, Appendix F) shall meet the requirements of AWWA C800; ends AWWA thread x compression, CTS.

4. Water Service Tubing

a. Water service connection tubing shall be blue polyethylene municipal service tubing as shown on Utility Detail Drawing W-12.

b. Polyethylene tubing shall meet the requirements of AWWA Standard C901. Polyethylene tubing shall be 3406 polyethylene.

5. Polyethylene Service Tube Stiffeners

a. A solid ring, stainless steel insert shall be installed with each and every compression connection made with polyethylene tubing.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all valves and appurtenances in accordance with manufacturer's instructions and in the locations shown, true to alignment and rigidly supported. Repair any damage to the above items to the satisfaction of the ENGINEER before they are installed.

B. After installation, test all valves and appurtenances for at least one hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, repair it to the satisfaction of the ENGINEER.

C. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, check all plans and figures, which have a direct bearing on their location and assure the proper location of these valves and appurtenances during the construction of the structures.

D. Flanged joints shall be made with stainless steel bolts.

E. Buried mechanical joints shall be made with COR-TEN bolts.

F. Prior to assembly of split couplings, thoroughly clean the grooves as well as other parts. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, center the gasket properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, tighten the nuts until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.

G. Prior to the installation of sleeve-type couplings, thoroughly clean the pipe ends for a distance of 8". Soapy water may be used as a gasket lubricant. A follower

and gasket, in that order, shall be slipped over each pipe to a distance of about 6" from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. Insert the other pipe end into the middle ring and bring to proper position in relation to the pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flaires. After the bolts have been inserted and all nuts have been made up finger-tight, uniformly tighten diametrically opposite nuts progressively all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

H. Carefully inspect each valve, open it wide and then tightly close it and test the various nuts and bolts for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Gate valves, unless shown otherwise, shall be set with their stems vertically above the centerline of the pipe. Remove and replace any valve that does not operate correctly.

I. Carefully center valve boxes over the operating nuts of the valves so as to permit a valve wrench or key to be fitted easily to the operating nut. Valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support flange as shown in Section 3, Utility Detail Drawings. The valve box shall not transmit surface loads to the pipe or valve. Exercise care to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug and reset. Before final acceptance of the work, adjust all valve boxes to finish grade. Valve extension stems or risers shall not be used.

3.2 AIR RELEASE VALVE INSTALLATION

A. Prior to pressure testing a pipeline, all air release valve assemblies on that pipeline shall be installed.

3.3 SHOP PAINTING

A. Ferrous surfaces of valves and appurtenances shall receive a coating of epoxy in accordance with AWWA Standard C550 and meets or exceeds all test requirements including the Food and Drug Administration Document Title 21 of the Federal Regulations on Food Additives, Section 175.000 entitled "Resinous and Polymeric Coating"; Impact Test Requirement in accordance with the ASTM D2794.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 331619

HYDRANTS

PART 1 GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Furnish and install fire hydrants where shown on the Drawings or directed by the ENGINEER.

1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 033100 – Concrete for Non-Plant Work

B. Section 331200 – Water Valves and Appurtenances

1.3 QUALITY ASSURANCE

A. Install hydrants to meet current requirements of Collier County Utilities.

B. Provide manufacturer's certificate those products meet or exceed minimum requirements as specified.

1.4 SUBMITTALS

A. Submit manufacturer's certificates on conformance.

B. Shop Drawings: Submit manufacturer's drawings and data sheets for material to be supplied under this Section. Indicate sizes and types to be installed.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. During loading, transportation and unloading, exercise care to prevent damage to materials.

B. Handling: Fire hydrants should be unloaded carefully. The hydrant should be carefully lowered from the truck to the ground, not dropped. Only hoists and slings with adequate load capacity to handle the weight of the hydrant shall be used.

C. Storage: Hydrants should be stored in the fully closed position to prevent entry of foreign material that could cause damage to the seating surfaces. Whenever practical, hydrants should be stored indoors. If outside storage is required, means should be provided to protect the operating mechanism. In outside storage, parts and flanges should be protected from the weather and foreign materials.

PART 2 PRODUCTS

2.1 FIRE HYDRANTS

A. Fire hydrants shall be of the dry barrel, compression type conforming to AWWA C502 “Standard for Dry-Barrel Fire Hydrants” and additional requirements as set forth herein.

B. Hydrant shall have break away upper sections capable of ready replacement without loss in the event of traffic damage. Each hydrant shall have a 6" bottom inlet connection and valve opening at least 5-1/4 inches in diameter. Hydrants shall have a national standard pentagon 1.5 inch, point to flat operating nut and turn to the left (counter clockwise) to open. Each hydrant shall be fitted with one 4-1/2-inch pumper connection and two 2-1/2 inch hose connections, both having threads that conform to the Fire Division Standard for the area. Hose caps shall be chained (unless specified without by appropriate fire control district) to the hydrant barrel and fitted with nuts similar to the hydrant operating nuts. Each hydrant shall have a barrel of sufficient length to bring the bottom of the 6" pipe connection 3 feet below the surface of the finished ground. Each hydrant shall have breakaway flanges and be made in at least two sections bolted together. All interior working parts of the hydrant shall be removable from the top of the hydrant to allow repairs without removing the hydrant barrel after it has been installed. Hydrants shall have renewable O-ring stem seals. Hydrant barrels shall be painted AWWA Safety Yellow (lead free) or as specified by appropriate fire control district. They shall be designed for a working pressure of 150 psi.

C. Hydrant shall have no drain ports. If ports exist, they shall be plugged with a threaded plug.

D. Operating stem shall be equipped with anti-friction thrust bearing to reduce operating torque and assure easy opening. Stops shall be provided to limit stem travel. Stem threads shall be enclosed in a permanently sealed lubricant reservoir with O-ring seals.

E. Hydrants shall be designated for 150 psi working pressure and shop tested to 300 psi pressure with main valve both opened and closed. Under test the valve shall not leak, the automatic drain shall function and there shall be no leakage into the bonnet.

F. Hydrants shall be of the years manufacture when construction commenced.

G. Acceptable models, see Appendix F, County Approved Product List.

PART 3 EXECUTION

3.1 INSTALLATION

A. Set hydrants plumb and in true alignment with mains. Utilize restrained joints as shown in the Collier County Standard Details. Carefully backfill around hydrants so as not to disturb the hydrant and thoroughly compact backfill so as to support the hydrant securely. The hydrants shall have a minimum 18-inch clearance measured from finish grade to the center of pumper connection.

B. Hydrants shall be located a minimum of 4 feet from the curb in urban areas, and a minimum of 14 feet from the edge of pavement in rural areas, and in accordance with local Fire Department requirements. A gate valve shall be provided at the connection to the main as shown in the Standard Details.

C. Hydrants requiring a lead to cross a roadway shall have a valve on both sides of the road. The valve nearest the hydrant must be within 20 feet of the hydrant. This requirement is not applicable to privately owned and operated water distribution systems.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333200

PUMP STATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK FOR COUNTY PUMP STATIONS

A. This section includes the following items for COUNTY owned and operated pump stations: wet wells, access covers, pumps, wet well equipment, valves, emergency bypasses, pump control panels, pump controller, antenna subsystem, disconnects, electric meters, electric service, pump wiring, lightning arrestors, and odor control systems.

B. Conform all pump stations to the specifications, Utilities Detail Drawings, and latest National Electrical Code (NEC) requirements.

C. When a pump station has a peak design flow coming into the station greater than 500 gpm, contact Public Utilities Planning and Project Management Department for specifications.

D. For systems eligible to be taken over by the COUNTY, provide enough room to operate and maintain all water and wastewater systems in a simple and non-awkward manner. If a pump station pump needs to be replaced, provide enough room for the COUNTY to readily remove the pump, and to do so without interfering with traffic. To be eligible for conveyance to the COUNTY, the pump station easement area must be designed to 30'X30', or twice the depth of the wet well by twice the depth of the wet well, whichever is larger, as defined in the Collier County Standards and Procedures Ordinance, Subsection 7.7(c), as amended or superseded.

E. Schedule required COUNTY inspections of (1) pump station installation prior to cover-up and (2) pump station start-up.

F. Install all fencing and gates around the pump station in accordance with Section 323113.

G. Communications: When proposing fiber-optic connectivity at pump stations, a letter of availability shall be requested to the COUNTY for review and approval.

H. Elevated platforms shall be provided where necessary to provide access to wet wells, pump station control panels, electrical devices and panels, generators, and bypass equipment. Typically, these platforms shall be limited to locations with existing grades requiring equipment to be located at a higher elevation due to the Florida Building Code (FBC), FEMA, and the ASCE Standard 7 and 24 requirements.

1.2 SCOPE OF WORK FOR PRIVATE GRINDER PUMP STATIONS

A. This section includes the following items for privately owned and operated grinder pump stations: wet wells, pumps, impeller, valves, level control, alarm, well equipment, pump control panels, pump controller, disconnects, and sloping requirements for private pump stations.
B. All maintenance tasks for private grinder pump stations must be possible without entry into the grinder pump station per 29 CFR 1910.146 (OSHA Permit-Required Confined Spaces).
C. The grinder pump station shall be free from electrical and fire hazards as required for functionality in a residential environment. The completed assembled and wired grinder pump station shall be listed by Underwriters Laboratories, Inc. (UL) to be safe and appropriate for the intended use. UL listing of components of the grinder pump station, or third-party testing to UL standard is not acceptable.
D. All private grinder pump stations shall bear the seal of NSF International to show that station meets accepted standards for plumbing equipment in or near residences, shall be free from noise, odor, or health hazards, and shall have been tested by an independent laboratory to certify its capability to perform as specified in either individual or low-pressure sewer system applications.
E. Private pump service sewers shall conform to applicable parts of the Florida Building Code and the COUNTY's Design Criteria. Where the COUNTY's standards are more restrictive than the Florida Building Code, the COUNTY's standards shall prevail.
F. Private pump station force main connections must follow the COUNTY's requirements for testing.
G. Schedule required COUNTY inspections of (1) testing of force main connection prior to cover-up and (2) pump station start-up.
H. Prior to the start-up inspection, the following documentation must be furnished to the COUNTY via electronic mail or a secure electronic file transfer service:
    1. As-built drawing (in both PDF and DWG formats) showing the completed pump station and force main locations, sizes, materials, and elevations along with the location of all valves, the pump-out connection, the control panel, and the generator receptacle on the property and
    2. A pump test curve from the pump manufacturer.

PART 2 EQUIPMENT

2.1 MATERIALS FOR COUNTY PUMP STATIONS

A. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

B. Wet Well: The concrete structure shall consist of precast, reinforced sections conforming to ASTM C76 and/or ASTM C478. 8-foot diameter wet wells shall have a minimum wall thickness of 8 inches. Wall thickness for larger wet wells shall conform to ASTM standards for wall thickness, but shall not be less than 8 inches in any case. The minimum inside diameter for all wet wells eligible to be owned and maintained by Collier County shall be 8 feet. As a deviation, a 6-foot

diameter wet well can be utilized if the ENGINEER can demonstrate that the wet well is sufficient hydraulically and the developer can demonstrate that the pump station shall be used for the perpetual and exclusive use of that development. For pump stations that will not be owned and maintained by Collier County, the ENGINEER shall set the design specifications for the wet well, provided such design does not in any way endanger the health, safety and/or welfare of the public. Base riser section shall be monolithically cast with the base slab. All concrete shall utilize Type 2 cement and have a minimum compressive strength of 4000 psi at 28 days. On new construction, if more than one hole is abandoned and required to be cemented in, provide a new wet well barrel section. Reinforcing steel for all wet well structures should be sized by the unit manufacturer and verified by the ENGINEER. All connections to the wet well for gravity sewer piping shall be equal to those for manholes as described in Section 333913. Factory double coat all exterior surfaces with an acceptable bituminous or epoxy sealer a minimum of 18 mils thick. Seal all riser joints utilizing plastic joint sealing compound (see County Approved Product List, Appendix F). Reinforcement and top slab thickness shall be specified by the design ENGINEER for H-20 loadings in all cases. Minimum reinforced slab thickness shall be 8 inches. Typical standards for wet wells are available in the Collier County Standard Details. The ENGINEER shall be responsible for designing all wet well structures to overcome buoyancy forces exerted on the installed structure. Coat all wet well interiors with an acceptable field applied internal protection (see County Approved Product List, Appendix F) in accordance with Section 099723.

C. Above-Ground Valves and Piping: Above-ground valves and piping must be positioned so that it does not lie above any gravity sewer line entering the wet well, unless field conditions dictate otherwise and the COUNTY has granted prior approval. Typical above-ground valves and piping standards are shown in the Collier County Standard Details. All valve and flange bolting shall be Type 316 stainless steel.

D. Pumps: Sewage pumps (see County Approved Product List, Appendix F) shall be of the submersible type suitable for operation in sewage of temperature not exceeding 115 degrees Fahrenheit. Pump head curves and design specifications for each application proposed shall be submitted for review and approval within the ENGINEER's hydraulic design report. All pumps shall be three-phase unless approved by a Utility Deviation Form. At least one (1) pump in each wet well shall be equipped with an opening in the volute with a bolted cover for a mix-flush system (see County Approved Product List, Appendix F).

E. Access Covers: Access covers for pump station wet wells shall be above the 100-year flood elevation unless the structure is located within a documented velocity and tidal flood zone, and elevation differentials prohibit such installation. In such cases, watertight access covers shall be utilized. The ENGINEER shall provide shop drawings of such access covers for review and approval by THE County Manager or designee prior to use. Access covers shall be constructed of diamond plate aluminum sheets and aluminum structural members. All access covers shall be attached to aluminum angle frames with stainless steel hinges and fasteners. Angle frames shall be firmly anchored into the top concrete slab of the structure.

All access covers shall be equipped with a ratchet-type restraint mechanism to prevent accidental closing of the cover and torsion bar or spring assist type openers. Assist openers shall be manufactured of stainless steel. Access covers shall be designed for H-20 loadings.

F. Wet Well Equipment: All pump discharge piping shall be HDPE pipe and shall be in conformance with pipe utilized for wastewater force mains. All fittings shall be HDPE fused, flange/flange, or Uni-Flange connections. All nuts, bolts, fasteners, brackets, pump guide rails and other hardware located inside the wet well shall be 316 stainless steel. A pump out with a screened vent shall be provided on all installations, with the pipe extended through the wet well lid (see details). Electrical systems and components (e.g. motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wetwells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present shall comply with the National Electrical Code (NEC) requirements for Class I Group D, Division 1 locations. Electrical equipment located in wet wells shall be suitable for use under corrosive conditions.

G. Valves: Discharge piping for each pump shall be equipped with a weighted check valve and plug valve. A tee with an isolation plug valve, equipped with a quick coupling (see County Approved Product List, Appendix F), shall be provided for a means of emergency bypass access to the wastewater force main. Valves shall be supported by stainless steel pipe supports.

H. Emergency Bypass: A 4-inch emergency bypass connection shall be provided down-stream from the in-line discharge piping valves. The connection shall be readily accessible and be equipped with a plug-type isolation valve and 4-inch male camlock type quick coupling and cap.

I. Pump Control Panel (see County Approved Product List, Appendix F): Panel enclosure construction shall be equal to a NEMA 4X stainless steel with 3-point latch where required and utilize stainless steel. When possible, panel door shall open away from wetwell and not towards wetwell hatch to ensure safety during maintenance of wetwell and panel. To ensure proper installation of control panel, contact the Wastewater Division prior to rough-in or installation of control panel, for a pre-construction meeting with respective Wastewater Collections personnel. Control panels shall be mounted on two 6-inch by 6-inch precast concrete posts. All mounting bars, nuts, bolts, etc. shall be stainless steel. A 110/120-volt (110V) receptacle shall be provided inside the control panel for pump stations that have outdoor control panels. Ground fault interruption (GFI) protection shall be provided for all outdoor outlets.

J. Pump Controller: Provide a pump control panel (see County Approved Product List, Appendix F) including a telemetry control unit (TCU) for pump controlling purposes. At a minimum, the TCU shall include an integrated 2-Watt digital radio with and Ethernet module for dual communications capability, an 18-amp-hour back-up battery, a manufacturer's prefabricated wire harness, all manufacturer recommended surge protection, and suitable devices for measuring wastewater flow. The TCU shall incorporate three on-board fail-safe HOA switches and

Triplex/Duplex/Simplex configurable operation mode. An on-board 240 or 460 VAC three-phase monitor shall be provided. The Alarm light and bell shall be activated by the TCU and the external push-button alarm silence switch shall be wired into the TCU. The TCU shall incorporate an on-board 4- by 20- character LCD display for elapsed runtime of each pump. During the automatic sequence, the pumps shall be controlled in an alternate mode. Pump controller shall be Data Flow Systems model TCU800 with features listed above.

K. Antenna Subsystem: Provide a high gain antenna (see County Approved Product List, Appendix F) for use to transmit and receive TCU data to and from the COUNTY's existing SCADA server. Antenna shall utilize all welded-aluminum elements. Element connections utilizing nuts and bolts are not acceptable. Antenna shall have a single radiator element connected to a type N female connector. Antenna shall be supported on a mast/pole and have DC grounding for lightning protection. Antenna mounting hardware shall be made of stainless steel. Antenna shall meet or exceed the quality, reliability and performance of the RTA series as provided by Data Flow Systems, Inc. Antenna mast/pole shall be a 21foot by 1.25 inch SCH80 galvanized pole. Mounting of the antenna mast/pole shall be in accordance with all applicable local and state building codes as they pertain to structural strength and wind velocity requirements. Tower shall meet or exceed the quality and reliability of the 25G manufactured by Rohn. Coaxial cable shall be RTC 400 as supplied by Data Flow Systems, Inc. Type N connectors shall be utilized at both ends of the coax. Type N connectors shall be sealed with 3-inch sections of Alpha FIT321-1-0 sealant shrink tubing. Coaxial cable shall be secured to the mast/pole with E.V.A.-coated 316 stainless steel cable ties. Cable ties shall meet or exceed the quality, reliability and performance of AE112 cable ties manufactured by Band-It. For pump stations to be conveyed to the County, a startup and successful testing of Data Flow telemetry equipment by Data Flow representatives and County Wastewater Collections instrumentation and telemetry representatives is required prior to County acceptance. After initial startup, for pump stations to be conveyed to the County, the latitude and longitude of pump stations shall be provided.

L. Disconnect: A circuit breaker disconnect shall be provided to isolate the pump control panel. Disconnect shall be installed on the service line between the electric meter and control panel and shall be lockable in the "ON" or "OFF" position. Disconnects shall be housed in a NEMA 4X, stainless steel enclosure or better.

M. Electric Meter: The electric meter servicing the pump station shall be located adjacent to the pump control panel, and shall be located and wired to service only the pump station facility.

N. Electric Service: All underground electric services shall be fully conduited in 2-inch diameter Schedule 80 PVC pipe from the power company source point to the pump control panel. The maximum length of the electric service from the power company transformer to the pump control panel shall be 200 feet. One spare conduit shall be provided and terminated in the meter. Only copper service wire shall be utilized. Sizing of the service wire shall be verified with the power company and the

extent and location of the service shall be indicated on the record drawings. The CONTRACTOR shall certify that the voltage drop across the service does not exceed five percent (5%) of the power company's line voltage at full load start-up of the pump station pumps. All pump stations shall have minimum 100-amp service. All electrical components shall be located within the COUNTY right-of-way or County Utility Easement (CUE).

O. Pump Wiring: Power wiring for each pump, from the control panel to the wet well shall be conduited in separate 2-inch diameter Schedule 80 PVC pipe and an appropriately sized water-tight fitting with separate strain relief shall be installed on each line. A spare parallel 2-inch PVC pipe conduit from the panel to the wet well shall be provided. All wire shall be stranded THHN or MTW copper wire. The pump motor cords shall be flexible and serviceable under conditions of extreme usage. Total of angle bends shall be 180 degrees or less. All conduits between wetwell and control panel shall not exceed a total of 180 degrees of bends per run. All service conduits shall be 2" Schedule 80 PVC except where noted. The pump motor cords shall be flexible and have an appropriate amount of slack.

P. Lightning Arrestors: All pump stations shall be equipped with lightning arrestor(s) (see County Approved Product List, Appendix F). The lightning arrestor shall be installed externally on the load side of the disconnect, between the disconnect and the main breaker. The penetration through the disconnect must be made below the working mechanism of the disconnect.

Q. Odor Control Systems for Community Pump Stations: Furnish and install an 8'X11' concrete slab for potential future odor control system. A Pre-Engineered Biofiltration Odor Control System shall be furnished if required by the engineer of record.

R. Platforms and stairs shall meet the Occupational Safety and Health Administration (OSHA) Part 1910, applicable FBC requirements, and ASCE Standards 7 and 24. All platform and stair designs and plans shall be prepared by a Florida Registered Professional Engineer. The Engineer of Record shall identify Flood Hazard Area, Flood Design Class (ASCE 24) and other applicable loadings. All components shall be aluminum with stainless steel hardware. Standard stairs shall be utilized. Fall protection shall be provided on all exposed sides by use of an OSHA approved guardrail system. Where required for access, removable guardrail sections shall be provided. Grating shall be slip resistant and bonded at ends of bearing bars and openings.

S. All platforms and stairs shall be supported by a concrete foundation system. The foundation designs and plans shall be prepared by a Florida Registered Professional Engineer. It shall meet the requirements of the FBC, ASCE 7 (Dead, Live, Flood, and Wind), ASCE 24 (Flood Resistant) and other regulatory requirements. Where head clearance under the platform is less than 6'-8", provisions shall be made to limit access.

2.2 MATERIALS FOR PRIVATE PUMP STATIONS

A. All private grinder pump stations shall conform to the requirements specified in Section 2.1 above, unless otherwise stated in this section.

B. Pumps: Private pump stations shall be constructed using progressive cavity, non-clogging, non-jamming, positive or semi-positive displacement grinder pump(s) capable of operating at a negative total dynamic head (TDH) equipped with thermal overload protection. Grinder pumps shall be capable of grinding all material typically found in domestic or commercial wastewater to a fine slurry that will pass through the pump, 1-1/4-inch NPT discharge piping and downstream appurtenances.

C. Impeller: The grinder impeller shall be a one-piece, rotating type cutter wheel constructed from hardened 4140 steel. The cutter teeth shall be treated and hardened to 56 to 60 Rockwell C. The shredder ring shall be stationary type with a staggered tooth pattern and made of white cast iron per ASTM A532(1B).

D. Valves: In addition to valve requirements described in Section 2.1, an anti-siphon valve shall be integral with the grinder pump station pump. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the grinder pump station discharge piping. The check valve will provide a full-ported passageway when open and shall introduce a friction loss of less than 6 inches of water at maximum rated flow.

E. Level Control: Level sensing control for private grinder pump stations shall be a non-fouling type with no moving parts in contact with the wastewater.

F. Alarms: All grinder pump station shall be equipped with a high level audible and visual warning alarm to notify the residential or commercial property owner(s) of a high wet well level.

G. Wet Well: The wet-well basin for all grinder pump stations shall be constructed from any watertight material suitable for light commercial applications, such as high-density polyethylene (HDPE), polyethylene (PE), or glass-fiber reinforced polyester (FRP). FRP wet wells must conform to ASTM D3753. All grinder pump station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure. The grinder pump station shall have all necessary penetrations molded in and factory sealed. To ensure a leak free installation, no field penetrations will be acceptable. No secondary welding of the wet well basin or cover will be accepted. The wet well shall be vented to the atmosphere.

H. Wet Well Equipment: Pumps and all electrical devices, components, and connections inside the wet well shall be explosion proof.

I. Anti-Siphon/Check Valve: All private grinder pump stations shall be equipped with a factory installed, gravity operated flapper-type integral check valve and anti-siphon valve built into the stainless-steel discharge piping, per Section 2.1 and Section 2.2. valve requirements.

J. Pump Control Panel: All electrical elements for private grinder pump stations shall be furnished pre-wired and housed in a NEMA 4X enclosure. In a flood zone, a NEMA 6P

enclosure is required if the control panel is mounted less than a foot above the base flood elevation. A NEMA Control circuit shall be 115 volts. The door of the control box shall be hinged of the dead type with locking hasp and suitable accessories to allow wall mounting. Motor shall be activated by a magnetic type contactor and protected by a UL-listed electrical monitoring system against damaging high current or low voltage conditions. An automatic reset, integral thermal overload protector shall protect the motor against excessive heat. The sensor shall reset automatically when the motor cools. An alarm test switch, HOA switch, run light, auto/off switch, and overload reset button shall be supplied inside the control box. A terminal strip with box type connections shall be supplied to make all power and control connections. All terminals shall be marked for easy identification. A ground terminal strip shall also be provided and labeled.

K. Disconnect: The grinder pump station shall be equipped with a factory-installed NEMA 6P electrical quick disconnect for all power and control functions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Finished grade shall be 1 inch to 4 inches below the bottom of the lid and shall slope away from the wet well.

B. Fill grinder pump stations with water prior to backfill compaction to prevent deformation of the basin wall and follow all other manufacturer's installation instructions.

END OF SECTION

NO TEXT FOR THIS PAGE

SECTION 333313

WASTEWATER VALVES AND APPURTENANCES

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install complete and ready for operation all valves and appurtenances as shown on the Drawings and as specified herein.

B. The equipment shall include, but not be limited to, the following:

1. Eccentric Plug Valves
2. Check Valves
3. Vacuum Breakers
4. Air Release Valves
5. Flange Adapter Couplings
6. Flexible Couplings
7. Diaphragm Seals
8. Unions
9. Mechanical Type Seals
10. Hose End Faucets
11. Pressure Gauges
12. Reduced Pressure Backflow Preventer
13. Flow Meters

1.2 DESCRIPTION OF SYSTEMS

A. All the equipment and materials specified herein are intended to be standard for use in controlling the flow of wastewater and reclaimed water.

1.3 QUALIFICATIONS

A. All the types of valves and appurtenances shall be products of well-established reputable firms who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

1.4 SUBMITTALS

A. Submit within 30 days after execution of the contract a list of materials to be furnished, the names of the suppliers and the date of delivery of materials to the site.

B. Complete shop drawings of all valves and appurtenances shall be submitted to the ENGINEER for approval in accordance with the General Conditions.

1.5 TOOLS

A. Special tools, if required for normal operation and maintenance shall be supplied with the equipment.

PART 2 PRODUCTS

2.1 GENERAL

A. All valves and appurtenances shall be of the size shown on the Drawings and as far as possible all equipment of the same type shall be from one manufacturer.

B. All valves and appurtenances shall have the name of the maker and the working pressure for which they are designed cast in raised letters upon some appropriate part of the body.

C. All stainless steel components and hardware shall be a minimum of Type 304, unless otherwise specified.

2.2 DESIGN

A. Eccentric Plug Valves

1. All valves (see County Approved Product List, Appendix F) shall be eccentric plug valves unless otherwise specified.

2. Plug valves shall be tested in accordance with AWWA C504 Section 5. Each valve shall be performance tested in accordance with AWWA C504 Section 5.2 and shall be given a leakage test and hydrostatic test as described in AWWA C504 Paragraphs 5.3 and 5.4. The leakage test shall be applied to the face of the plug tending to unseat the valve. The Manufacturer shall furnish certified

copies of reports covering proof of design testing as described in AWWA C504 Section 5.5.

3. Plug valves shall be of the tight closing, resilient faced, non-lubricating variety and shall be of eccentric design such that the valve's pressure member (plug) rises off the body seat contact area immediately upon shaft rotation during the opening movement. Valve pressure ratings shall be as follows and shall be established by hydrostatic tests as specified by ANSI B16.1-1967. Valves shall be drip-tight in both directions (bi-directional) at rated pressure of 175 psi through 12-inch diameter, and 150 psi for 14-inch diameter and above. The valve shall be provided with a 2-inch square operating nut.

4. The valve body shall be constructed of cast iron ASTM A126, Class B. Body ends shall be mechanical joint to meet the requirements of AWWA C111/ANSI A21.11 or single gasket push-on type.

5. The valve plug shall be constructed of cast iron or ductile iron and shall have a conical seating surface that is eccentrically offset from the center of the plug shafts. The plug and shafts shall be integral. The entire plug face shall be totally encapsulated with Buna N (Nitrile) rubber in all valve sizes. The rubber to metal bond must withstand 75 lbs. pull under test procedure ASTM D-429-73, Method B. When the plug is in full open position, plug geometry and body waterway contours must provide a passageway that allows flow capacity equal to 100% of the adjacent pipe area.

6. Valve seat mating surface shall be constructed of a welded-in overlay of not less than 90% nickel or be a one-piece stainless steel ring. Seat ring contour must be precision machined.

7. A mechanical "brake" shall be supplied on all valves and shall be capable of "locking" the valve in any intermediate position between full-open and full-closed.

8. Valves shall have multiple V-type packing and packing glands and shall be capable of being field adjusted or repacked without the bonnet or plug being removed from the valve with the valve under the full rated pressure. Valves shall have a port position indicator.

9. For corrosion protection, the interior ferrous surfaces of all plug valves shall have a 2-part epoxy internal coating to a minimum of 20 mils thickness.

10. Valve shaft seals shall be adjustable and comply with AWWA C507 Section 10 and with AWWA C507 Section 11.

11. Manual valves shall have lever or gear actuators and tee wrenches, extension stems, floorstands, etc. as indicated on the plans. All valves 6" and larger shall be equipped with gear actuators. All gearing shall be enclosed in a semi-steel housing and be suitable for running in a lubricant with seals provided on all

shafts to prevent entry of dirt and water into the actuator. All actuator shafts shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. All adjustable stop shall be provided to set closing torque. All exposed nuts, bolts, and washers shall be stainless steel. Valve packing adjustment shall be accessible without disassembly of the actuator.

12. Valves and gear actuators for submerged service shall have seals on all shafts and gaskets on the valve and actuator covers to prevent entry of water. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. All exposed nuts, bolts, springs and washers shall be stainless steel.

13. Three-way plug valves shall be non-lubricated gear oriented. Valve bodies shall be ASTM A-126 Class, and be semi-steel with 125 lb. ANSI standard flanges. Plugs shall be resilient faced. Three-way valves shall be 3-way, 3-port 270-degree turn.

14. Plug valves installed such that actuators are 6 feet or more above the floor shall have chain wheels.

15. Where shown on the Drawings, plug valves shall be installed with extended shafts and actuators. Actuators for extended shafts shall be mounted on floor stands where indicated on the drawings or shall be removable handwheels where floor stands are not called for. Six-inch sleeves shall be provided for extended shafts in all floors; where necessary covers shall be provided. Shafts shall be of adequate strength to operate the valve and shall be stainless steel where submerged and carbon steel elsewhere. Floor stands and covers, where called for shall be cast iron. Floor stands shall be equipped with valve position indicators. Where shown on the drawings, plug valves shall be furnished with extended bonnets, equal to DeZurik Figure 640.

16. All buried plug valves shall have a remote position indicator in the valve box showing position of the valve. A stainless steel centering and I.D. plate shall be provided showing direction of opening and number of turns to open for each valve.

B. Valves for Buried Service

1. Valves for buried service shall meet all the requirements as specified herein for interior except that buried valves shall have mechanical joint ends.

2. All buried valves shall have cast-iron two-piece valve boxes (see County Approved Product List, Appendix F), valve boxes shall be provided with suitable heavy bonnets to extend to such elevation at the finished grade surface as directed by the ENGINEER. The barrel shall be two-piece, screw type. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling, shall be designed to prevent the transmission of surface loads

directly to the valve or piping, and shall be complete with cast iron covers. Covers shall have "SEWER" cast into the top. The covers shall be so constructed as to prevent tipping or rattling. All valve boxes located in paved roadways or sidewalks shall have locking covers.

3. Where valves are located out of pavement, the boxes shall be adjusted to finished grade and a concrete slab two feet square and six inches thick shall be poured around the box, as shown in the Details.

4. Valve boxes shall be of the heavy duty, traffic bearing cast iron, adjustable screw type with a drop cover. The valve box assembly shall consist of a bottom section, top section and cover which is cast from gray iron, formulated to ASTM specification A-48 latest revision, minimum tensile of 21,000 psi and shall be free from blowholes, shrinkage or other imperfections not true to pattern. The shaft size shall be 5 1/4" and the adjustable length shall be from 18" to 36". The wall thickness shall be 1/4". The weight of the assembly shall be 61 pounds $\pm$ 2 pounds, with the cover weight being a minimum of 13 pounds.

5. The name of the manufacturer and foundry of origin shall be cast into each of the components of the assembly in legible form. The assembly shall be suitable for highway traffic wheel loads of 16,000 pounds and shall withstand a proof load test of 25,000 pounds without failure or permanent deflection. The valve box shall be cast, machined, assembled, and packaged within the United States and shall fully comply with the Buy American provisions of Public Law 102-240, enacted 12/18/91.

C. Check Valves

1. All check valve bodies shall be cast iron per ASTM A126 Class B, having integral (not Wafer) flanges.

2. The seat shall be centrifugally cast bronze with an O-ring seal and be locked in place with stainless steel lock screws and be field replaceable, without the use of special tools.

3. The shaft shall be single and continuous stainless steel, extending on one side of the body with a lever and weight.

4. The air cushion cylinder, when specifically required, shall be constructed of corrosion-resistant material and the piston shall be totally enclosed within the cylinder and not open at one end. The air cushion cylinder assembly shall be externally attached to either or both sides of the valve body and will permit adjustability to cushion the closure of the valve. Cushioning shall be by air trapped in the cushion cylinder, which shall be fitted with a one-way adjustable control check valve to cushion disc contact to the seat at the shut-off point. The bottom cylinder head shall be swivel mounted and not rigid to follow the change of force angles as the lever raises or lowers to open or close the check valve.

Valve shall prevent backflow on normal pump shut-off or power failure, at zero velocity, and be watertight.

5. The disc shall be cast iron utilizing a double clevice hinge connected to a ductile iron disc arm. The disc arm assembly shall be suspended from a stainless steel shaft, which passes through a seal retainer on both sides of the valve body.

6. Valve exterior to be painted with Red Oxide Phenolic Primer Paint as accepted by the FDA for use in contact with Potable Water. Materials shall be certified to the following ASTM specifications:

   a. Body, cover & disc - Cast Iron - ASTM A126, Class B

   b. Disc Arm - Ductile Iron - ASTM A536

   c. Seat - Aluminum Bronze or Stainless Steel - ASTM B148, ASTM A276

   d. Disc Seat - Buna-N or metal

   e. Cushion cylinder - Corrosion-resistant Commercial material

   f. Exposed Nuts and Bolts – 316 Stainless Steel

7. For corrosion protection, the interior ferrous surfaces of all check valves used in sewage applications shall be coated with a factory applied, two-part epoxy coating to a minimum of 20 mils thick.

D. Automatic Air Release Valves for Wastewater Systems

All force mains shall have automatic air release valves installed as they are indicated on the plans. These Automatic Air Release Valves (ARV's) shall conform to the following:

1. The ARV shall be a "Combination" ARV modified with a check valve on the discharge of the air piping to allow air release only operation.

2. The body of these valves shall be conical shaped to maintain maximum air gap to ensure no contact between the sewage and the seal.

3. The ARV shall seal at zero (0) psi and have an overall operating range of 0 – 250 psi, (0 – 17.2 bar).

4. The ARV shall close watertight when liquid enters the valve, even when the fluid is rising without pressure, (no minimum operating pressure required).

5. The working pressure shall be 250 psi (17.2 bar) tested to 360 psi (25 bar).

6. The ARV shall include both a Polypropylene Debris Shield funnel and an Orifice Strainer to prevent solids from entering sealing area.

7. The ARV shall have a rolling cup seal diaphragm for infinitely variable operation, providing water hammer inhibition.

8. The ARV body shall be constructed of 316 stainless steel. The float shall be Delrin (Polyoximethylene, POM) and the Float Spindle shall be of 316 stainless steel. The valve seat and all internal working parts shall be of corrosion-resistant materials. ARV flange hardware (nuts, bolts, washers) shall be of 316 stainless steel construction.

9. The threaded or flanged outlet size of the ARVs shall be sized by the design engineer. A minimum diameter of two inches (2") shall be provided.

10. All parts required for ARV maintenance shall be the same for all connection sizes (i.e. the internal parts for the 2" ARV are identical to the internal parts for the 4" ARV).

11. All ARV manufacturers and models shall comply with the County Approved Product List (Appendix F). All ARVs shall be installed in accordance with manufacturer recommendations and shall have an isolation valve connection for control.

12. All ARVs installed for wastewater transmission systems (except at pump stations or wastewater treatment facilities) shall be installed in above ground polyethylene enclosures as shown on the County's standard details. Color of enclosures shall be dark green.

E. Flange Adapter Couplings

1. Flange adapter couplings shall be of the size and pressure rating required for each installation and shall be suitable for use on either cast iron or ductile iron pipe. They shall be similar or equal to Dresser Company, Style 128. All couplings shall have enough factory installed anchor studs to meet or exceed the test pressure rating for this project, 100-psi minimum.

F. Flexible Couplings:

1. Flexible couplings shall be either the split type or the sleeve type as shown on the Drawings.

   a. Split type coupling shall be either the split type or the sleeve type as shown on the Drawings. The couplings shall be mechanical type for radius groove piping. The couplings shall mechanically engage and lock grooved pipe ends in a positive coupling and allow for angular deflection and contraction and expansion.

b. Couplings shall consist of malleable iron, ASTM Specification A47, Grade 32510 housing clamps in two or more parts, a single chlorinated butyl composition sealing gasket with a "C" shaped cross-section and internal sealing lips projecting diagonally inward, and two or more oval track head type bolts with hexagonal heavy nuts conforming to ASTM Specification A183 and A194 to assemble the housing clamps. Bolts and nuts shall be stainless steel.

c. Victaulic type couplings and fittings may be used in lieu of flanged joints. Pipes shall be radius grooved as specified for use with the Victaulic couplings. Flanged adapter connections (see County Approved Product List, Appendix F) at fittings, valves, and equipment.

d. Sleeve type couplings (see County Approved Product List, Appendix F) shall be used with all buried piping. The couplings shall be of steel. The coupling shall be provided with stainless steel bolts and nuts unless indicated otherwise.

e. All couplings shall be furnished with the pipe stop removed.

f. Couplings shall be provided with gaskets of a composition suitable for exposure to the liquid within the pipe.

g. If the CONTRACTOR decides to use victaulic couplings in lieu of flanged joints, he shall be responsible for supplying supports for the joints.

G. Diaphragm Seals (see County Approved Product List, Appendix F):

1. Diaphragm seals shall be installed on pressure gauge connection to all lines where shown on the Drawings, to protect pressure switches used to monitor excessive pressures on pipe lines. The diaphragm shall be "thread attached" to both piping and pressure switches. Diaphragm seals shall be constructed of cadmium plated carbon steel, except for the lower housing which shall be specifically chosen according to the fluid pressure being monitored.

2. Diaphragm seals shall have a flushing connection.

H. Unions

1. Unions on ferrous pipe 2" in diameter and smaller shall be 150 pounds malleable iron, zinc-coated. Unions on water piping 22" in diameter and larger shall be flange pattern, 125-pound class, zinc-coated. Gaskets for flanged unions shall be of the best quality fiber, plastic, or leather. Unions shall not be concealed in walls, ceilings, or partitions.

I. Mechanical Type Seals

1. Mechanical type seals (see County Approved Product List, Appendix F) shall consist of an adjustable modular bolted, synthetic rubber and plastic sealing element.

J. Hose End Faucets

1. Hose end faucets (see County Approved Product List, Appendix F) for potable water supply at submersible stations shall be furnished with removable key and shall be lockable.

K. Pressure Gauges

1. Each pressure gauge shall be direct mounted, cast aluminum case, with a four inch (4”) diameter dial and furnished with a clear glass crystal window, 3/8" shut-off valve, and a bronze pressure snubber. Provide diaphragm seals between shut-off valve and pressure gauge on all sludge and lines with nonclear matter in suspension of solution. All gauges shall be weatherproofed. The face dial shall be white finished aluminum with jet black graduations and figures. The face dial shall indicate the units of pressure being measured (e.g., feet, inches, etc.) or be dual scale.

2. Gauges shall be sized with an appropriate range of pressure readings shown in pounds per square inch (PSI).

L. Reduce Pressure Backflow Preventer

1. If shown on the drawings, backflow preventers shall be supplied at each pump station, and installed in accordance with the Collier County Standard Details.

M. Flow Meters for Master Pumping Stations

1. Meters shall be of the magnetic type (see County Approved Product List, Appendix F). Flow meters shall be designed to record both the peak pumping station capacity and anticipated minimum flows with equally high accuracy. All meters shall be tied to the Radio Telemetry SCADA System. The flow metering system shall be installed within the pumping station structure, if space is available, or in an exterior protected and drained pit. In all cases, meter by-pass valves and piping shall be provided.

2. Flow meters shall be supplied for “Master Pumping Stations” only.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all valves and appurtenances in the locations shown, true to alignment and rigidly supported. Repair any damage to the above items to the satisfaction of the ENGINEER before they are installed.

B. Carefully inspect each valve, open it wide and then tightly close it, and test the various nuts and bolts for tightness. Take special care to prevent any foreign matter from becoming lodged in the valve seat. Valves, unless shown otherwise shall be set with their operator shaft vertically. Repair and replace any valve that does not operate correctly.

C. Carefully center valve boxes over the operating nuts of the valves to permit a valve wrench or key to be fitted easily to the operating nut. Valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support flange as shown on the Collier County Standard Details. The valve box shall not transmit surface loads to the pipe or valve. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box which is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work, adjust all valve boxes to finish grade. Valve operating risers shall be installed with any valves required to ensure that the operating nut is 30-inches or less from the ground surface.

D. After installation, test all valves and appurtenances for at least 1 hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, repair it to the satisfaction of the ENGINEER.

E. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, check all plans and figures that have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of the structures.

F. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections.

G. Buried mechanical joints shall be made with COR-TEN bolts.

H. Prior to assembly of split couplings, thoroughly clean the grooves as well as other parts. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, center the gasket properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, tighten

the nuts until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.

I. Prior to the installation of sleeve-type couplings, thoroughly clean the pipe ends for 8 inches. Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to about 6" from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. Insert the other pipe end into the middle ring and bring to proper position in relation to the pipe already laid. The gaskets and followers shall then be pressed evenly and firmly into the middle ring flaires. After the bolts have been inserted and all nuts have been made up finger-tight, uniformly tighten diametrically opposite nuts progressively all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

3.2 AIR RELEASE VALVE INSTALLATION

A. Each air release valve shall be installed at a high point in the pipeline.

B. Prior to pressure testing a pipeline, all air release valve assemblies on that pipeline shall be installed.

3.3 SEWER SERVICE CONNECTIONS

A. Materials, Construction:

1. All sewer service connections shall be of SDR 35 PVC as specified herein with elastomeric gaskets on pipe and fittings.

2. Service lines shall be connected to the sewer mains by means of a PVC wye fitting. The service branch of the wye fitting will be elevated depending on the depth of the sewer and the elevation of the property to be served. 45-degree bends or other fittings shall be used to connect the service line at the wye branch. Service lines shall be installed at such grades as will adequately serve the properties, minimum 1% slope.

3. Service lines shall extend from the sewer to the property line and be plugged. Plugs shall be plastic with sealer. Service lines shall be 6 inches for single residential properties and 6 inches pipe and larger for commercial, industrial, and multiple residential services. Service lines will have a minimum of 3 feet and a maximum of 5 feet of cover at the property line. Service will be provided to each lot. All laterals shall have a vertical clean out installed at the property line. Clean outs shall extend 24 inches above grade and should be capped. After final connection of the lateral to a structure the clean out shall be cut off at grade and capped.

3.4 SHOP PAINTING

A. Coat ferrous surfaces of valves and appurtenances with rust-inhibitive primer. Cap all pipe connection openings to prevent the entry of foreign matter prior to installation.

3.5 FIELD PAINTING

A. Paint all metal valves and appurtenances specified herein and installed in valve and meter pits as specified.

3.6 INSPECTION AND TESTING

A. Subject completed pipe to hydrostatic pressure test at full working pressure. Repair all leaks and retest the line as approved by the ENGINEER. Prior to testing, support the gravity pipelines in an approved manner to prevent movement during tests.

END OF SECTION

SECTION 333913

SEWER MANHOLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for providing sewer manholes and all other appurtenances for a complete installation. Provide precast reinforced concrete manholes conforming to ASTM C478 in accordance with the Collier County Standard Details.

B. Related Work Specified in Other Sections Include:

1. Section 055600 – Metal Castings

2. Section 099723 – Concrete Coatings

1.2 REFERENCE

A. Codes and standards referred to in this Section are:

1. ASTM C 76 - Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

2. ASTM C 478 - Specification for Precast Reinforced Concrete Manhole Sections

3. ASTM C 32 - Specification for Sewer and Manhole Brick (Made for Clay or Shale)

4. ASTM C 443 - Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets [Metric]

1.3 SUBMITTALS

A. Shop Drawings: Submit shop drawings of sewer manholes as specified in Division 1.

B. Quality Control: Submit shop and field test reports of concrete samples tested in an approved laboratory.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Take every precaution to prevent injury to the manhole sections during transportation and unloading. Unload manhole sections using skids, pipe hooks, rope slings, or suitable power equipment, if necessary, and keep the sections under control at all times. Do not allow the manhole sections to be dropped, dumped or dragged under any conditions. Follow applicable requirements specified in Division 1.

B. Damaged Section: If any manhole section is damaged in the process of transportation or handling (see Section 2.3.C below), contact the Public Utilities Wastewater Department for visual inspection. If the Wastewater Department deems it necessary to reject the manhole section, reject and immediately remove such sections from the site, and replace the damaged manhole sections at no increase in Contract Amount.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. See County Approved Product List, Appendix F, for acceptable manufacturers of plastic joint sealing compound and sewer manhole frames and covers.

2.2 MATERIALS

A. Concrete, Steel Reinforcement and Aggregates: Provide reinforced concrete, cementitious materials, aggregates and steel reinforcement conforming to the requirements of ASTM C 478, with 4000 psi concrete, Grade 40 reinforcement bars, Type II cement, and a minimum wall thickness of 8 inches.

B. Steel reinforced polymer concrete manholes may be furnished and installed instead of the Type II cement manholes described above. If provided, steel reinforced polymer concrete manholes shall not require interior and exterior protection as described in part 3.1 F and 3.1 G. All steel reinforced polymer concrete structures shall be supplied by a qualified company with a minimum of 5 years' experience manufacturing polymer concrete. All steel reinforced polymer concrete structures shall be manufactured and installed in accordance with the applicable requirements of ASTM C76, C478, C443, D6783, C33, C267, A82, A165, A496, A497, A615, and A615M.

C. Manhole Frames and Covers: Provide manhole frames and covers as shown on the Collier County Standard details. Castings for manhole frames, covers and other items shall conform to the ASTM Designation A48, Class 30. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects in positions which would impair their strength, or otherwise make them unfit for the service intended. The scating surfaces between frames and covers shall be machined to fit true so the frames and covers do not shift under traffic

conditions or permit entry of storm water from flooding. Lifting or “pick” holes shall be provided, but shall not penetrate the cover. The words SANITARY SEWER, as well as COLLIER COUNTY shall be cast in all manhole covers except those owned by a private party. All manhole frames and covers shall be traffic bearing unless otherwise specified. Frames and covers shall be fully bedded in mortar to the correct finished grade elevation with materials shown in the COUNTY’s Standard Detail Drawings.

D. Preformed Joint Sealing Compound: Provide preformed joint sealing compound for joining manhole sections.

E. Concrete Protective Liner: Provide concrete protective liner conforming to Section 02608.

F. Pipeline Connections: Provide neoprene boots with type 316 stainless steel clamps of a design approved by the County Manager or designee for joining sewers to manhole riser sections. Fill the unfilled portion of the connection with mortar or concrete to guarantee a watertight seal.

G. Doghouse Manholes: Doghouse manholes over existing sanitary sewer pipes are permitted, and in a number of instances, preferred. Provide a concrete base a minimum of 8 inches thick, with proper reinforcing rods to prevent cracking. Pour concrete base upon a 12-inch base of gravel. Precast manhole rings may be set in the concrete over the existing pipe. Concrete should then be used to form both the bench and to seal the pipe entrances, both inside and especially outside. Once dry, remove the top of the pipe in the manhole.

H. Standard Manholes: The standard manhole shall be 4 feet or more in depth measured from the base of the cover frame to the top of the concrete footing and shall be of the concentric cone type, as shown in the Standard Details. If the manhole is 4 feet or less in depth, it shall be classified as a "Shallow Manhole" as specified below.

I. Shallow Manholes: The shallow manhole shall be 4 feet or less in depth measured from the base of the cover frame to the top of the concrete footing and shall be of flat top construction, as shown in the Standard Details.

J. Manhole Inverts: Form manhole inverts from concrete having a minimum 28 day compressive strength of 2500 psi, and as shown in the Standard Details. Inverts for "straight-through" manholes may be formed by laying the pipe straight through the manhole, pouring the concrete invert, and then cutting out the top half of the pipe. Construct curved inverts of concrete, as shown in the Standard Details, and form a smooth, even, half pipe section. Precast inverts may be used, however, no large "bowls" shall be permitted in the center of the manhole. To alleviate this problem, grout the invert to form a smooth, uniform invert as shown in the Standard Details. Maintain a 0.1 foot drop across the manhole.

K. Inflow Protectors: In all manholes, install an inflow protector manufactured from a high-quality 304 stainless steel with a consistent thickness of not less than 18 gage (see County Approved Product List, Appendix F). The inflow shall have a deep-dish bowl design with no less than 8 inches in depth to allow easy and unobstructed removal of the manhole cover. The manhole inflow protector is to be manufactured with a one-piece rubber gasket installed at the factory for a tight, consistent fit. The rubber gasket is to be designed to securely wrap around the entire leading edge of the inflow protector at the point where it comes in contact with the manhole frame and cover. The wrap around rubber gasket is to be manufactured to a width of no less than 3/8 inches, consistent on top and bottom of the leading edge of the inflow protector. The gasket shall be no more than 3/32 inches thick. The insert removal handle shall be manufactured of a high-quality stainless steel for strength and durability. The handle is installed in such a way that it does not interfere with the installation or removal of the manhole lid. The insert handle will be manufactured to withstand a minimum pull force of 500 pounds before it fails or separates from the insert. The inscription “PROPERTY OF COLLIER COUNTY UTILITIES” shall be etched, at the base of the handle frame, to provide a long-lasting identification marker for the COUNTY.

L. Chimney Seals: Install a minimum of two (2) precast concrete or HDPE riser rings with a chimney seal (see County Approved Product List, Appendix F) between manhole and cast iron frame.

2.3 SOURCE QUALITY CONTROL

A. If requested by the County Manager or designee, at least three cylinders shall be taken each day that manhole sections are cast, with batch samples to be designated by the laboratory representative. At least one set of cylinders will be taken from each 9 cubic yards of concrete used in manhole section construction. These samples will be tested for strength. If the samples fail to meet specified minimum concrete strength requirements, all manhole sections manufactured from the concrete from which the cylinders were made will be rejected.

B. The County Manager or designee reserves the right to core manholes either at the job site or point of delivery to validate strength of concrete and placement of steel. If cores fail to demonstrate the required strength or indicate incorrect placement of reinforcing steel, all sections not previously tested will be considered rejected until sufficient additional cores are tested, at no increase in Contract Amount, to substantiate conformance to these requirements.

C. Components of the manhole shall be free of fractures, cracks, and undue roughness. Concrete shall be free of defects, which indicate improper mixing or placing, and surface defects such as honeycomb or spalling. Cracks or broken ends due to improper handling will not be acceptable. No lift holes will be allowed except in rise and corbel sections. These holes shall not penetrate the wall and shall be filled with non-shrink grout after installation.

PART 3 EXECUTION

3.1 INSTALLATION

A. Lifting Holes: Grout lifting holes through the structure with non-shrink grout.

B. Precast Base: Provide a precast base of not less than 8 inches in thickness with a minimum dimension across the precast base of 72 inches poured monolithically with the bottom section of the manhole walls, reinforced, with a minimum 28-day compressive strength of 3000 psi.

C. Joining Manhole Sections: Join precast sections using plastic joint sealing compound (see County Approved Product List, Appendix F) and trimmed prior to grouting. The first construction joint shall be not less than 2 feet above the base slab. Use tongue and groove joints suitable for the flexible gasket. Use non-shrink grout inside and outside for sealing between manhole precast sections. Grout shall be of a type acceptable to the County Manager or designee and designed for use in water. Seal all openings and joints watertight.

D. Top Termination: Terminate manhole tops at such elevations as will permit laying up grade rings under the manhole frame to make allowances for future street grade adjustments.

E. Drop Connections: Manufacture drop connections, where required on precast manholes, with the manhole elements at the casting yard. Drop manholes shall be constructed per the Collier County Standard Details.

F. Internal Protection: Provide internal protection for all manholes by either of the following (not required for steel reinforced polymer concrete manholes as described in 2.2 B. above):

1. Sewpercoat, or

2. IET Coating system, or

3. Raven Lining Systems

Install the coating systems per manufacturer's recommendation and completely protect the structure from corrosion. The liner or coating systems must extend and seal onto manhole ring, seal onto and around pipe openings, and any other protrusions, completely cover the bench and flow invert. Provide a five (5)-year unlimited warranty on all workmanship and products. The work includes the surface preparation and application of the coating or liner system, and shall protect the structure for at least five (5) years from all leaks and from failure due to corrosion from exposure to corrosive gases such as hydrogen sulfide.
Repair internal coating of existing manholes cored during tie-in of new sewers by applying approved coating material as listed above in accordance with the manufacturer's recommendations. If existing manhole has an internal coating

other than that listed above, sandblast the interior of the existing manhole and apply an approved coating in accordance with the manufacturer's recommendations.

G. Coal Tar Epoxy: Coat all manhole, wet well, and valve vault exteriors with two (2) coats of coal tar epoxy to a minimum thickness of 8 dry mils (not required for steel reinforced polymer concrete manholes as described in 2.2 B. above).

END OF SECTION

SECTION 334713

HDPE IRRIGATION POND LINER

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Specifications and guidelines for MANUFACTURING and INSTALLING geomembrane.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting.

2. D 1238 Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.

3. D 1505 Test Method for Density of Plastics by the Density-Gradient Technique.

4. D 1603 Test Method for Carbon Black in Olefin Plastics.

5. D 3895 Standard Test Method for Oxidative-Induction Time of Polyolefins by Differential Scanning Calorimetry.

6. D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

7. D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.

8. D 5397 Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test.

9. D 5596 Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics.

10. D 5994 Standard Test Method for Measuring Core Thickness of Textured Geomembranes.

11. D 6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

12. D 6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.

B. Geosynthetic Research Institute

1. GRI GM 13 Test Properties, Testing Frequency and Recommended Warranty for High Density Polyethylene (HDPE) Smooth and Textured Geomembranes.

2. GRI GM 17 Test Properties, Testing Frequency and Recommended Warranty for Linear Low Density Polyethylene (LLDPE) Smooth and Textured Geomembranes.

1.3 DEFINITIONS

A. Lot- A quantity of resin (usually the capacity of one rail car) used in the manufacture of geomembranes. Finished roll will be identified by a roll number traceable to the resin lot used.

B. Construction Quality Assurance Consultant (CONSULTANT) - Party, independent from MANUFACTURER and INSTALLER that is responsible for observing and documenting activities related to quality assurance during the lining system construction.

C. ENGINEER- The individual or firm responsible for the design and preparation of the project's Contract Drawings and Specifications.

D. Geomembrane Manufacturer (MANUFACTURER) - The party responsible for manufacturing the geomembrane rolls.

E. Geosynthetic Quality Assurance Laboratory (TESTING LABORATORY)- Party, independent from the OWNER, MANUFACTURER and INSTALLER, responsible for conducting laboratory tests on samples of geosynthetics obtained at the site or during manufacturing, usually under the direction of the OWNER.

F. INSTALLER- Party responsible for field handling, transporting, storing, deploying, seaming and testing of the geomembrane seams.

G. Panel- Unit area of a geomembrane that will be seamed in the field that is larger than 100 ft^2.

H. Patch- Unit area of a geomembrane that will be seamed in the field that is less than 100 ft^2.

I. Subgrade Surface- Soil layer surface which immediately underlies the geosynthetic material(s).

1.4 SUBMITTALS POST-AWARD

A. Furnish the following product data, in writing, to ENGINEER prior to installation of the geomembrane material:

1. Resin Data shall include the following.

2. Certification stating that the resin meets the specification requirements (see Section 1.09).

3. Geomembrane Roll.

4. Statement certifying no recycled polymer and no more than 10% rework of the same type of material is added to the resin (product run may be recycled).

B. The INSTALLER shall furnish the following information to the ENGINEER and OWNER prior to installation:

1. Installation layout drawings:

a. Must show proposed panel layout including field seams and details.

b. Must be approved prior to installing the geomembrane.

2. Approved drawings will be for concept only and actual panel placement will be determined by site conditions.

3. Installer's Geosynthetic Field Installation Quality Assurance Plan.

C. The INSTALLER will submit the following to the ENGINEER upon completion of installation:

1. Certificate stating the geomembrane has been installed in accordance with the Contract Documents.

2. Material and installation warranties.

3. As-built drawings showing actual geomembrane placement and seams including typical anchor trench detail.

1.5 QUALITY ASSURANCE

A. The OWNER will engage and pay for the services of a Geosynthetic Quality Assurance Consultant and Laboratory to monitor geomembrane installation.

1.6 QUALIFICATIONS

A. MANUFACTURER

1. See County Approved Product List, Appendix F, for approved geomembrane manufacturer.

2. MANUFACTURER shall have manufactured a minimum of 5000,000 square feet of polyethylene geomembrane during the last year.

B. INSTALLER

1. Installation shall be performed by the manufacturer approved dealer/installer.

2. INSTALLER shall have installed a minimum of 15,000 square feet of HDPE geomembrane during the last 3 years.

3. INSTALLER shall have worked in a similar capacity on at least 3 projects similar in complexity to the project described in the contract documents, and with at least 5,000 square feet of HDPE geomembrane installation on each project.

4. The Installation Supervisor shall have worked in a similar capacity on projects similar in size and complexity to the project described in the Contract Documents.

5. The INSTALLER shall provide a minimum of one Master Seamer for work on the project.

a. Must have completed a minimum of 15,000 square feet of geomembrane seaming work using the type of seaming apparatus proposed for the use on this Project.

1.7 MATERIAL LABELING, DELIVERY, STORAGE AND HANDLING

A. Labeling - Each roll of geomembrane delivered to the site shall be labeled by the MANUFACTURER. The label will identify:

1. manufacturer’s name

2. product identification

3. thickness

4. length

5. width

6. roll number

B. Delivery- Rolls of liner will be prepared to ship by appropriate means to prevent damage to the material and to facilitate off-loading.

C. Storage- The on-site storage location for geomembrane material, provided by the CONTRACTOR to protect the geomembrane from punctures, abrasions and excessive dirt and moisture for should have the following characteristics:

1. level (no wooden pallets)

2. smooth

3. dry

4. protected from theft and vandalism

5. adjacent to the area being lined

D. Handling- Materials are to be handled so as to prevent damage.

1.8 WARRANTY

A. Material shall be warranted, on a pro-rata basis against Manufacturer's defects for a period of 5 years from the date of geomembrane installation.

B. Installation shall be warranted against defects in workmanship for a period of 1 year from the date of geomembrane completion.

1.9 GEOMEMBRANE

A. Material shall be smooth/textured polyethylene geomembrane as shown on the drawings.

B. Resin

1. Resin shall be new, first quality, compounded and manufactured specifically for producing geomembrane.

2. Natural resin (without carbon black) shall meet the following minimum requirements:

Property	Test Method	HDPE	LLDPE
Density [g/cm^3]	ASTM D 1505	0.932	0.915
Melt Flow Index [g/10 min.]	ASTM D 1238 (190/2.16)	• 1.0	• 1.0
OIT [minutes]	ASTM D 3895 (1 atm/200°C)	100	100

C. Geomembrane Rolls:

1. Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black.

2. Geomembrane shall be free of holes, pinholes as verified by on-line electrical detection, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

3. Geomembrane material is to be supplied in roll form. Each roll is to be identified with labels indicating roll number, thickness, length, width and MANUFACTURER.

4. All liner sheets produced at the factory shall be inspected prior to shipment for compliance with the physical property requirements listed in section 1.09, B, and be tested by an acceptable method of inspecting for pinholes. If pinholes are located, identified and indicated during manufacturing, these pinholes may be corrected during installation.

D. Smooth surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s):

Table 1.1: Minimum Values for Smooth Black-Surfaced HDPE Geomembranes

Property	Test Method[1]	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)
Thickness, mil (mm)	ASTM D 5199						
Minimum Average		30 (0.75)	40 (1.0)	60 (1.5)	80 (2.0)	100 (2.5)	120 (3.0)
Lowest Individual Reading		27 (0.69)	36 (0.91)	54 (1.4)	72 (1.8)	90 (2.3)	108 (2.7)
Density, g/cm^3	ASTM D 1505	0.94	0.94	0.94	0.94	0.94	0.94
Carbon Black Content, %	ASTM D 1603, mod.	2.0	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 2*	*Note 2*	*Note 2*	*Note 2*	*Note 2*	*Note 2*
Tensile Properties: (each direction)	ASTM D 6693						
Strength at Yield, lb/in (kN/m)		63 (11)	84 (15)	130 (23)	173 (30)	216 (38)	259 (45)
Strength at Break, lb/in (kN/m)		122 (21)	162 (28)	243 (43)	324 (57)	405 (71)	486 (85)
Elongation at Yield, %	(1.3" gauge length)	13	13	13	13	13	13
Elongation at Break, %	(2.0" gauge length)	700	700	700	700	700	700
Tear Resistance, lb (N)	ASTM D 1004	21 (93)	28 (124)	42 (187)	56 (249)	70 (311)	84 (373)
Puncture Resistance, lb (N)	ASTM D 4833	59 (263)	79 (352)	119 (530)	158 (703)	198 (881)	238 (1059)
Notched Constant Tensile Load, hours	ASTM D 5397, app.	400	400	400	400	400	400
Oxidative Induction Time, min.	ASTM D 3895	100	100	100	100	100	100

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.
2 Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

E. Textured surfaced geomembrane shall meet the requirements shown in the following table(s) for the following material(s).

Table 2.1: Minimum Values for Black Surfaced Coextruded Textured HDPE Geomembranes

Property	Test Method[1]	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thicknes (mils)	Thickness (mils)
Thickness, mil (mm) Minimum Average Lowest Individual Reading	ASTM D 5994	 30 (0.75) 27 (0.69)	 40 (1.0) 36 (0.91)	 60 (1.5) 54 (1.4)	 80 (2.0) 72 (1.8)	 100 (2.5) 90 (2.3)
Density, g/cm^3	ASTM D 1505	0.94	0.94	0.94	0.94	0.94
Carbon Black Content, %	ASTM D 1603, modified	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	*Note 4*	*Note 4*	*Note 4*	*Note 4*	*Note 4*
Tensile Properties[2]: *(each direction)* Strength at Yield, lb/in (kN/m) Strength at Break, lb/in (kN/m)	ASTM D 6693	 63 (11) 45 (8)	 84 (15) 60 (11)	 130 (23) 90 (16)	 173 (30) 120 (21)	 216 (38) 150 (27)
Elongation at Yield, % Elongation at Break, %	(1.3" gauge length) (2.0" gauge length)	13 150	13 150	13 150	13 150	13 150
Tear Resistance, lb (N)	ASTM D 1004	21 (93)	28 (124)	42 (187)	56 (249)	70 (311)
Puncture Resistance, lb (N)	ASTM D 4833	54 (240)	72 (320)	108 (480)	144 (641)	180 (801)
Notched Constant Tensile Load [3], hours	ASTM D 5397, appendix	400	400	400	400	400
Oxidative Induction Time, min.	ASTM D 3895	100	100	100	100	100

[1] Some test procedures have been modified for application to geosynthetics. All procedures and values are subject to change without prior notification.
[2] The combination of stress concentrations due to coextrusion texture geometry and the small specimen size results in large variations of test results. Therefore, these tensile properties are minimum average roll values.
[3] NCTL on coextruded textured product is conducted on representative smooth membrane samples.
[4] Only near spherical agglomerates are considered. 9 of 10 views shall be Category 1 or 2. No more than one view Category 3.

F. Extrudate Rod or Bead:

1. Extrudate material shall be made from same type resin as the geomembrane.

2. Additives shall be thoroughly dispersed.

3. Materials shall be free of contamination by moisture or foreign matter.

1.10 EQUIPMENT

A. Welding equipment and accessories shall meet the following requirements:

1. Gauges showing temperatures in apparatus (extrusion welder) or wedge (wedge welder) shall be present.

2. An adequate number of welding apparati shall be available to avoid delaying work.

3. Power source must be capable of providing constant voltage under combined line load.

1.11 DEPLOYMENT

A. Assign each panel a simple and logical identifying code. The coding system shall be subject to approval and shall be determined at the job site.

B. Visually inspect the geomembrane during deployment for imperfections and mark faulty or suspect areas.

C. Deployment of geomembrane panels shall be performed in a manner that will comply with the following guidelines:

1. Unroll geomembrane using methods that will not damage geomembrane and will protect underlying surface from damage (spreader bar, protected equipment bucket).

2. Place ballast (commonly sandbags) on geomembrane which will not damage geomembrane to prevent wind uplift.

3. Personnel walking on geomembrane shall not engage in activities or wear shoes that could damage it. Smoking will not be permitted on the geomembrane.

4. Do not allow heavy vehicular traffic directly on geomembrane. Rubber-tired ATV's and trucks are acceptable if wheel contact is less than 6 psi.

5. Protect geomembrane in areas of heavy traffic by placing protective cover over the geomembrane.

D. Sufficient material (slack) shall be provided to allow for thermal expansion and contraction of the material.

1.12 FIELD SEAMING

A. Seams shall meet the following requirements:

1. To the maximum extent possible, orient seams parallel to line of slope, i.e., down and not across slope.
2. Minimize number of field seams in corners, odd-shaped geometric locations and outside corners.

3. Slope seams (panels) shall extend a minimum of five-feet beyond the grade break into the flat area.

4. Use a sequential seam numbering system compatible with panel numbering system that is agreeable to the CONSULTANT and INSTALLER.

5. Align seam overlaps consistent with the requirements of the welding equipment being used. A 6-inch overlap is commonly suggested.

B. During Welding Operations

1. Provide at least one Master Seamer who shall provide direct supervision over other welders as necessary.

C. Extrusion Welding

1. Hot-air tack adjacent pieces together using procedures that do not damage the geomembrane.

2. Clean geomembrane surfaces by disc grinder or equivalent.

3. Purge welding apparatus of heat-degraded extrudate before welding.

D. Hot Wedge Welding

1. Welding apparatus shall be a self-propelled device equipped with an electronic controller which displays applicable temperatures.

2. Clean seam area of dust, mud, moisture and debris immediately ahead of hot wedge welder.

3. Protect against moisture build-up between sheets.

E. Trial Welds

1. Perform trial welds on geomembrane samples to verify welding equipment is operating properly.

2. Make trial welds under the same surface and environmental conditions as the production welds, i.e., in contact with subgrade and similar ambient temperature.

3. Minimum of two trial welds per day, per welding apparatus, one made prior to the start of work and one completed at mid shift.

4. Cut four, one-inch wide by six-inch long test strips from the trial weld.

5. Quantitatively test specimens for peel adhesion, and then for shear strength.

6. Trial weld specimens shall pass when the results shown in Table 3 are achieved in both peel and shear test.

a. The break, when peel testing, occurs in the liner material itself, not through peel separation (FTB).

b. The break is ductile.

7. Repeat the trial weld, in its entirety, when any of the trial weld samples fail in either peel or shear.

8. No welding equipment or welder shall be allowed to perform production welds until equipment and welders have successfully completed trial weld.

F. Seaming shall not proceed when ambient air temperature or adverse weather conditions jeopardize the integrity of the liner installation. INSTALLER shall demonstrate that acceptable seaming can be performed by completing acceptable trial welds.

G. Defects and Repairs

1. Examine all seams and non-seam areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter.

2. Repair and non-destructively test each suspect location in both seam and non-seam areas. Do not cover geomembrane at locations that have been repaired until test results with passing values are available.

1.13 FIELD QUALITY ASSURANCE

A. MANUFACTURER and INSTALLER shall participate in and conform to all terms and requirements of the Owner's quality assurance program. CONTRACTOR shall be responsible for assuring this participation.

B. Quality assurance requirements are as specified in this Section and in the Field Installation Quality Assurance Manual if it is included in the contract.

C. Field Testing

1. Non-destructive testing may be carried out as the seaming progresses or at completion of all field seaming.

a. Vacuum Testing
(1) Shall be performed in accordance with ASTM D 5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.

b. Air Pressure Testing

(1) Shall be performed in accordance with ASTM D 5820, Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes.

c. Other approved methods.

2. Destructive Testing (performed by CONSULTANT with assistance from INSTALLER)

a. Location and Frequency of Testing

(1) Collect destructive test samples at a frequency of one per every 1500 lineal feet of seam length.

(2) Test locations will be determined after seaming.

(3) Exercise Method of Attributes as described by GRI GM-14 (Geosynthetic Research Institute, http://www.geosynthetic-institute.org) to minimize test samples taken.

b. Sampling Procedures are performed as follows:

(1) INSTALLER shall cut samples at locations designated by the CONSULTANT as the seaming progresses in order to obtain field laboratory test results before the geomembrane is covered.

(2) CONSULTANT will number each sample, and the location will be noted on the installation as-built.

(3) Samples shall be twelve (12) inches wide by minimal length with the seam centered lengthwise.

(4) Cut a 2-inch wide strip from each end of the sample for field-testing.

(5) Cut the remaining sample into two parts for distribution as follows:

(a) One portion for INSTALLER, 12-inches by 12 inches

(b) One portion for the Third Party laboratory, 12-inches by 18-inches

(c) Additional samples may be archived if required.

c. Destructive testing shall be performed in accordance with ASTM D 6392, Standard Test Method for Determing the Integrity of Non-

Reinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

d. INSTALLER shall repair all holes in the geomembrane resulting from destructive sampling.

e. Repair and test the continuity of the repair in accordance with these Specifications.

D. Failed Seam Procedures

1. If the seam fails, INSTALLER shall follow one of two options:

a. Reconstruct the seam between any two passed test locations.

b. Trace the weld to intermediate location at least 10 feet minimum or where the seam ends in both directions from the location of the failed test.

c. The next seam welded using the same welding device is required to obtain an additional sample, i.e., if one side of the seam is less than 10 feet long.

d. If sample passes, then the seam shall be reconstructed or capped between the test sample locations.

e. If any sample fails, the process shall be repeated to establish the zone in which the seam shall be reconstructed.

1.14 REPAIR PROCEDURES

A. Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactorily repaired.

B. Repair any portion of unsatisfactory geomembrane or seam area failing a destructive or non-destructive test.

C. INSTALLER shall be responsible for repair of defective areas.

D. Agreement upon the appropriate repair method shall be decided between CONSULTANT and INSTALLER by using one of the following repair methods:

1. Patching- Used to repair large holes, tears, undispersed raw materials and contamination by foreign matter.

2. Abrading and Re-welding- Used to repair short section of a seam.

3. Spot Welding- Used to repair pinholes or other minor, localized flaws or where geomembrane thickness has been reduced.

4. Capping- Used to repair long lengths of failed seams.

5. Flap Welding- Used to extrusion weld the flap (excess outer portion) of a fusion weld in lieu of a full cap.

6. Remove the unacceptable seam and replace with new material.

E. The following procedures shall be observed when a repair method is used:

1. All geomembrane surfaces shall be clean and dry at the time of repair.

2. Surfaces of the polyethylene which are to be repaired by extrusion welds shall be lightly abraded to assure cleanliness.

3. Extend patches or caps at least 6 inches for extrusion welds and 4 inches for wedge welds beyond the edge of the defect, and around all corners of patch material.

F. Repair Verification

1. Number and log each patch repair (performed by CONSULTANT).

2. Non-destructively test each repair using methods specified in this Specification.

1.15 MEASUREMENT AND PAYMENT

A. Payment for geomembrane installation will be as per contract unit price per square foot, as measured parallel to liner surface, including designed anchor trench material and is based upon net lined area.

B. Net lined area is defined to be the true area of all surfaces to be lined plus designed burial in all anchor trenches, rubsheets, and sacrificial layers.

C. Prices shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals.

END OF SECTION

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SECTION 409500

FIBER-OPTIC COMMUNICATION STANDARDS

PART 1 GENERAL

1.1 OVERVIEW

A. The standards herein pertain to all work associated with the procurement, installation, configuration, and testing of fiber-optic communications and associated infrastructure for County installations.

B. All contractors and subcontractors selected to perform fiber-optic communications work for the County shall adhere to the standards described in this document.

C. Additional requirements may be defined in engineering plans related to the fiber-optic communications work performed. In the event of a conflict, the most stringent requirement shall be followed. In the event of a conflict where the most stringent requirement cannot be resolved, Contractor shall inform County in writing identifying the discrepancy for final direction.

1.2 DEFINITIONS

A. Common Abbreviations

1. Amps: Ampere.
2. ANSI: American National Standards Institute.
3. ASTM: American Society for Testing and Materials.
4. AWG: American Wire Gauge.
5. CCITD: Collier County Information Technology Department.
6. CFR: Code of Federal Regulations.
7. dB: Decibel.
8. EIA: Electronic Industries Alliance.
9. FDEP: Florida Department of Environmental Protection.
10. HASB: High Airspeed Blowing.
11. HDPE: High Density Polyethylene.
12. IT: Information Technology.
13. km: Kilometer.
14. lbs: Pounds.
15. m: Meter.
16. N: Newton.

17. NEC: National Electric Code.
18. NEMA: National Electrical Manufacturers Association.
19. NESC: National Electrical Safety Code.
20. nm: Nanometer.
21. OSHA: Occupational Safety and Health Administration.
22. OTDR: Optical Time Domain Reflectometer.
23. PVC: Polyvinyl Chloride.
24. RCDD: Registered Communications Distribution Designer.
25. RUS: United States Rural Utilities Service.
26. SC: Subscriber Connection.
27. SDR: Standard Dimension Ratio.
28. SMF: Single Mode Fiber.
29. SRM: Standard Route Marker.
30. TIA: Telecommunications Industry Association.
31. UV: Ultraviolet.
32. VAC: Volts Alternating Current.
33. WGU: Wire Grounding Unit.

1.3 COORDINATION ACTIVITIES

A. Work involving the installation of fiber-optic cabling and equipment will interface with equipment provided by Others including, but not limited to, the following:
   1. Mounting of the IT Telecommunications Panel
      a. The IT telecommunications panel shall be mounted to an equipment rack at the installation site. Refer to County Utility Detail G-12.

B. Contractor shall determine all interface and installation requirements at the site prior to procurement and delivery and coordinate as required with County.

C. Permitting:
   1. Contractor is responsible for determining and obtaining all necessary permits for the work being performed, including, but not limited to:
      a. Stormwater.
      b. Utilities.
      c. Right-of-way.
      d. Canal crossings [South Florida Water Management District].
      e. FDEP.
   2. Contractor is responsible for all permitting fees.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications:

1. Contractor shall be firms, corporations, individuals, or partnerships normally engaged in the deployment, maintenance, and repairs of fiber-optics at the municipal, county or state level.
2. Contractor shall have one or more of the following certifications
    a. Registered Communications Distribution Designer (RCDD)
    b. IMSA Fiber Optics for Traffic Stem Technician 2
    c. IMSA Traffic Signal Technician Level 2
    d. IMSA Traffic Signal Technician Level 3
3. Contractor shall have a minimum of 5 years of experience performing fiber-optic communications work based on the relevant scope definition category or categories above.

PART 2 PRODUCTS

2.1 GENERAL

A. Each subsection below specifies the minimum requirements for each type of product. Contractor shall adhere to product requirements below unless otherwise approved by County in writing.

2.2 FIBER-OPTIC CABLE

A. General: Provide all-dielectric, dry-filled, loose-tube, dispersion-unshifted, single-mode fiber (SMF) with low water peak, gel free, and suitable for underground (i.e., in conduit) and aerial outside plant installation. All fiber optic cable shall be splice-compatible with existing dispersion-unshifted SMF and require no electronic equipment for dispersion compensation between new and existing fiber. Ensure that all components that comprise a single length of cable are continuous and of the same material. Furnish only commercial off-the-shelf materials, equipment, and components.

B. Optical Fibers:
    1. Ensure that the optical fibers used in the cable meet or exceed the Telecommunications Industry Association (TIA) and Electronic Industries Alliance (EIA) TIA/EIA-492-CAAB specification, the U.S. Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900, and International Telecommunication Union ITU-T G.652.D requirements. Use only optical fibers meeting the additional requirements as follows:
        a. Optical:
            1) Cabled Fiber Attenuation:
                a) 1310 nm; Less than or equal to 0.35 dB/km.
                b) 1550 nm; Less than or equal to 0.25 dB/km.
            2) Point Discontinuity:
                a) 1310 nm; Less than or equal to 0.05 dB/km.
                b) 1550 nm; Less than or equal to 0.05 dB/km.

2. Ensure that all fiber in the buffer tube is usable fiber that complies with attenuation requirements. Ensure that fibers do not adhere to each other. Ensure that the fiber is free of surface imperfections and inclusions. Ensure that all fiber optic core glass is from the same manufacturer.

C. Buffer Tubes: Ensure that the fiber optic cable includes loose buffer tubes that isolate internal optical fibers from outside forces and provide protection from physical damage as well as water ingress and migration. Ensure that buffer tubes provide freedom of movement for internal optical fibers. Ensure buffer tubes allow for expansion and contraction of the cable without damage to internal optical fiber. Ensure that fiber does not adhere to the inside of the tube. Ensure that buffer tubes permit intentional scoring and breakout without damage to the fiber. Ensure that each fiber optic cable buffer tube contains 12 fibers per tube.

D. Color Code:

1. Ensure that the marking and color-coding of the fibers and buffer tubes conforms to the TIA-598-D standard.
2. Ensure that colors are permanent and stable during temperature cycling, and not subject to fading or smearing onto each other or into the water-blocking material. Ensure that fibers are colored with UV curable inks that remain clearly distinguishable as the intended color.

E. Strength Member: Ensure that the fiber optic cable contains a dielectric central and outside elements that prevent buckling of the cable and provide tensile strength. Ensure that the fiber optic cable can withstand a pulling tension of 600 lbs. without damage to any components of the fiber optic cable.

F. Outer Jacket:

1. Mark the jacket with the cable manufacturer’s name, fiber type, fiber count, date of manufacture”, and the sequential cable lengths marked in feet. All fiber-optic cabling shall have a stripe, yellow in color, along the entire length of the cable, and shall be marked "Collier County BCC IT" at three-foot intervals. Provide legible marking with contrasting color to that of the cable jacket.

G. Performance:

1. Bend radius: Ensure that the fiber optic cable is capable of withstanding a minimum unloaded bend radius of 10 times the cable diameter and a minimum loaded bend radius of 20 times the cable diameter when loaded to pulling tension of 600 pounds. Test the cable as required in the TIA -455-33B standard. Ensure that bending the fiber optic cable up to the minimum bend radius does not affect the optical characteristics of the fiber.

2. Cable Strength: Ensure that the fiber optic cable is capable of withstanding a pulling tension of 600 pounds during installation without increasing the fiber attenuation more than 0.8 dB/mile and without changing other optical fiber characteristics after the tensile load is removed. Ensure that optical fiber is proof-tested by the fiber manufacturer at a minimum of 100 kilo pounds per square inch. Ensure that the cable will withstand 25 impact cycles and the change in attenuation does not exceed 0.2 dB at 1550 nm when tested according to the requirements as detailed in the TIA -455-25D standard. Ensure that the change in attenuation will not exceed 0.15 dB during loading at 1550 nm, and that no fiber displays a measurable change in attenuation after load removal.

2.3 FIBER-OPTIC CONNECTION HARDWARE

A. General: Ensure that all splice enclosures, organizers, cable end preparation tools, and procedures are compatible with the fiber optic cable, and are approved by the County in writing.

B. Splice Enclosures:

1. Contain all optical fiber splices within a splice enclosure. Ensure that the enclosures provide storage for splices, fiber, and buffer tubes. Ensure that the splice enclosure restores the mechanical and environmental integrity of the fiber optic cable, encases the sheath opening in the cable, and organizes and stores optical fiber. Ensure all hinges and latching devices are stainless steel. Ensure that the enclosure is airtight and prevents water intrusion. Ensure that the splice enclosure can accommodate pressurization and has the ability to be reentered without requiring specialized tools or equipment. Ensure that the enclosure provides fiber and splice organizers including splice trays and strain relief.
2. Ensure that splice enclosures are hermetically sealed to protect internal components from environmental hazards such as moisture, insects, and UV light. Fiber optic splice enclosures shall also:
3. Comply with the Telcordia Technologies' GR-771-CORE standard and all applicable NEC requirements.
4. Provide space for future expansion equal to 100% of the initial utilization.
5. Provide fiber optic cable penetration end caps to accommodate a minimum installation of two trunk fiber optic cables and two fiber optic drop cables. Ensure that the enclosure end caps are factory-drilled to the proper diameter to accept and seal the fiber optic cable entries. Ensure that the cable entry locations can accommodate an assortment of cables with outside diameters ranging from 0.45 inches to 0.55

inches, plus 10%, without jeopardizing the waterproof characteristics of the enclosure.

C. Splice Trays: Ensure that splice trays are securely attached and accessible and provide sufficient storage for the fiber cable. Ensure splice trays provide access to individual fibers without disrupting other fibers in the tray. Ensure that splice trays hold the buffer tubes rigidly in place and provide protection for fusion splices. Ensure that the raceway accommodates the minimum bend radius of the fiber. Ensure that splice trays allow visible inspection of the fiber. Ensure that splice trays include a cover with a locking mechanism to hold it in place.

D. Cable Terminations:

1. Use Type SC connectors for all new network installations. Ensure that all connectors include a ceramic ferrule and provide a strain relief mechanism when installed on a single fiber cable that contains strength elements. Ensure that the optical fiber within the body of all connectors is mechanically isolated from cable tension, bending, and twisting.

E. Pre-Terminated Connector Assemblies: Ensure that pre-terminated cable assemblies consist of fiber optic cables with factory-installed connectors on one end of the cable and an un-terminated optical fiber on the other. Ensure that the pre-terminated connector assemblies are installed with fusion splices. Ensure that all buffer tubes and fibers are protected once the attachment of pre-terminated connector assemblies is complete.

F. Buffer Tube Fan-Out Kits: Ensure that a buffer tube fan-out kit is installed when fiber optic cables are terminated. Use a kit compatible with the fiber optic cable being terminated and that is color-coded to match the optical fiber color scheme. Ensure that the buffer tube fan-out kit supports 12 fiber strands.

G. Patch Panels:

1. Ensure that the patch panel is compatible with the fiber optic cable being terminated and color coded to match the optical fiber color scheme. Ensure that the patch panel has a minimum of 12 SC-type panel connectors unless otherwise shown in the Plans. Ensure that the patch panel dimensions do not exceed 14 inches x 6 inches x 4 inches for fiber counts of twelve or less. Ensure the patch panel is suitable for mounting within an approved cabinet at the field device location. Ensure patch panels are sized to accommodate specified coupler housings and maintain sufficient bend radius for cables. Ensure the patch panel is sized to occupy the minimum space required for capacity.
2. Connector Panels:

a. Ensure that the connector panel provides 12 SC-type, bulkhead-mount coupling connectors. Ensure that each coupling connector allows connection of a cable terminated on one side of the panel to a cable on the opposite side.

2.4 IT TELECOMMUNICATIONS PANEL

A. General:
   1. Function: Receive incoming fiber-optic cable at installation site from County network.
   2. Major parts include fiber-optic patch panel, network cabling, and accessories.

B. Enclosure Specifications:
   1. Manufacturers and Products:
      a. American Products; AP Minifort Model AM-462418-24RU.
      b. No substitutions.
   2. Panel Size:
      a. Include mounting bracket accessory from panel manufacturer for installation.
      b. Increase panel size if and as needed to accommodate additional network equipment or to increase heat dissipation to reach an internal steady-state operating temperature below the maximum operating temperature of all contained equipment.
   3. Provide ground bar inside enclosure.
   4. All conduit penetrations shall be made through the bottom face of the enclosure. Side or top penetrations are not acceptable.
   5. Include quad 120 VAC power receptacle gang box inside enclosure.
   6. Enclosure shall include a standard rack for mounting of rack-mounted equipment.

2.5 CONDUIT

A. Materials of Construction: Use materials that have been tested and listed by a Nationally Recognized Testing Laboratory to the following industry standards:

- High Density Polyethylene (HDPE):
  - For use outside site boundaries, such as roadside pull boxes and splice enclosures.
- HDPE Standard Dimension Ratio (SDR) 13.5: ASTM F2160, NEMA TC-7
- All HDPE conduit shall be orange in color.
- Schedule 80 PVC:
  - For use inside site boundary for interconnection of fiber-optic equipment and to on-site fiber-optic handholes, pull boxes, and splice enclosures.

B. Locate Wire: Ensure that locate wire is a single copper solid conductor with a minimum gauge of No. 12 AWG with blue shielding. Ensure locate wire is insulated using a 45-millimeter minimum thickness polyethylene sheath that is orange in color and marked to identify the manufacturer and the conductor size.

C. Locate Wire Grounding: Ensure that locate wires are attached to a wire grounding unit (WGU) dedicated to safely dissipate high transient voltages or other foreign electrical surges induced into the designated system. Ensure the WGU conforms to the following:

1. Allows signals generated by locate system transmitters to pass through the protection system without going to ground.
2. The protection system automatically resets and passes locate system transmitter signals after the unit has been grounded to dissipate over-voltages.
3. Is intended for below or above grade applications. Ground the WGU to a driven rod within 10 feet of the system using a No. 6 AWG single conductor wire with green insulation.
4. The WGU system meets the minimum standards listed below for surge protection:
    a. Surge Element: Three-element maximum duty fail-safe gas tube.
    b. Rating: 40,000 Amp surge capacity (single-cycle, 8 by 20 microsecond waveform).
    c. Life: Minimum 1,000 surges (1000 Amps to ground).
    d. Insulation Resistance: 1,000 megohm minimum at 100 volts of direct current.
    e. Clamp Voltages:
        1) Impulse at 100 volts per microsecond.
        2) Direct Current: 300 to 500 volts.

D. Route Markers:

1. Ensure Standard Route Marker (SRM) is a rigid, three-sided driven post used for location and notification purposes only.
2. Ensure that each SRM is labeled and identified as a County IT fiber optic cable marker unless otherwise shown in the Plans. The labels must include the contact information for the Collier County IT department, and a telephone number to call prior to any excavation in the area. Ensure that the identification information is permanently imprinted on the top fitting, and will not peel, fade, or deteriorate.
3. Ensure that SRM posts are white with an orange top fitting cover with black or white lettering and graphics. Ensure that the SRM is a tubular configuration, and both the marker post and the top fitting are made

from virgin Type 111 HDPE. Ensure that any fasteners used with the SRM are constructed of stainless steel.

4. Ensure that all SRMs have a minimum outside diameter of 3.5 inches with a minimum wall thickness of 0.125 inches. Ensure that the top fitting cover is a minimum of 1.5 feet long and has an outside diameter of 3.75 inches with a minimum wall thickness of 0.125 inches. Ensure that each SRM provides a tensile strength of 4,200 pounds per square inch as required in ASTM D638. Ensure that each SRM is manufactured for use in temperatures range of minus 30° to 165°F in accordance with NEMA TS 2.
5. Ensure the SRM can withstand an impact force of 70 pounds per foot at 32°F in accordance with ASTM D2444, before and after UV conditioning for 2,000 hours in accordance with ASTM G154. Ensure that the control sample of any material tested maintains a minimum of 70 percent of its original tensile strength.
6. Ensure that SRMs installed at the minimum 2-foot depth can withstand at least one impact at 45 miles per hour by a vehicle weighing at least 3,500 pounds and that after impact, post returns to an upright position within 10 degrees of vertical alignment within 30 seconds from the time of impact.

2.6 PULL AND SPLICE BOXES

A. General:

1. The box bodies and covers shall be free of flaws such as cracks, sharp, broken, or uneven edges, and voids.
2. Ensure in-ground boxes have an open bottom design.

B. Marking:

1. The following information shall be permanently cast or engraved into the top surface of all pull and splice box covers. If used, identification plates shall be UV stable, mechanically fastened, and bonded with adhesive material suitable for outdoor applications.
   a. Mark application as “COMMUNICATIONS”
   b. Manufacturer’s name or logo.

C. Dimensions:

1. For fiber optic cable applications, pull boxes with nominal cover dimensions of 24 inches wide by 36 inches long or larger and no less than 18 inches deep shall be provided.
2. Rectangular splice boxes with nominal cover dimensions of 30 inches wide by 48 inches long or larger and no less than 18 inches deep shall be provided.

D. Fabrication:

1. Box covers shall be constructed of concrete, polymer concrete or other materials meeting the requirements of this Section.
2. Box covers with lifting slots and a flush-seating lockdown mechanism shall be provided. Penta-head or other non-standard, security type lockdown lag bolts shall be used. Lockdown bolts and lifting slots shall be Type 316, 304, or 302 passivated stainless steel or brass. Lockdown bolt assembly shall be designed to prevent seizing and can be removed without damaging the cover or box body. The lockdown bolt threaded insert/nut assembly shall be field replaceable.
3. The box construction shall be an ANSI Tier 22 Quazite brand enclosure.

PART 3 EXECUTION

3.1 PREPARATION

A. Conduit:
1. Ensure installed conduit system conforms to fiber-optic system requirements, including:
   a. Conduits: Size and number.
   b. Access Holes, Handholes, and Pull Boxes: Location and size, to ensure cables may be installed without exceeding manufacturer's limitations.
   c. Outlet Boxes: Size to coordinate with outlet cover plates for adequate volume and bend radius.
2. Expansion Plugs: Seal conduit to stop ingress of water and grit with fabricated expansion plugs.
3. Ensure duct bank, conduit, and other confined routing is free and clear of debris before cable placement.

3.2 SOURCE QUALITY CONTROL

A. Cable End Sealing: Ensure that fiber optic cable ends are capped or sealed to prevent the entry of moisture during shipping, handling, storage, and installation. Equip one end of the fiber optic cable with flexible pulling eyes.

B. Protective Wrap: Ensure that the fiber optic cable is shipped and stored with a protective wrap or other approved mechanical reel protection device over the outer turns of the fiber optic cable on each reel. Ensure that the wrap is weather resistant and protects the cable reel from environmental hazards. Ensure that the cable reel remains wrapped until cable is to be installed.

C. Packaging, Shipping and Receiving: Ensure that the packaging and delivery of fiber optic cable reels comply with the following minimum requirements:

1. Ensure cable is shipped on reels of marked continuous length.
2. Ensure each cable is shipped on a separate, strongly constructed reel designed to prevent damage to the cable during shipment and installation.
3. Ensure each reel has a minimum of 6 feet on each end of the cable available for testing.
4. Ensure that all fiber optic cable is continuous and free from damage.
5. Ensure no point discontinuities greater than 0.1 dB per reel.
6. Ensure satisfactory transmission loss test results as required by the TIA-455-61-A standard.
7. Ensure that the manufacturer submits the date of manufacture; product and serial numbers; cable data, including the reel length; refraction index; the project name and location; type of fiber and quantity of strands used; technical product data sheets; and reel numbers.

D. Manufacturer Testing and Certification: Submit documentation of all factory tests performed by the manufacturer for all fiber optic cable, splicing material, cable terminations, and patch panels as requested by the County.

3.3 INSTALLATION

A. Fiber-Optic Cable Installation:
   1. Install all materials and equipment according to the latest version of the manufacturer's installation procedures. Ensure that all materials and installation practices are in accordance with the applicable OSHA requirements as found in 29 CFR Part 1926, Safety and Health Standards for Construction. In addition, perform the following:
      a. Ensure conduit and innerduct is clean and free from damage prior to installing fiber optic cable.
      b. Document the sequential cable length markings at each splice box and pull box wall that the cable passes through and include the information with the as-built documentation.
   2. Provide all incidental parts needed to complete the installation as necessary for a complete and properly operating system.
   3. Cable Identification:
      a. All fiber cable shall be striped with a yellow color along the entire length of the cable.
      b. A cable tag with permanent ink shall denote "COLLIER COUNTY BCC IT FIBER-OPTIC CABLE" shall be affixed on the cable at every 3-foot interval.
   4. Pulling:
      a. Install the fiber optic cable by hand or by using a mechanical pulling machine. If a mechanical pulling machine is used, equip the machine with a monitored or recording tension meter.

Ensure that at no time the manufacturer's recommended maximum pulling tension is exceeded. Ensure that the central strength member and aramid yarn are attached directly to the pulling eye during cable pulling. Use pulling attachments to ensure that the optical and mechanical characteristics are not degraded during the fiber optic cable installation.

b. Ensure that excess cable is coiled in a figure eight and fed manually when pulling through pull boxes and splice boxes by hand. If pulleys and sheaves will be used to mechanically pull through pull boxes and splice boxes, ensure that the cable will never be pulled through a radius less than the manufacturer's minimum bend radius. Use large diameter wheels, pulling sheaves, and cable guides to maintain the appropriate bend radius. Provide tension monitoring at all times during the pulling operation. Ensure that cable pulling lubricant used during installation is recommended by the optical fiber cable manufacturer.

5. Blowing: Use either the high airspeed blowing (HASB) method or the piston method. When using the HASB method, ensure that the volume of air passing through the conduit does not exceed 600 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive. When using the piston method, ensure that the volume of air passing through the conduit does not exceed 300 cubic feet per minute or the conduit manufacturer's recommended air volume, whichever is more restrictive.

6. Slack Cable Storage: Provide and store fiber optic cable at each pull box and splice box to allow for future splices, additions, or repairs to the fiber network. Store the fiber optic cable without twisting or bending the cable below the minimum bend radius.
   a. Store a total of 200 feet of fiber optic backbone cable in splice boxes, with 100 feet of cable on each side of the cable splice point.
   b. Store a minimum of 100 feet of fiber optic drop cable in splice boxes.
   c. Store 100 feet of spare fiber optic cable in pull boxes.

7. Fiber Optic Connection - Splicing:
   a. Perform all optical fiber splicing using the fusion splicing technique, and according to the latest version of the manufacturer's cable installation procedures, industry accepted installation standards, codes, and practices. Ensure that all splices match fiber and buffer tube colors.
   b. Ensure that splice loss does not exceed a maximum of 0.05 dB per splice as measured on the fusion splice machine when splicing newly installed fibers together. Ensure that splice loss does not exceed a maximum of 0.1 dB per splice as measured

on the fusion splice machine when splicing newly installed fibers to existing fibers.

c. Where a fiber cable is to be accessed for lateral or drop signal insertion, only open the buffer tube containing the fiber to be accessed and only cut the actual fiber to be accessed. If a fiber end is not intended for use, cut the fiber to a length equal to that of the fiber to be used and neatly lay it into the splice tray.

d. Treat any fibers exposed during splicing with a protective coating and place in a protective sleeve or housing to protect the fiber from damage or contaminants. Neatly store all splice enclosures within a splice box.

8. Splice Plan: Submit a splice plan showing the location and configuration of splices in the system for approval by the County. Perform all splicing according to the splice plan. Document each splice location and identify the source and destination of each fiber in each splice tray. Document all fiber colors and buffer jacket colors used during installation and develop a sequential fiber numbering plan as required in the TIA -598-D standard for color-coding in the documentation.

9. Splice Equipment: Use a fusion splice machine to splice all optical fiber. Ensure that splice equipment is new from the factory, or equipment has been serviced and certified by the factory or its authorized representative within the previous 12 months from the commencement of its use. Ensure that the calibration certificate is maintained in the splicing equipment case or provided electronically when requested. Clean all splicing equipment and calibrate according to the manufacturer's recommendations prior to each splicing session at each location.

B. Cable Termination Installation: Ensure that cables, buffer tubes, or strands are neatly routed, secured, and terminated in a patch panel in coordination with the County. Ensure all cable termination points include documentation regarding the identification, route, and function of each fiber installed at that location. Ensure that a copy of this information is placed alongside the installed equipment (for instance, in a document pouch or drawer within a field cabinet).

C. Patch Panel Installation: Ensure that patch panels are neatly installed and secured in a weather-proof enclosure.

D. Conduit Installation:

1. Install the conduit in accordance with NEC or National Electrical Safety Code (NESC) requirements and the Standard Plans. Construct conduit runs as straight as possible. Mark the location of the conduit system

with route markers every 1,000 feet and at every pull box and splice box. Ensure that all route markers used are new and consistent in appearance.

2. Install a No. 12 AWG pull wire or polypropylene cord inside the full length of all conduits. Ensure that a minimum of 24 inches of pull wire/cord is accessible at each conduit termination.
3. Ensure the conduit includes all required fittings and incidentals necessary to construct a complete installation.
4. Prevent the ingress of water, dirt, sand, and other foreign materials into the conduit prior to, during, and after construction. Seal the ends of conduit after wiring is complete with a moisture resistant sealant that is designed for this specific application.
5. Install the conduit system so the fiber optic cable maintains the minimum bend radius. Use approved methods for connecting inner duct or conduit within or between plowed portions, trenched portions, and bored portions. Coupling method and material to be in compliance with manufacturer's installation guidelines.
6. Conduit Terminations:
    a. Where conduit enters a box, fitting, or other enclosure, provide a bushing or adapter (end bell, conduit adapter, etc.) to protect the conductor or cable from abrasion unless the box, fitting, or enclosure provides equivalent protection.
    b. For conduit to be encased in concrete, wrap with tape, or otherwise protect all terminations to prevent the entrance of concrete.
    c. Connect new underground conduits to existing underground conduits with a pull box.
    d. Seal conduits terminating in a pull box or junction box with a moisture resistant sealant.
7. Restoration of Trench Areas: Restore the conduit trench construction area to an acceptable condition. Such work includes repair or replacement of all pavement areas, sidewalks, driveways, curbs, structures, landscaping, grass areas (including removal of excavated materials and spoils), removal and disposal of drilling fluids, and backfilling areas disturbed by the conduit installation.
8. Above-Ground Installation
    a. Use conduit designed and manufactured for use in long-term above-ground applications with UV stabilization to prevent material deterioration.
    b. Securely attach above-ground conduit installations to the surface of the supporting structure using conduit straps. As a minimum, use conduit straps located on 5-foot centers.
9. Elbow Curvature:
    a. For 2-inch conduit, the radius of curvature of the centerline of any bend shall not be less than 9.5 inches.

E. Fiber-Optic Cable Locate Wire:

1. Installation:
    a. Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system. When conduit is placed by trenching, bury locate wire along the centerline of the top outer surface of installed conduit.
    b. Do not run locate wires into field cabinets. Terminate locate wires at the following locations or as shown on the Plans, nearest pull box to a field cabinet, nearest pull box to a building, and splice box locations. Ensure that wire termination occurs in a pull box.
    c. Install WGUs in pull boxes and splice boxes as shown in the Plans. Mount the device in a location high enough from the bottom of the box to allow access to terminal facilities without disturbing cables present within the box. Terminate the locate wires and connect the WGU to ground in accordance with the manufacturer's instructions.
2. Testing: Test the locate wire system after installation to ensure that it functions and can be used to accurately locate the conduit system. Perform continuity tests and insulation resistance tests on all locate wires. Replace, or repair defective locate wire at no additional cost.

F. Route Markers:

1. Install route markers for new fiber optic cable installations, replace route markers as shown in the Plans, and ensure the following:
    a. Markers are plumb and level and the notification information is clearly visible when viewed from the side facing the roadway.
    b. Markers are set within the right of way.
    c. Markers are placed at a one-foot offset from the conduit system.
    d. The top of the marker post is a minimum of five feet and maximum of six feet above the finish grade
    e. Place marker at each pull box location.
    f. Markers are installed on both sides of a stream, river, or other water crossing, and on both sides of aboveground attachments such as bridges and walls.
2. Remove and replace all marker posts damaged during installation at no additional cost. Provide as-built documentation at the completion of installation that includes location of all installed route markers and correlates the marker to the fiber optic infrastructure that it signifies.

G. Pull and Splice Boxes:

1. Do not install power and communication cables in the same box.

2. Install pull and splice boxes in accordance with Plans. Ensure that the pull or splice box cover is flush with the concrete apron or sidewalk. Prior to installation, pour in a bed of pea rock or crushed stone at least one foot deep, with horizontal dimensions four inches longer than the width and length of the pull box. The pull or splice box installation shall be placed so that the inside edge of the box rests entirely on a gravel bed. Do not install pull or splice boxes in roadways, driveways, parking areas, ditches, or public sidewalk curb ramps. Avoid placing pull and splice boxes in low-lying locations with poor drainage. Ensure that pull and splice boxes house fiber optic cable without exceeding the cable bend radius.
3. Provide conductive metal ground rod that is at least 5/8 inches in diameter and 48 inches long. Ground rod shall be installed vertically within three inches of the inside edge of the pull or splice box, with at least 10 inches of the rod exposed above the gravel base.
4. Placement and Spacing: Pull boxes shall be spaced a maximum of 1,000 feet apart, and within 20 feet of either side of a roadway, and within 10 linear feet of any fiber optics termination point. The County agency shall reserve sole determination whether spacing of pull boxes shall be less or more than the standard 1,000 feet apart.
5. Relocation of Pull and Splice Boxes:
    a. Relocation of pull and splice boxes shall consist of removing an existing box and installing the box at the location shown in the Plans. Restore the area of the box removal and relocation to the condition of the adjacent area. The costs for restoration will be included in the Contract unit price of the relocation.
    b. Boxes damaged due to the Contractor's operations must be replaced by the Contractor at no cost to the County. Replacement boxes must be of the same material and size of the existing box, unless directed otherwise by the CCITD.

3.4 FIELD QUALITY CONTROL

A. Installation Testing:
1. General:
    a. Notify the CCITD of cable testing at least 14 calendar days in advance. Submit the testing procedures to the CCITD staff for approval prior to commencement of testing. Perform all tests at 1310 nm and 1550 nm wavelengths, and include the last calibration date of all test equipment with the test parameters set on the equipment in the test documentation. Ensure that the last calibration date of all test equipment is within the last 12 months and that the calibration certificate is maintained in the test equipment case or provided electronically when requested. Test all installed fibers (terminated and un-terminated) using

methods identified in this Section. All tests must be conducted with a launch box.

b. Fibers containing splices or fibers terminated on both ends must be bidirectionally tested.

c. Present the results of the optical time domain reflectometer (OTDR) testing (i.e., traces for each fiber) and a loss table showing details for each splice and termination tested to the CCITD in an approved electronic format. Ensure all OTDR testing complies with the EIA/TIA-455-61 standard.

2. OTDR Attenuation Testing: Perform testing on all fibers to ensure that attenuation does not exceed allowable loss (0.35 dB/km for 1310 nm wavelength, 0.25 dB/km for 1550 nm wavelength, plus 0.5 dB for any connectors and 0.1 dB for splices). Repair or replace cable sections exceeding allowable attenuation at no cost to the County.

3. OTDR Tracing: Test all fibers with an OTDR at wavelengths of 1310 and 1550 nm.

4. Splice Loss Testing: Ensure that the splice loss for a SMF fusion splice does not exceed a maximum bidirectional average of 0.1 dB per splice when measured using an OTDR. Repair or replace splices that exceed allowable attenuation at no cost to the County.

5. Connector Loss Testing**:** Ensure that the attenuation in the connector at each termination panel and its associated splice does not exceed 0.6 dB when measured using an OTDR. Repair or replace connectors exceeding allowable attenuation at no cost to the County.

B. Fiber Optic Cable Locator: Locate and mark all existing County owned or maintained fiber optic facilities within project limits prior to performing any subsurface work. Locate and mark as necessary to ensure that all fiber optic facilities are located and visibly marked at all times.

C. Fiber-Optic Cable Warranty: Ensure that the fiber optic cable, the splice enclosures, and terminations have a manufacturer's warranty covering defects for a minimum of two years from the date of final acceptance. Ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

D. Pull and Splice Box Warranty: Ensure all pull, splice, and junction boxes have a manufacturer's warranty covering defects for a minimum of one year from the date of final acceptance. Ensure the warranty includes providing replacements, within 30 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the County.

E. Documentation and Closeout

1. Within ten (10) days following successful installation and testing of the fiber-optic communication work, Contractor shall provide the County both printed and electronic copies of as-built network drawings.
2. At minimum, as-builts shall contain:
    a. Network block diagrams, identifying endpoints for fiber termination, number of fiber strands and cables, and topology layout.
    b. Updated site plan of each affected installation site identifying location of the IT telecommunications cabinet, in addition to pull boxes and handhole locations at the installation and interconnecting conduit.
    c. Updated overall site plan identifying the fiber-optic cable installation for the entire project, including all interconnecting segments between installations or other endpoint locations. Overall site plant shall include all pull boxes, splice vaults, handholes, and fiber cable lengths.
    d. As-built plans shall additionally be provided as converted Google Earth and Visio formats for County use.

END OF SECTION

SECTION 3

UTILITIES DETAIL DRAWINGS

For the latest revisions to the Utilities Detail Drawings visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 3

UTILITIES DETAIL DRAWINGS

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G-4	Pipe Conflict Detail	04/2006
G-5	Jack and Bore Detail	08/2008
G-6	Thrust Block Detail for Existing A / C Pipe	04/2006
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Drawing No.	Title	Revision Date
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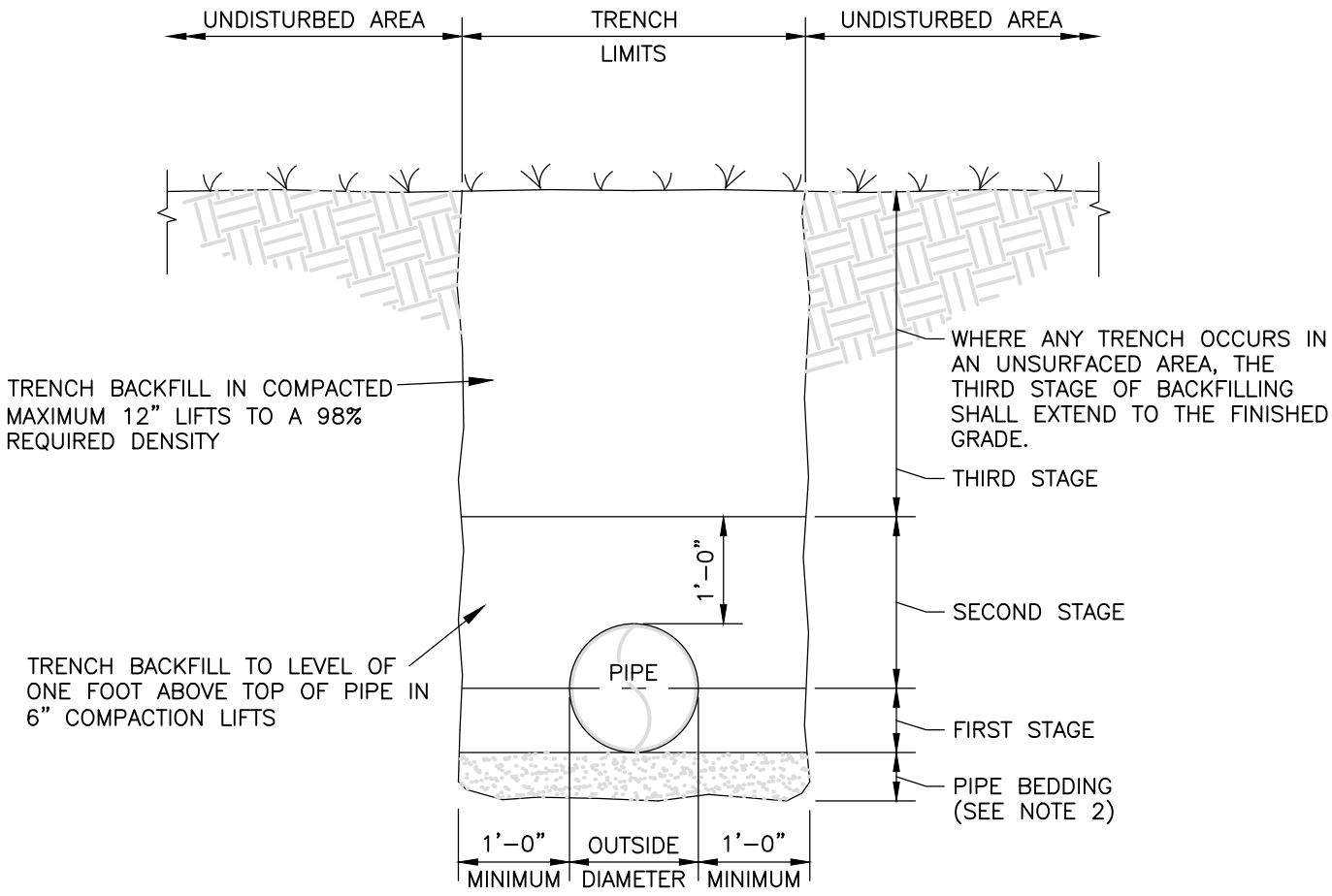
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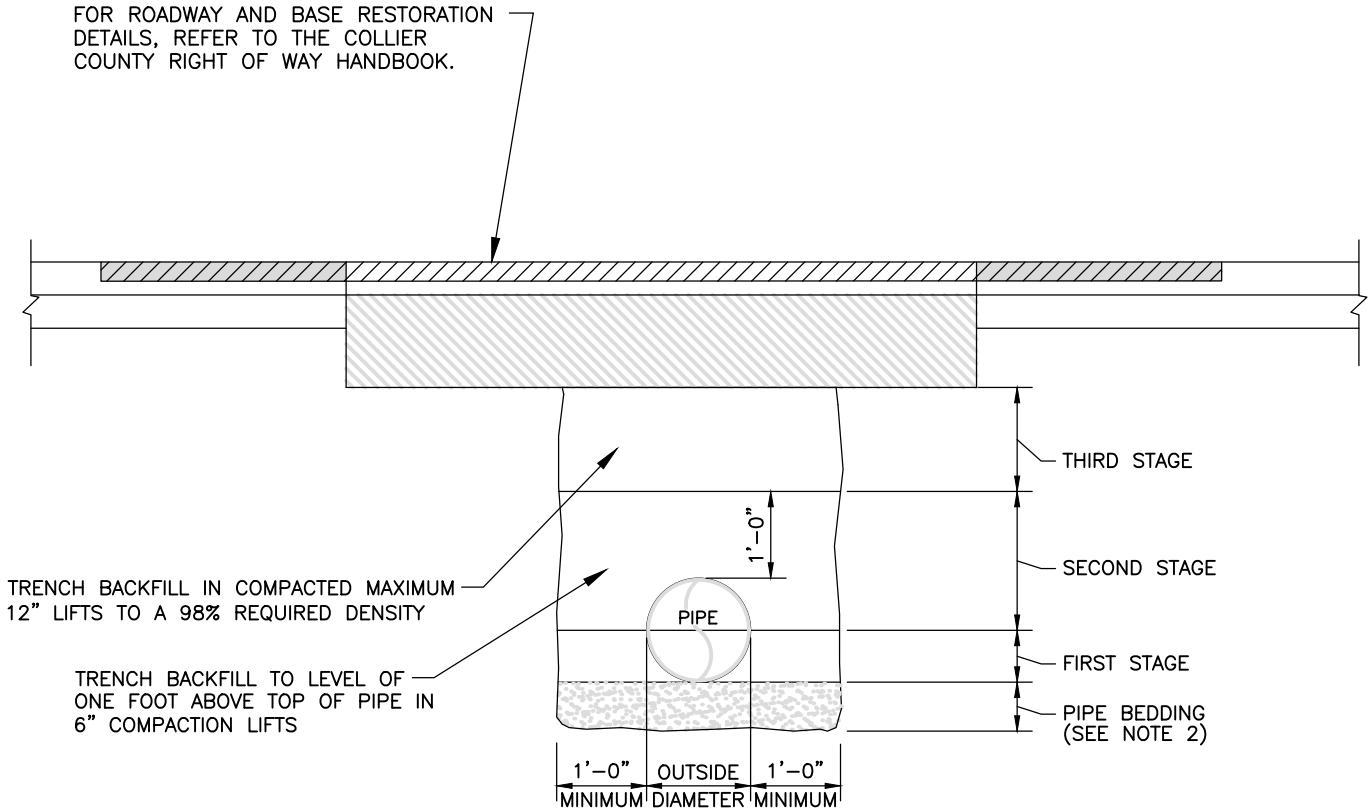


NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.

2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

UNPAVED AREA TRENCH BACKFILL DETAIL	REVISION DATE: APRIL 2006	Collier County	SHEET NO. G-1
NTS			

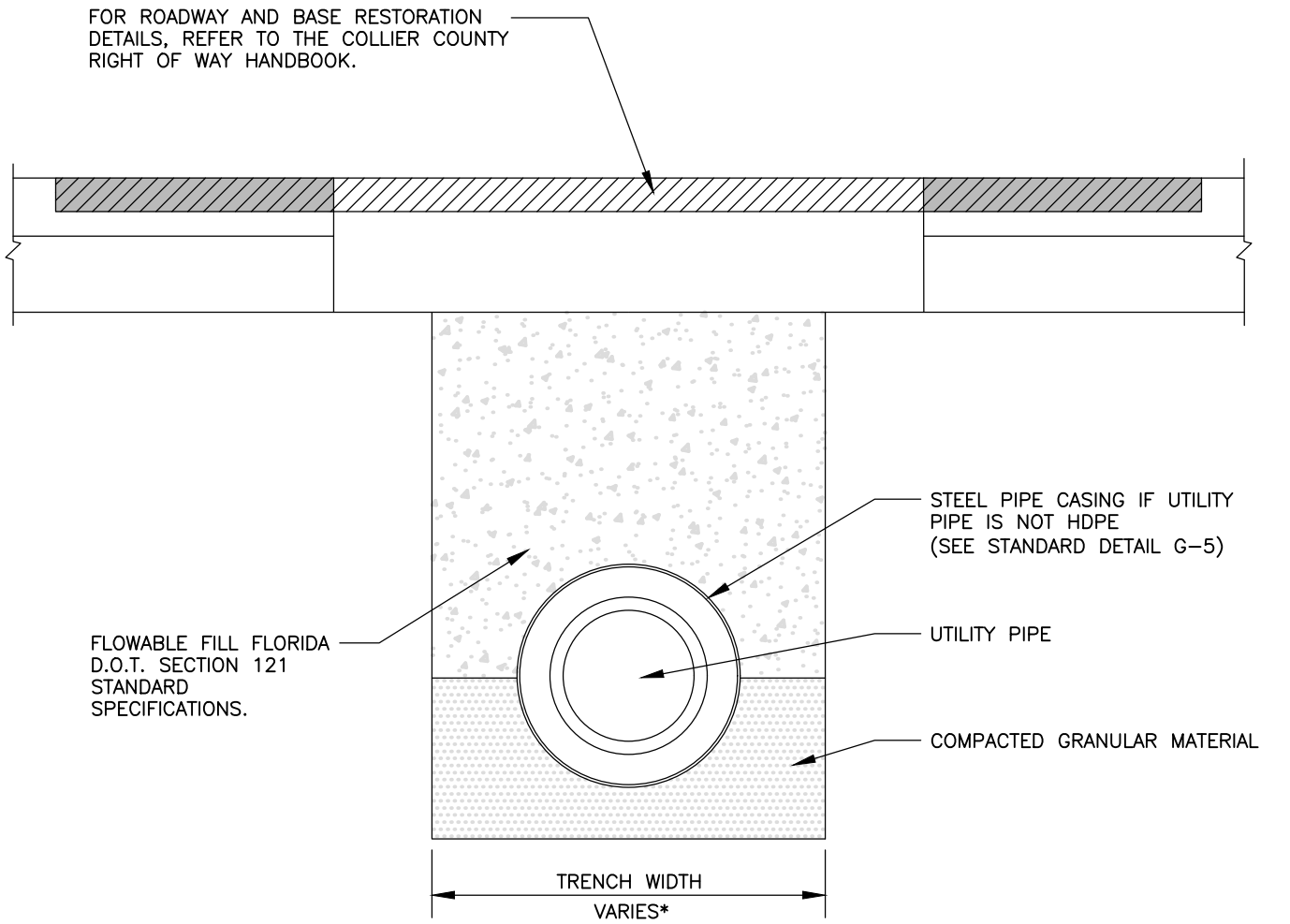


NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.

2. IF TRENCH BOTTOM CONTAINS ROCK, THEN A MINIMUM OF A 6" PIPE BEDDING SHALL BE USED.

PAVED AREA TRENCH RESTORATION DETAIL FOR PRIVATE ROADS	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2
NTS			

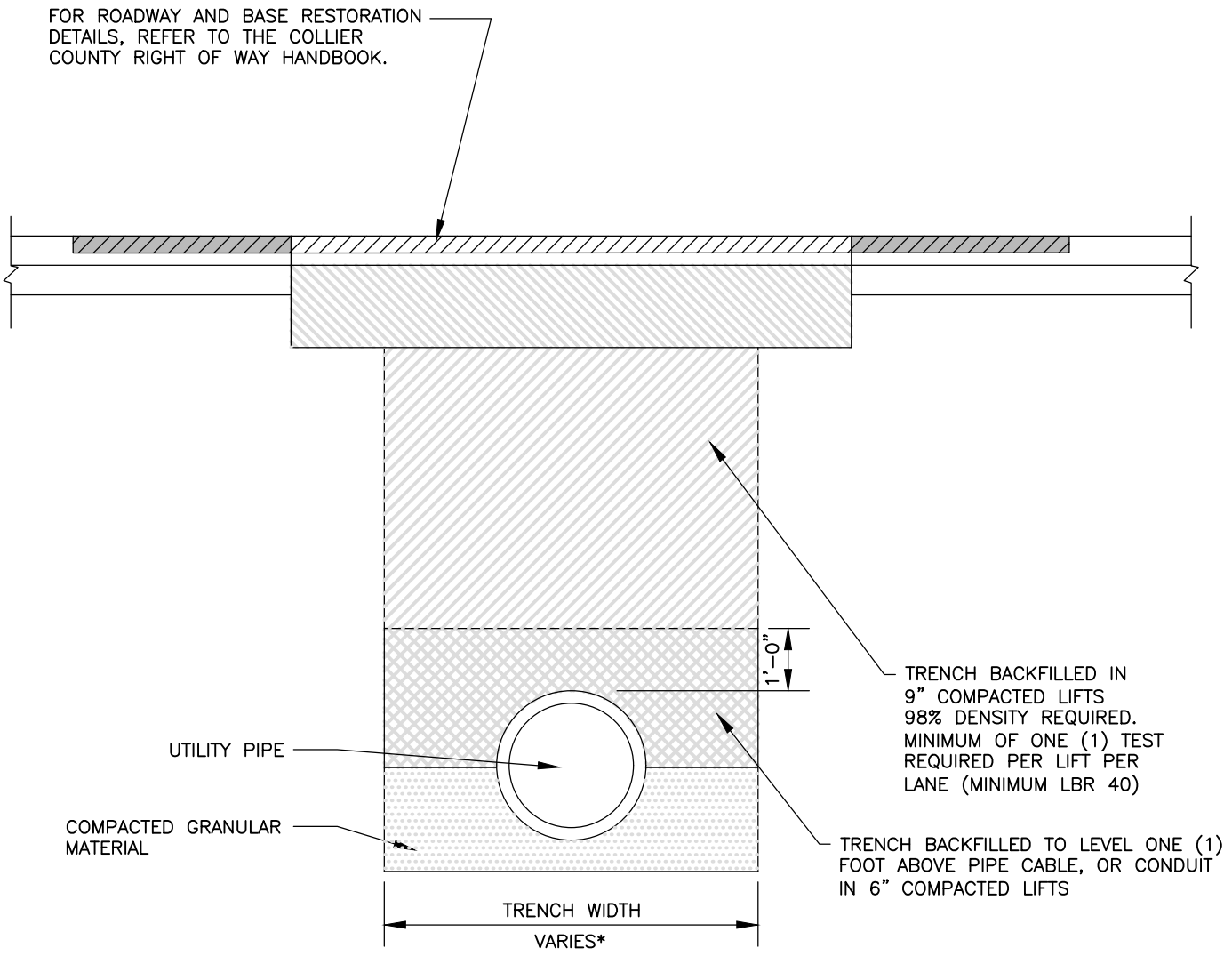


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. BACKFILL SHALL BE OF SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. BACKFILL MATERIAL SHALL CONSIST OF EARTH, LOAM, SANDY CLAY, GRAVEL, CRUSHED LIMESTONE, OR OTHER APPROVED MATERIAL. REFER TO TECHNICAL SPECIFICATIONS FOR DETAIL REQUIREMENTS.
2. ALL PIPES SHALL BE CONSTURCTED WITIHN A STEEL CASING PIPE IF INSTALLED ON A ROAD TO BE WIDENED, UNLESS THE UTILITY PIPE IS HDPE.

STATE ROAD, MAJOR COUNTY ROAD, AND NUMBERED COUNTY ROAD FLOWABLE FILL ROAD AND TRENCH RESTORATION	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2A
NTS			

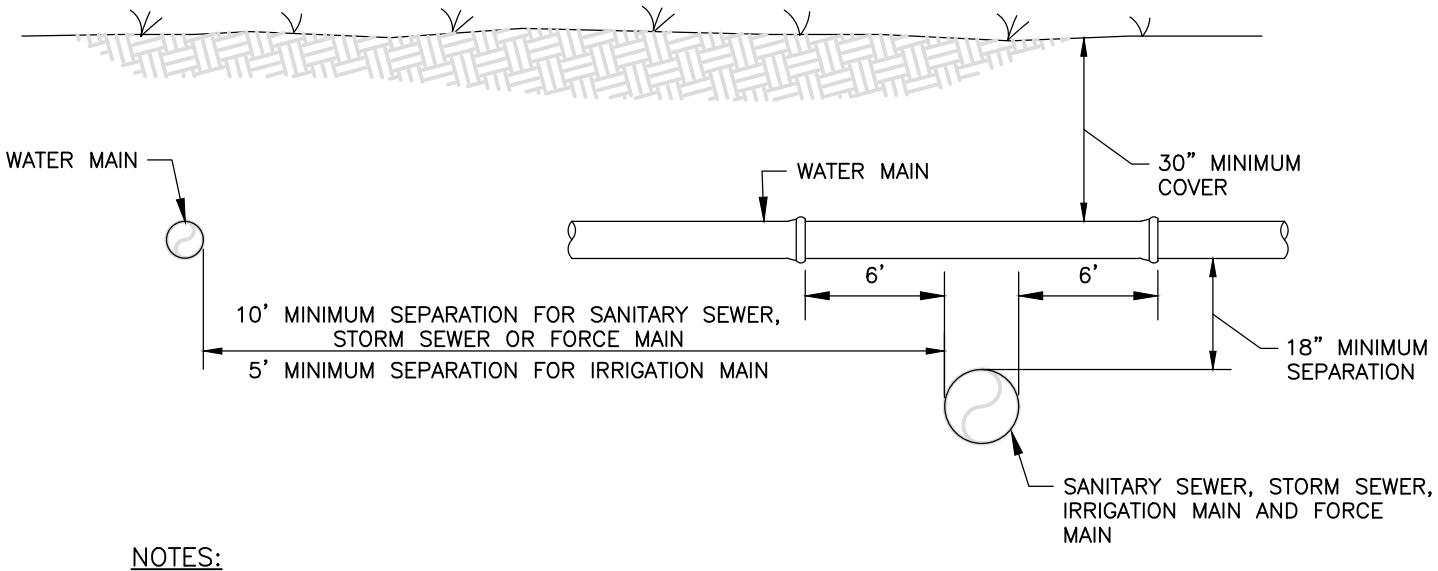


*TRENCH WIDTH = PIPE OUTSIDE DIAMETER PLUS 2 FEET

NOTES:

1. ALL MODIFIED PROCTOR AND DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED LABORATORY.
2. ALL TESTS SHALL BE COMPLETED AND SHALL MEET MINIMUM DENSITY REQUIREMENTS PRIOR TO ADDITIONAL BACKFILLING.
3. RIGHT-OF-WAY PERMIT STIPULATIONS OVERRIDE THIS DETAIL WHERE TRENCH IS LOCATED WITHIN A COUNTY RIGHT-OF-WAY.
4. ASPHALT PATCH AND TAPERS MUST BE FLUSH WITH ADJACENT ASPHALT AND CURBING.

ROAD AND TRENCH RESTORATION FOR LOCAL ROADS	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-2B
NTS			



NOTES:

1. WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER, NON-POTABLE IRRIGATION MAINS, AND FORCE MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18 INCHES MEASURED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE. THE 18 INCHES MINIMUM VERTICAL SEPARATION DISTANCE DOES NOT APPLY TO SEPARATIONS OF SEWER LATERALS AND POTABLE WATER MAIN PIPELINE INSTALLATIONS. ALSO, WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER AND FORCE MAINS BY 10 FEET AND FROM IRRIGATION MAINS BY 5 FEET MEASURED HORIZONTALLY BETWEEN OUTSIDE OF PIPES.

2. ALL CROSSINGS WITH VERTICAL CLEARANCE LESS THAN 18 INCHES SHALL REQUIRE SUBMISSION AND APPROVAL OF A DEVIATION. IF A DEVIATION IS SUBMITTED, THE FOLLOWING MINIMUM STIPULATIONS APPLY: THE CROSSING SHALL BE MADE USING A FULL LENGTH OF THICKNESS CLASS 200 (DR14) AWWA C-900 PVC OR CLASS 235 (DR18) AWWA C-905 PVC PIPE CENTERED ON THE CROSSING.

3. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.

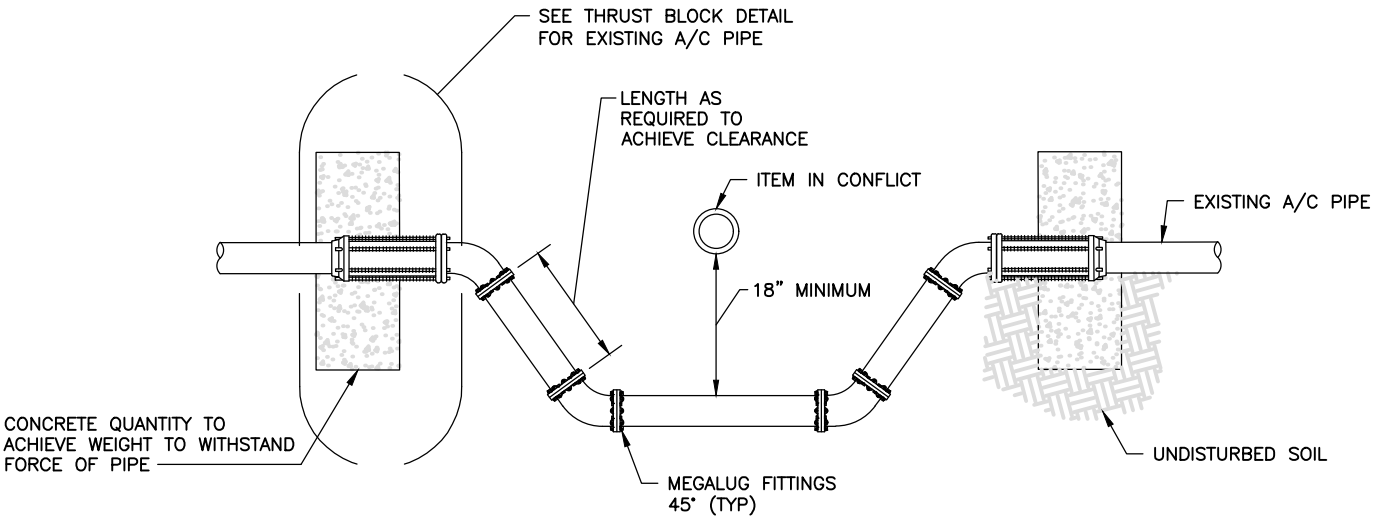
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.

5. WATER MAINS CROSSING ANY TYPE OF SANITARY SEWER, INCLUDING FORCE MAIN, OR STORM SEWER SHALL HAVE THE ONE FULL LENGTH OF WATER MAIN CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THAT THE WATER JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, FAC, AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRSSURE-TYPE SANITARY SEWERS, FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610.

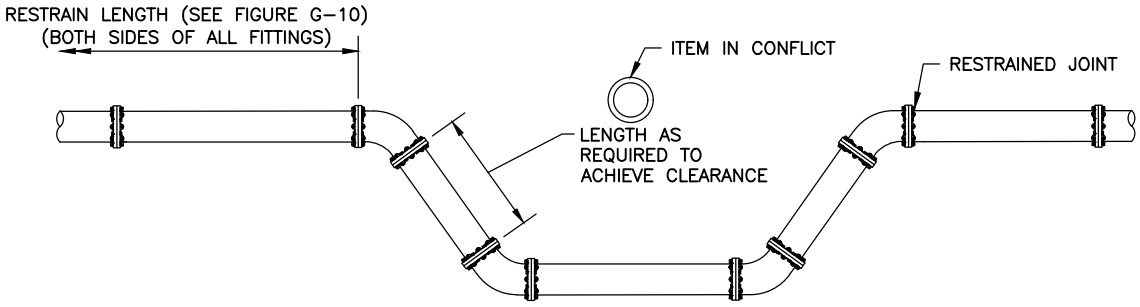
6. IF THE VERTICAL SEPARATION BETWEEN GRAVITY SANITARY SEWER AND STORMWATER LINES IS LESS THAN 18 INCHES, THEN 57 STONE SHALL BE UTILIZED BETWEEN THE TWO LINES.

7. SEE SECTION 1- DESIGN CRITERIA FOR ADDITIONAL REQUIREMENTS.

PIPE SEPARATION DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-3
NTS			



EXISTING A/C PIPE – HEADWALL

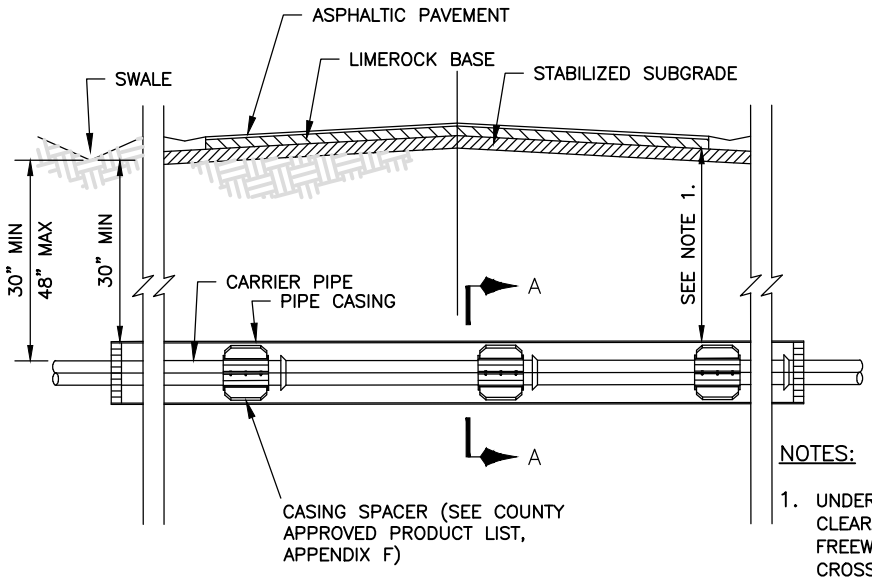


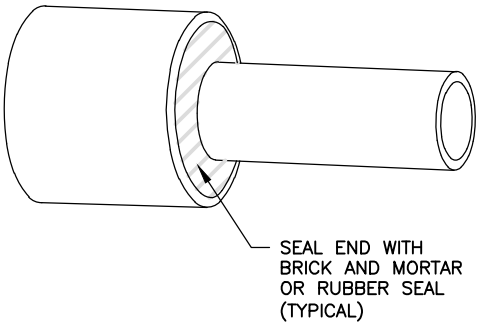
NEW & EXISTING PIPE – RESTRAINED JOINT

NOTES

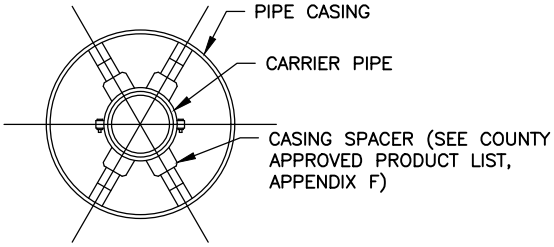
1. SEE SECTION 1 – DESIGN CRITERIA FOR AIR RELEASE VALVE REQUIREMENTS.

PIPE CONFLICT DETAILS	REVISION DATE: APRIL 2006	Collier County	SHEET NO. G-4
NTS			

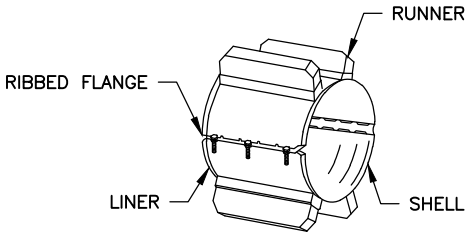




CASING END SEAL



SECTION A–A



SPACER

STANDARD NUMBER OF RUNNERS REQUIRED

UP TO 14" CARRIER PIPE	– 4 REQUIRED
OVER 14" THROUGH 36" CARRIER PIPE	– 6 REQUIRED
OVER 36" THROUGH 48" CARRIER PIPE	– 7 REQUIRED

NOTES:

1. UNDERGROUND CROSSINGS REQUIRE A MINIMUM VERTICAL CLEARANCE OF 48" BELOW PAVEMENT SURFACE FOR FREEWAYS, 36" FOR OTHER HIGHWAYS AND SUBAQUEOUS CROSSINGS OR 30" BELOW UNPAVED GROUND INCLUDING DITCH GRADE PER FLORIDA D.O.T.

2. SEE TECHNICAL SPECIFICATIONS FOR CARRIER PIPE AND CASING PIPE REQUIREMENTS.

STAINLESS STEEL SPACERS:

1. SPACERS SHALL BE BOLT–ON STYLE WITH A TWO PIECE SOLID SHELL MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS. THE SHELL SHALL BE LINED WITH A RIBBED PVC SHEET OF A 0.090" THICKNESS THAT OVERLAPS THE EDGES. RUNNERS MADE FROM UHMW POLYMER SHALL BE ATTACHED TO RISERS AT APPROPRIATE POSITIONS TO PROPERLY LOCATE THE CARRIER WITHIN THE CASING AND TO EASE INSTALLATION. RISERS SHALL BE MADE FROM T–304 STAINLESS STEEL OF A MINIMUM 14 GAUGE THICKNESS AND SHALL BE ATTACHED TO THE SHELL BY MIG WELDING. ALL WELDS SHALL BE FULLY PASSIVATED. ALL FASTENERS SHALL BE MADE FROM T–304 STAINLESS STEEL. CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

PLACEMENT OF SPACERS ON CARRIER PIPE:

1. GENERAL – ONE SPACER SHALL BE PLACED NOT MORE THAN TWO FEET FROM EACH END OF CASING. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS WITHIN THE CASING, OR IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS.

2. PVC CARRIER – ONE SPACER SHALL BE PLACED ON THE SPIGOT END OF EACH SEGMENT AT THE LINE MARKING THE LIMIT OF INSERTION INTO THE BELL. WHEN THE JOINT IS COMPLETE, THE SPACER SHALL BE IN CONTACT WITH THE BELL OF THE JOINT SO THAT THE SPACER PUSHES THE JOINT AND RELIEVES COMPRESSION WITHIN THE JOINT. SUBSEQUENT SPACERS SHALL BE PLACED AT 6' TO 10' INTERVALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

CARRIER PIPE:

1. CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF STAINLESS STEEL CASING SPACERS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

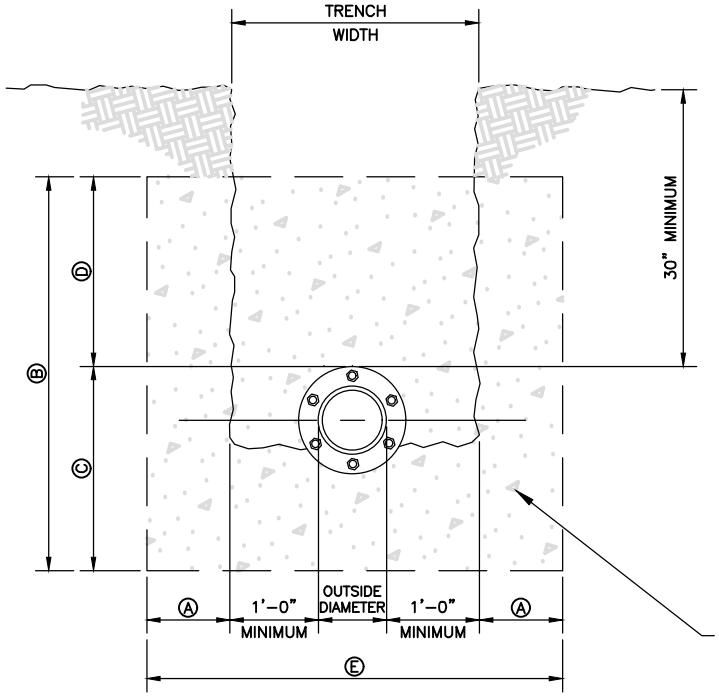
JACK AND BORE DETAIL

NTS

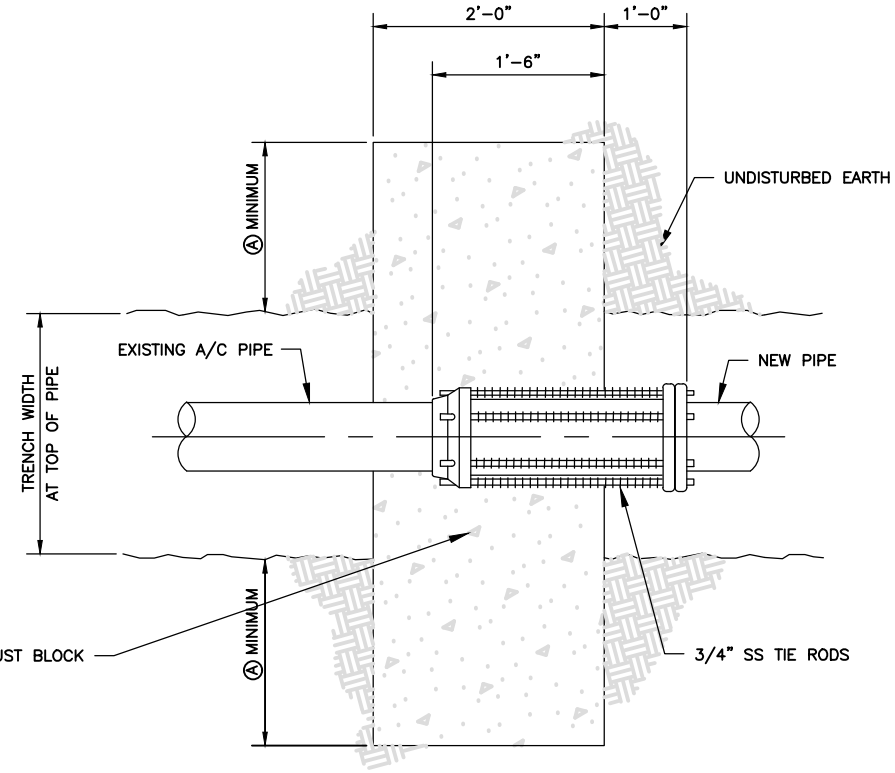
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
G–5



CROSS SECTION



PLAN VIEW

PIPE DIAMETER	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	NUMBER OF TIE RODS REQUIRED	CY.
4"	9"	36"	20"	16"	3'–10"	2	.85
6"	12"	36"	21"	15"	4'–6"	2	1.00
8"	12"	36"	22"	14"	4'–8"	2	1.04
10"	12"	36"	23"	13"	4'–10"	2	1.07
12"	18"	36"	24"	12"	6'–0"	2	1.33
16"	18"	36"	32"	4"	6'–4"	4	1.41

DESIGN ENGINEER SHALL VERIFY ABOVE DIMENSIONS AND THE NUMBER OF TIE RODS.

$$\text{CUBIC YARDS OF CONCRETE (CY)} = \frac{\left(\frac{Ⓑ \times Ⓔ}{12}\right) \times 2}{27}$$

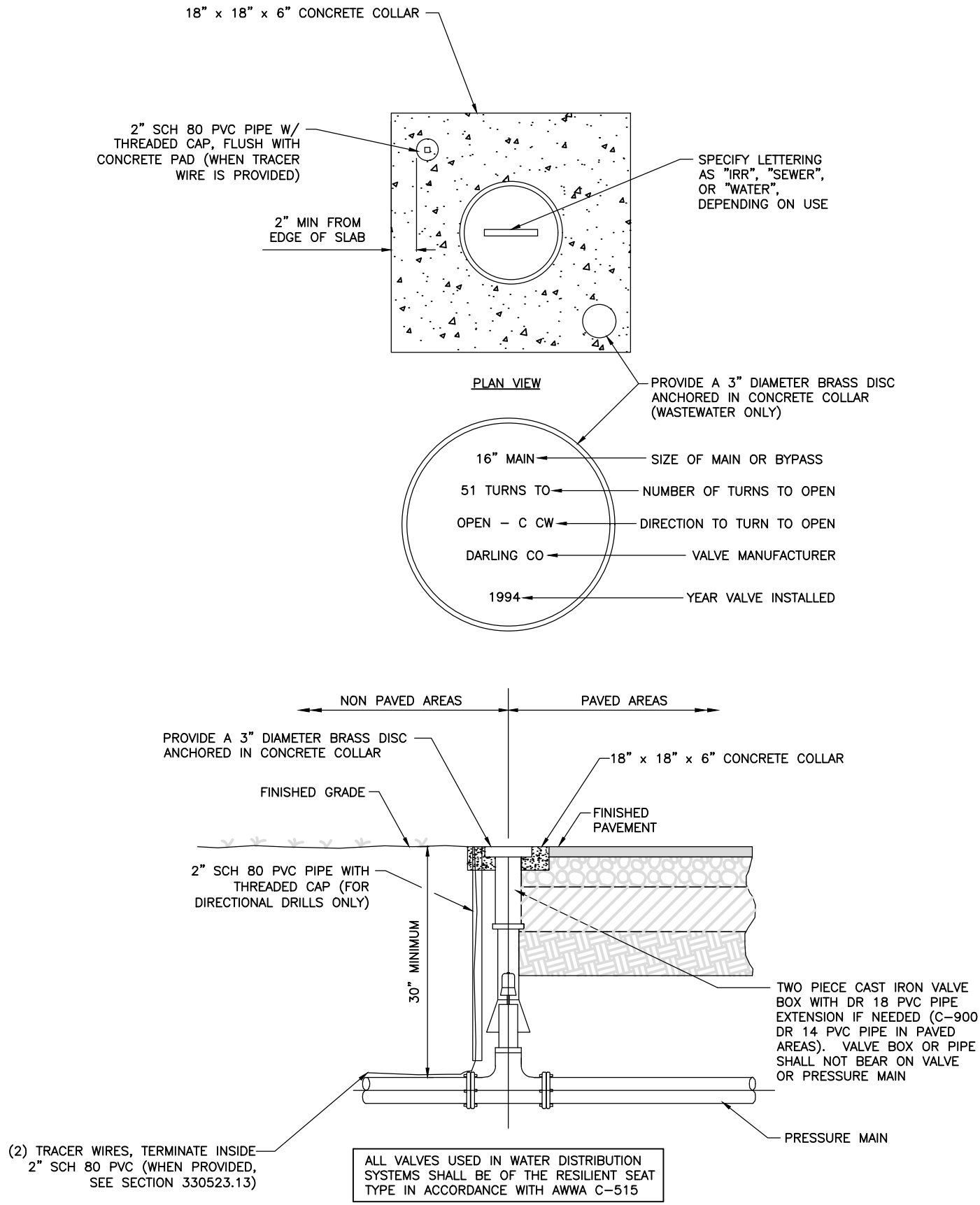
THRUST BLOCK DETAIL FOR EXISTING A/C PIPE

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
G–6



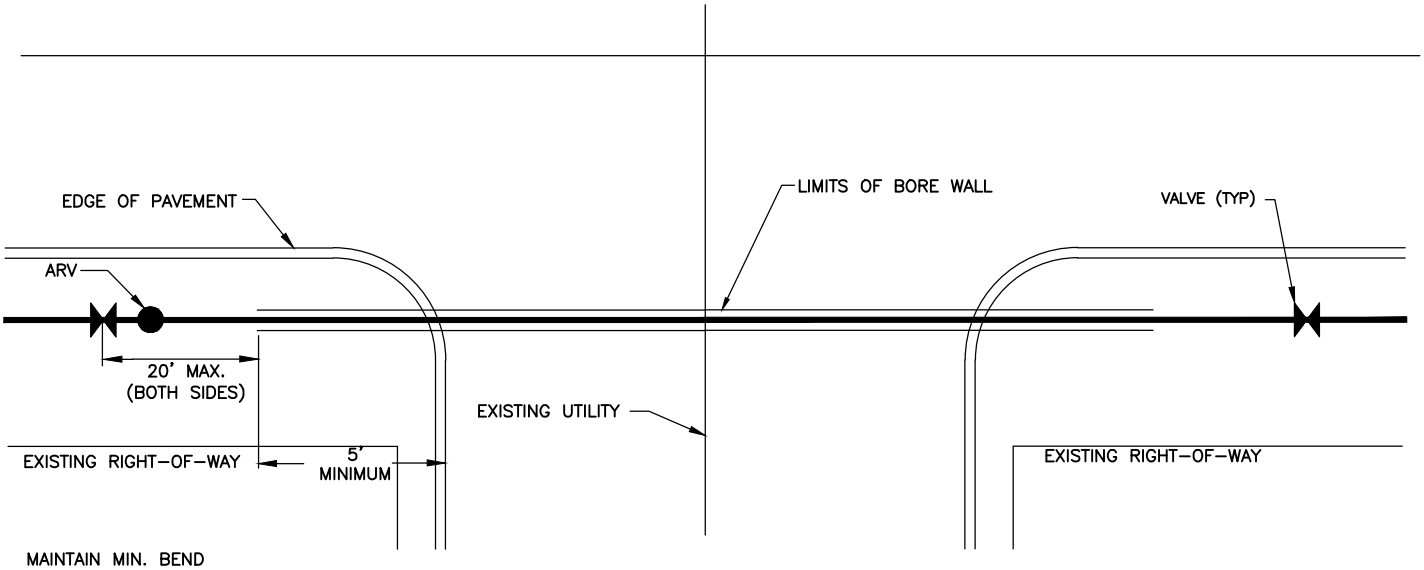
TYPICAL VALVE SETTING DETAIL

NTS

REVISION DATE:
JULY 2018

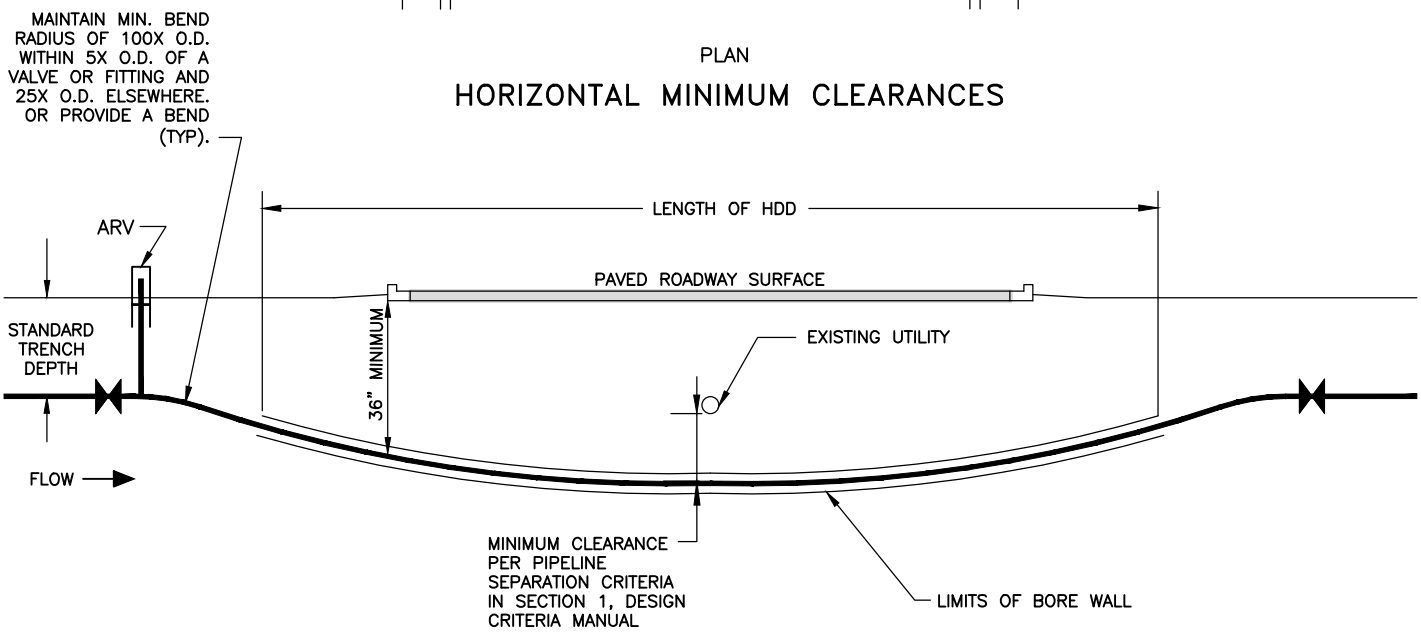
Collier County

SHEET NO.
G-7



PLAN

HORIZONTAL MINIMUM CLEARANCES



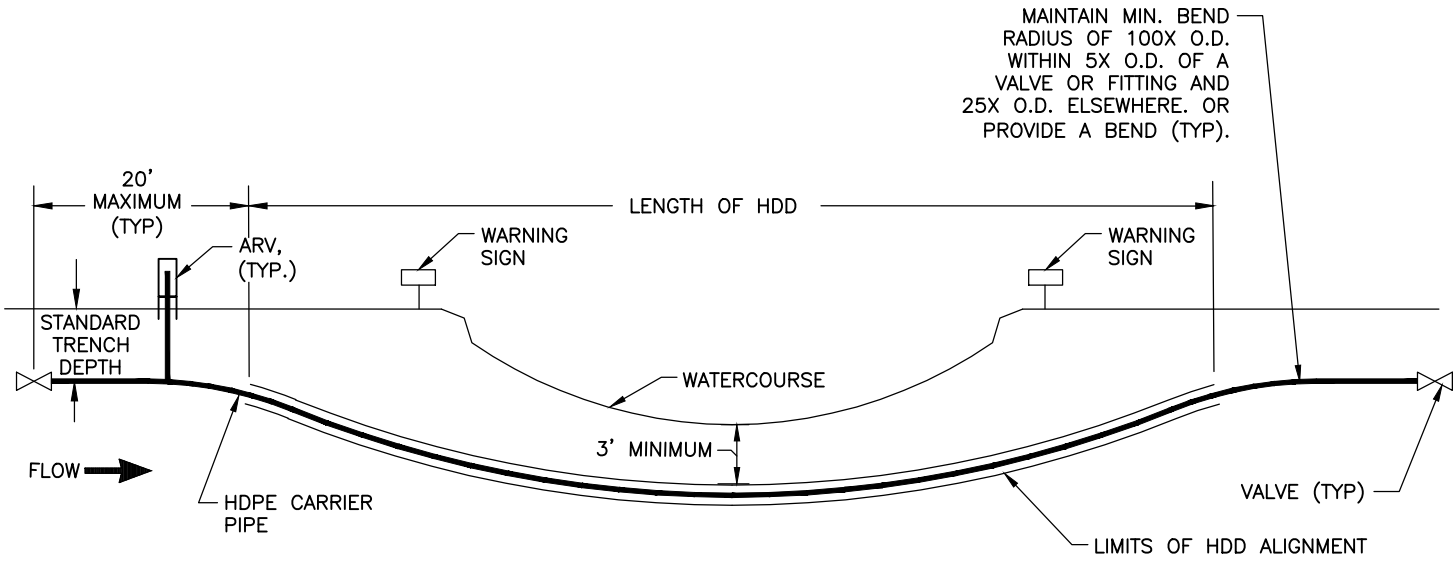
PROFILE

VERTICAL MINIMUM CLEARANCES

HDD INSTALLATION NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE COLLIER COUNTY UTILITIES TECHNICAL SPECIFICATION SECTION 330523.13.
2. ALL HDD INSTALLATION ACTIVITIES SHALL BE IN ACCORDANCE WITH THE FLORIDA D.O.T. UTILITY ACCOMMODATIONS MANUAL AND THE COLLIER COUNTY UTILITIES STANDARDS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION OF AFFECTED AGENCIES AND COORDINATION WITH ALL UTILITIES PRIOR TO CONSTRUCTION.
4. ALL CONSTRUCTION MATERIALS, INCLUDING DRILLING FLUID, SHALL BE REMOVED FROM THE SITE PRIOR TO RESTORATION OF DISTURBED AREAS.
5. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
6. VALVES SHALL BE INSTALLED A MAXIMUM OF 20' FROM THE END OF ALL DIRECTIONAL DRILLS.

TYPICAL HORIZONTAL DIRECTIONAL DRILL (HDD) UNDER A ROADWAY	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-8
NTS			

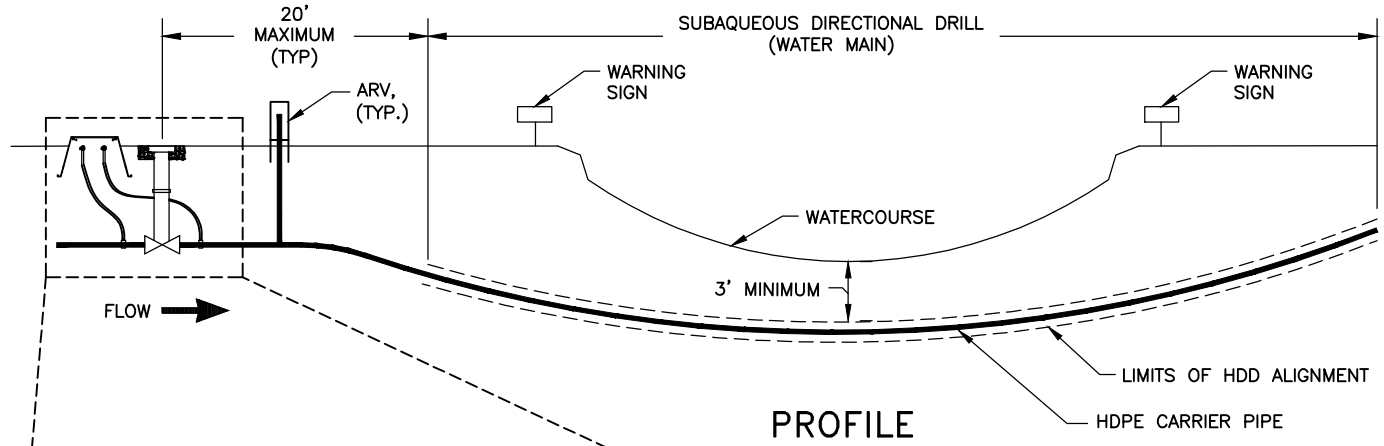


PROFILE

HDD INSTALLATION NOTES:

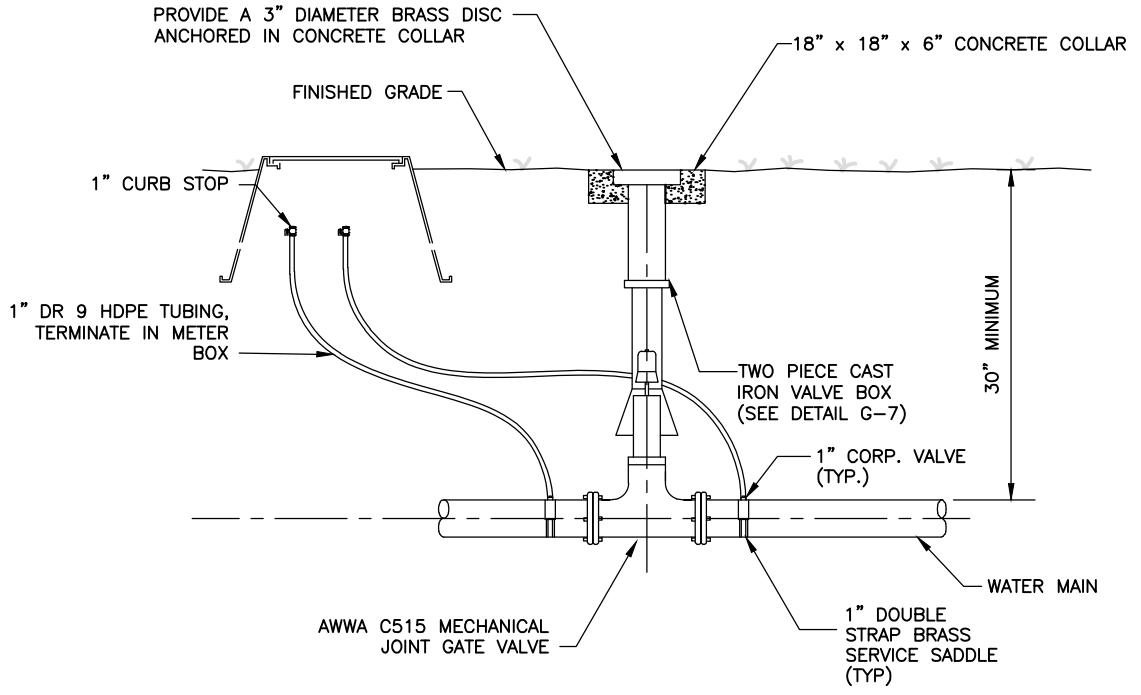
1. PROVIDE VALVES AT BOTH ENDS OF SUBAQUEOUS CROSSING. FOR WATERMAIN CROSSINGS, TWO 1" SERVICE TAPS AND SADDLES SHALL BE PROVIDED ON BOTH SIDES OF THE VALVE CLOSEST TO THE WATER SUPPLY AND TERMINATED INTO A METER BOX. SEE DETAIL G-9A.
2. PLACE ARV ON UPSTREAM SIDE. WHEN BIDIRECTIONAL FLOW CONDITIONS EXIST, AN ARV WILL BE REQUIRED AT EACH END OF THE HDD.
3. ALL SUBAQUEOUS CROSSINGS SHALL BE DISCUSSED AT A PLAN PRE-SUBMITTAL CONFERENCE WITH REPRESENTATIVES OF THE WATER OR WASTEWATER DEPARTMENTS. SUBAQUEOUS WATER MAINS SHALL REQUIRE APPROVAL BY THE WATER OR WASTEWATER DEPARTMENT.
4. WARNING SIGNS SHALL BE PLACED ALONG BANKS OF WATERWAY TO CLEARLY IDENTIFY SUBAQUEOUS CROSSING. SIGNS SHALL INDICATE TYPE OF PIPELINE AND DEPTH OF PIPELINE BELOW BOTTOM OF WATER BODY.
5. VALVES SHALL BE INSTALLED WITHIN 20' OF THE END OF ALL DIRECTIONAL DRILLS.
6. DEPTH OF COVER BENEATH THE WATERCOURSE SHALL BE A MINIMUM OF 3' OR AS REQUIRED BY ACOE, SFWMD, OR OTHER APPLICABLE REGULATORY AGENCY.

TYPICAL SUBAQUEOUS HORIZONTAL DIRECTIONAL DRILL (HDD)	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-9
NTS			



PROFILE

NOTES:
1. WHERE BI-DIRECTIONAL FLOW DOES NOT OCCUR PLACE LEAK DETECTION ASSEMBLY AT UPSTREAM VALVE LOCATION AS SHOWN.
2. PLACE METER BOX AS FAR FROM NEARBY ROADWAY AS PRACTICABLE.



SUBAQUEOUS WATER MAIN VALVE DETAIL

NTS

REVISION DATE:
JULY 2018

Collier County

SHEET NO.
G-9A

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET							
	VERTICAL BENDS							
	90°		45°		22-1/2°		11-1/4°	
	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
4	60	24	25	10	12	5	6	3
6	85	34	35	14	17	7	9	3
8	110	43	45	18	22	9	11	9
10	133	52	55	21	27	10	13	5
12	155	60	64	25	31	12	15	6
16	198	76	82	31	40	15	20	8
18	218	83	90	35	44	17	22	8
20	238	90	98	37	47	18	23	9
24	277	104	115	43	55	21	27	10
30	330	122	136	51	66	24	33	12
36	379	139	156	57	75	28	38	14

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET				
	HORIZONTAL BENDS				DEAD ENDS (2)
	90°	45°	22-1/2°	11-1/4°	
4	23	9	5	2	55
6	32	13	6	3	77
8	40	17	8	4	100
10	48	20	10	5	120
12	56	23	11	6	141
16	71	29	14	7	181
18	77	32	15	8	200
20	84	35	17	8	218
24	96	40	19	10	253
30	112	47	22	11	303
36	127	53	25	13	350

NOTES:

1. RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.

2. ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS. WITH RESTRAINT ON BOTH SIDES OF THE VALVE.

3. RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.

4. RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).

5. THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

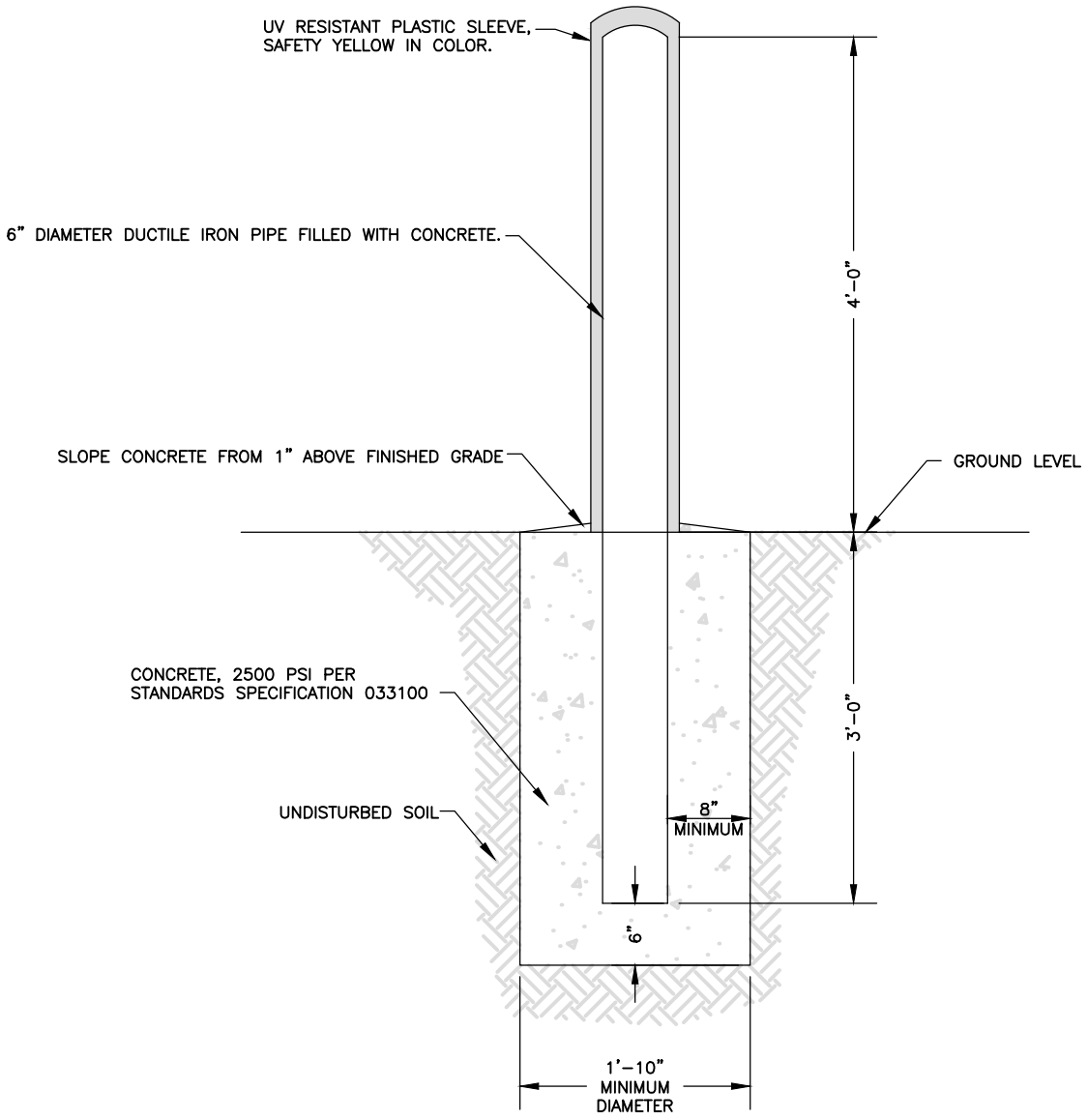
PIPE RESTRAINT SCHEDULE

NTS

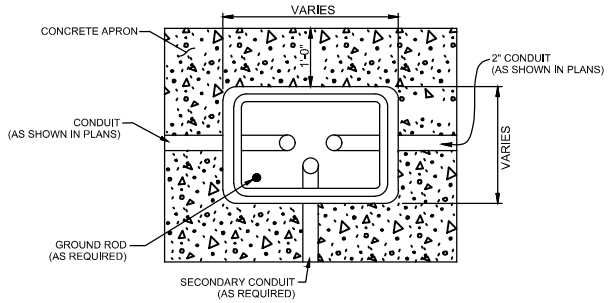
REVISION DATE:
JANUARY 2025

Collier County

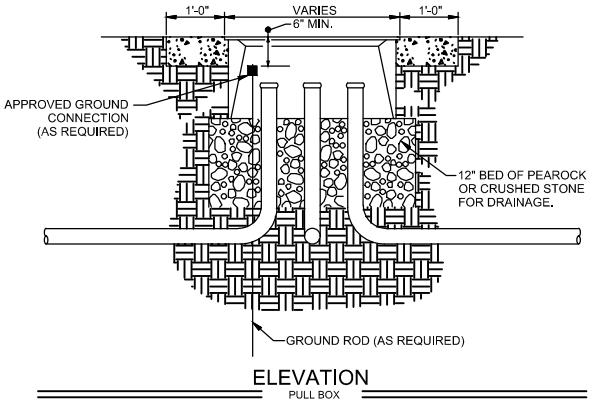
SHEET NO.
G-10



VEHICULAR GUARD POST DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. G-11
NTS			



PLAN

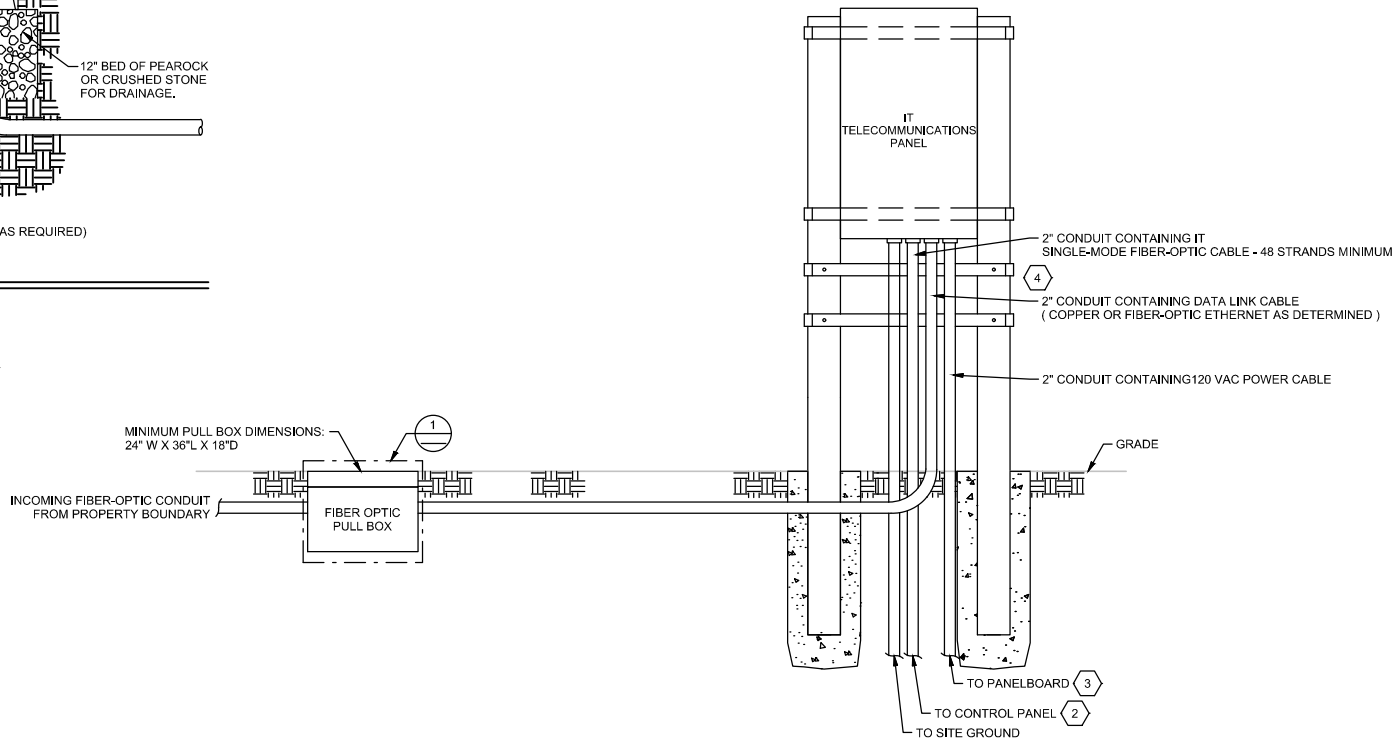


ELEVATION
PULL BOX

1 DETAIL

EQUIPMENT SPECIFICATIONS

MARK	
1	DRAWING NOT TO SCALE.
2	CONTROL PANEL LOCATION AND CONFIGURATION VARIES. REFER TO COUNTY DETAILS WW-8, WW-8A, AND WW-8B FOR DETAILS.
3	120VAC PANELBOARD LOCATED ON EQUIPMENT RACK WITH OTHER PANELS NOT SHOWN. REFER TO COUNTY DETAIL WW-9A FOR COMPLETE EQUIPMENT RACK LAYOUT AND ADDITIONAL PANELBOARD REQUIREMENTS.
4	ALL TELECOMMUNICATIONS CONDUIT ENTERING SITE FROM STATION SIDE HANDHOLE SHALL BE SCH 80 PVC UNLESS OTHERWISE NOTED.
5	REFER TO COUNTY SPECIFICATIONS FOR DETAILED REQUIREMENTS ON MATERIALS OF CONSTRUCTION AND INSTALLATION METHODS.



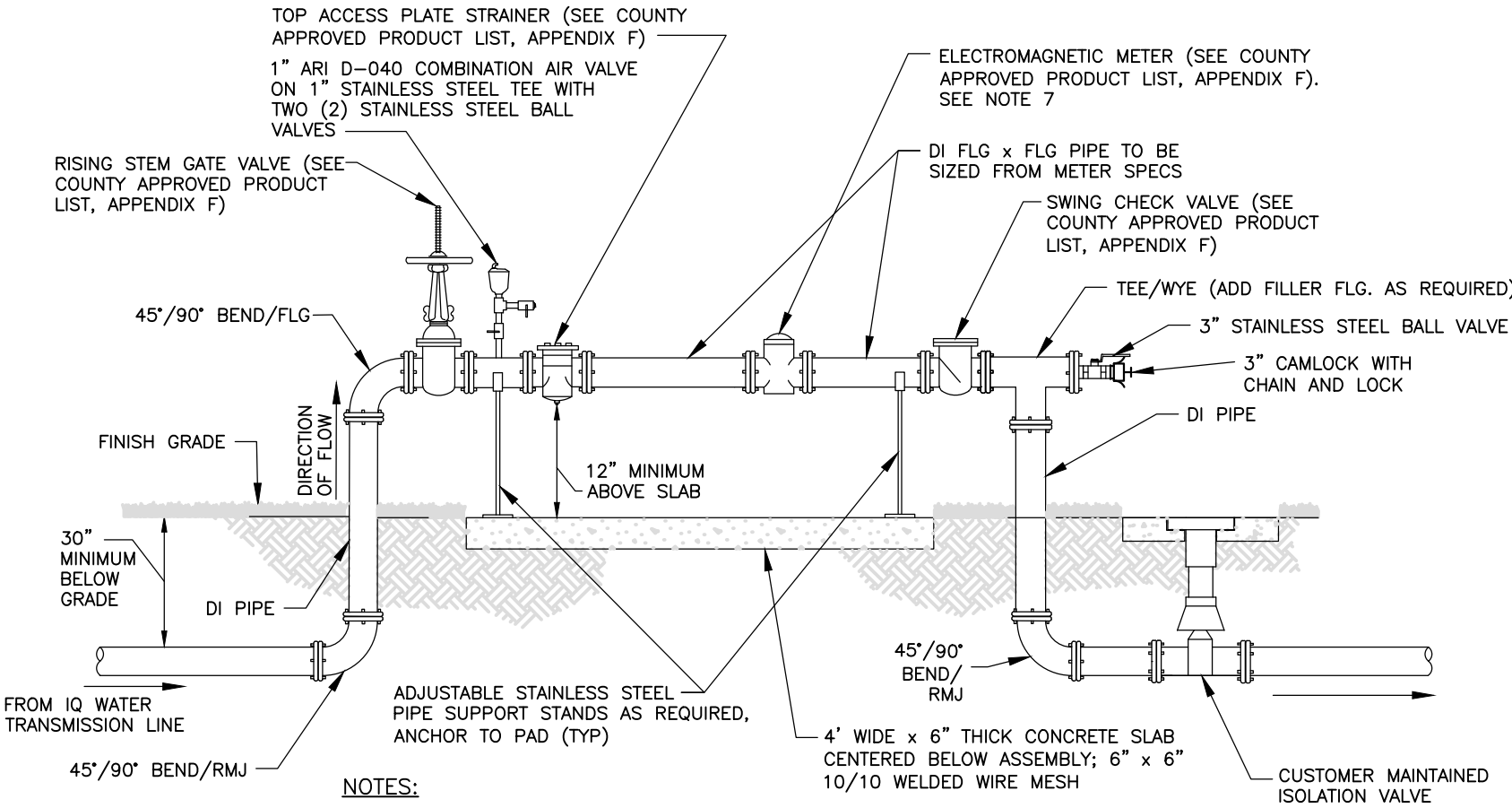
IT FIBER-OPTIC TELECOMMUNICATIONS DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
G-12



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE PAINTED PANTONE PURPLE 522-C.
2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. SUBMIT FOR REVIEW AND APPROVAL. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. ALL PIPES UNDER 3" SHALL BE BRASS.
6. METER ASSEMBLY SHALL BE LOCATED WITHIN C.U.E.
7. USE 45-DEGREE BENDS WHERE POSSIBLE.

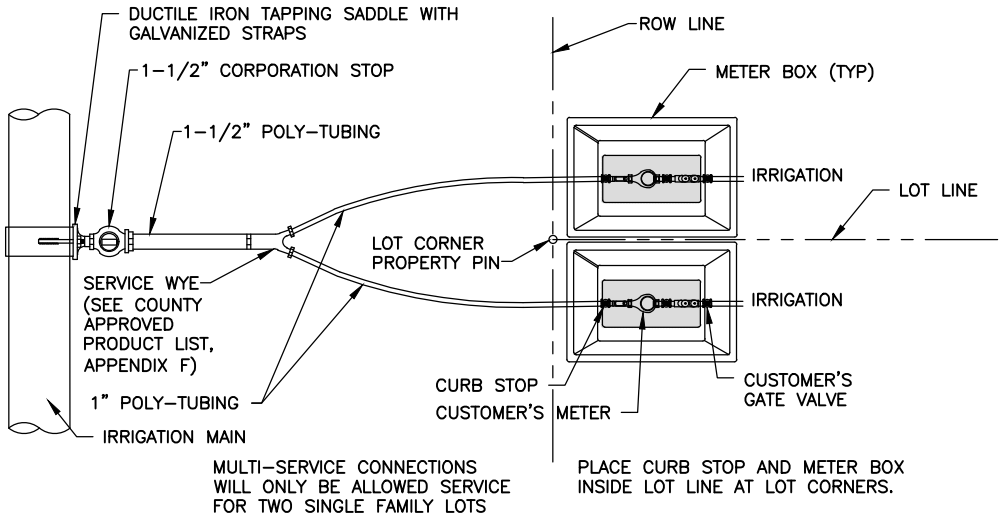
STANDARD IRRIGATION WATER NON-TELEMETRY METER ASSEMBLY 3" AND LARGER

NTS

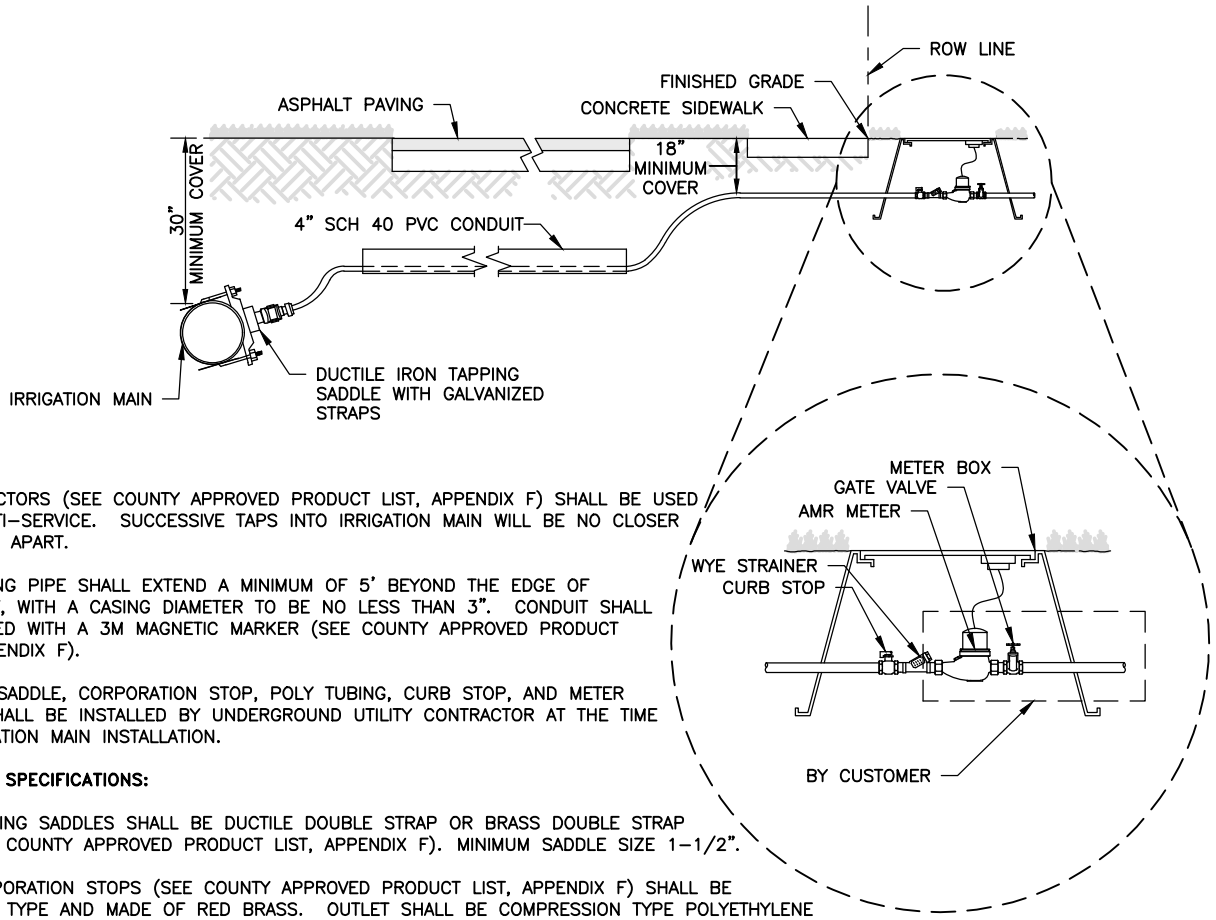
REVISION DATE:
JULY 2018

Collier County

SHEET NO.
NP-1



MULTIPLE METER SERVICE CONNECTIONS



NOTES:

1. Y CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI–SERVICE. SUCCESSIVE TAPS INTO IRRIGATION MAIN WILL BE NO CLOSER THAN 24" APART.

2. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 3". CONDUIT SHALL BE MARKED WITH A 3M MAGNETIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).

3. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF IRRIGATION MAIN INSTALLATION.

4. **MATERIAL SPECIFICATIONS:**

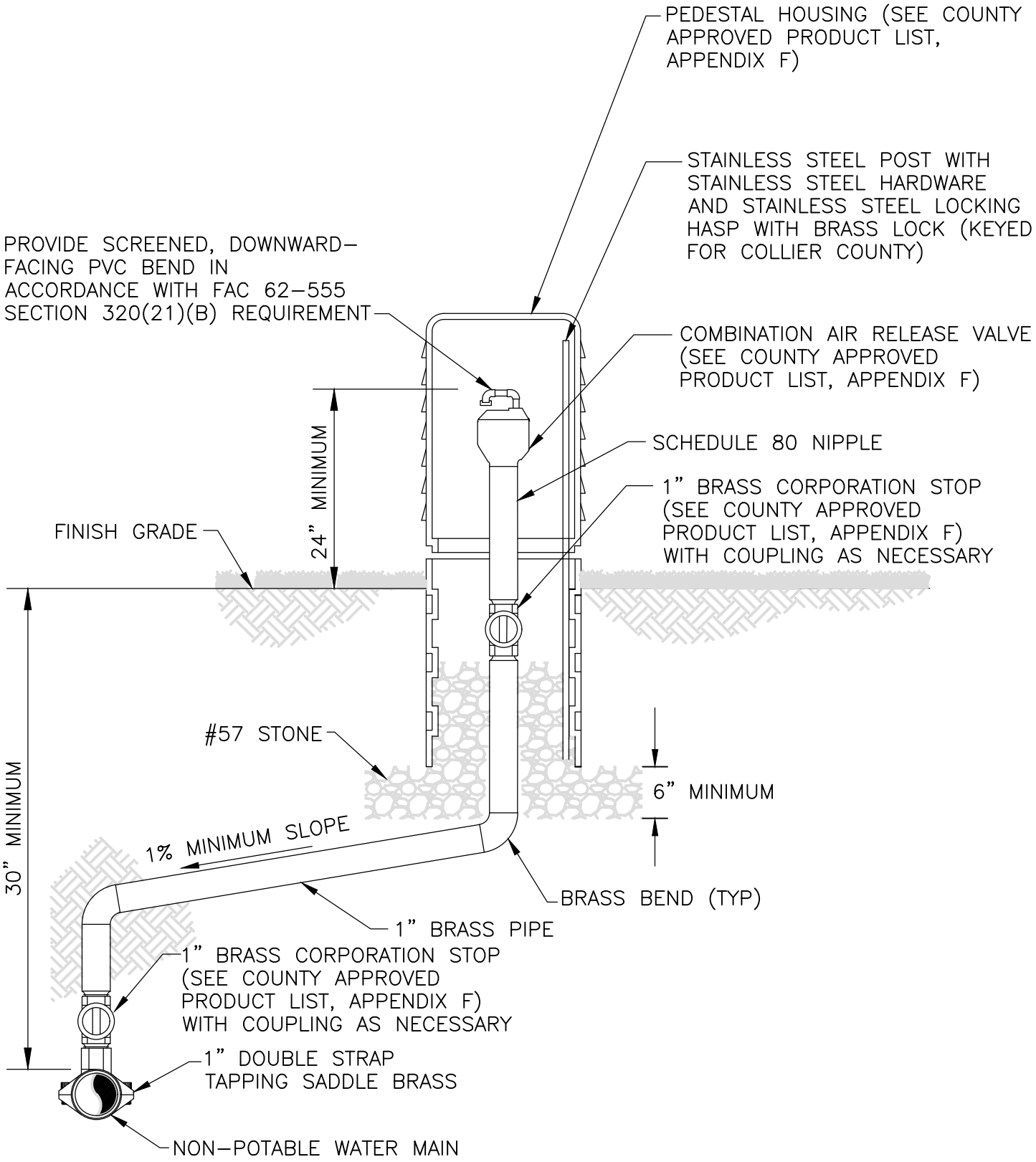
   A. TAPPING SADDLES SHALL BE DUCTILE DOUBLE STRAP OR BRASS DOUBLE STRAP (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F). MINIMUM SADDLE SIZE 1–1/2".

   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.

   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.

   D. AUTOMATIC METER READER (AMR) METER BOXES (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL HAVE CAST IRON READ LID.

TYPICAL IRRIGATION SERVICE METER SETTING DETAIL FOR CONNECTION TO IRRIGATION MAIN NTS	REVISION DATE: MAY 2009	Collier County	SHEET NO. NP–2



REUSE, RAW AND SUPPLEMENTAL WATER AIR RELEASE VALVE DETAIL	NTS	REVISION DATE: MAY 2009	SHEET NO. NP-4

Collier County

GENERAL NOTES:

1. ALL ABOVE GROUND PIPING SHALL BE PAINTED PANTONE PURPLE 522–C.

2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL HARDWARE NUTS AND BOLTS SHALL BE STAINLESS STEEL.

3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.

4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SHALL SLAB AND PROVIDE A 3' ACCESS OPENING.

5. ALL PIPES UNDER 3" SHALL BE BRASS.

6. METER ASSEMBLY SHALL BE LOCATED WITHIN COUNTY UTILITY EASEMENT.

7. ALL BELOW GRADE GROUND CONNECTIONS TO BE VIA EXOTHERMIC WELD (CADWELD) UNLESS INDICATED OTHERWISE.

CONTROL/ELEMENTARY SYMBOLS

- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- AR — ALARM RELAY
- AT — ALARM TIMER
- CR — CONTROL RELAY
- F/T FIT — FLOW INDICATOR TRANSMITTER (TOTALIZER)
- L/T LIT — LEVEL INDICATOR TRANSMITTER
- P/G — PRESSURE GAUGE
- TS — TAMPER SWITCH
- S/S — SURGE SUPPRESSION DEVICE
- SV — SOLENOID VALVE
- A — ALARM INDICATING LIGHT
- R — RUN INDICATING LIGHT
- MOMENTARY CONTACT PUSHBUTTON
- MOMENTARY BREAK PUSHBUTTON OR RESET
- MAINTAINED CONTACT ON–OFF SWITCH
- FUSE
- MOLDED CASE CIRCUIT BREAKER
- REMOTE TERMINAL BLOCK POINT
- TSP — TWISTED SHIELDED PAIRS

ELECTRICAL PLAN SYMBOLS

- SYSTEMS CABINET AS NOTED OR MARKED
- CONDUIT AND WIRE CONCEALED IN FLOOR SLAB OR UNDERGROUND
- MOV — MOTOR OPERATED VALVE CONNECTION
- SERVICE OR EQUIPMENT GROUND

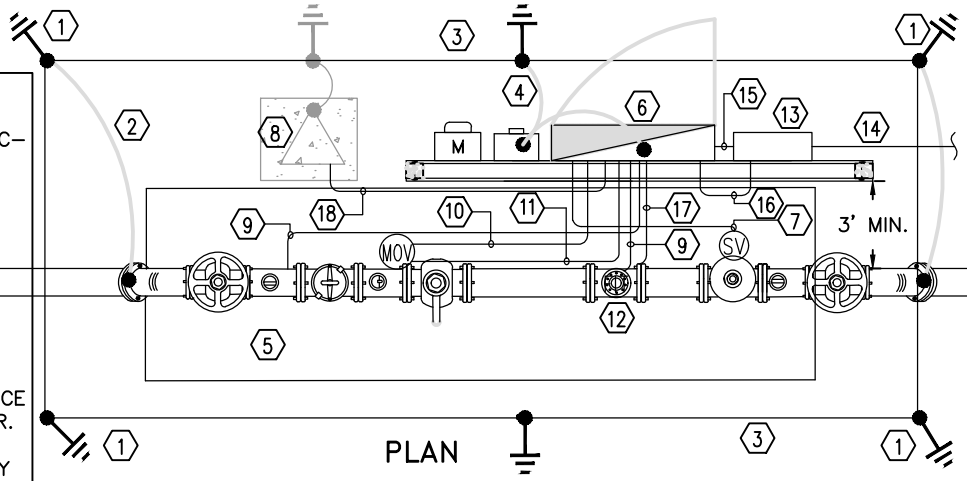
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE GENERAL NOTE AND KEYNOTES

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
NP–E1



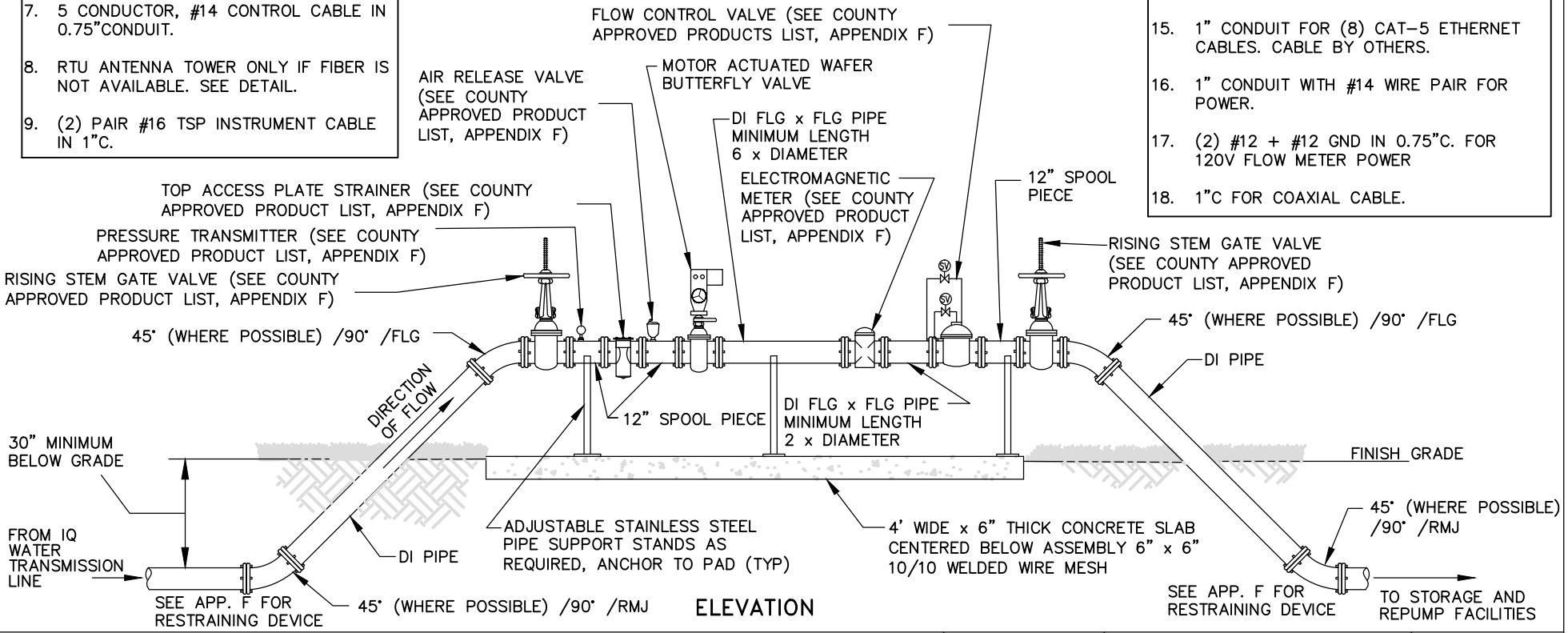
PLAN

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO EQUIPMENT/CABINETS ETC (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).
4. 60A, 240/120V, SINGLE PHASE SERVICE ENTRANCE RATED ENCLOSED BREAKER.
5. PRESSURE TRANSMITTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
6. VALVE CONTROL AND RTU PANEL (VCP).
7. 5 CONDUCTOR, #14 CONTROL CABLE IN 0.75"CONDUIT.
8. RTU ANTENNA TOWER ONLY IF FIBER IS NOT AVAILABLE. SEE DETAIL.
9. (2) PAIR #16 TSP INSTRUMENT CABLE IN 1"C.

KEYNOTES CONTINUED...

10. (2) #12 + #12 GND IN 0.75"C. FOR 120V MOV POWER
11. 14 CONDUCTOR #14 CONTROL CABLE IN 1.25" C.
12. ELECTROMAGNETIC FLOW METER WITH 4-20MA OUTPUT AND PULSE FLOW TOTALIZATION.
13. FIBER-OPTIC CONTROL ENCLOSURE, AMERICAN PRODUCTS PRODUCT #AM-462418-24RU.
14. 2" CONDUIT FOR FIBER-OPTIC CABLE. PROVIDE STUB-UP FOR SPLICE. CABLE BY OTHERS.
15. 1" CONDUIT FOR (8) CAT-5 ETHERNET CABLES. CABLE BY OTHERS.
16. 1" CONDUIT WITH #14 WIRE PAIR FOR POWER.
17. (2) #12 + #12 GND IN 0.75"C. FOR 120V FLOW METER POWER
18. 1"C FOR COAXIAL CABLE.



ELEVATION

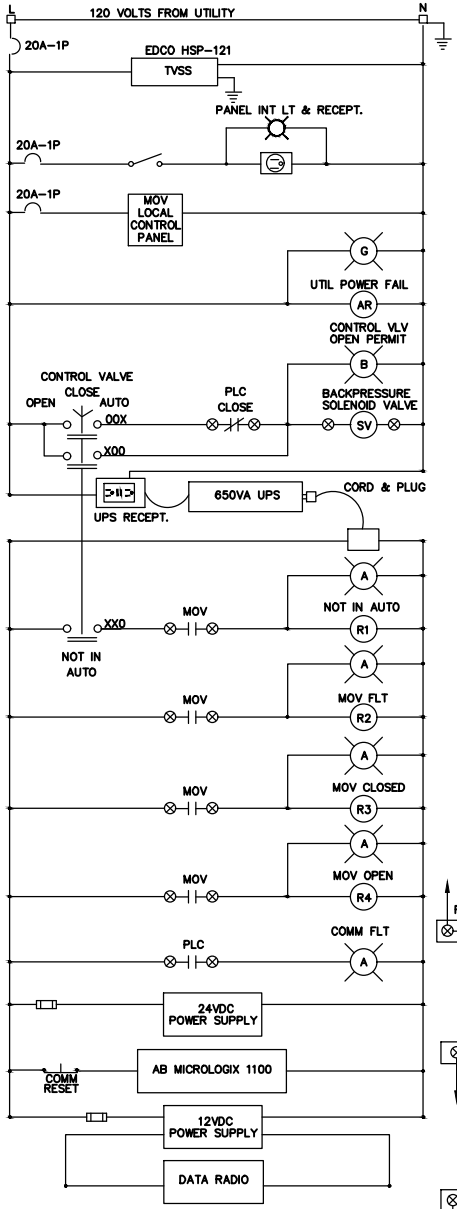
STANDARD IRRIGATION WATER METER ASSEMBLY 3" AND LARGER - TELEMETRY

NTS

REVISION DATE: JULY 2018

Collier County

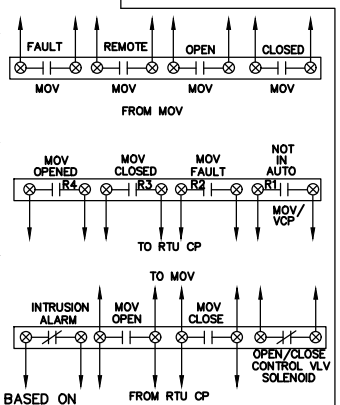
SHEET NO. NP-E2

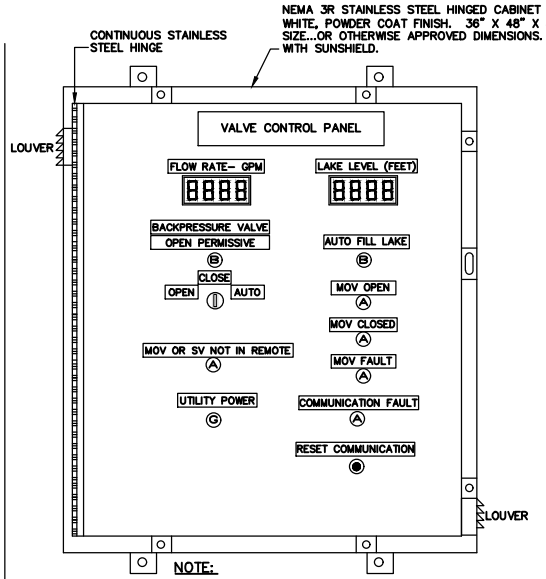


NOTE:

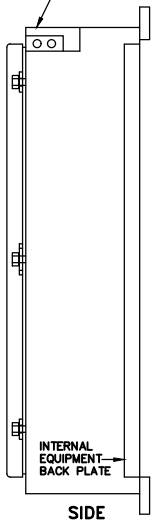
TYPICAL CONTROL PANEL WIRING AND MOUNTING IS BASED ON USING SINGLE PANEL FOR VALVE CONTROL AS WELL AS TELEMETRY. FOR SITES WHERE SEPARATE PANEL PROVISIONS ARE REQUIRED (ONE FOR VALVE CONTROL AND ONE FOR TELEMETRY), CONSULT WITH COUNTY PUED/IQ STAFF FOR APPROVED MODIFICATIONS TO THIS AND RELATED DRAWINGS.

VALVE CONTROL PANEL ELEMENTARY





FRONT



SIDE

KEYNOTES

1. DOOR CONTACT INTRUSION ALARM. PLUNGER TYPE
2. 12VDC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
3. 120VAC SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
4. COAX SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
5. 24VDC POWER SUPPLY (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
6. GFI DUPLEX RECEPTACLE
7. PLC
8. DATA SIGNAL LINE SURGE SUPPRESSOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. DATA RADIO (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
10. 110VAC CONTROL RELAY. TYPICAL UNLESS NOTED OTHERWISE
11. 24VDC CONTROL RELAY

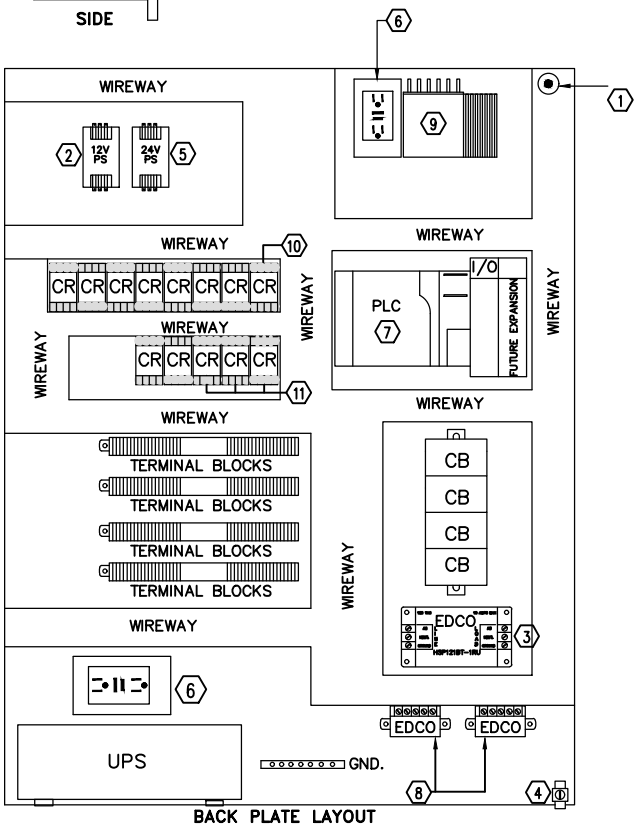
OPEN/CLOSE REUSE SERVICE CONNECTION RTU I/O POINT LIST

ANALOG IN
1) FLOW RATE
2) LAKE LEVEL/TANK LEVEL

DIGITAL IN
1) MOV OPEN
2) MOV CLOSED
3) MOV OR VCP NOT IN REMOTE
4) MOV FAULT
5) UTILITY POWER FAILURE
6) RAIN GAUGE*
* (REQUIRED ONLY AT SITES EQUIPPED WITH THE ISCO 674)
7) VALVE CONTROL PANEL NOT IN AUTO
8) DOOR INTRUSION ALARM
9) BACK PRESSURE SUSTAINING VALVE LIMIT SWITCH
10) PULSED FLOW RATE (FOR TOTALIZATION)

DIGITAL OUT
1) OPEN MOV
2) CLOSE MOV
3) BACK PRESSURE SUSTAINING VALVE SOLENOID

PLC
ALLEN BRADLEY MICROLOGIX 1100, P/N 1763-L16AWA WITH DUAL COMM PORTS (BUILT-IN ETHERNET/IP AND ISOLATED RS-232/RS-485COMBO); 4-PT ANALOG INPUT CARD, P/N 1762-IF4; AND EEPROM MEMORY MODULE; P/N 1763-MM1.



BACK PLATE LAYOUT

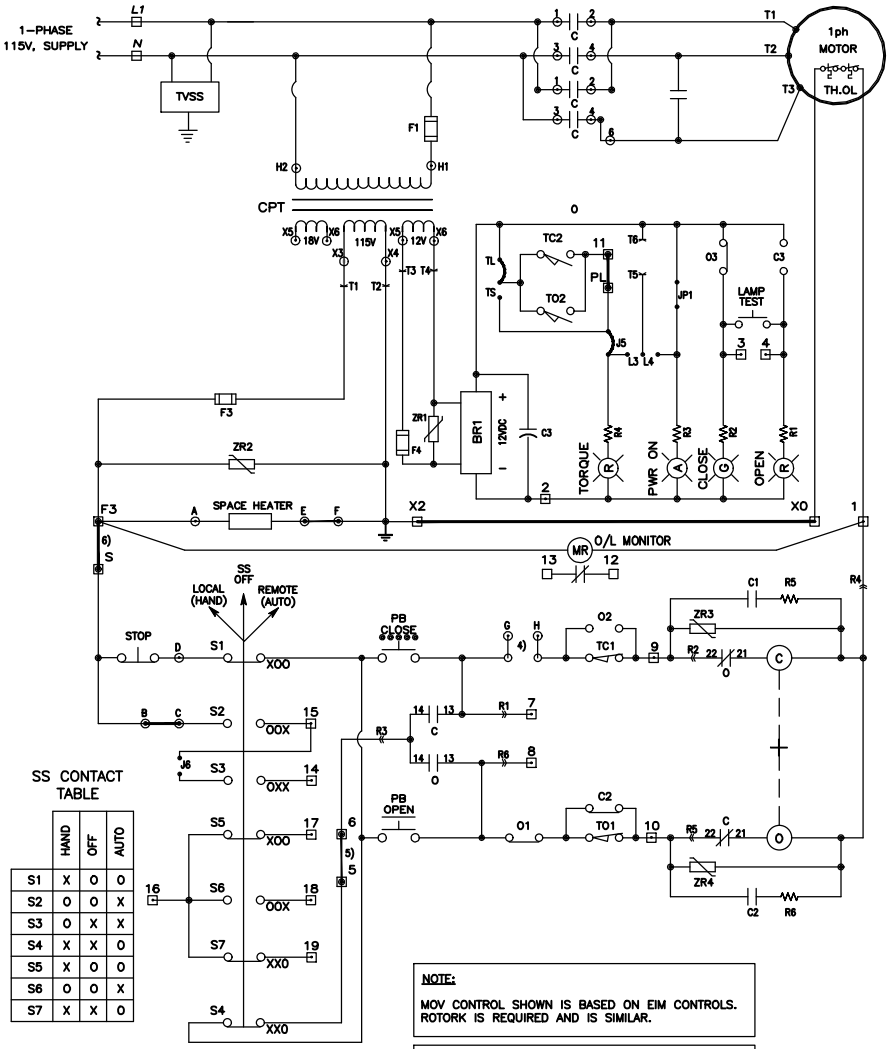
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LAYOUT & ELEMENTARY

NTS

REVISION DATE:
AUGUST 2008

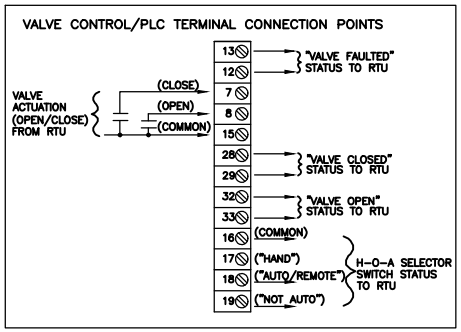
Collier County

SHEET NO.
NP-E3



SS CONTACT TABLE

	HAND	OFF	AUTO
S1	X	O	O
S2	O	O	X
S3	O	X	X
S4	X	X	O
S5	X	O	O
S6	O	O	X
S7	X	X	O



LEGEND

O–OPEN CONTACT
C–CLOSE CONTACT
Ⓞ–OPENING COIL
Ⓒ–CLOSING COIL
+–MECHANICAL INTERLOCK
CPT–CONTROL POWER TRANSFORMER
TH.OL–THERMAL OVERLOAD CONTACTS
SS–SELECTOR SWITCH (LOCAL–OFF–REMOTE)
PB–PUSHBUTTON
MR–MONITOR RELAY
ZR–ZENER DIODE
Ⓡ–RED INDICATING LIGHT
Ⓐ–AMBER INDICATING LIGHT
Ⓖ–GREEN INDICATING LIGHT

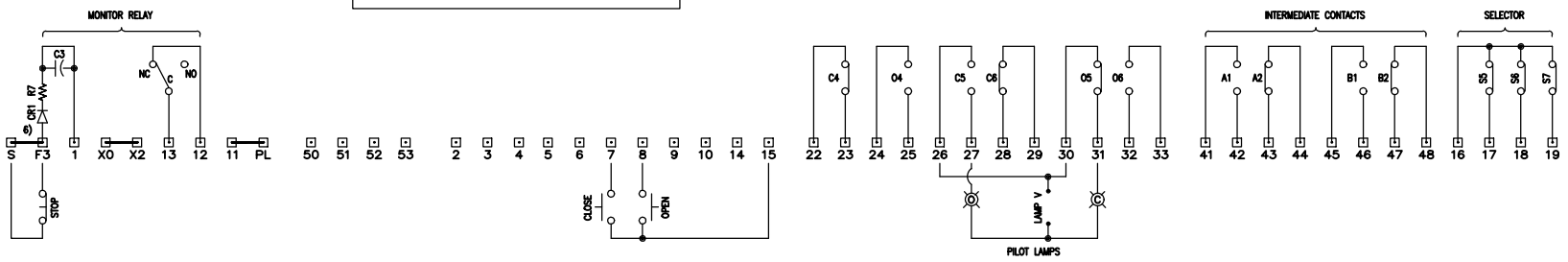
		VALVE POSITION			CONTACT FUNCTION
		CLOSE	MID	OPEN	
CLOSE rotor	C1	O	X	X	CLOSE COIL
	C2	X	O	O	BYPASS TO1
	C3	O	X	X	OPEN LAMP
	C4	X	O	O	
	C5	O	X	X	
	C6	X	O	O	
OPEN rotor	O1	X	X	O	OPEN COIL
	O2	O	O	X	BYPASS TC1
	O3	X	X	O	CLOSE LAMP
	O4	O	O	X	
	O5	X	X	O	
	O6	O	O	X	
A	A1	O		X	SPARE
	A2	X		O	SPARE
B	B1	O		X	SPARE
	B2	X		O	SPARE

NOTES

1) CONTACTS SHOWN: VALVE CLOSED; VOLTAGE: OFF; S/S: HAND
2) ⊡ CUSTOMER WIRES TO TERMINALS ON PWR AND TBM MODULES.
   ⊙ M2CP INTERNAL TERMINAL INTERCONNECT WIRING POINTS
   ——— FIELD CONNECTED WIRING BY OTHERS.
3) TORQUE SWITCH ( ) "TC1" & "TO1" NC CONTACTS OPEN, AND ( ) "TC2" & "TO2" N.O. CONTACTS MAKE ON FIELD ADJUSTABLE MECHANICAL OVERLOAD IN (C) "CLOSE" OR IN (O) "OPEN" DIRECTION.
4) FOR TORQUE SEATED VALVE: INSTALL G TO H STRAP ON LSM.
5) FOR MAINTAINED PB CONTROL: REMOVE 5 TO 6 STRAP ON TBM.
6) FOR REMOTE STOP PB OR RELAY: REMOVE F3 TO S STRAP ON TBM.
7) O & C (22–31) REVERSING CONTACTOR NC INTERLOCK CONTACTS.
   O & C (14–13) MOMENTARY PUSHBUTTON N.O. SEAL–IN CONTACTS.
8) MOTOR THERMAL CONTACTS OPEN WITH EXCESSIVE TEMPERATURE.
9) POSITION INDICATOR PILOT LIGHTS: LED SOLID–STATE
   "OPEN" INDICATES: FULL OPEN (RED)
   "CLOSE" INDICATES: FULL CLOSED (GREEN)
   MID–POSITION: BOTH "OPEN" AND "CLOSE" ILLUMINATED.
   "PWR ON" AND "TORQUE" INDICATORS ARE ONLY VISIBLE WITH COVER OPEN FOR CONVENIENCE DURING MAINTENANCE PROCEDURES.

NOTE:
MOV CONTROL SHOWN IS BASED ON EIM CONTROLS. ROTORK IS REQUIRED AND IS SIMILAR.

NOTE:
SET VALVE TO FAIL IN PLACE ON LOSS OF POWER.



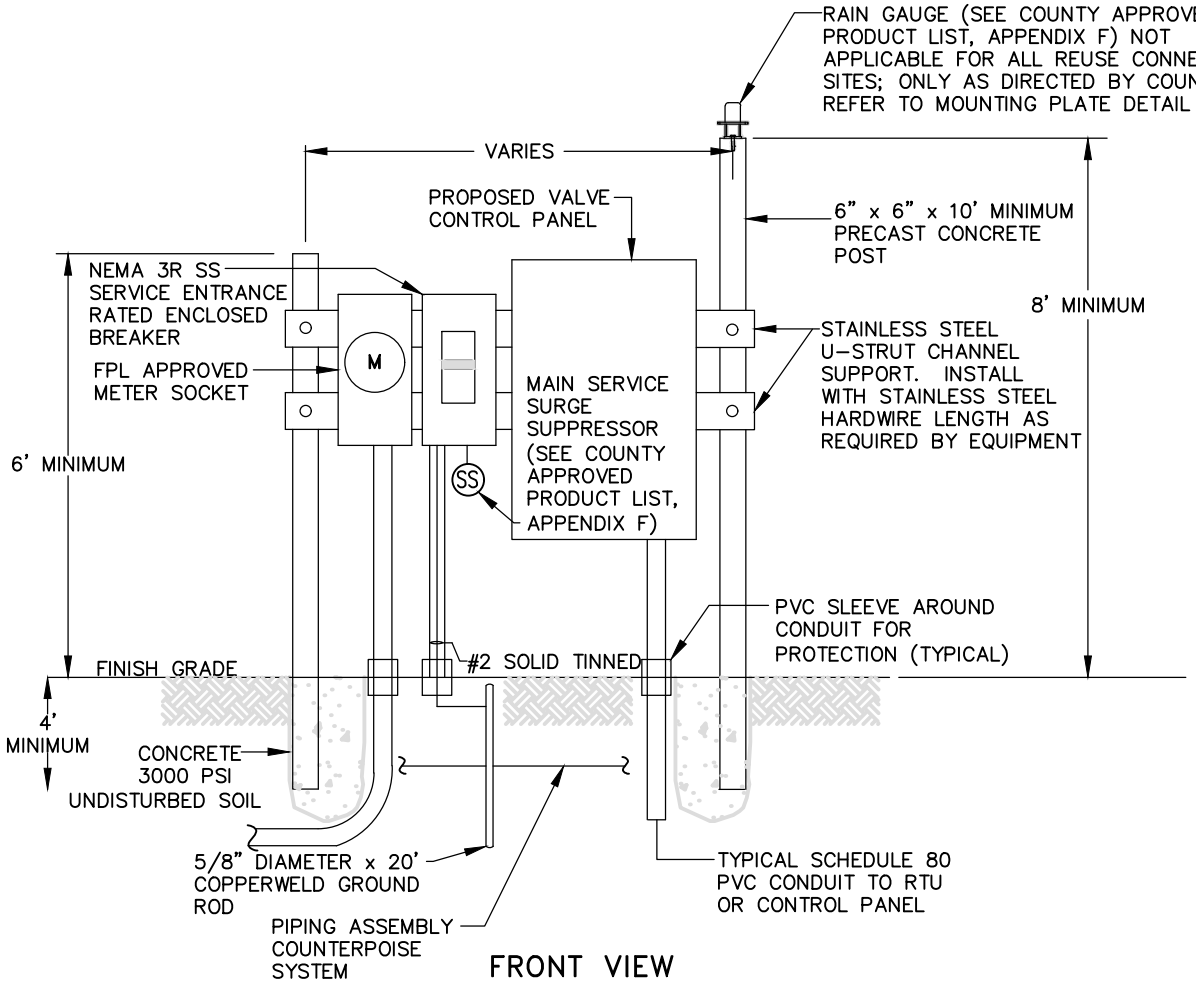
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
OPEN/CLOSED MOV CONTROL DIAGRAM

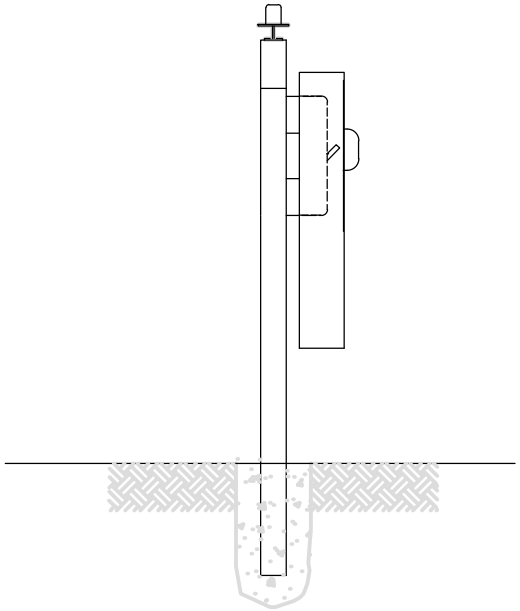
NTS

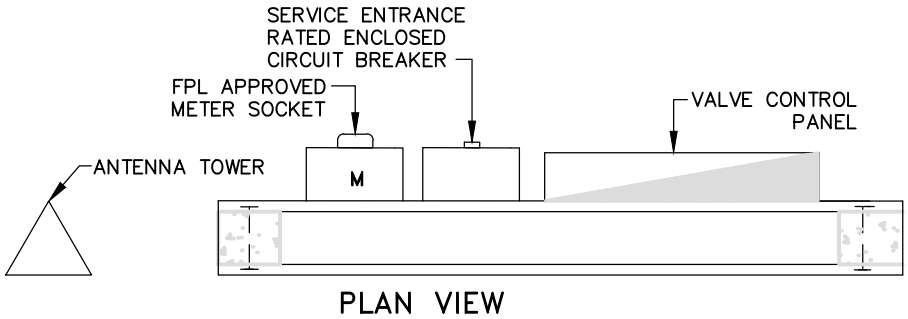
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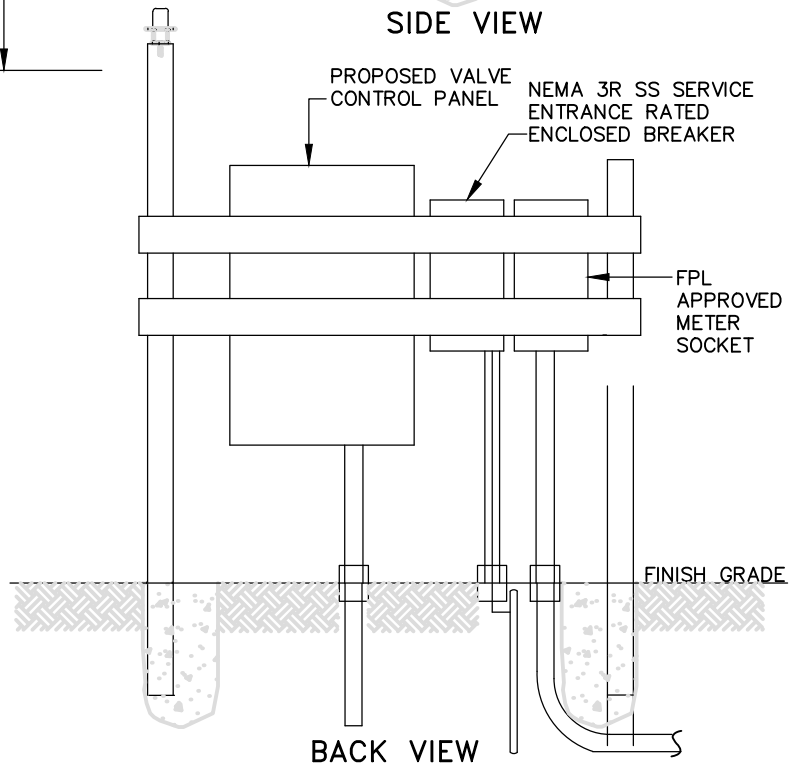
Collier County

SHEET NO.
NP–E4









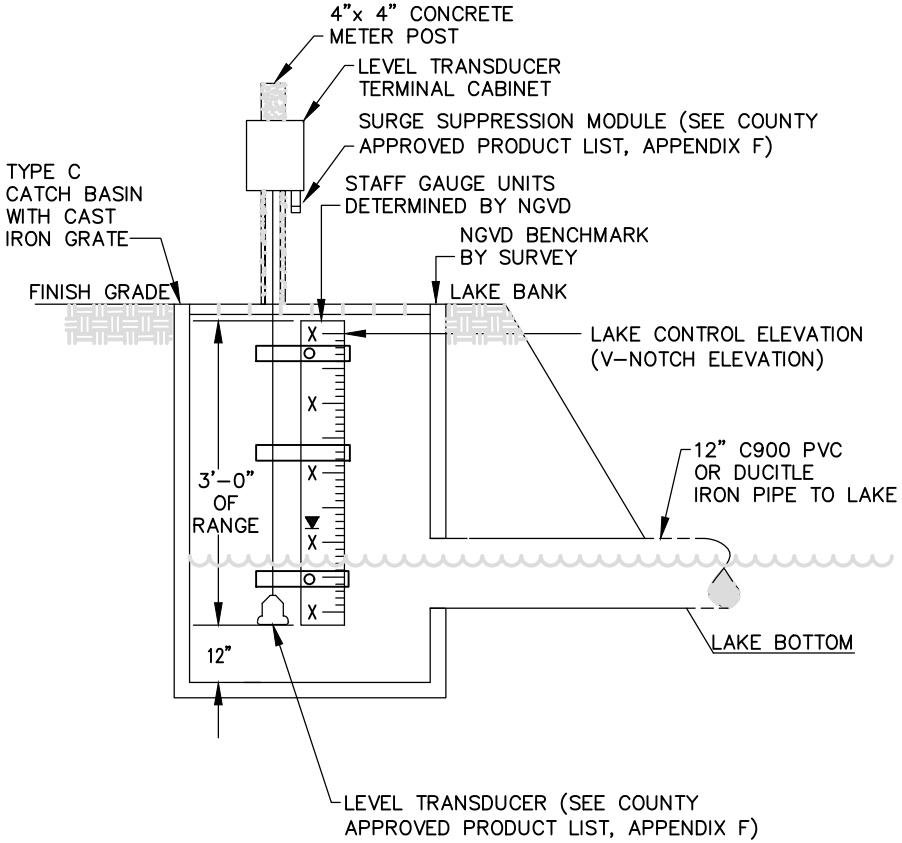
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE ELECTRICAL EQUIPMENT ELEVATIONS

NTS

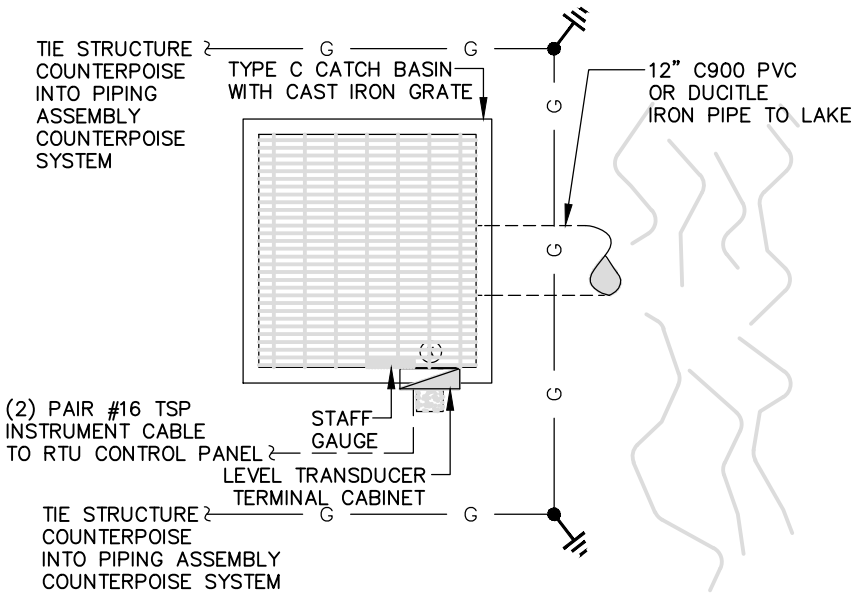
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E5



CROSS SECTION



PLAN VIEW

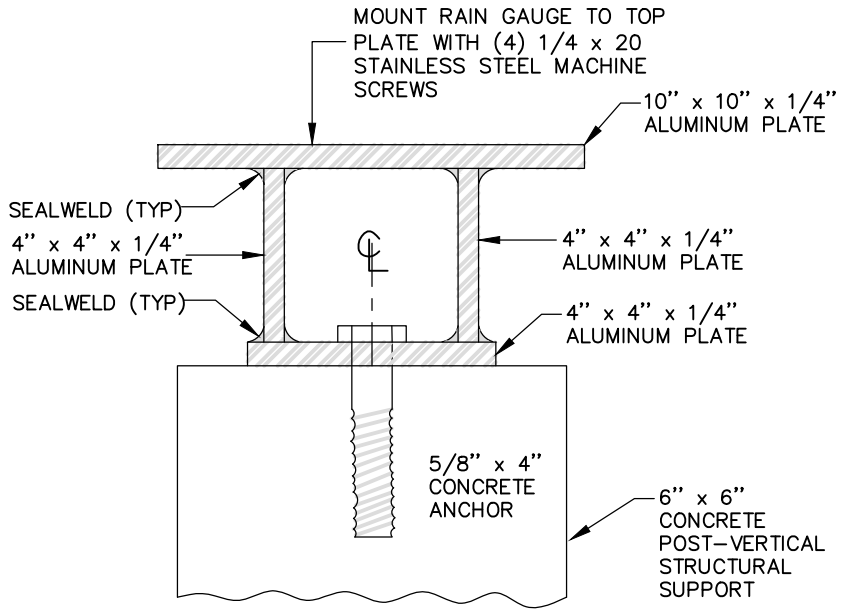
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LEVEL TRANSDUCER MOUNTING DETAILS

NTS

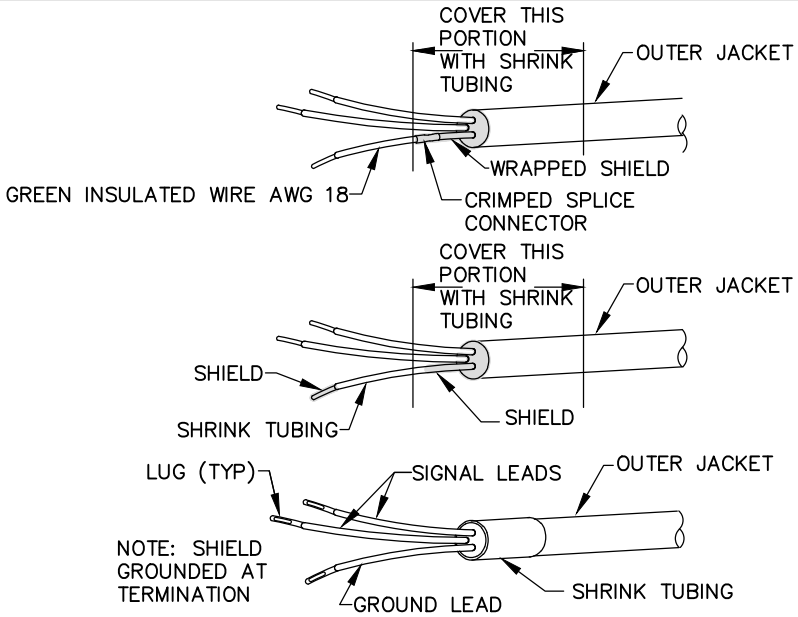
REVISION DATE:
AUGUST 2008

Collier County

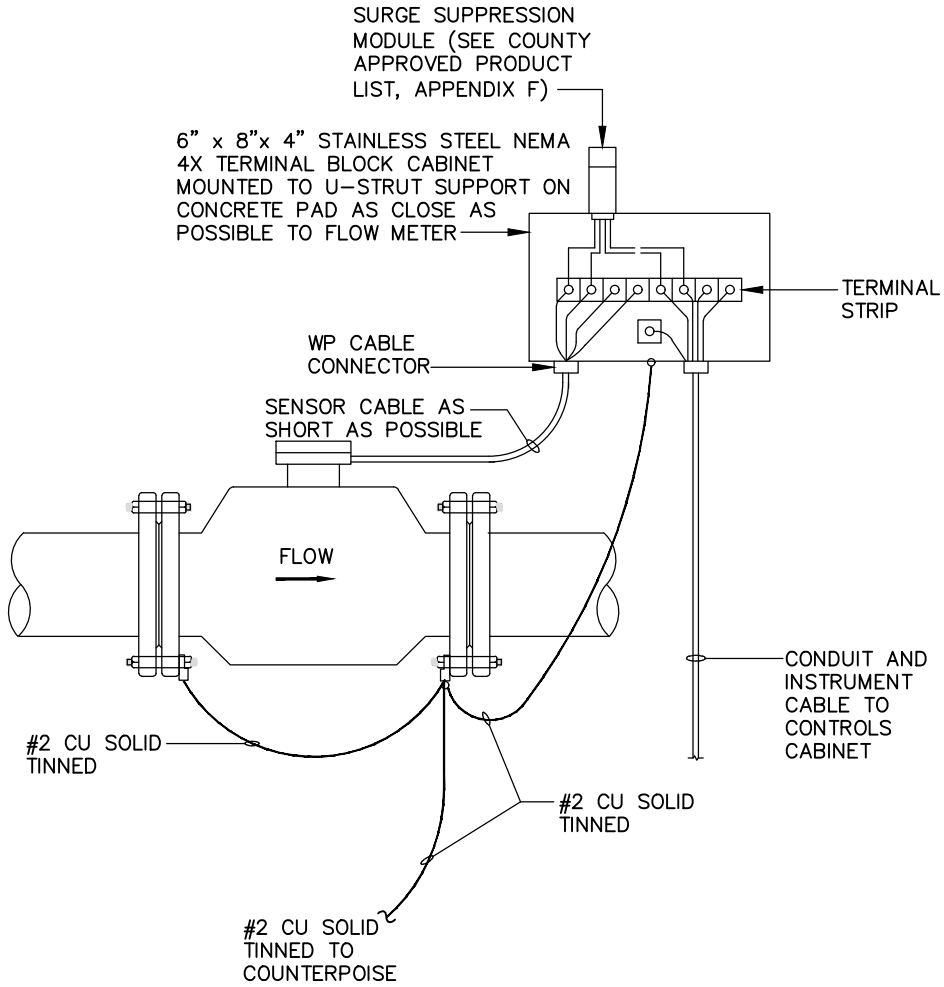
SHEET NO.
NP-E6



RAIN GAUGE MOUNTING PLATE



TERMINATION OF SHIELDED INSTRUMENT AND CONTROL CABLE



FLOW METER TRANSMITTER INSTALLATION DETAIL

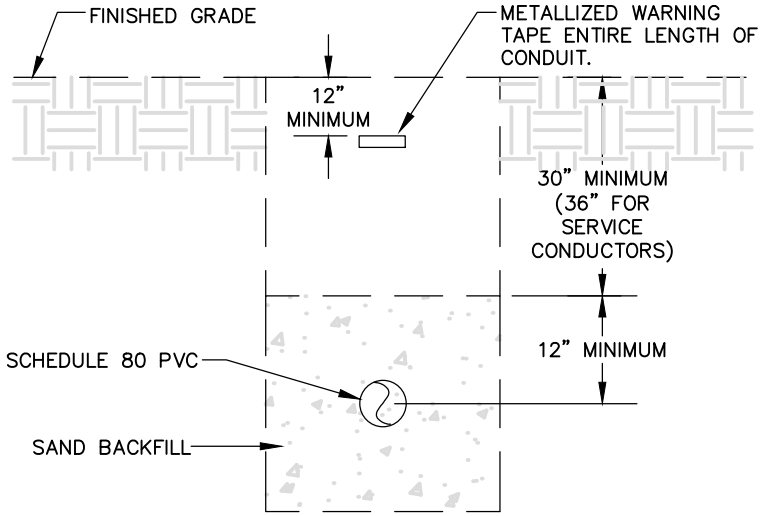
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE
SINGLE CONTROL PANEL SITE
ELECTRICAL DETAILS

NTS

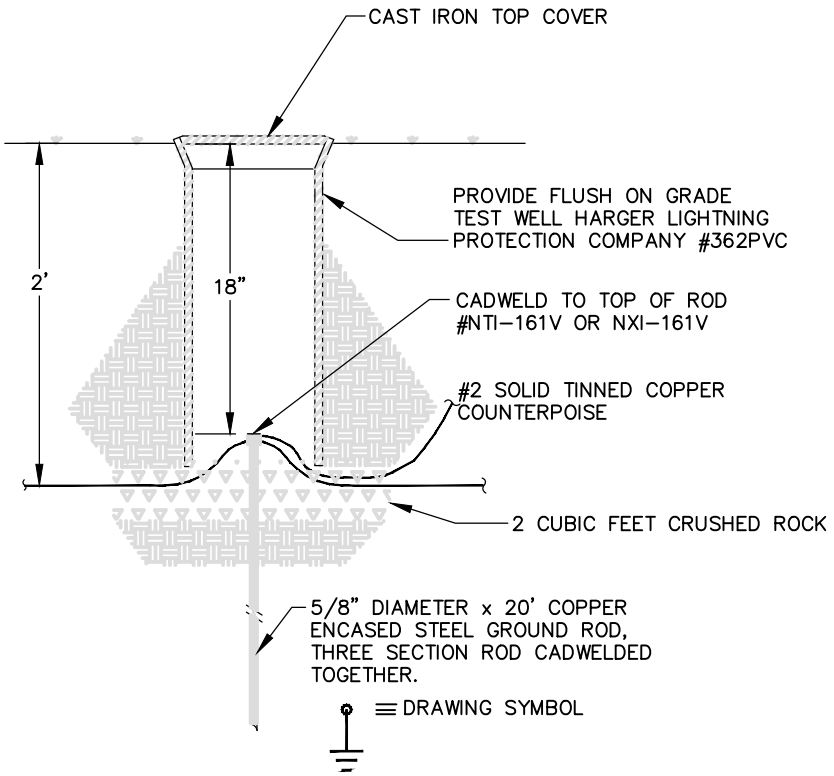
REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E7



UNDERGROUND CONDUIT INSTALLATION



TYPICAL GROUND ROD INSTALLATION DETAIL

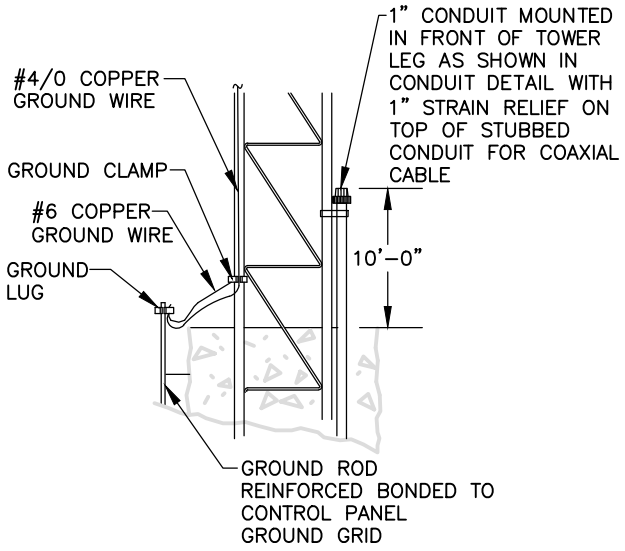
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE ELECTRICAL DETAILS

NTS

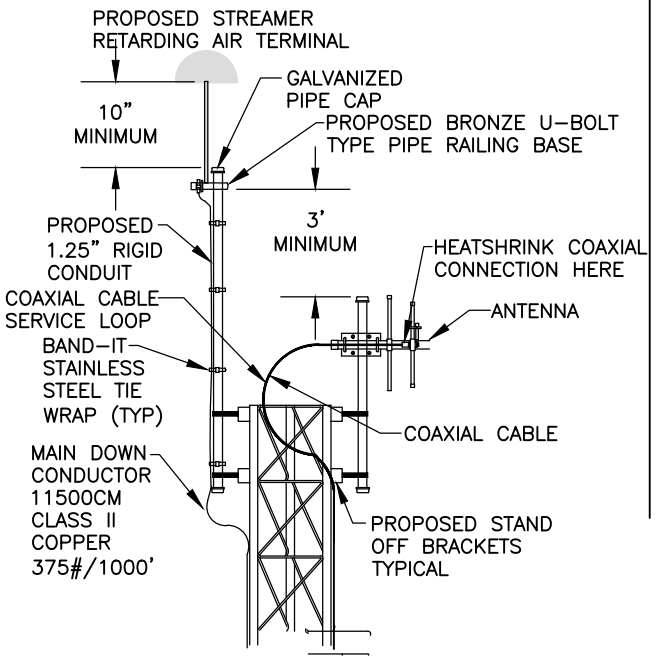
REVISION DATE:
APRIL 2006

Collier County

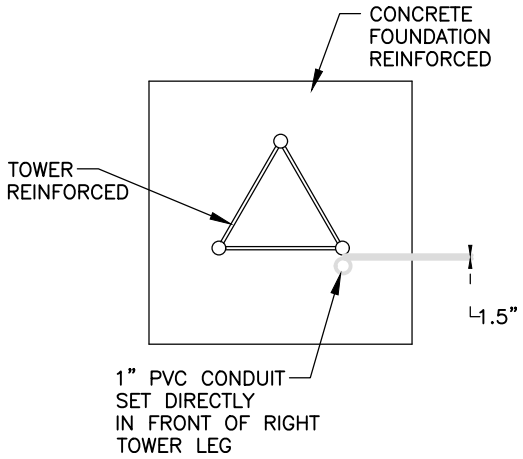
SHEET NO.
NP-E8



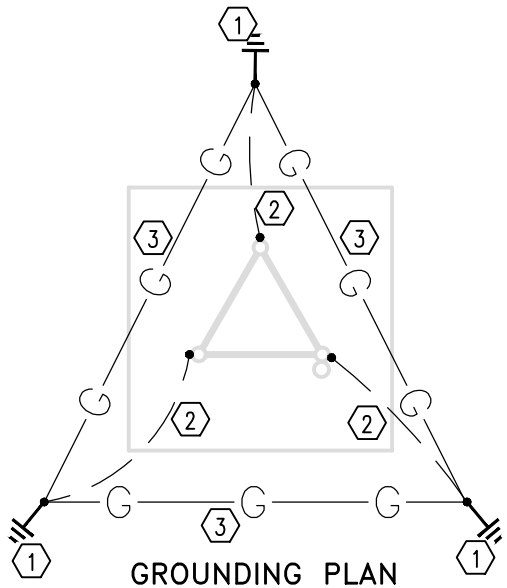
DETAIL #1 GROUNDING DETAIL



DETAIL #2 TOWER TOP DETAIL



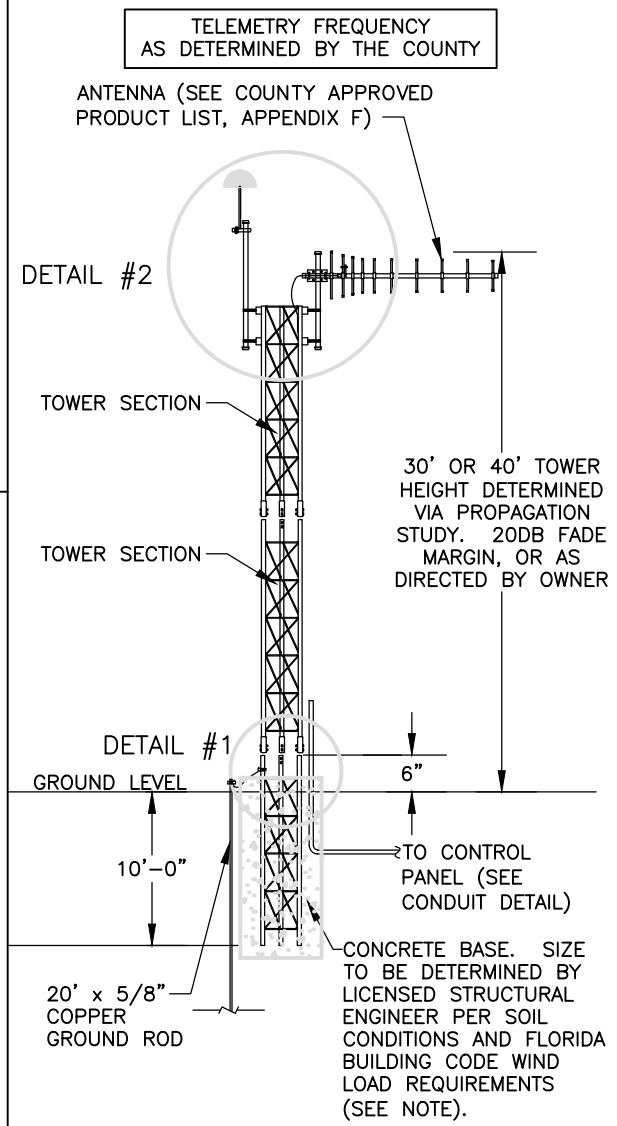
CONDUIT DETAIL TOP VIEW



GROUNDING PLAN

KEYNOTES:

1. 20' DRIVEN GROUND ROD WITH INSPECTION TEST WELL (SEE DETAIL) (TYP).
2. #2 TINNED SOLID COPPER TO TOWER LEG (TYP).
3. #2 TINNED BARE COPPER COUNTERPOISE LOOP GROUND (TYP).



NOTE:
TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS FOR 140 MPH WIND ZONE. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.

TYPICAL POLE DETAIL

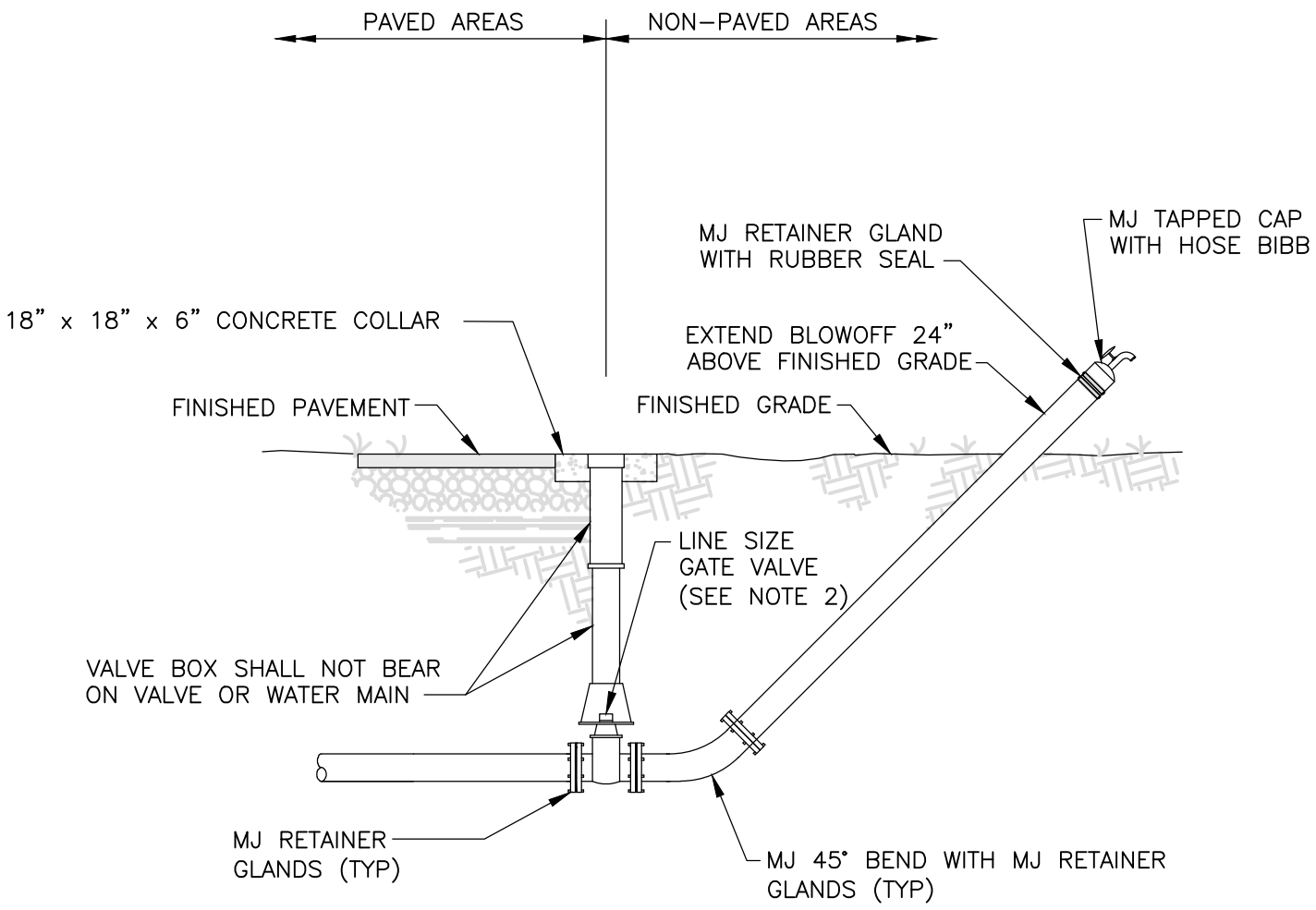
REUSE SYSTEM STANDARD SERVICE CONNECTIONS
OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE
TYPICAL RTU ANTENNA TOWER DETAILS

NTS

REVISION DATE:
AUGUST 2008

Collier County

SHEET NO.
NP-E9

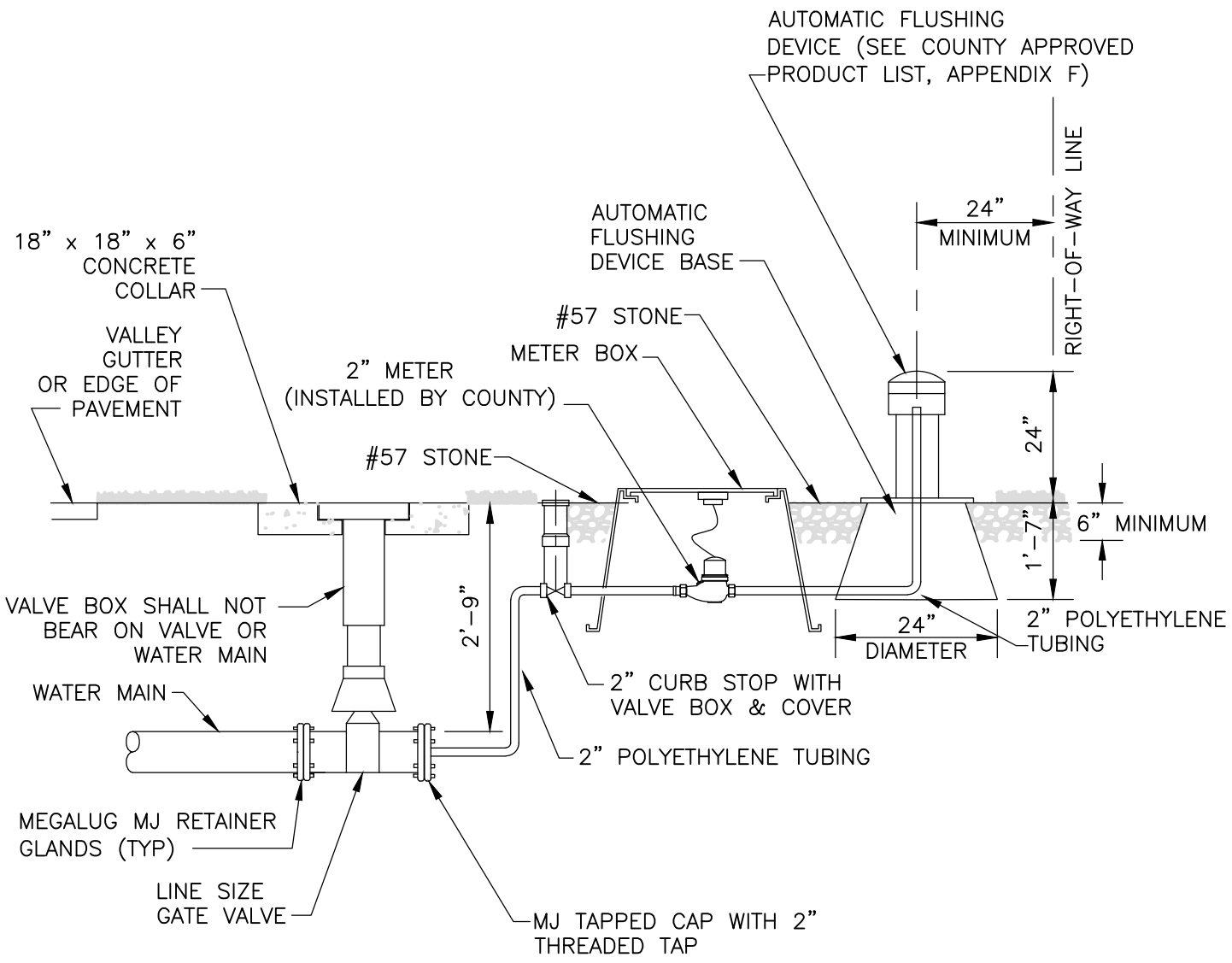


SIDE VIEW

NOTES:

1. MJ TAPPED CAP WITH HOSE BIBB IS TO BE REMOVED AFTER INITIAL BACTERIOLOGICAL CLEARANCE AND PRIOR TO WATER MAIN ACCEPTANCE.
2. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
3. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

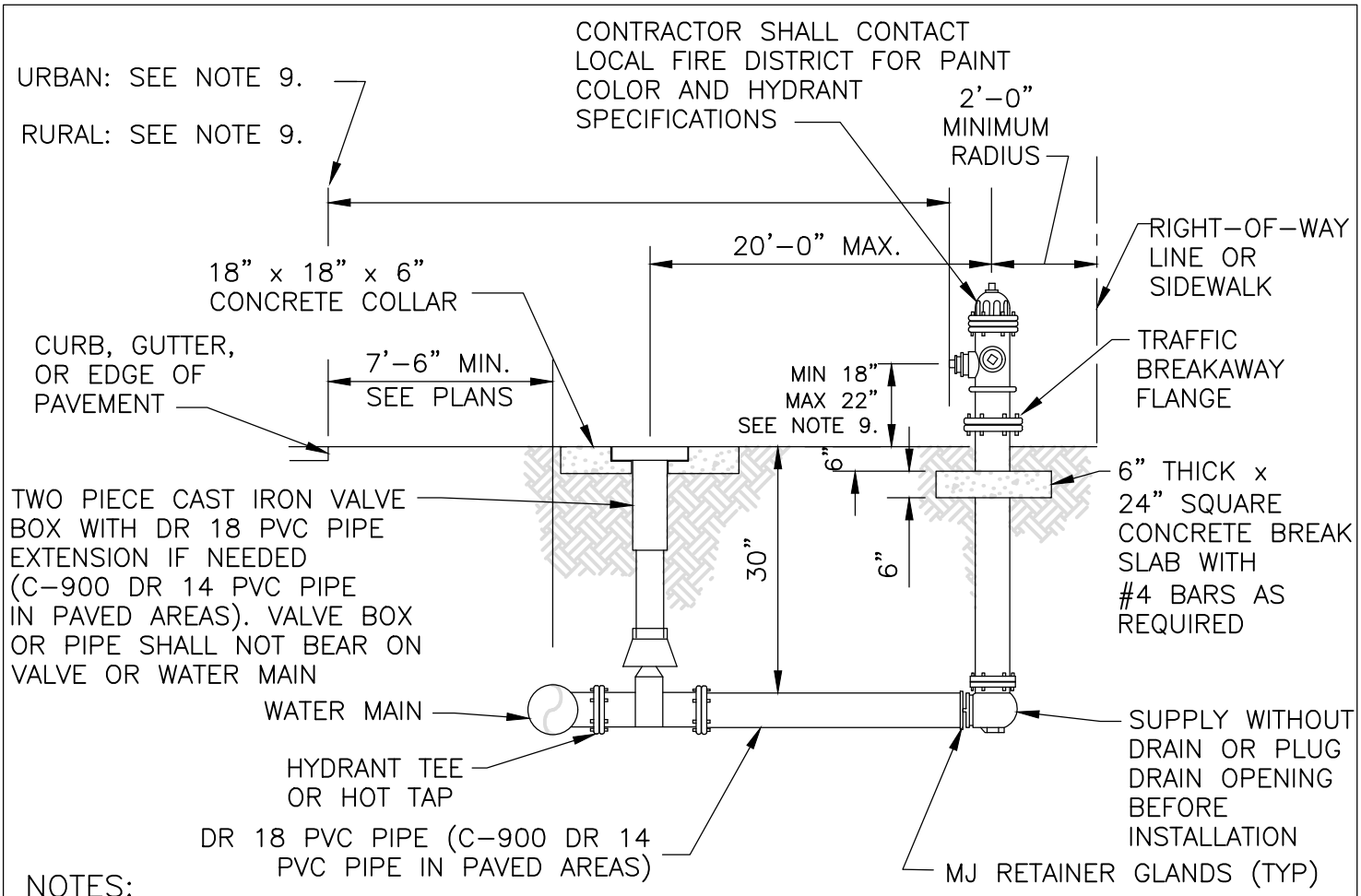
TEMPORARY BLOWOFF ASSEMBLY WITH BACTERIAL SAMPLING POINT DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W–1
NTS			



NOTES:

1. PIPING SHALL BE INSTALLED UP TO 2" CURB STOP WITH VALVE BOX AND COVER AT TIME OF MAIN INSTALLATION.
2. AUTOMATIC FLUSHING DEVICE SHALL BE SHUT OFF UNTIL MAIN LINE HAS BEEN BACTERIOLOGICALLY TESTED.
3. SEE TECHNICAL SPECIFICATIONS SECTION 331200 FOR GATE VALVE AND VALVE BOX REQUIREMENTS.
4. AT TIME OF ACCEPTANCE, WATER DEPARTMENT WILL INSTALL 2" METER.
5. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.

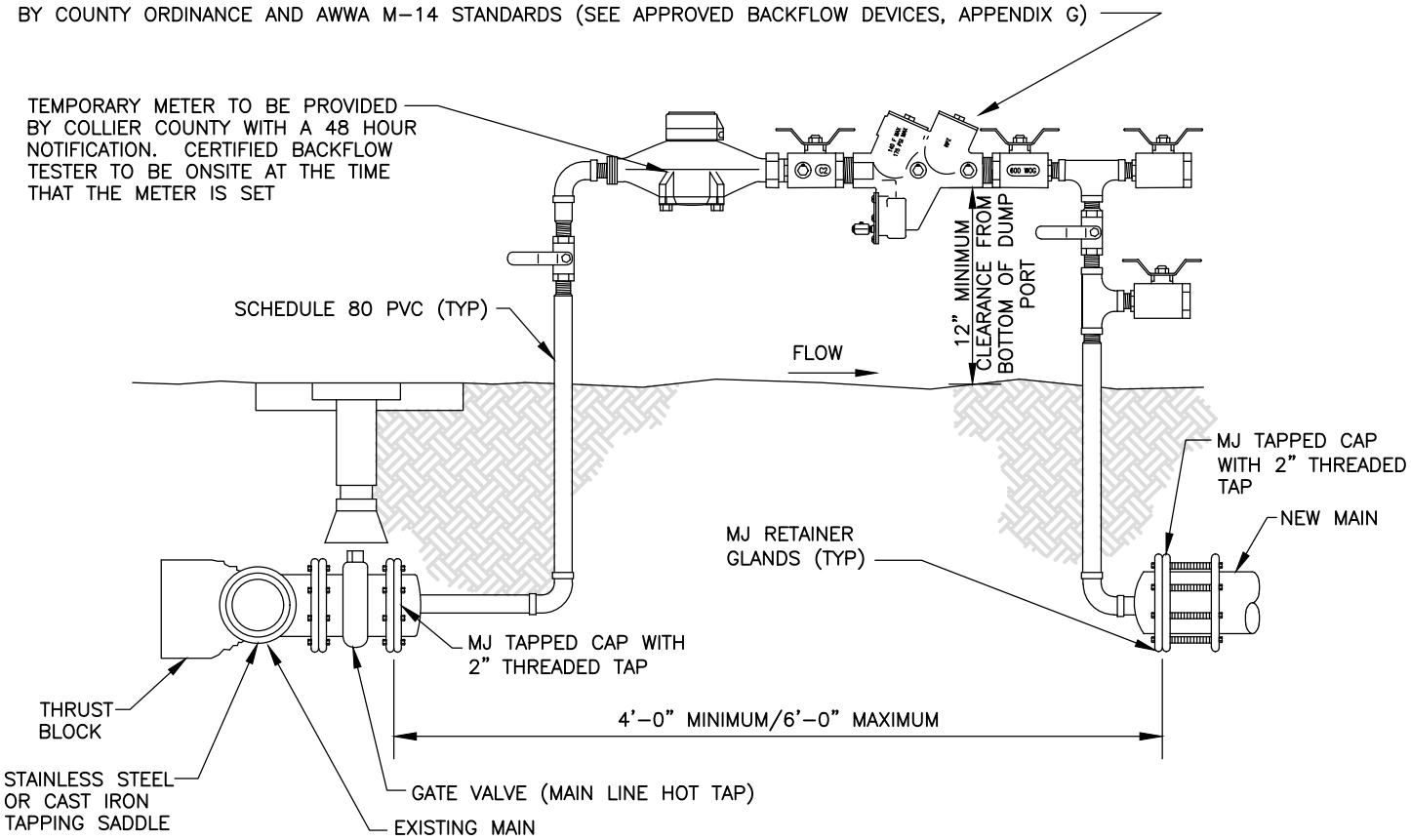
AUTOMATIC WATER MAIN FLUSHING DEVICE DETAIL	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. W-2
NTS			



NOTES:

1. HYDRANT MUST BE CURRENT YEAR MANUFACTURE AND YEAR OF MANUFACTURE MUST BE CAST ON BARREL.
2. ALL EXISTING MAINS WHERE FIRE HYDRANTS ARE TO BE INSTALLED SHALL BE HOT TAPPED.
3. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
4. ALL FIRE HYDRANT BARRELS SHALL BE A MINIMUM 5–1/4" IN DIAMETER.
5. ALL FIRE HYDRANTS INSTALLED SHALL BE OF THE BREAK AWAY FLANGE TYPE AND SHALL MEET THE REQUIREMENTS OF THE LOCAL FIRE CONTROL DISTRICT.
6. HYDRANT SHALL CONFORM WITH AWWA C–502.
7. THRUST RESTRAINT SHALL BE BY MJ RETAINER GLANDS.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. INSTALLATION OF ALL FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE DEPARTMENT OF TRANSPORTATION AND LOCAL FIRE CONTROL DISTRICT REQUIREMENTS.

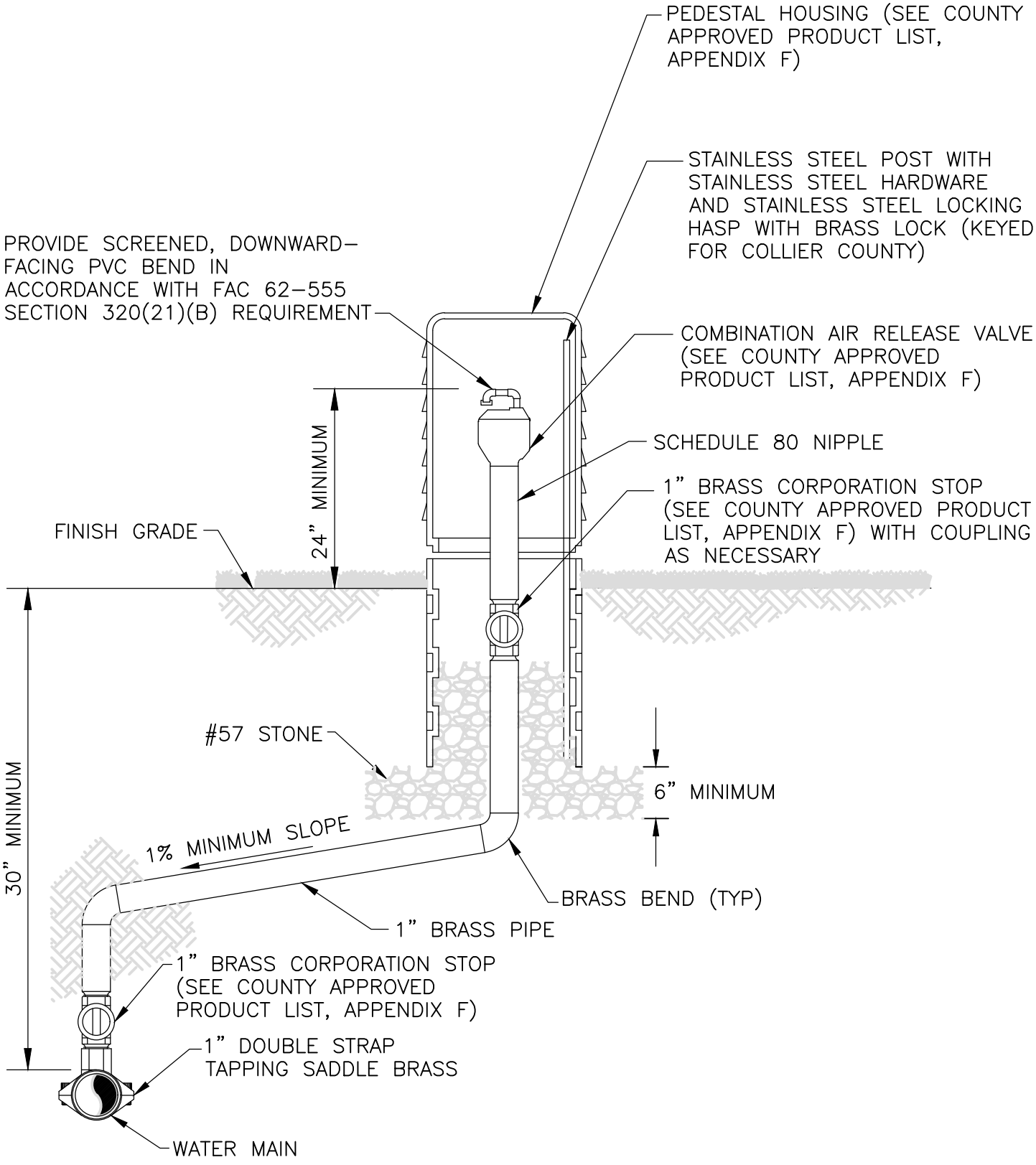
FIRE HYDRANT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W–3
NTS			



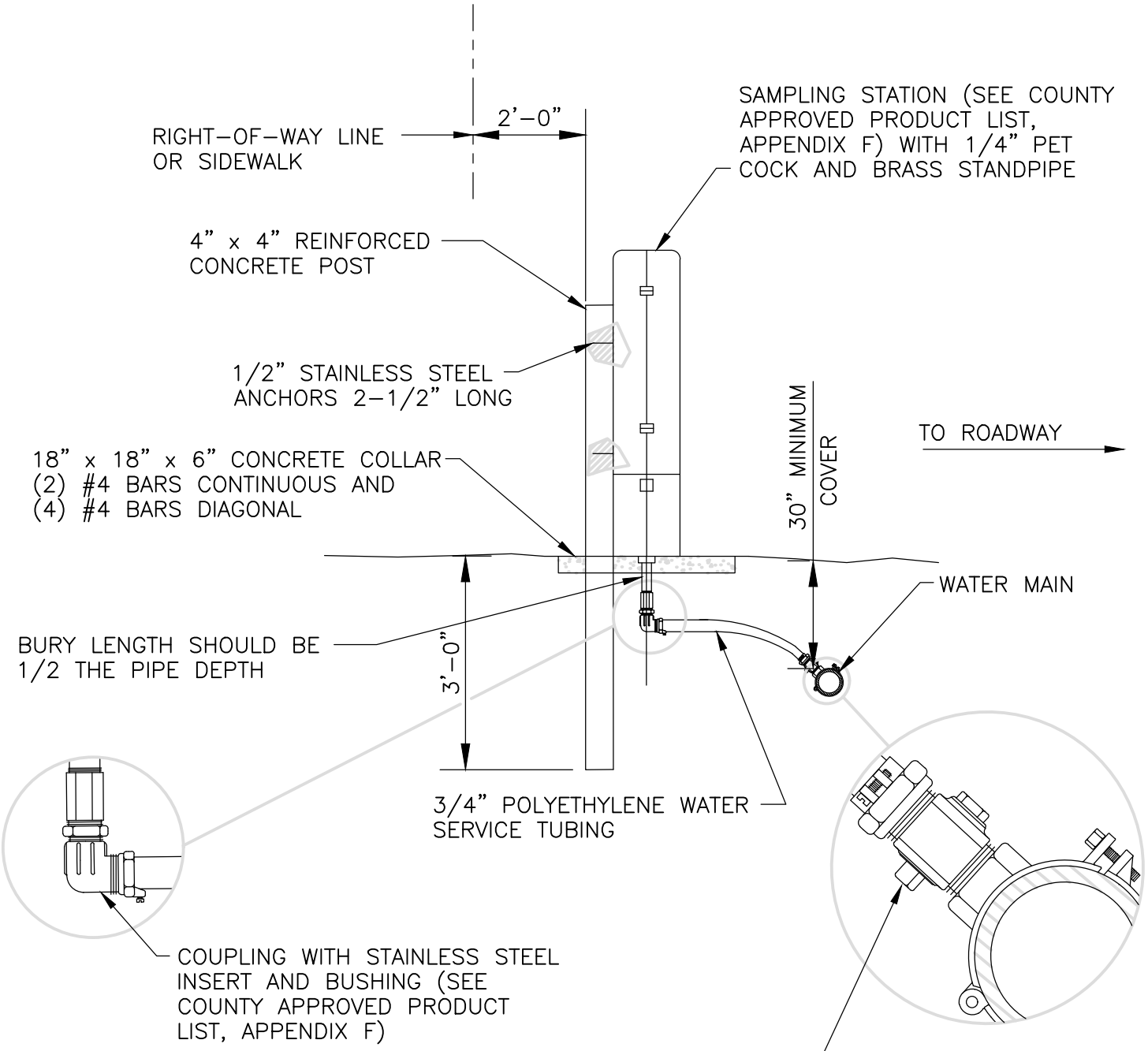
NOTES:

1. FINAL CONNECTION TO BE WITNESSED BY COLLIER COUNTY WATER DISTRIBUTION.
2. MJ TAPPED CAPS TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP SYSTEM FOR TEMPORARY METER DOWNSTREAM OF BLIND FLANGE FOR CONSTRUCTION WATER.
4. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES FOR ASBESTOS CEMENT PIPE SHALL BE STAINLESS STEEL.
5. JUMPER ASSEMBLY MUST BE MINIMUM OF 18" ABOVE FINISHED GRADE.
6. BACKFLOW ASSEMBLY REQUIRES INITIAL CERTIFICATION BY CERTIFIED BACKFLOW TESTER.
7. THIS ASSEMBLY SHALL ONLY BE USED IF NO COMBUSTIBLES WILL BE ON SITE. IF COMBUSTIBLES ARE BROUGHT ON SITE, THEN THE TEMPORARY BACKFLOW PREVENTERS AND FIRE PROTECTION METER TIE-IN ASSEMBLY SHALL BE USED.
8. THIS ASSEMBLY IS NOT APPROVED TO PROVIDE FIRE PROTECTION WATER TO THE SITE DURING CONSTRUCTION. ASSEMBLY NOT TO BE REMOVED AND SPOOL PIECE INSTALLED FOR FINAL CONNECTION UNTIL AFTER TESTING, BACTERIAL CLEARANCE, FINAL INSPECTION AND COUNTY ACCEPTANCE.
9. GAP CONFIGURATION TO BE INSTALLED WITHIN 24 HOURS OR LESS AT THE DISCRETION OF THE WATER DISTRIBUTION DEPARTMENT.
10. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
11. FOR INSTALLATIONS WHERE LESS THAN 20' OF NEW WATER MAIN IS BEING CONSTRUCTED BETWEEN THE PERMANENT BACKFLOW ASSEMBLY AND THE EXISTING MAIN, NO TEMPORARY JUMPER IS REQUIRED.

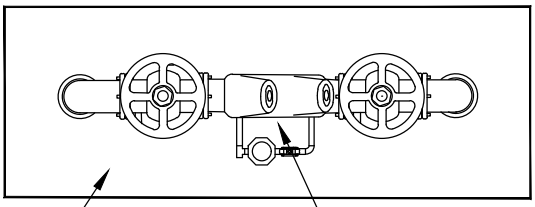
CONNECTION TO EXISTING WATER MAIN DETAIL (GAP CONFIGURATION) NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. W-4



POTABLE WATER AIR RELEASE VALVE DETAIL	REVISION DATE: AUGUST 2008	Collier County	SHEET NO. W-5
NTS			



PERMANENT BACTERIAL SAMPLE POINT DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W–6
NTS			



DOUBLE CHECK DETECTOR BACKFLOW PREVENTER ASSEMBLY SUPPLIED WITH AMMONIA AND CHLORINE RESISTANT SEATS AND SILICONE RUBBER SEALS. UL/FM APPROVED FOR FIRE SERVICE INSTALLATION. INSTALLATION AS REQUIRED BY COUNTY ORDINANCE AND AWWA M–14 (SEE APPROVED BACKFLOW DEVICES, APPENDIX G)

CONCRETE FOUNDATION FULL LENGTH OF ASSEMBLY (TYP) 4' WIDE, 6" THICK 6" x 6" 10x10 WELDED WIRE MESH

FLANGED GATE VALVE WITH RISING STEM AND RESILIENT SEAT (TYP)

FLOW

FLOW

12" MINIMUM CLEARANCE FROM BOTTOM OF ASSEMBLY

FLOW

BRASS

18" (TYP)

FINISH GRADE

BRASS

6 MIL POLY WRAP CONSTRUCTION GRADE SHEETING, DOUBLE LAYER, PLASTIC ALL PURPOSE

GATE VALVE

PROPERTY LINE

FLOW

FLOW

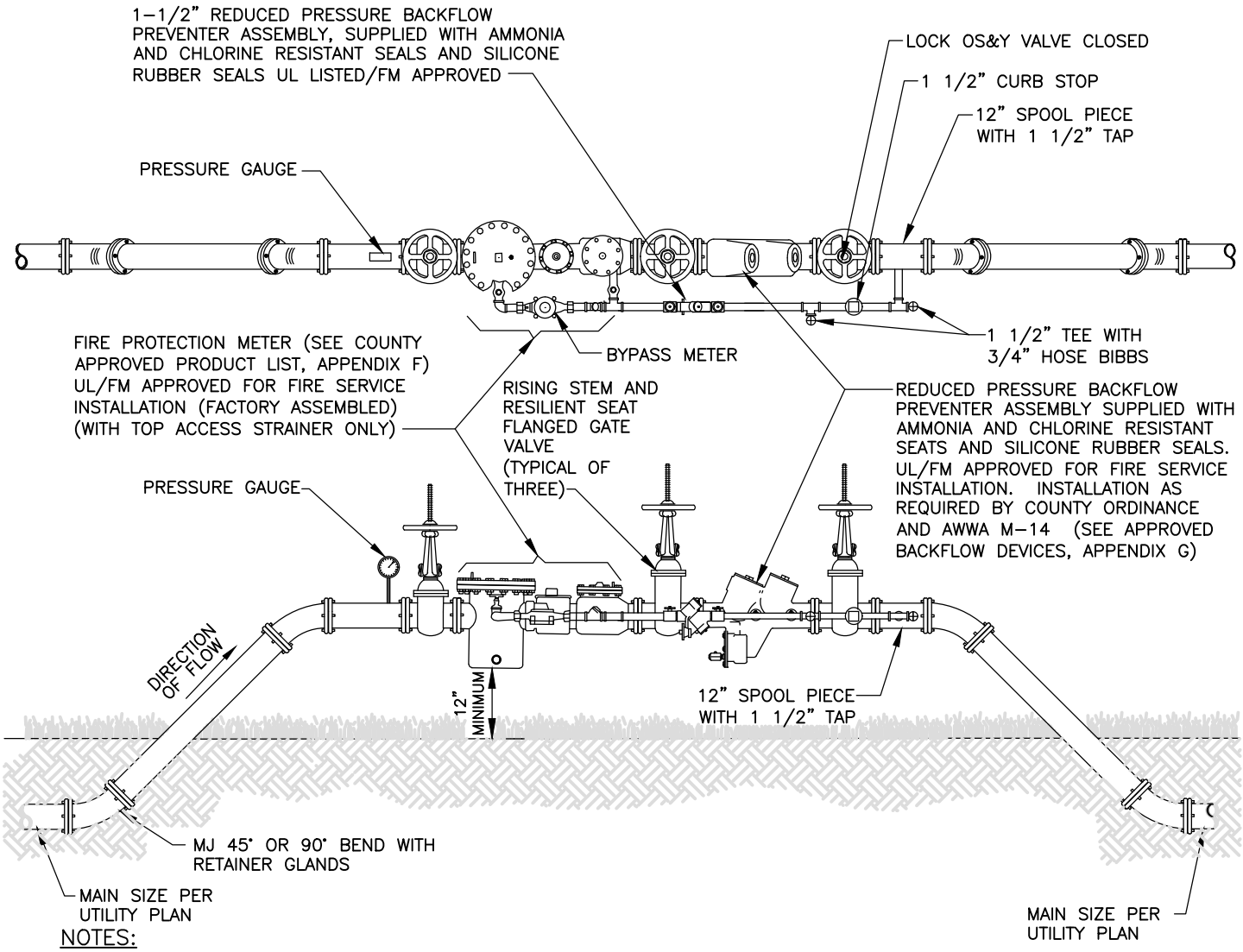
CUSTOMER SERVICE LINE

PROPERTY OWNER MAINTENANCE TO THIS POINT

NOTES:

1. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT–OF–WAY LINE.
2. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
3. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
4. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
5. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M–14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.
8. ALL ABOVE GROUND PIPING SHALL BE BRASS.

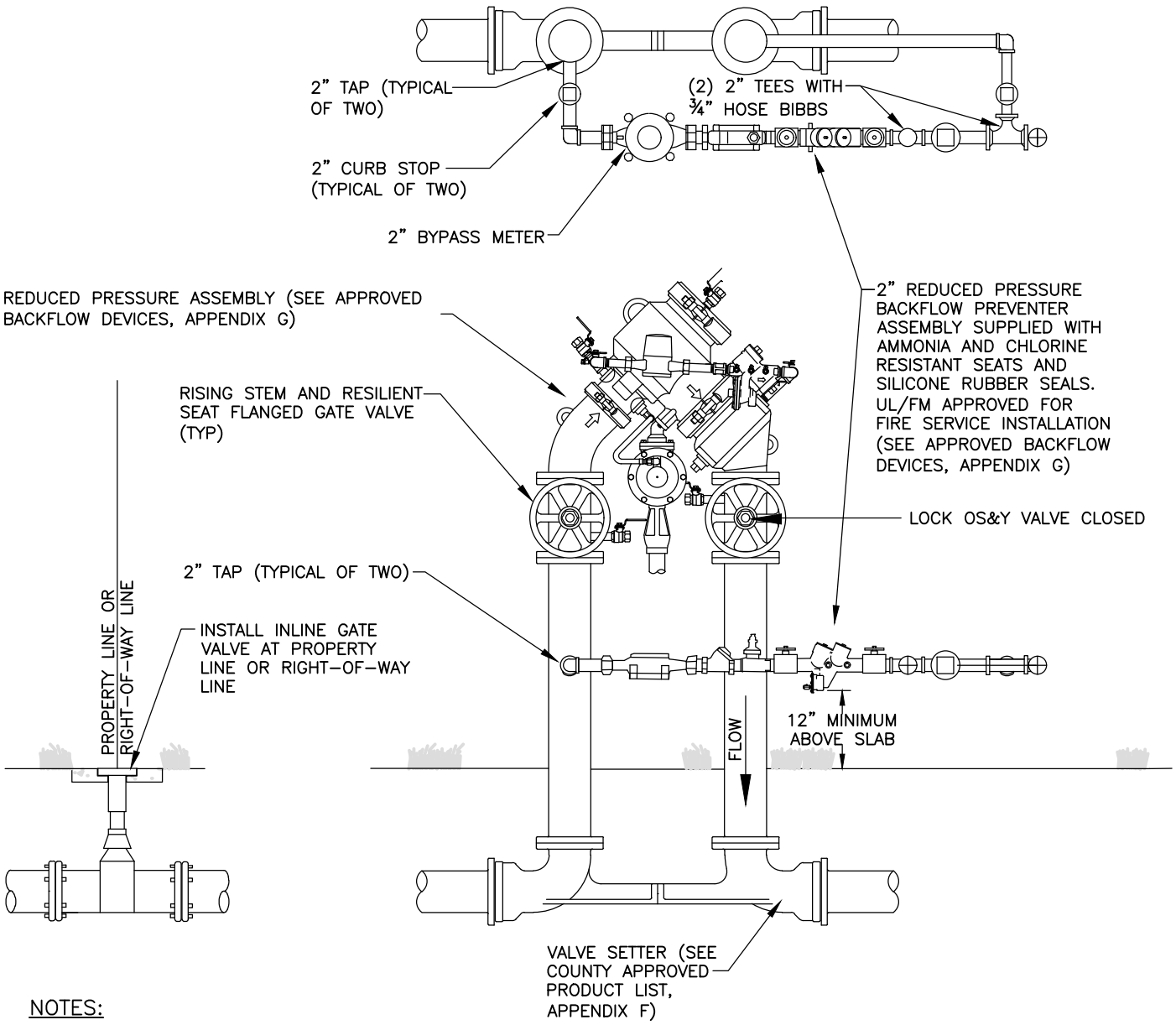
2–½" AND SMALLER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. W–8



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE-IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
8. A 4'X8' SIGN WITH 3" LETTERS OR BIGGER SHALL READ: IN CASE OF FIRE OPEN VALVE.

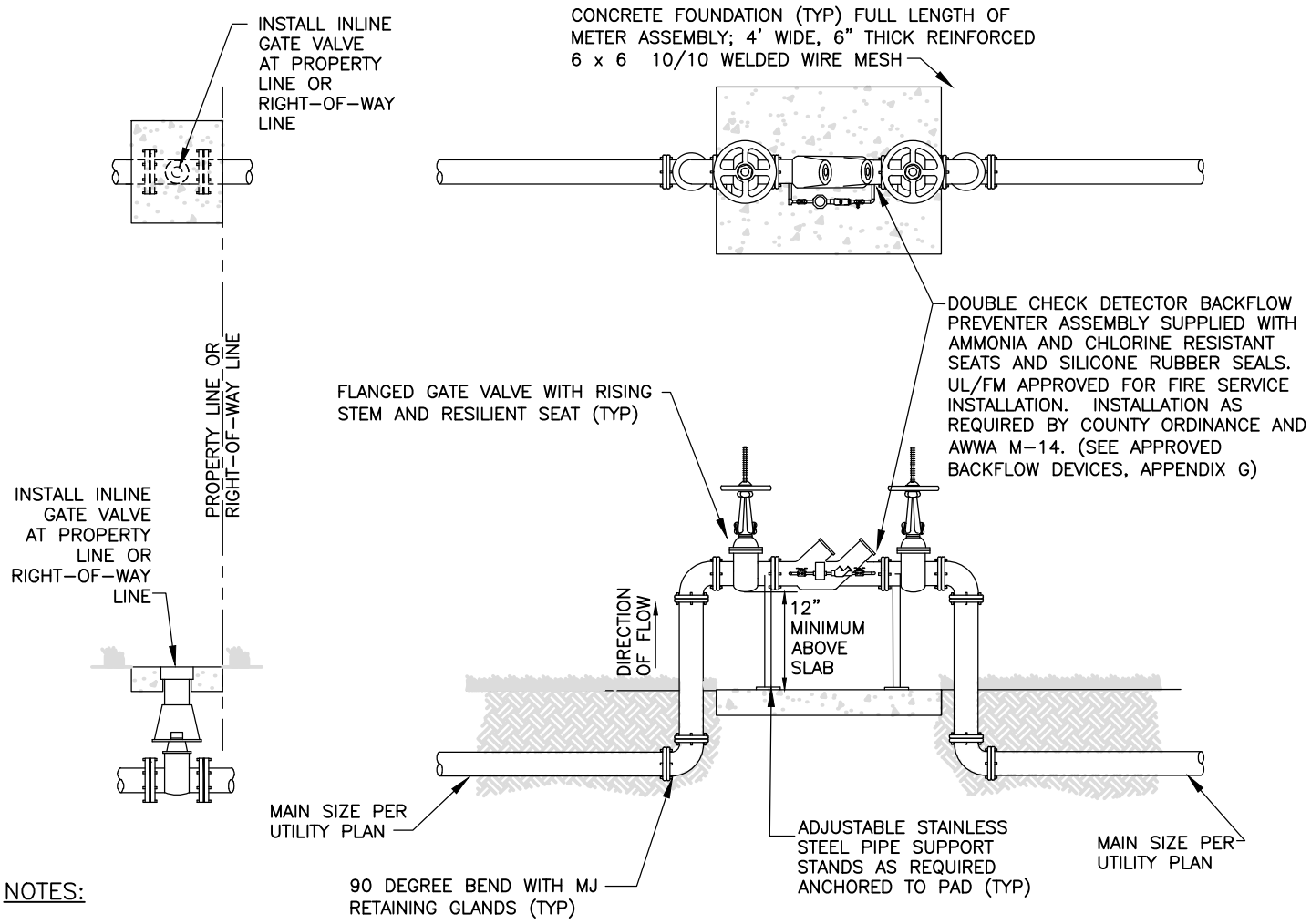
TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE-IN ASSEMBLY	REVISION DATE: JANUARY 2009	Collier County	SHEET NO. W-9
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE SHALL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. WATER MAIN EXTENSION AND ASSEMBLY IS REQUIRED TO BE FLUSHED, CHLORINATED AND GIVEN BACTERIAL CLEARANCE BY THE WATER DEPARTMENT LAB BEFORE PLACEMENT IN SERVICE.
3. BACKFLOW UNIT AND METER REQUIRES INITIAL CERTIFICATION FOR OPERATION AND ACCURACY WITH RESULTS AND ANNUAL TESTS SUBMITTED TO THE COLLIER COUNTY WATER DEPARTMENT FOR RECERTIFICATION.
4. INSPECTIONS ARE REQUIRED FOR SYSTEM TIE-IN AND ASSEMBLY CONNECTION.
5. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
6. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
7. A 4'X8' SIGN WITH 3" LETTERS OR BIGGER SHALL READ: IN CASE OF FIRE OPEN VALVE.

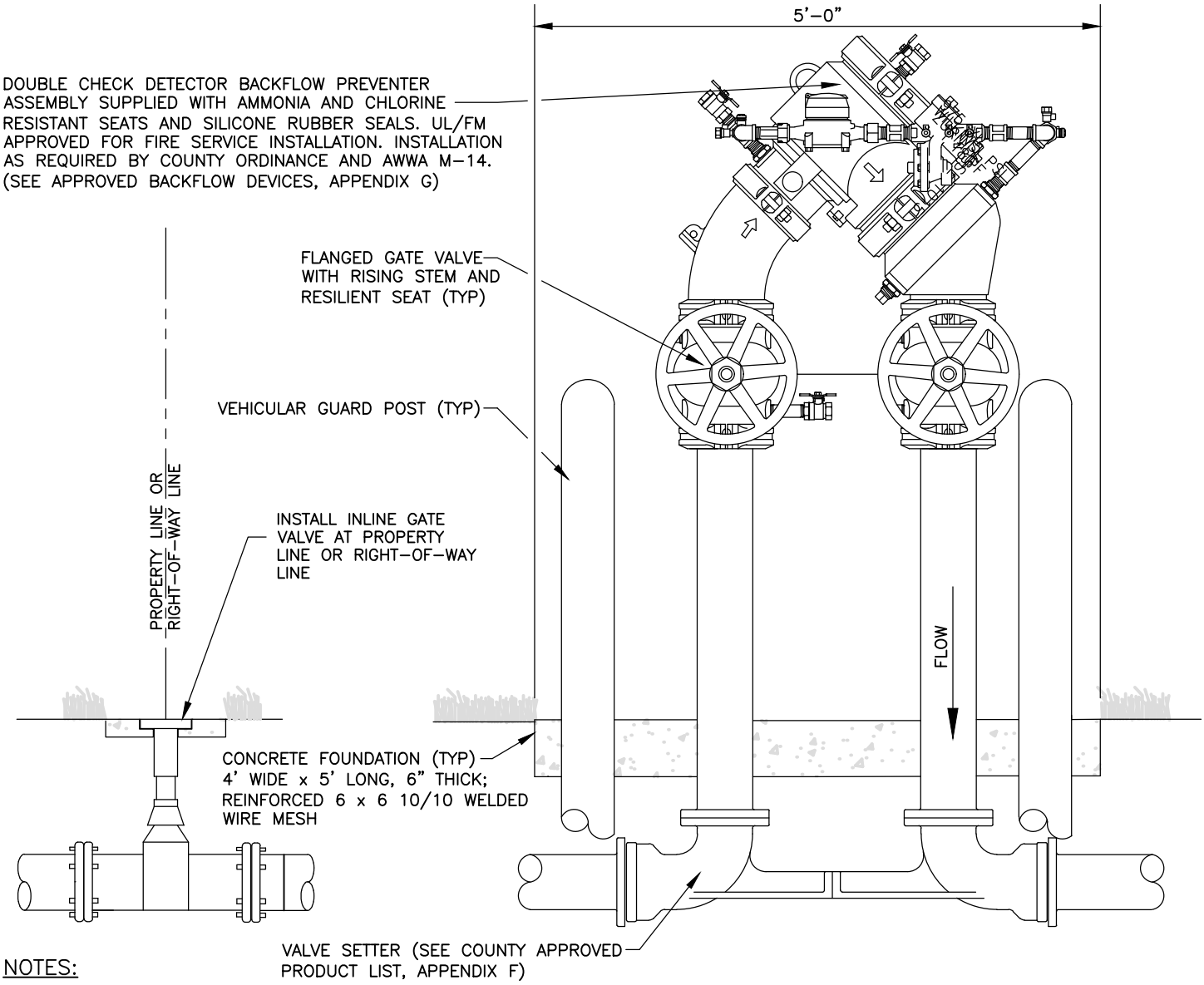
ALTERNATE TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE-IN ASSEMBLY NTS	REVISION DATE: JANUARY 2009	Collier County	SHEET NO. W-9A



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 3' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

3" AND LARGER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL	REVISION DATE: JULY 2018	Collier County	SHEET NO. W-11
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. AS THIS UNIT WILL REQUIRE PERIODIC TESTING, FACILITIES REQUIRING CONTINUOUS WATER SERVICE MAY WISH TO INSTALL PARALLEL UNITS TO PREVENT SERVICE INTERRUPTIONS.
4. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
5. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
6. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. A REDUCED PRESSURE DETECTOR BACKFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

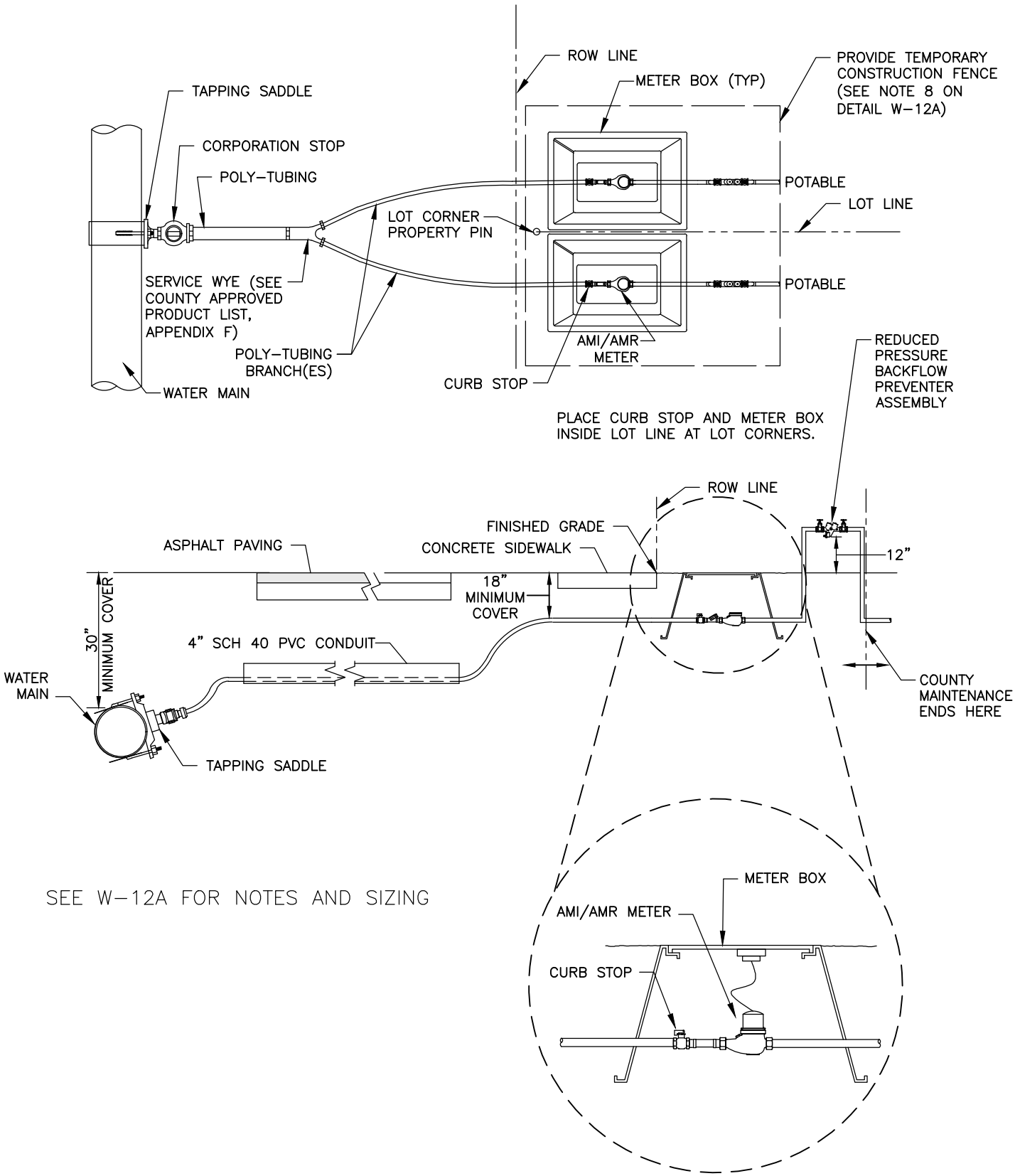
4" THROUGH 10" ONLY COMPACT FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL

NTS

REVISION DATE:
JULY 2011

Collier County

SHEET NO.
W-11A



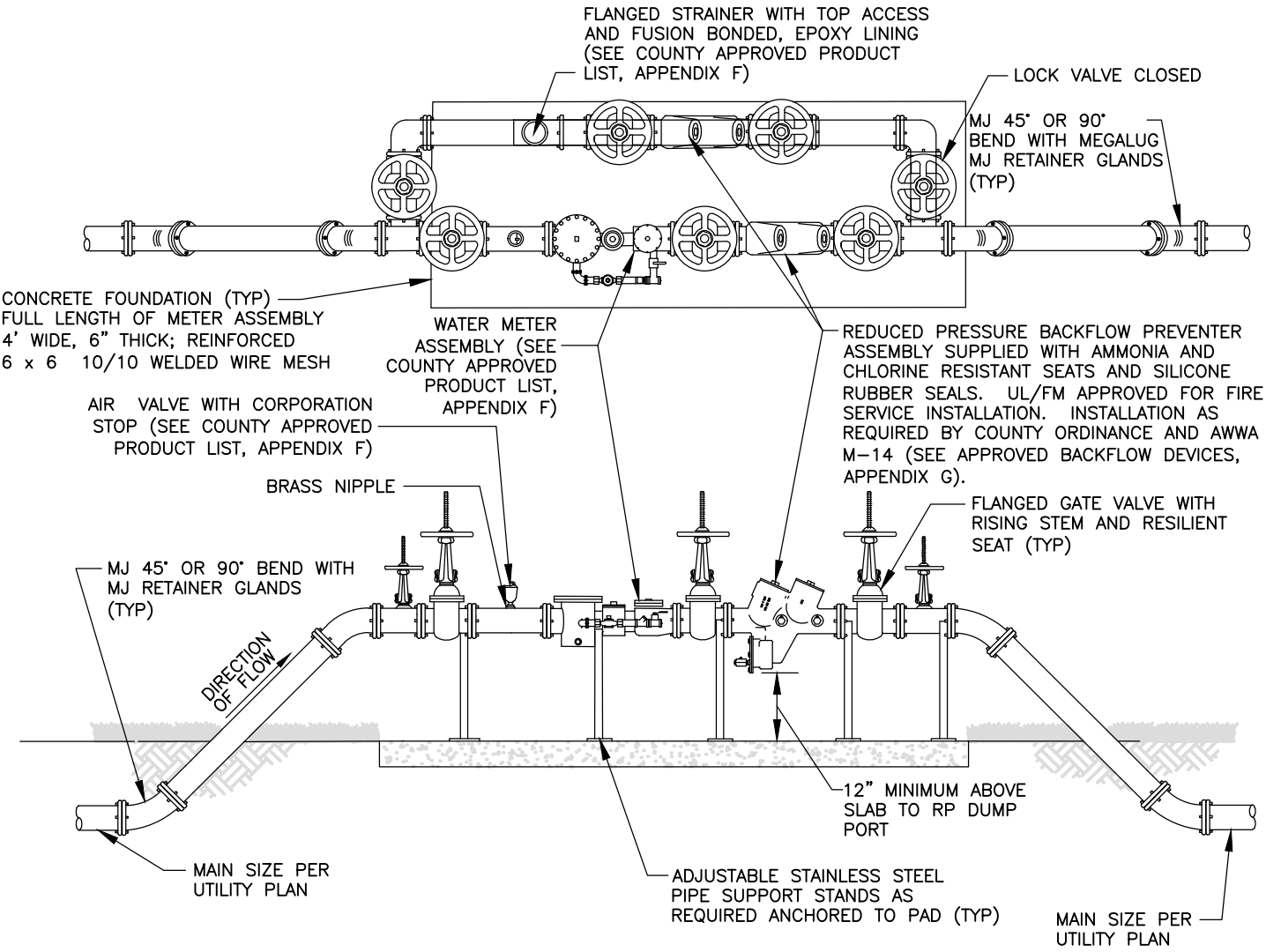
SEE W-12A FOR NOTES AND SIZING

TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-12
NTS			

SERVICE CONNECTION SIZING CHART				
SINGLE SERVICE	CONNECTION TO MAIN	DOUBLE SERVICE	CONNECTION TO MAIN	BRANCH SIZE
$\frac{3}{4}$" METER	$1-\frac{1}{2}$"	(2) $\frac{3}{4}$" METERS	$1-\frac{1}{2}$"	1"
1" METER	$1-\frac{1}{2}$"	(2) 1" METERS	$1-\frac{1}{2}$"	1"
$1-\frac{1}{2}$" METER	$1-\frac{1}{2}$"			
2" METER	2"			

NOTES:

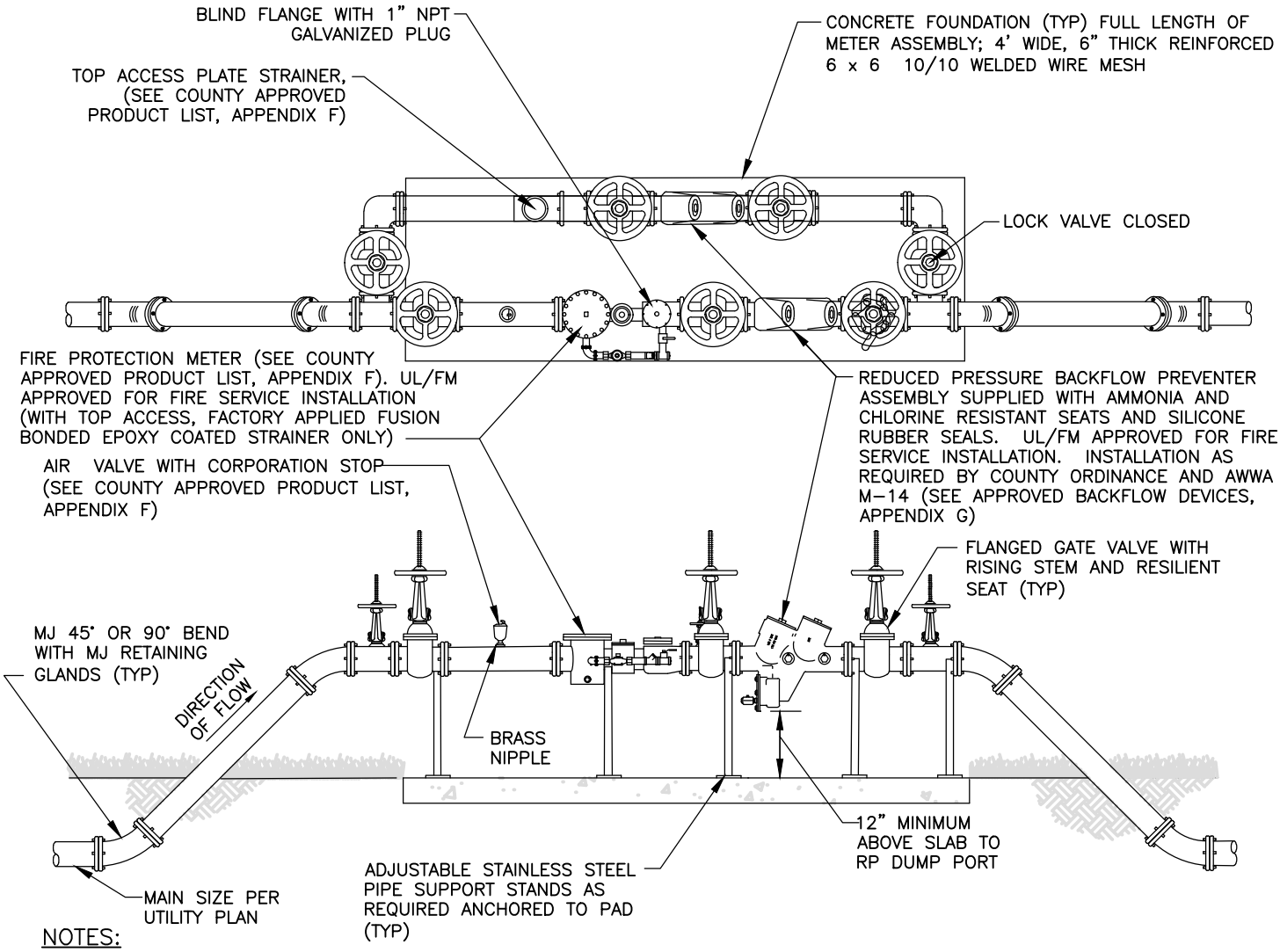
1. $1-\frac{1}{2}$" AND LARGER METERS SHALL BE SERVED BY SINGLE SERVICES ONLY.
2. WYE CONNECTORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE USED FOR MULTI-SERVICE. SUCCESSIVE TAPS INTO WATER MAIN WILL BE NO CLOSER THAN 24" APART.
3. ALL CASING PIPE SHALL EXTEND A MINIMUM OF 5' BEYOND THE EDGE OF PAVEMENT, WITH A CASING DIAMETER TO BE NO LESS THAN 4". CONDUIT SHALL BE MARKED WITH A ELECTRONIC MARKER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
4. TAPPING SADDLE, CORPORATION STOP, POLY TUBING, CURB STOP, AND METER BOXES SHALL BE INSTALLED BY UNDERGROUND UTILITY CONTRACTOR AT THE TIME OF WATER MAIN INSTALLATION.
5. MATERIAL SPECIFICATIONS:
   A. TAPPING SADDLES SHALL BE DOUBLE STRAP BRASS OR DUCTILE IRON (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
   B. CORPORATION STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. OUTLET SHALL BE COMPRESSION TYPE POLYETHYLENE TUBE. COMPRESSION INSERT SHALL BE STAINLESS STEEL.
   C. CURB STOPS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) SHALL BE BALL TYPE AND MADE OF RED BRASS. INLET SHALL BE COMPRESSION JOINT. OUTLET SHALL BE SWIVEL NUT FOR METER CONNECTION.
   D. TUBING SHALL BE POLYETHYLENE, PE4710, (AWWA C-901, DR 9) AND BLUE IN COLOR.
6. ALL PLANTINGS SHALL BE A MINIMUM 3' FROM METER BOX, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 AND THE REDUCTION OF LEAD IN DRINKING WATER ACT AMENDING THE SAFE DRINKING WATER ACT.
8. A TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AT WATER METER SETTINGS UNTIL BUILDING CERTIFICATE OF OCCUPANCY OR INSTALLATION OF SOD. THE EXISTING TEMPORARY CONSTRUCTION FENCE SHALL BE MODIFIED AS NECESSITATED BY LOT DEVELOPMENT. FENCE TO BE 3' IN HEIGHT AND OFFSET 3' FROM ASSEMBLY.



NOTES:

1. ALL ABOVE GROUND PIPES WILL BE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. LOCATION TO BE FIELD DETERMINED BY THE ENGINEER OR HIS DESIGNEE.
3. THIS ASSEMBLY IS PERMITTED FOR POTABLE SERVICE ONLY.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW UNITS SHALL BE TESTED BY CERTIFIED BACKFLOW TECHNICIAN WITH TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT FOR CERTIFICATION AND APPROVAL.
6. COUNTY WILL REQUIRE DEDICATION OF ALL MATERIALS AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY WATER MAIN.
7. ALL PLANTINGS SHALL BE A MINIMUM OF 1.5' FROM EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION).

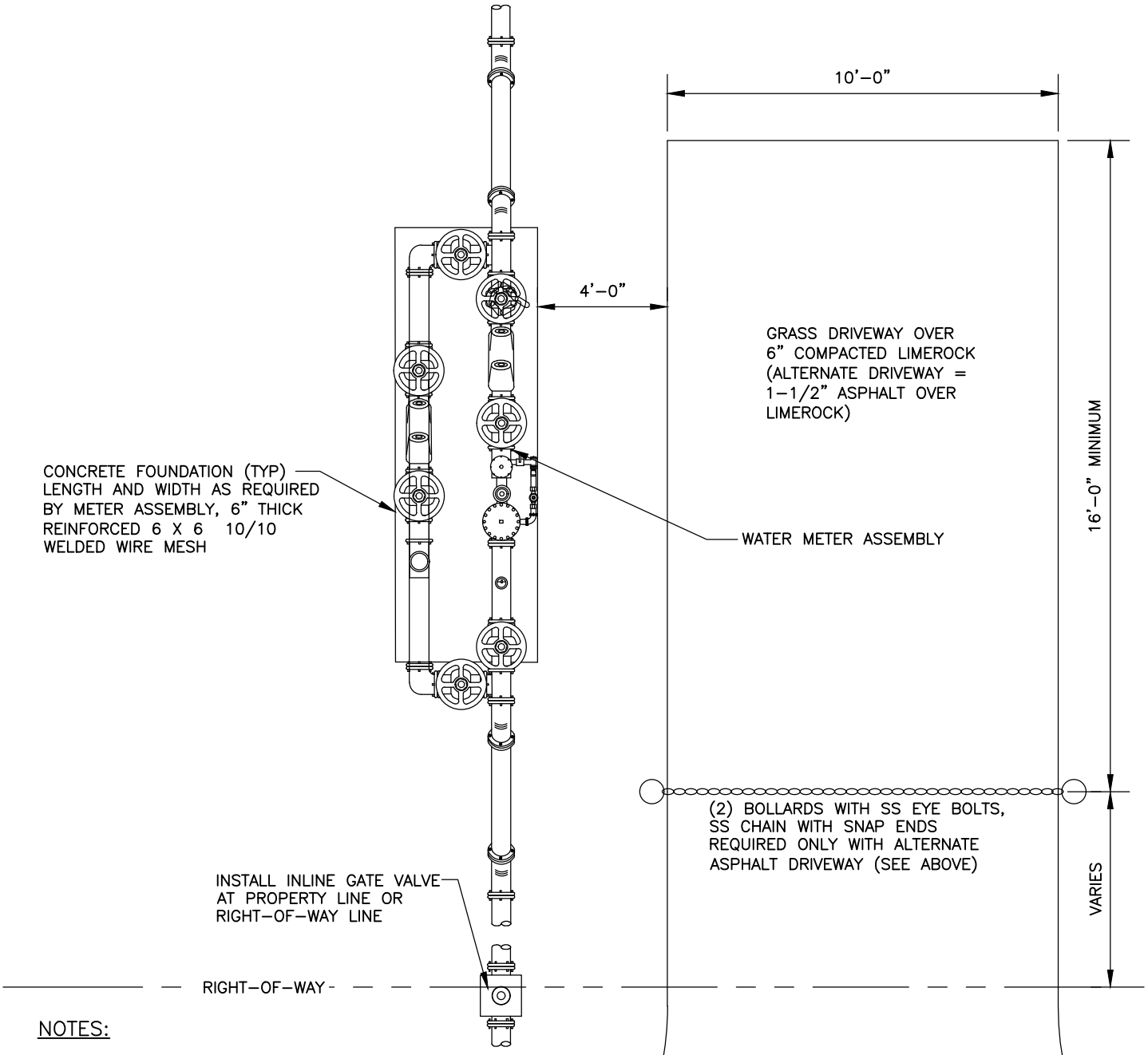
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-13
NTS			



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. THIS ASSEMBLY IS PERMITTED FOR COMBINATION FIRE AND POTABLE WATER SERVICE.
4. A FULL SIZE BYPASS SHALL BE INSTALLED TO PREVENT A REDUCTION IN FLOW DURING PERIODIC TESTING.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. COUNTY REQUIRES DEDICATION OF ALL ABOVE GROUND MATERIAL AND EQUIPMENT FROM THE METER ASSEMBLY BACK TO THE COUNTY MAIN.
7. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
8. STRAINER SHALL HAVE FUSION-BONDED EPOXY COATING.
9. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
10. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT OR RIGHT OR RIGHT OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION),

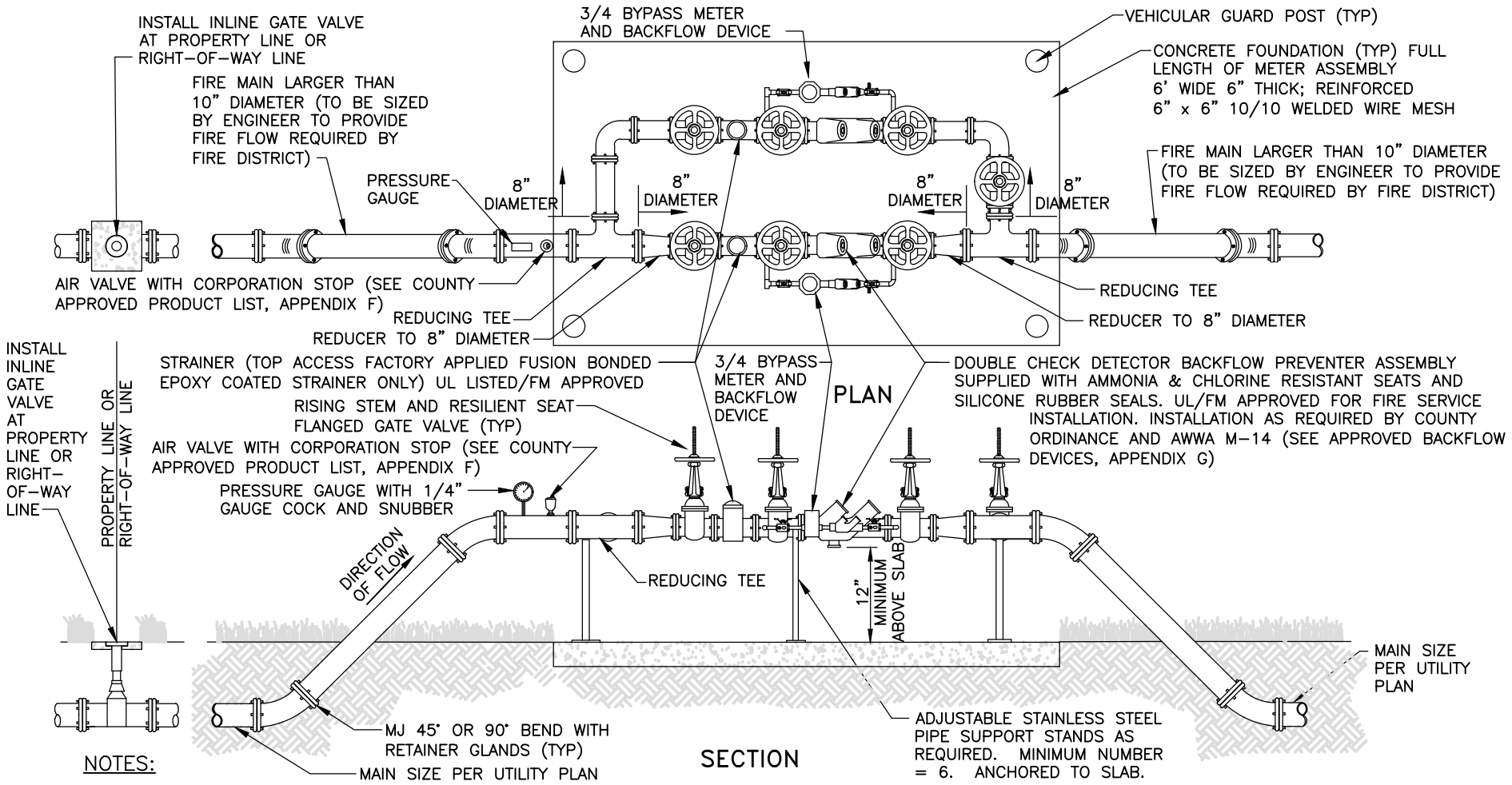
4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. W-14
NTS			



NOTES:

1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 515.
2. VEHICULAR GUARDPOSTS ARE NOT SHOWN. PROVIDE GUARDPOSTS AS REQUIRED BY WATER METER DETAIL AND SITE.
3. DRIVEWAY ORIENTATION TO BE AS APPROVED BY THE COUNTY.
4. MAINTENANCE ACCESS SHALL BE INCLUDED IN COUNTY UTILITY EASEMENT.
5. IF ROADWAY CURB EXISTS, PROVIDE CONCRETE TRANSITION ONTO DRIVEWAY.

MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER NTS	REVISION DATE: JULY 2018	Collier County	SHEET NO. W–14A



NOTES:

1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE PRESSURE CLASS 350, ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. ASSEMBLY WILL BE OWNED AND MAINTAINED BY PROPERTY OWNER, STARTING AFTER THE INLINE GATE VALVE AT THE PROPERTY LINE OR RIGHT-OF-WAY LINE.
4. COUNTY WILL REQUIRE DEDICATION OF MATERIAL UP TO AND INCLUDING THE INLINE GATE VALVE FROM THE COUNTY'S WATER MAIN.
5. BACKFLOW DEVICE REQUIRES INITIAL CERTIFICATION BY AN APPROVED CERTIFIED TESTER WITH RESULTS AND ANNUAL TEST RESULTS SUBMITTED TO THE COUNTY WATER DEPARTMENT.
6. ALL PLANTING SHALL BE A MINIMUM OF 1.5' FROM THE EDGE OF SLAB, AND SHALL PROVIDE A 3' ACCESS OPENING.
7. THIS ASSEMBLY SHALL BE PAINTED WITH RED EPOXY PAINT.
8. ALL COMPONENTS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61.
9. A REDUCED PRESSURE DETECTOR BAKCFLOW ASSEMBLY SHALL BE USED WHEN HIGH HAZARDS, AS DEFINED BY AWWA M-14 (e.g., RISK OF CHEMICAL ADDITION, MEDICAL FACILITIES, INDUSTRIAL FACILITIES, PROPERTIES USING RECLAIMED WATER, ETC.), EXIST.

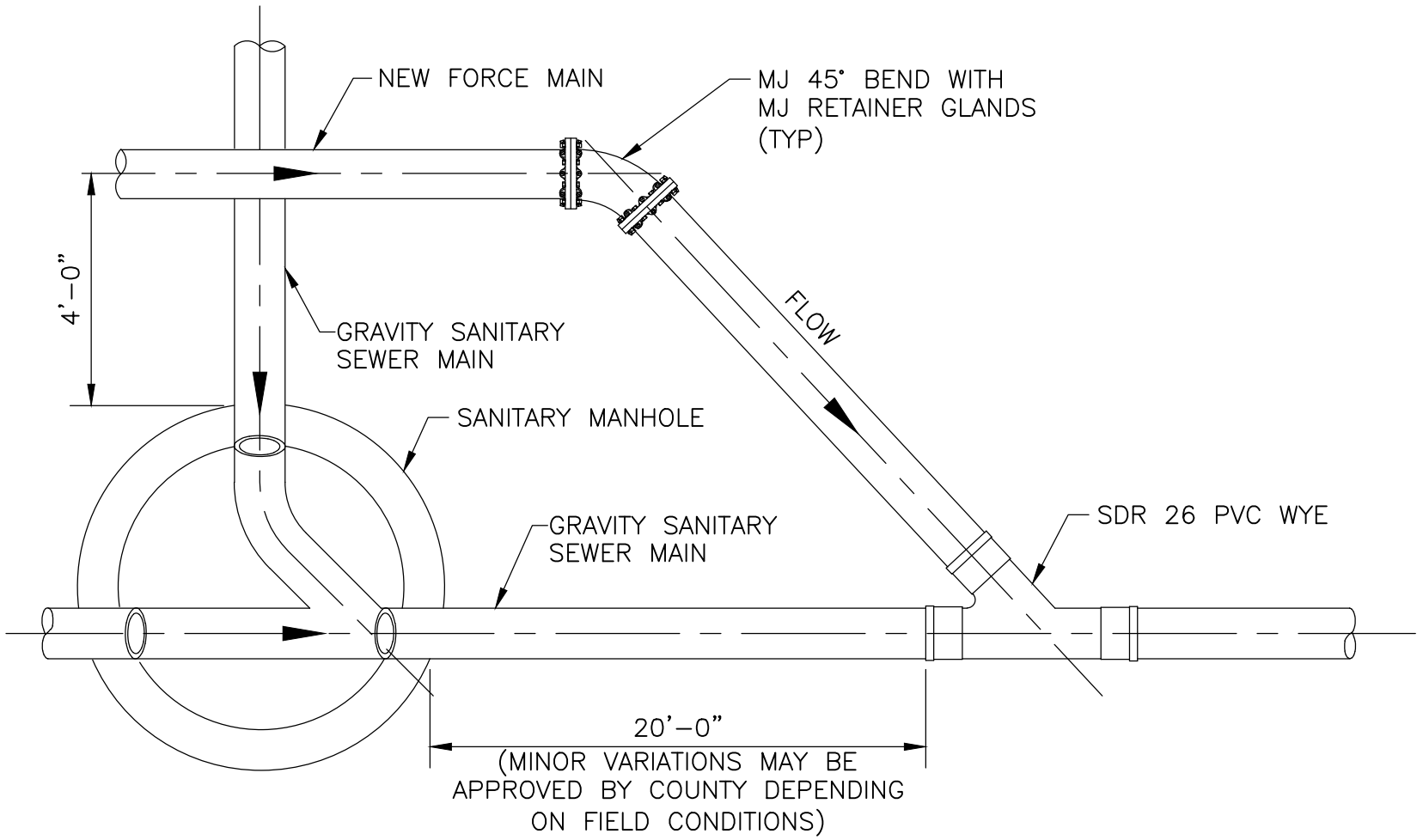
FIRE SERVICE DUAL DETECTOR CHECK ASSEMBLY OVER 10" FIRE MAIN DETAIL (DUAL 8" ASSEMBLIES)

NTS

REVISION DATE:
JULY 2011

Collier County

SHEET NO.
W-16



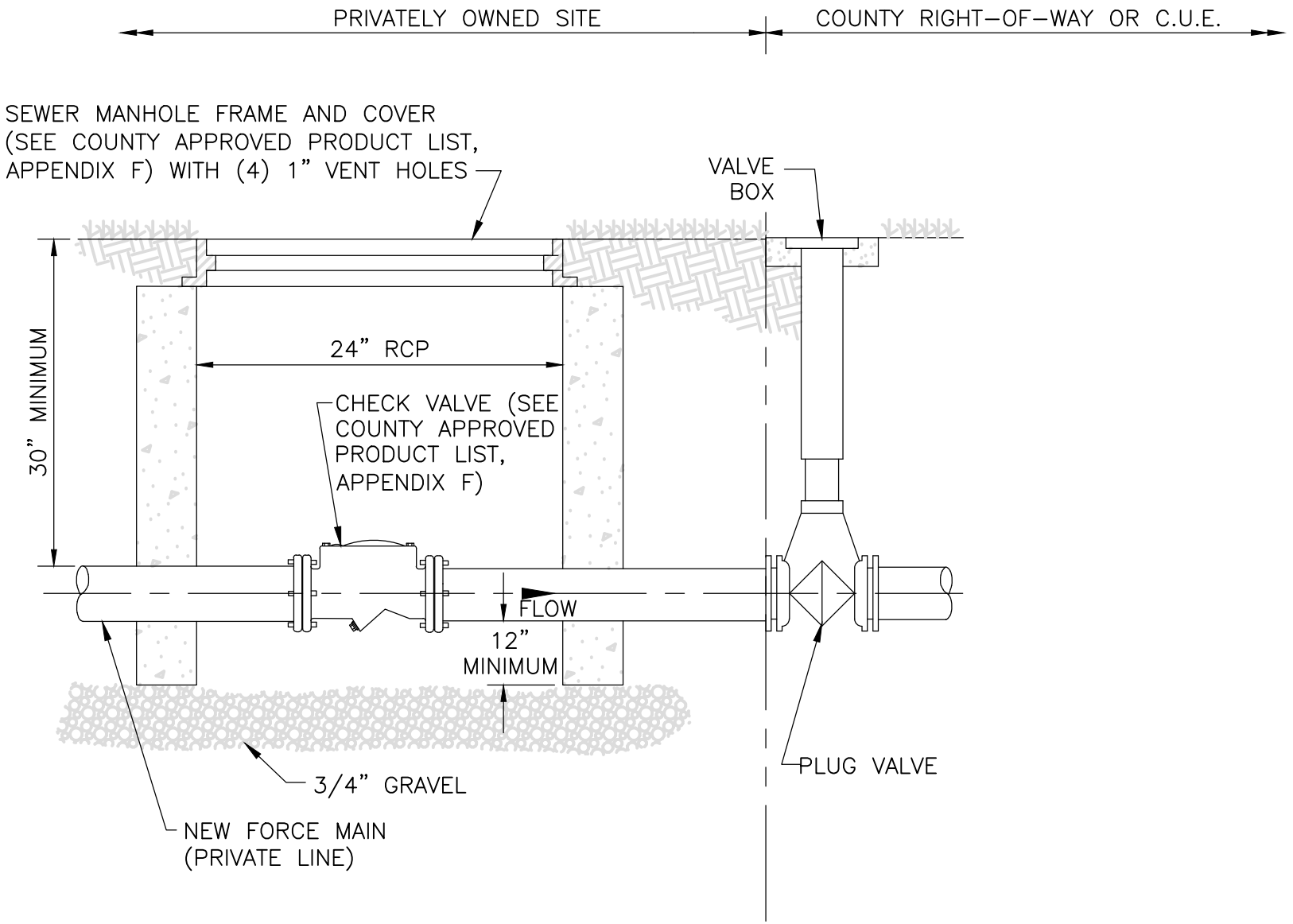
FORCE MAIN CONNECTION TO GRAVITY SANITARY SEWER DETAIL

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
WW–1



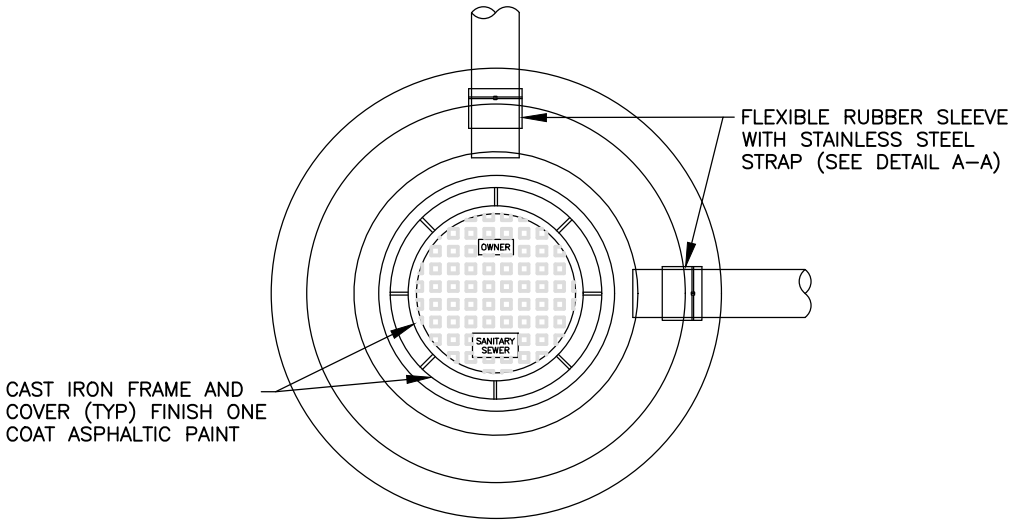
PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

NTS

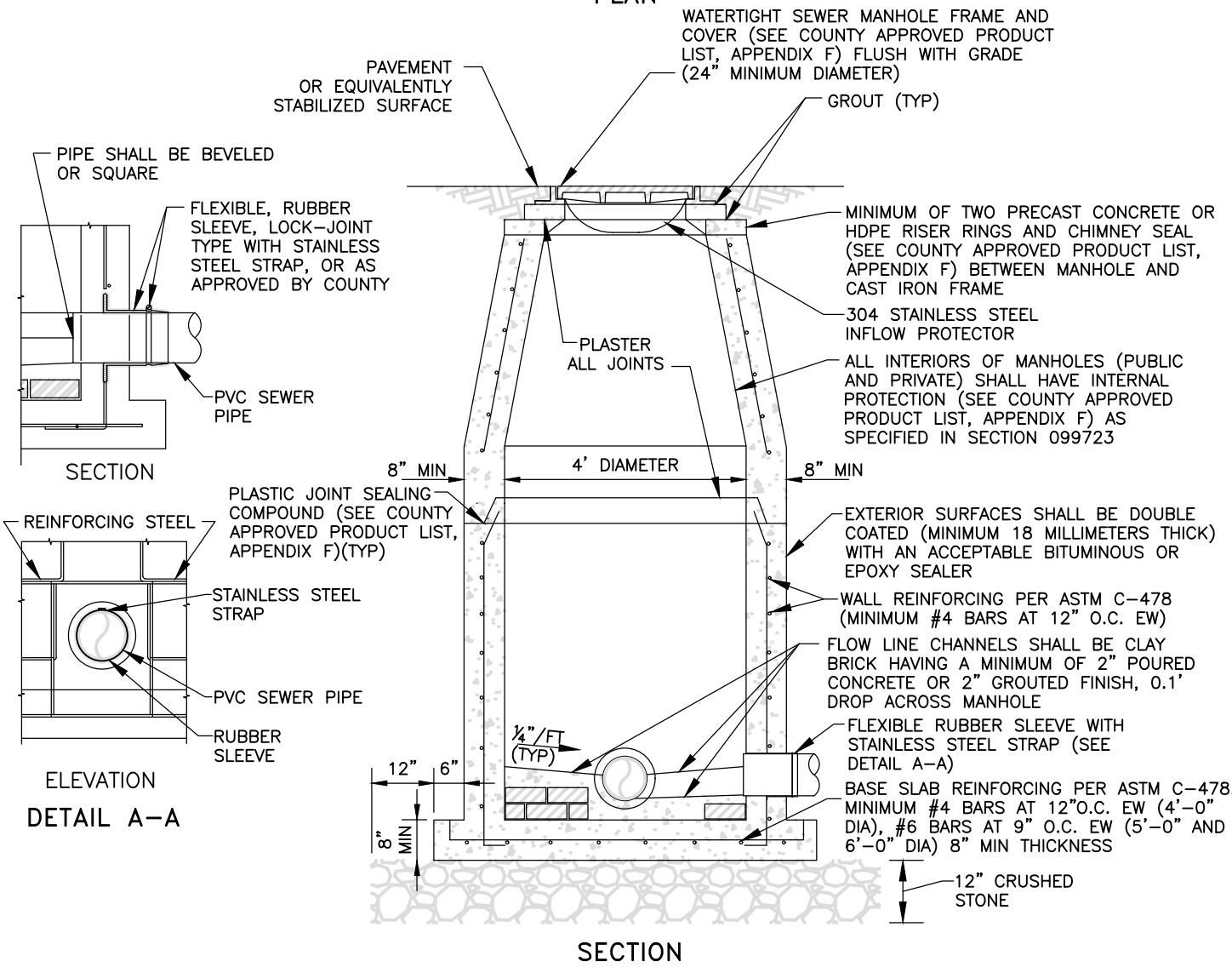
REVISION DATE: JULY 2018

Collier County

SHEET NO. WW-2



PLAN

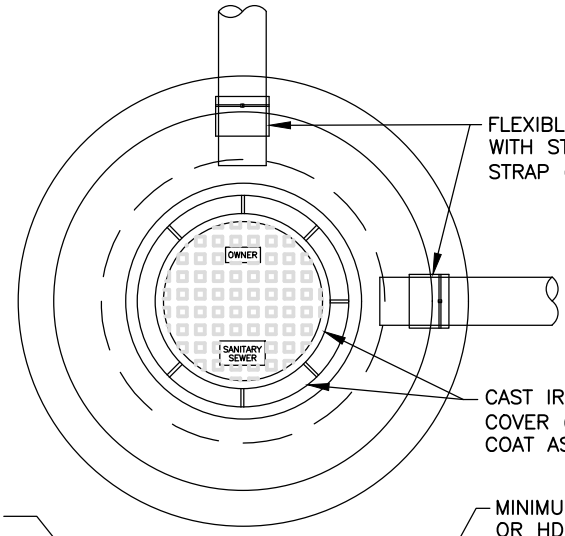


SECTION

ELEVATION

DETAIL A–A

PRECAST REINFORCED CONCRETE MANHOLE DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW–3
NTS			



FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

CAST IRON FRAME AND COVER (TYP) FINISH ONE COAT ASPHALTIC PAINT

PLAN

WATERTIGHT SEWER MANHOLE FRAME AND COVER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FLUSH WITH GRADE (24" MINIMUM DIAMETER)

PAVEMENT

304 STAINLESS STEEL INFLOW PROTECTORS

TOP SLAB REINFORCING PER ASTM C–478 (MIN #4 BARS AT 12" O.C. EW). MIN 8" THICK.

ALL INTERIORS OF MANHOLES (PUBLIC AND PRIVATE) SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AS SPECIFIED IN SECTION 099723

MINIMUM OF TWO PRECAST CONCRETE OR HDPE RISER RINGS AND CHIMNEY SEAL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) BETWEEN MANHOLE AND CAST IRON FRAME

GROUT (TYP)

PLASTIC JOINT SEALING COMPOUND (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) KEYED (TYP)

EXTERIOR SURFACES SHALL BE DOUBLE COATED (MINIMUM 18 MILLIMETERS THICK) WITH AN ACCEPTABLE BITUMINOUS OR EPOXY SEALER

WALL REINFORCING PER ASTM C–478

FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED FINISH, 0.1' DROP ACROSS MANHOLE

FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

BASE SLAB REINFORCING PER ASTM C–478. MINIMUM #4 BARS AT 12"O.C. EW (4'–0" DIA), #6 BARS AT 9" O.C. EW (5'–0" AND 6'–0" DIA). 8" MIN THICKNESS.

12" CRUSHED STONE

8" MIN

8" MIN

12'

24"

12"

8" MIN

4' DIAMETER

VARIES

¼"/FT (TYP)

12"

6"

8" MIN

SECTION

PIPE SHALL BE BEVELED OR SQUARE

FLEXIBLE, RUBBER SLEEVE, LOCK–JOINT TYPE WITH STAINLESS STEEL STRAP, OR AS APPROVED BY COUNTY

PVC SEWER PIPE

SECTION

REINFORCING STEEL

STAINLESS STEEL STRAP

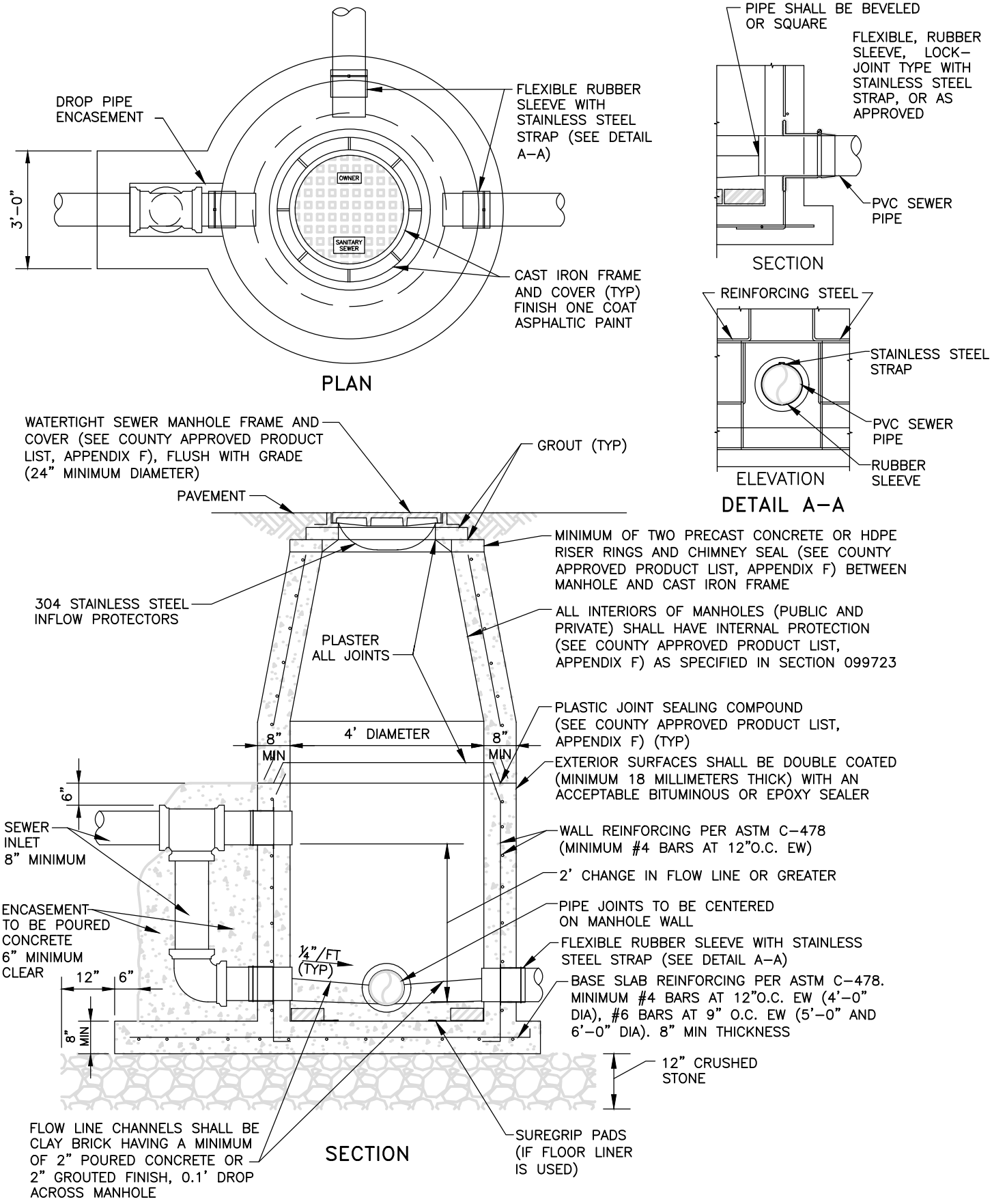
PVC SEWER PIPE

RUBBER SLEEVE

ELEVATION

DETAIL A–A

SHALLOW MANHOLE DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW–4
NTS			



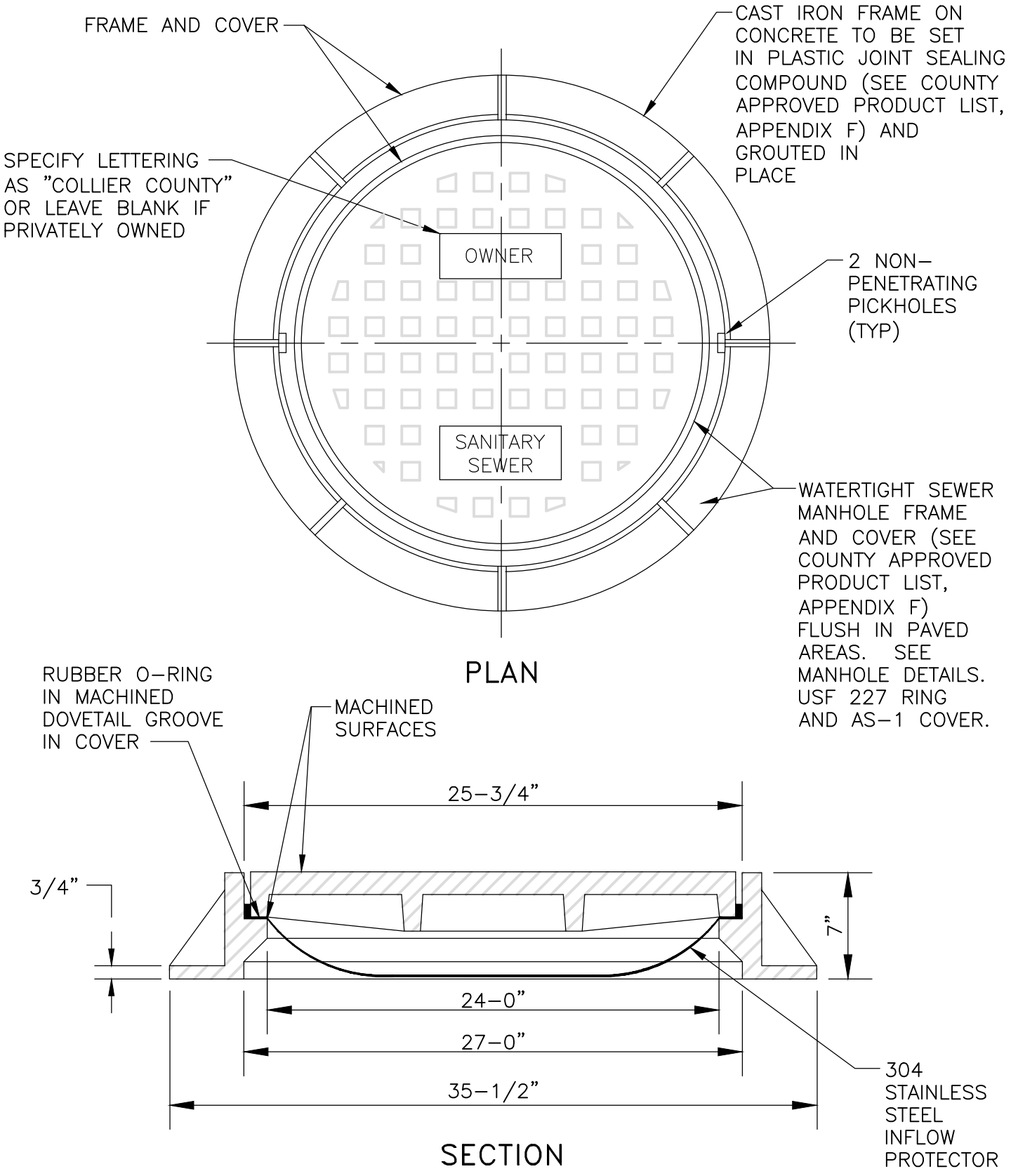
DROP MANHOLE DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–5



MANHOLE RING AND COVER DETAIL	REVISION DATE: JANUARY 2025	Collier County	SHEET NO. WW-6
NTS			

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

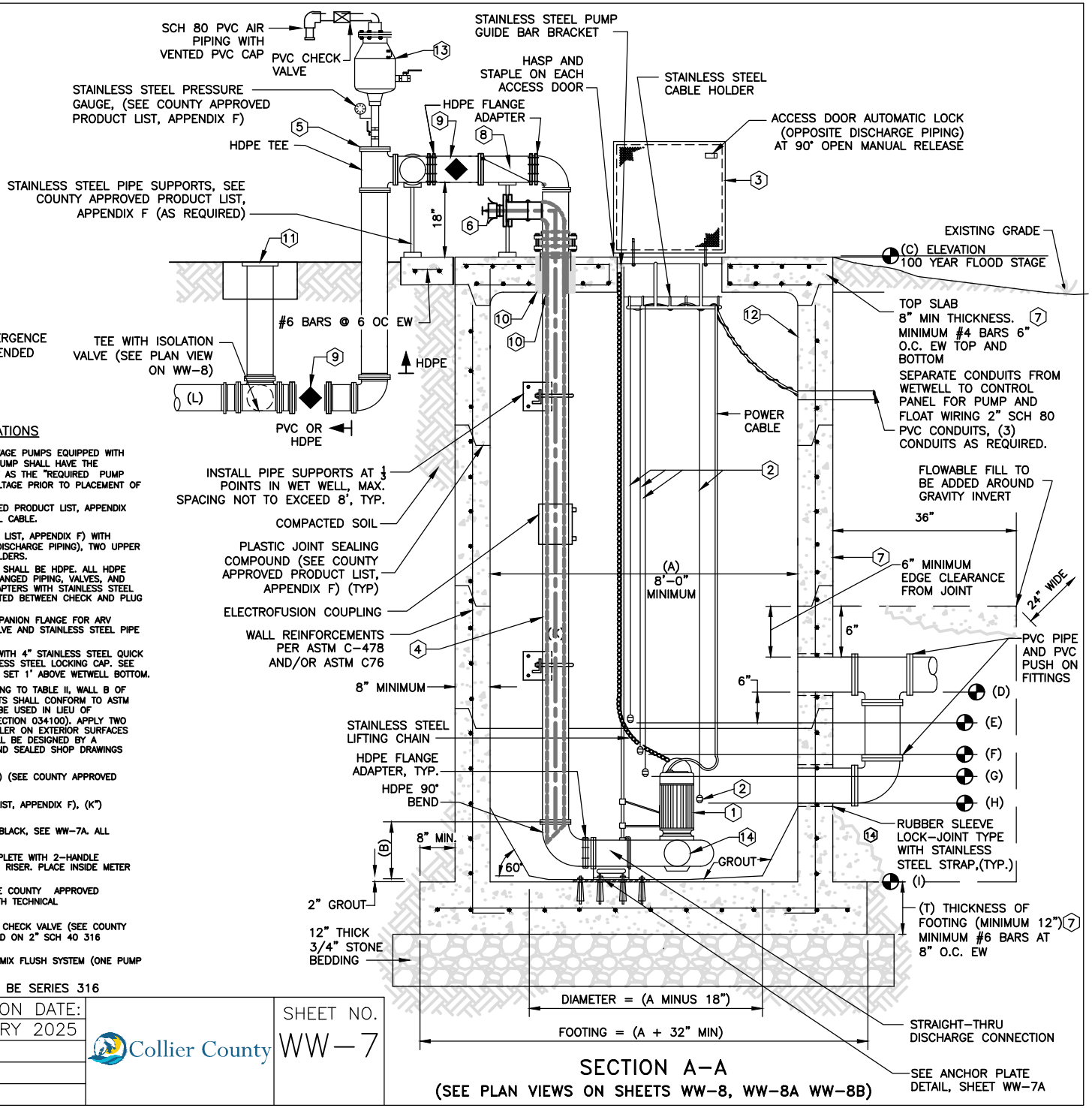
*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER (OPPOSITE DISCHARGE PIPING), TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76 AND/OR ASTM C-478. O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. RAM-NEK MAY BE USED IN LIEU OF O-RING RUBBER GASKETS (SEE SPECIFICATION SECTION 034100). APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL. PUMP STATION WET WELL SHALL BE DESIGNED BY A FLORIDA PROFESSIONAL ENGINEER AND SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



SECTION A-A
(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)

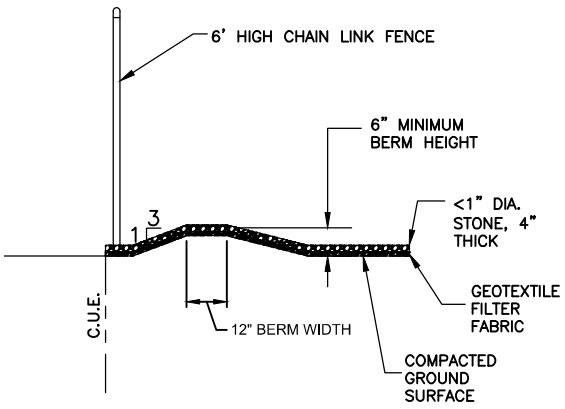
PUMP STATION DETAIL - PROFILE

NTS

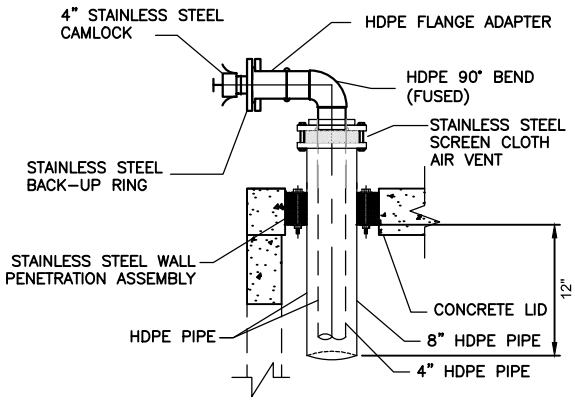
REVISION DATE: JANUARY 2025

Collier County

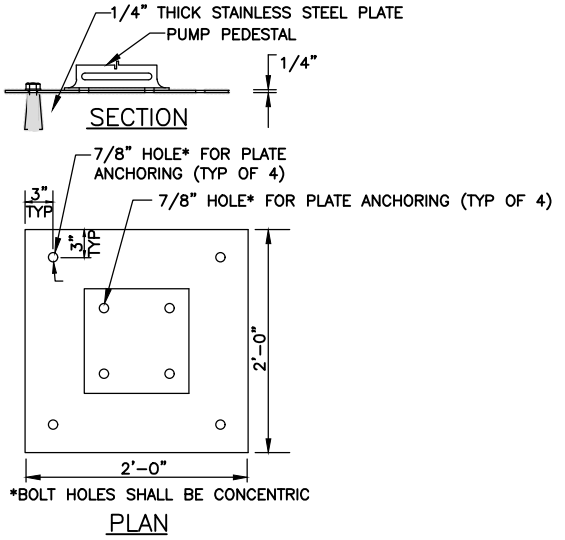
SHEET NO. WW-7



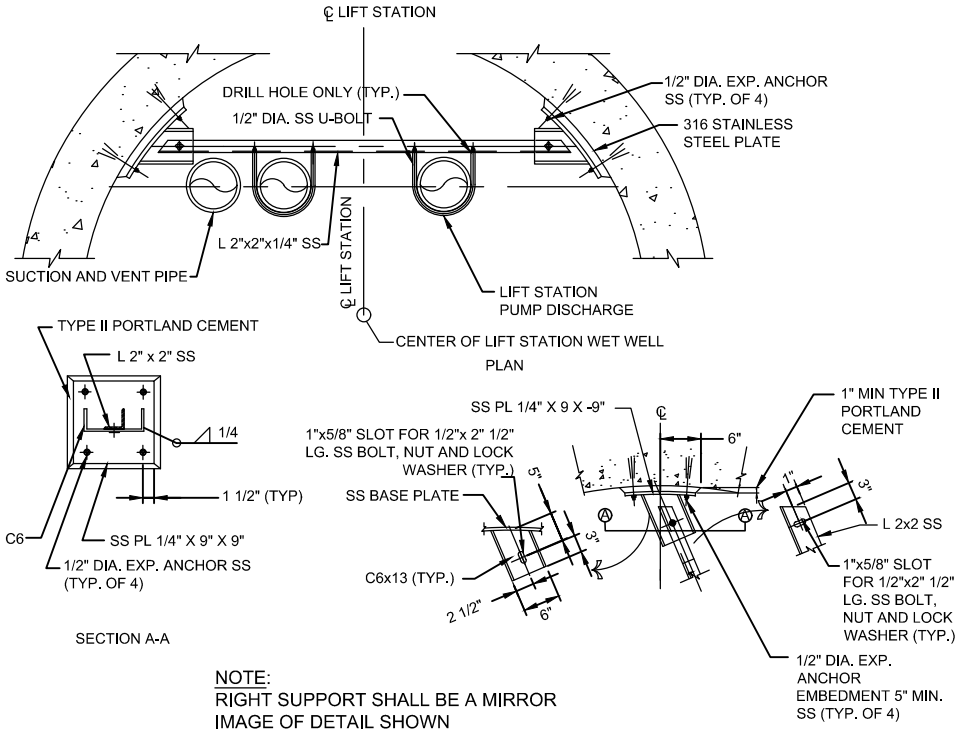
BERM DETAIL (FROM WW-8)



VENT PIPE DETAIL
(FROM WW-8, WW-8A, WW-8B)

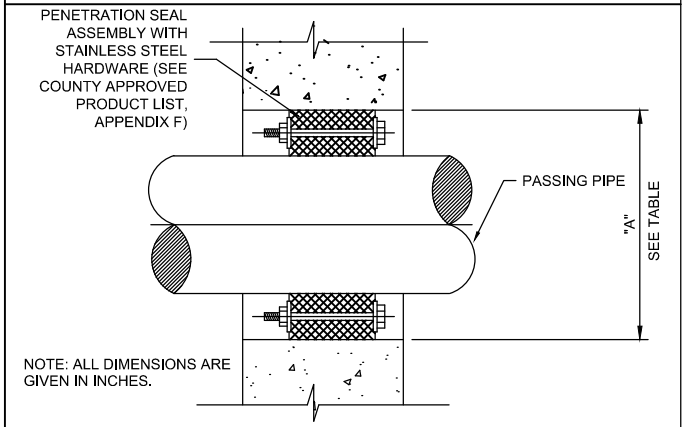


ANCHOR PLATE DETAIL (FROM WW-7)



NOTE:
RIGHT SUPPORT SHALL BE A MIRROR IMAGE OF DETAIL SHOWN

DISCHARGE PIPE SUPPORT DETAIL
(FROM WW-7)



PIPE SIZE	"A"	PIPE SIZE	"A"
2	4	14	18
4	8	16	20
6	10	18	24
8	12	20	26
10	14	24	28
12	16		

WALL PENETRATION DETAIL (FROM WW-7)

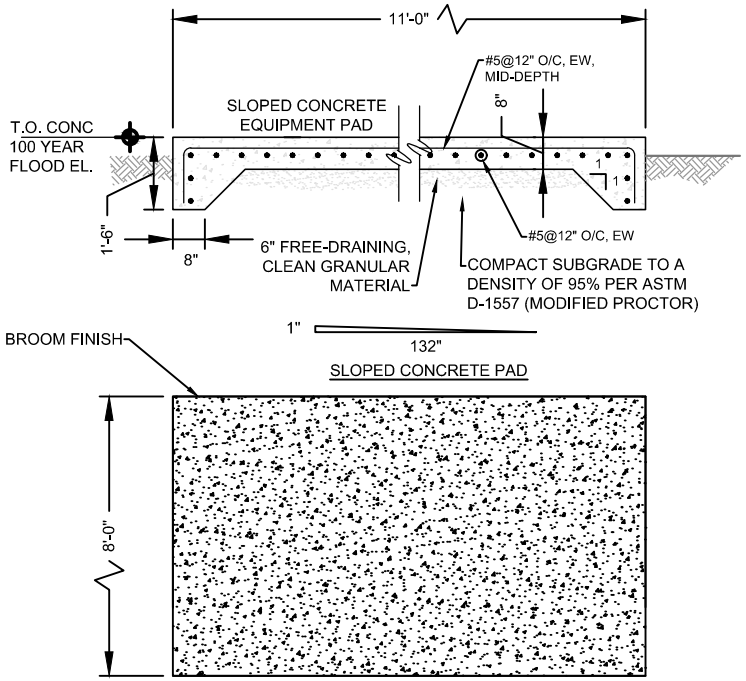
PUMP STATION AND WASTEWATER DETAILS

NTS

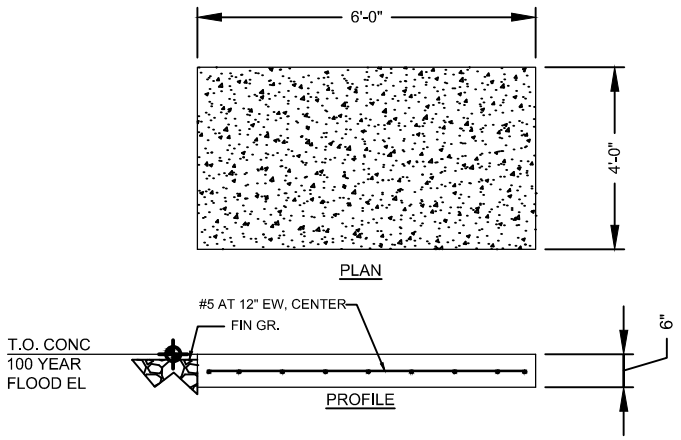
REVISION DATE:
JAN. 2015

Collier County

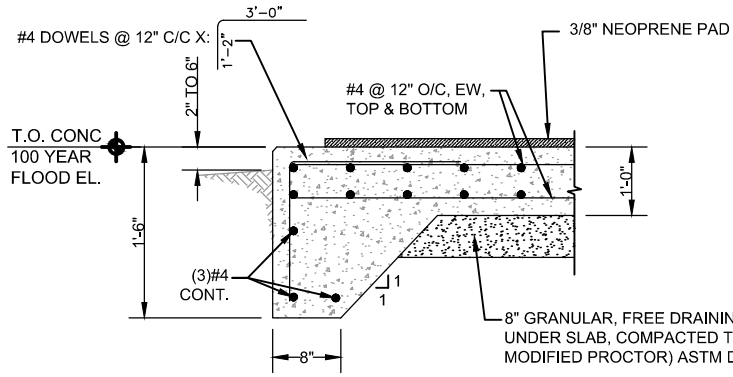
SHEET NO.
WW-7A



ODOR CONTROL PAD (TYPICAL)
N.T.S



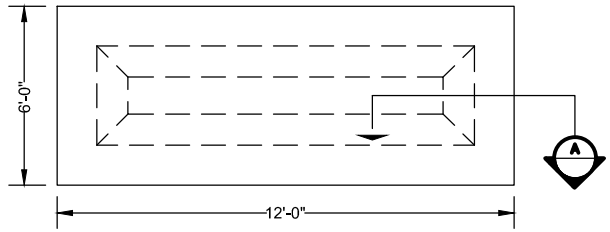
PUMP CONTROL PANEL PAD (TYPICAL) – N.T.S



SECTION A
SCALE: N.T.S.

GENERATOR (SLAB/REINF.)

NOTE: CONTRACTOR SHALL PROVIDE A 3/8" CLOSED CELL NEOPRENE PAD ON THE SLAB TO MATCH THE BASE FOOTPRINT OF THE GENERATOR OR THE DIESEL PUMP.



STAND–BY GENERATOR OR DIESEL PUMP CONCRETE SLAB DETAIL (TYP.) – N.T.S.

STRUCTURAL NOTES:

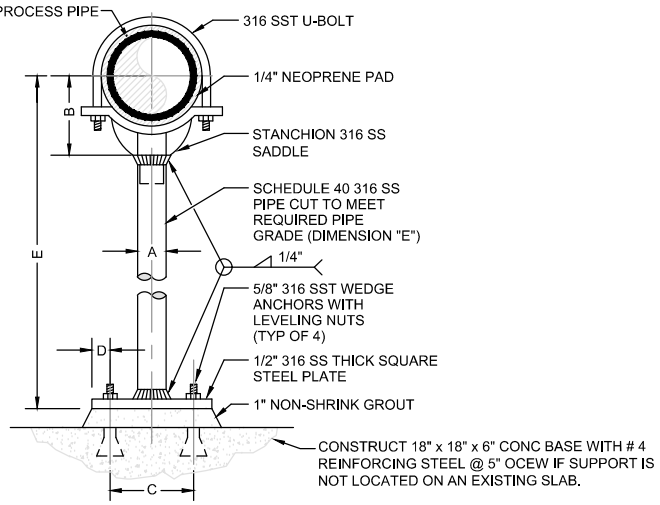
1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH; W/C = 0.45, AIR CONTENT 6% (±) 1%; SLUMP = 4" BEFORE ADDING WATER REDUCING AGENT.
2. ALL STEEL SHALL BE ASTM A615, GR 60.
3. ALL DIMENSIONS SHOWN ARE TYPICAL ONLY. CONTRACTOR TO VERIFY OVERALL SLAB SIZE WITH EQUIPMENT MANUFACTURER AND ENGINEER PRIOR TO CONSTRUCTION.
4. ALL SLABS SHALL HAVE TOOLED EDGES ON ALL SIDES

PUMP STATION CONCRETE DETAILS

REVISION DATE:
JAN. 2015
NTS

Collier County

SHEET NO.
WW–7B



PIPE SIZE	A	B	C	D	E	
					MIN	MAX
4	3	4 3/16	7	1	18	30
5	3	4 13/16	7	1	18	30
6	3	5 7/16	7	1	18	30
8	3	6 15/16	7	1	18	30
10	3	8 7/16	7	1	18	30
12	3	9 15/16	7	1	18	30

* ALL DIMENSIONS IN INCHES.

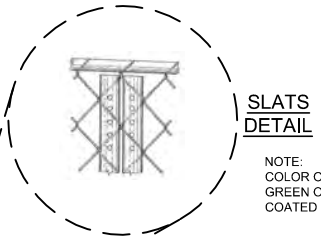
NOTES:

1. PIPE SUPPORT HEIGHT TO BE ADJUSTABLE.
2. SEE PLANS AND SECTIONS FOR PIPE GRADE REQUIREMENT (DIMENSION "E").
3. PIPE SUPPORT TO BE COMPATIBLE WITH HDPE PIPE.
4. ALL MATERIALS AND HARDWARE TO BE 316 SS.

PIPE SUPPORT DETAIL

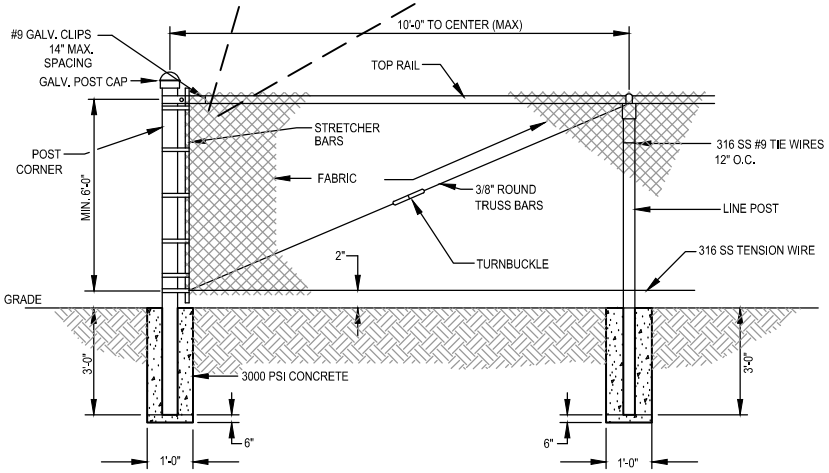
NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.

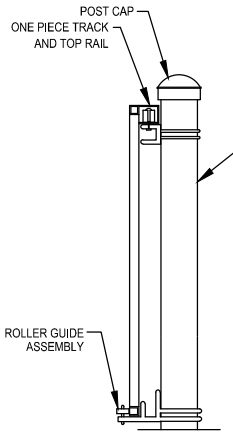


SLATS DETAIL

NOTE:
COLOR OF THE SLATS SHALL BE GREEN OR BLACK TO MATCH VINYL COATED PARTS



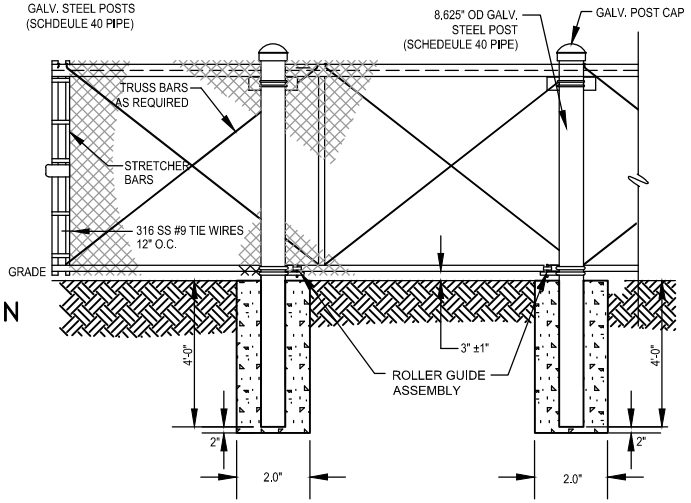
CHAIN LINK FENCE DETAIL



GATE SECTION

NOTES:

1. ALL FENCING COMPONENTS SHALL BE VINYL COATED GREEN OR BLACK AS APPLICABLE.



CHAIN LINK FENCE GATE DETAIL

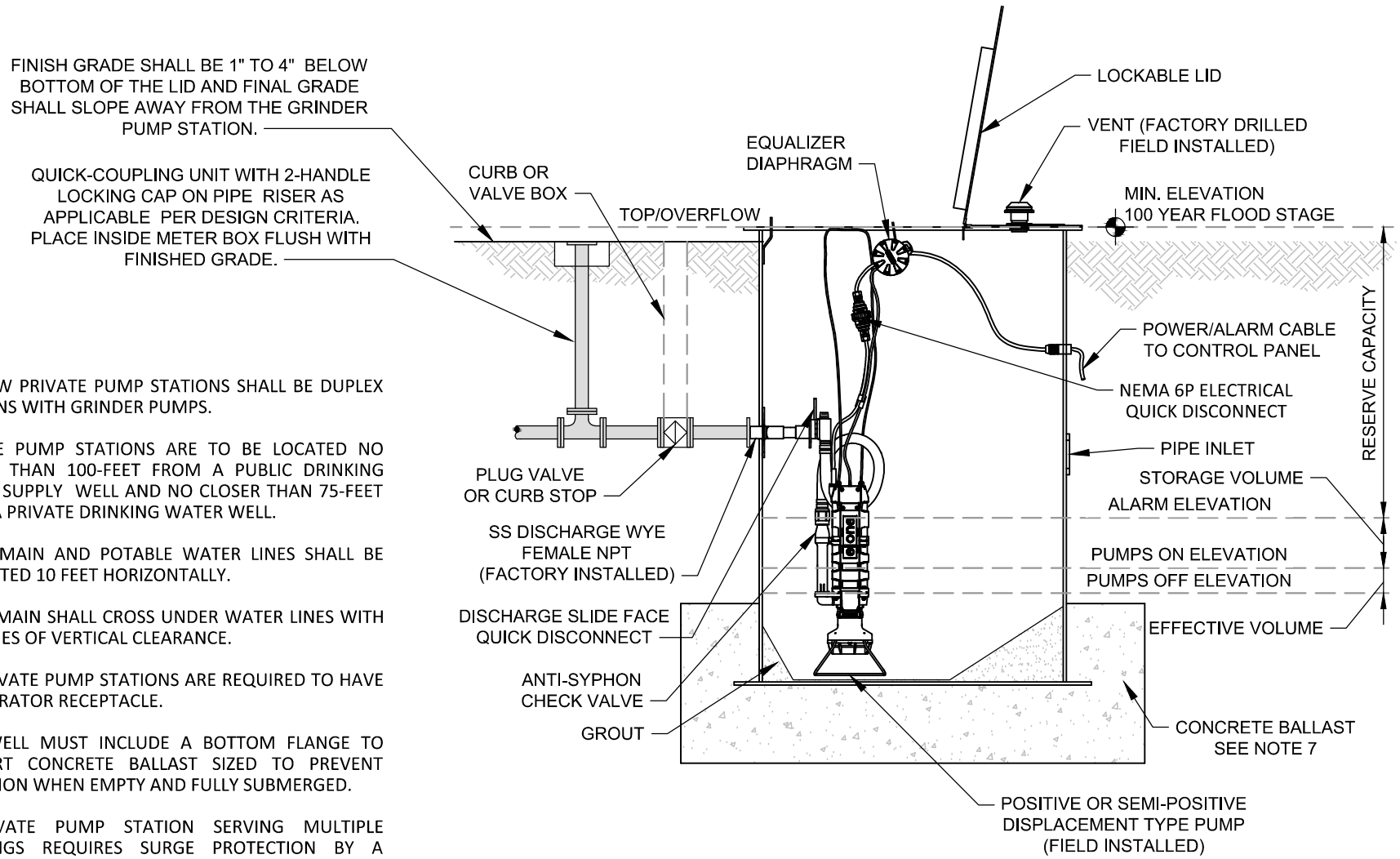
PUMP STATION AND WASTEWATER DETAILS

REVISION DATE:
JULY 2018

NTS

Collier County

SHEET NO.
WW-7C



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPTACLE.
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

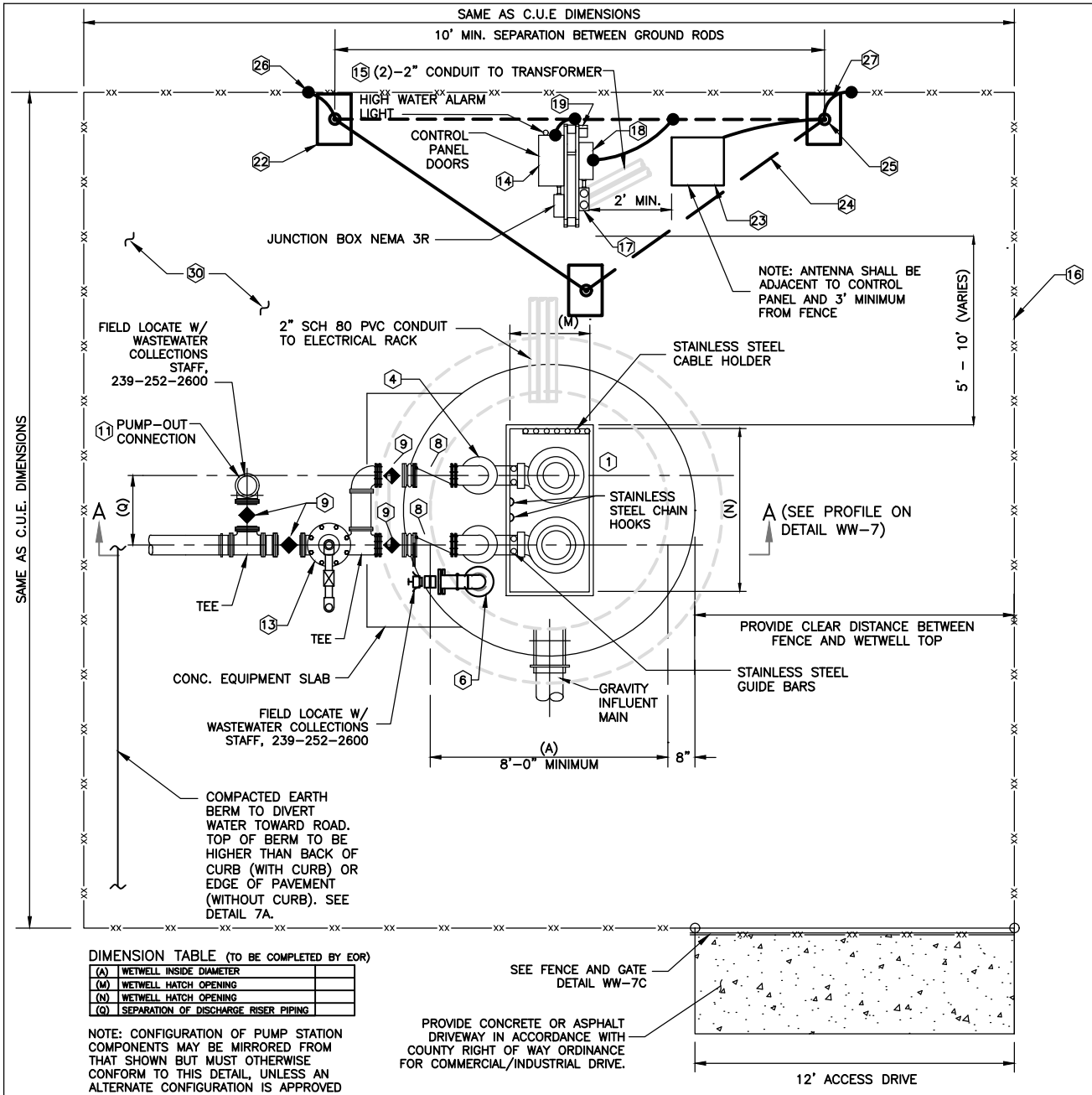
PRIVATE GRINDER PUMP STATION DETAIL

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–7D



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW-9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600. SEE DETAIL WW-9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

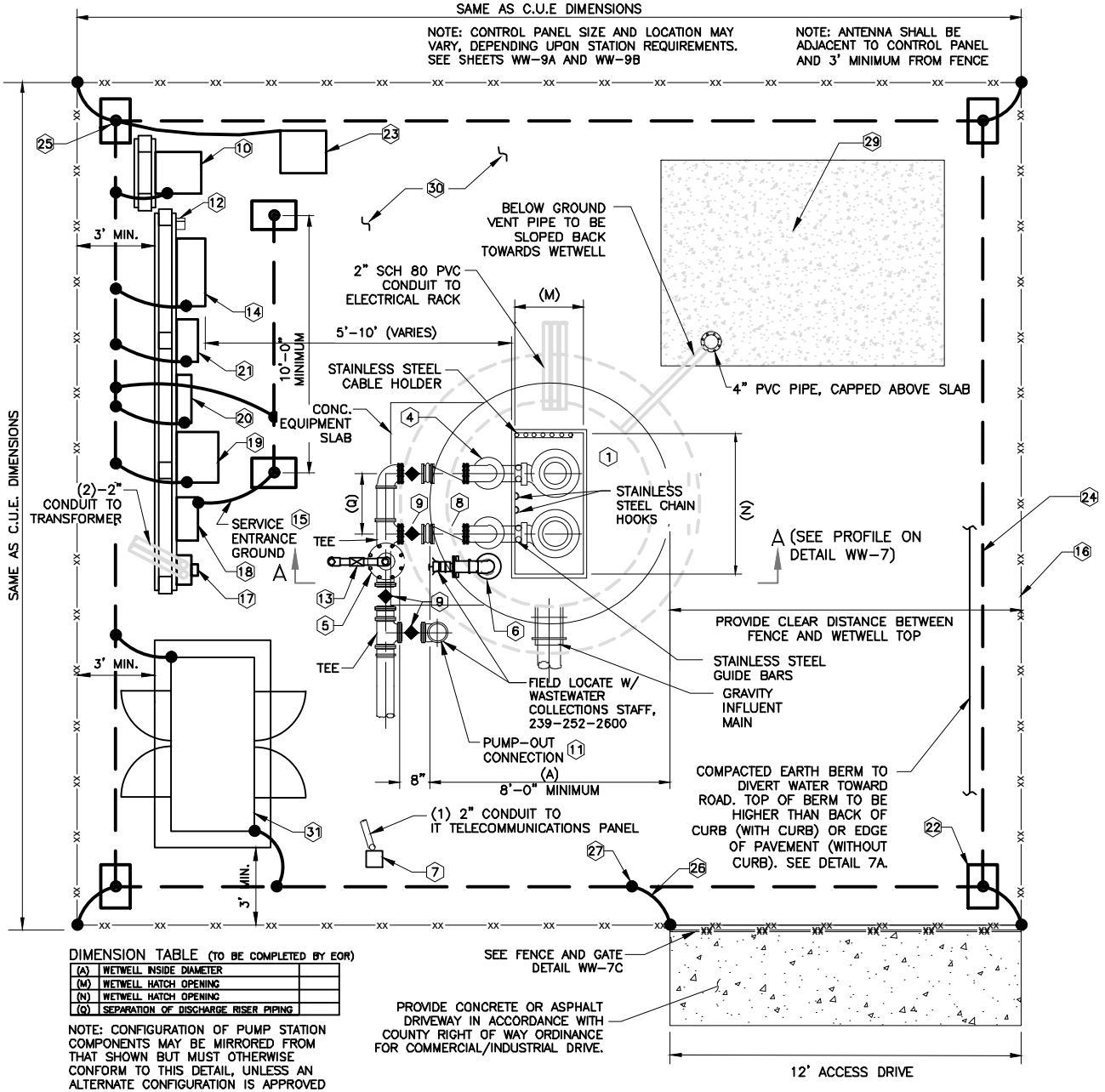
PUMP STATION DETAIL - PLAN

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-8



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD, FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

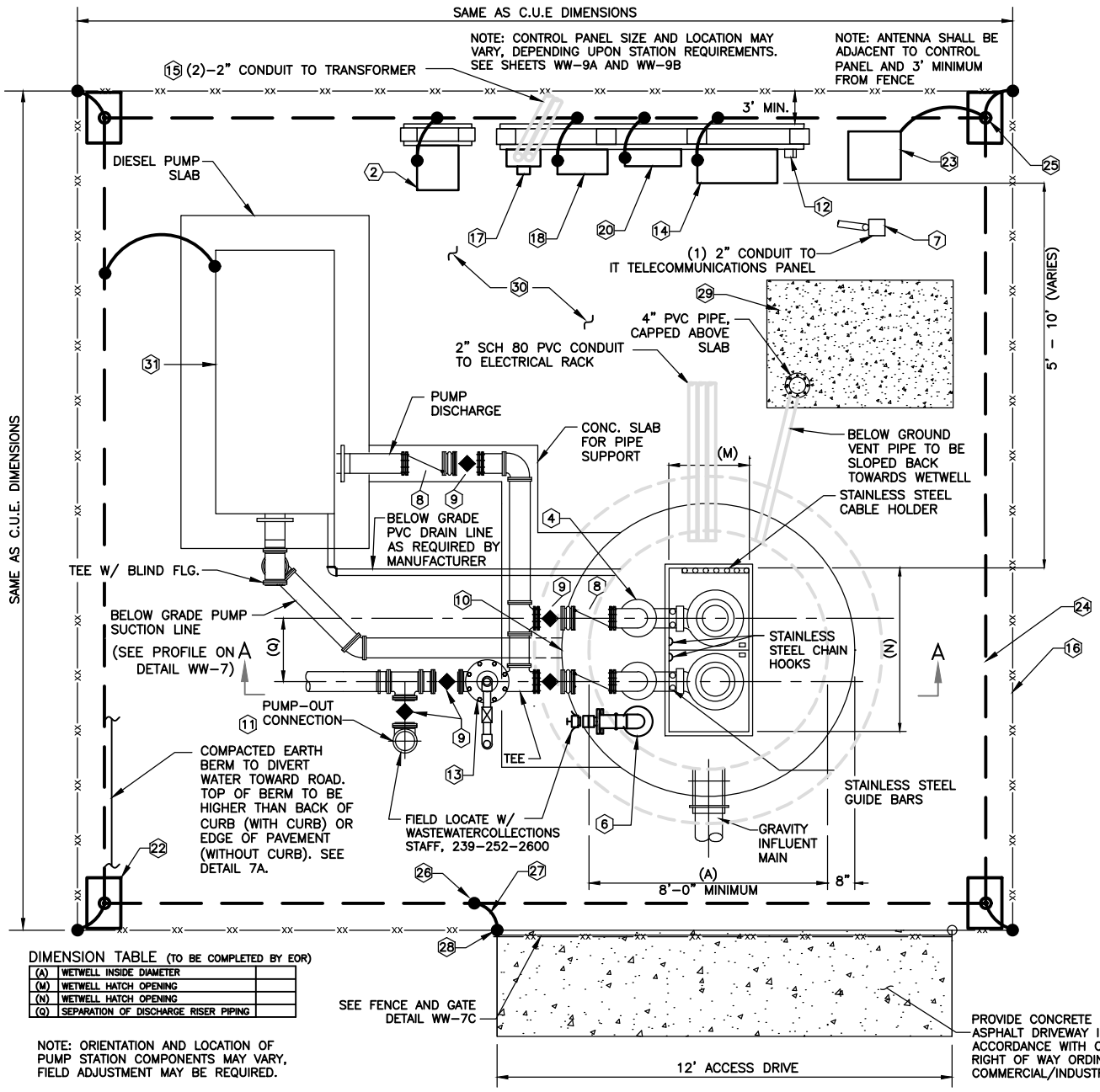
COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A



DIMENSION TABLE (TO BE COMPLETED BY EOR)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. IT TELECOMMUNICATIONS PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAILS WW-9A AND WW-9B, AS APPLICABLE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. NOT USED
20. 120V PANELBOARD / MINI POWER ZONE AS REQUIRED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW-17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW-17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER-CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. BOND FENCE POST. SEE FENCE POST/GATE BONDING DETAIL ON SHEET WW-9C FOR ADDITIONAL REQUIREMENTS (TYP.)
29. 8' X 11' X 6" CONCRETE PAD FOR FUTURE ODOR CONTROL
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. STAND-BY DIESEL PUMP WITH INTEGRATED FUEL TANK AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 221336.

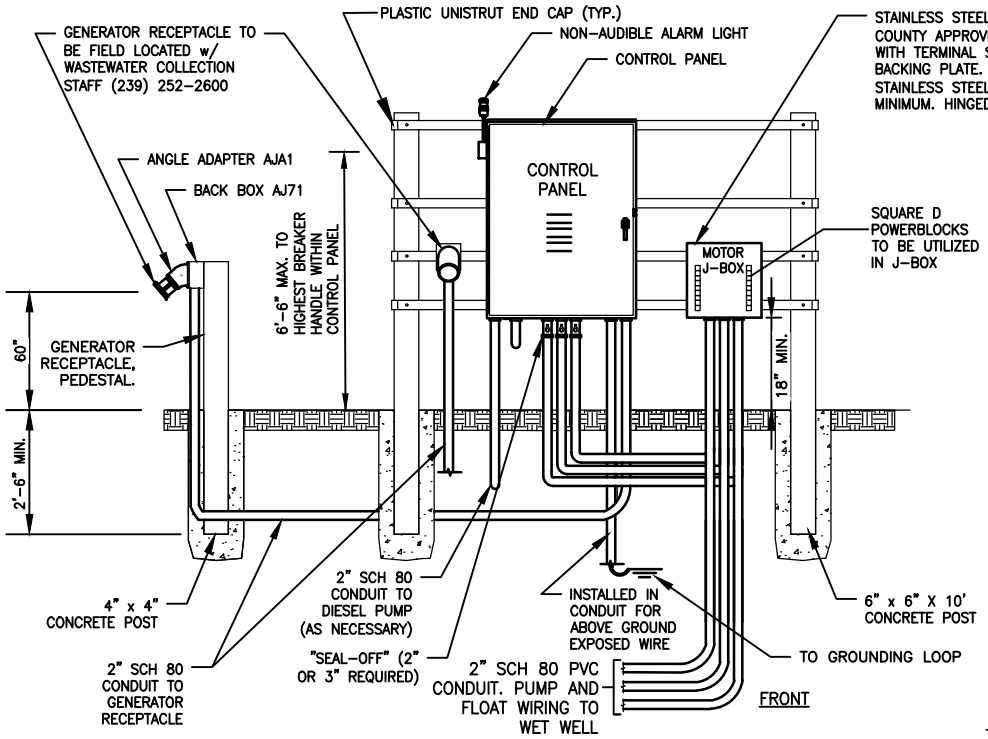
COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

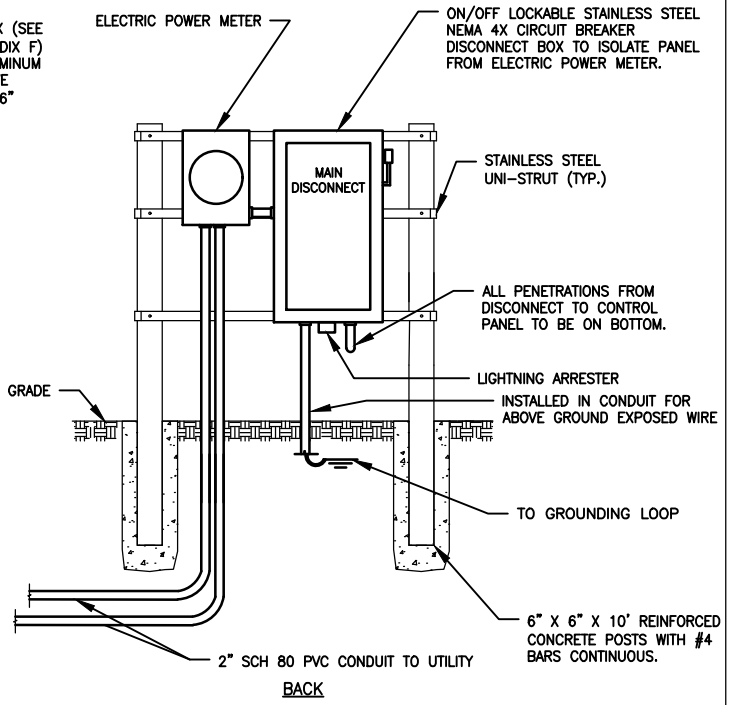
Collier County

SHEET NO. WW-8B



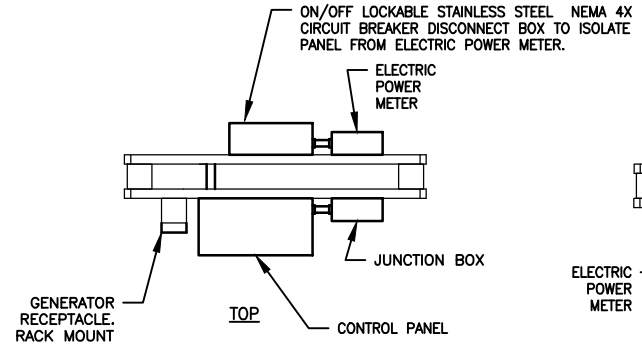
PUMP STATION CONTROL PANEL DETAIL - FRONT ELEVATION

SCALE: 1" = 4'-0"



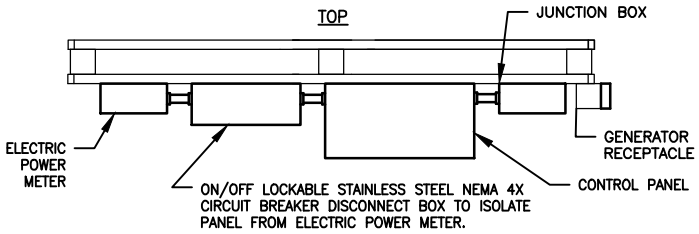
PUMP STATION CONTROL PANEL DETAIL - BACK ELEVATION

SCALE: 1" = 4'-0"



PUMP STATION CONTROL PANEL DETAIL - PLAN VIEW

SCALE: 1" = 4'-0"



SINGLE SIDE ALTERNATE - PLAN VIEW

SCALE: 1" = 4'-0"

NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN SCH 80 PVC CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC
7. GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
8. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF (239) 252-2600
9. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
10. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
11. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

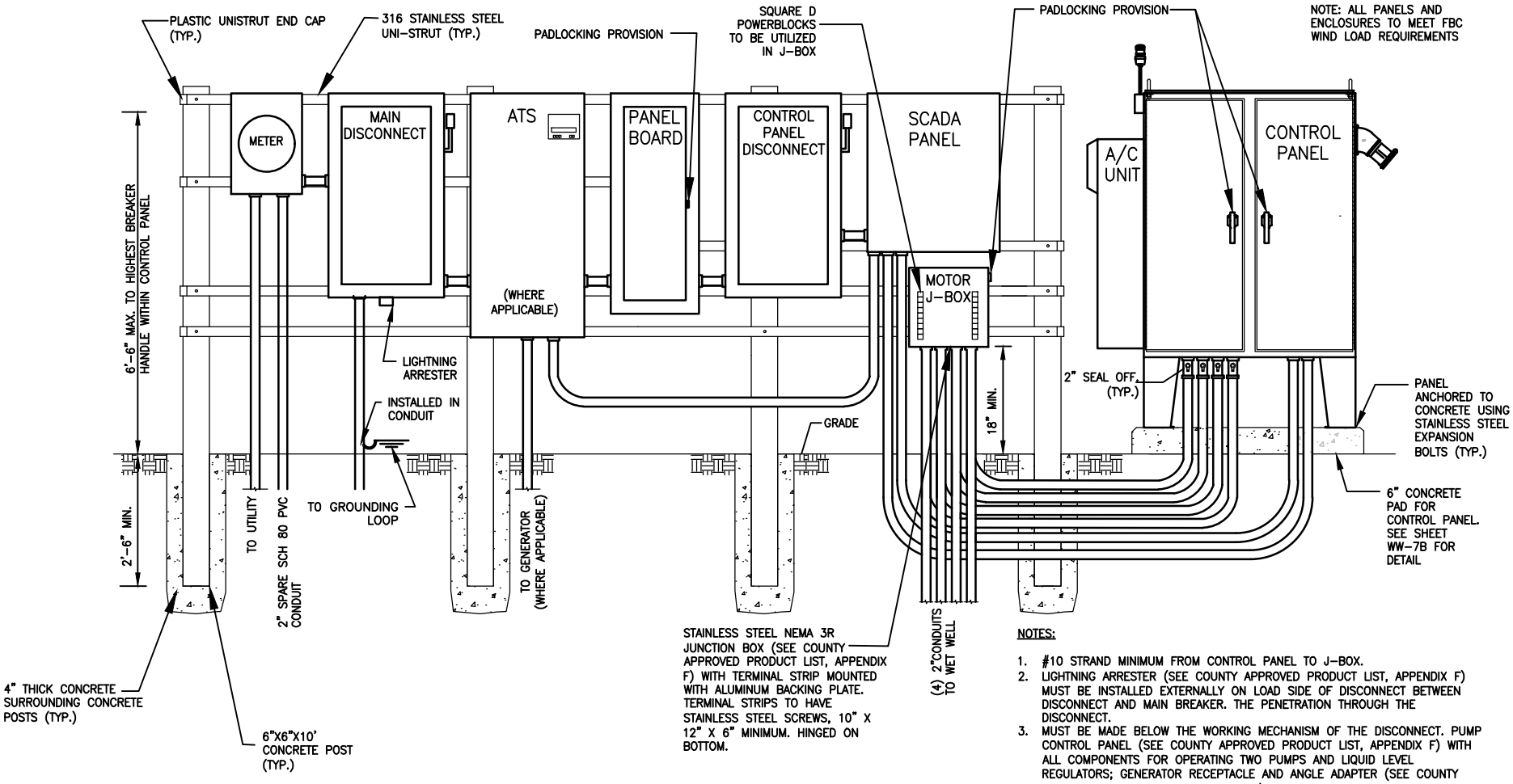
PUMP STATION CONTROL PANEL DETAIL

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-9



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT.
3. MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
6. ALL CONDUIT SHALL BE SCH 80 PVC.
7. LABEL ALL EQUIPMENT USING MIN. ½" BLACK LETTERING ON WHITE PLASTIC LABELS FIX MOUNTED ONTO FRONT OF ALL PANELS AND CABINETS.
8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

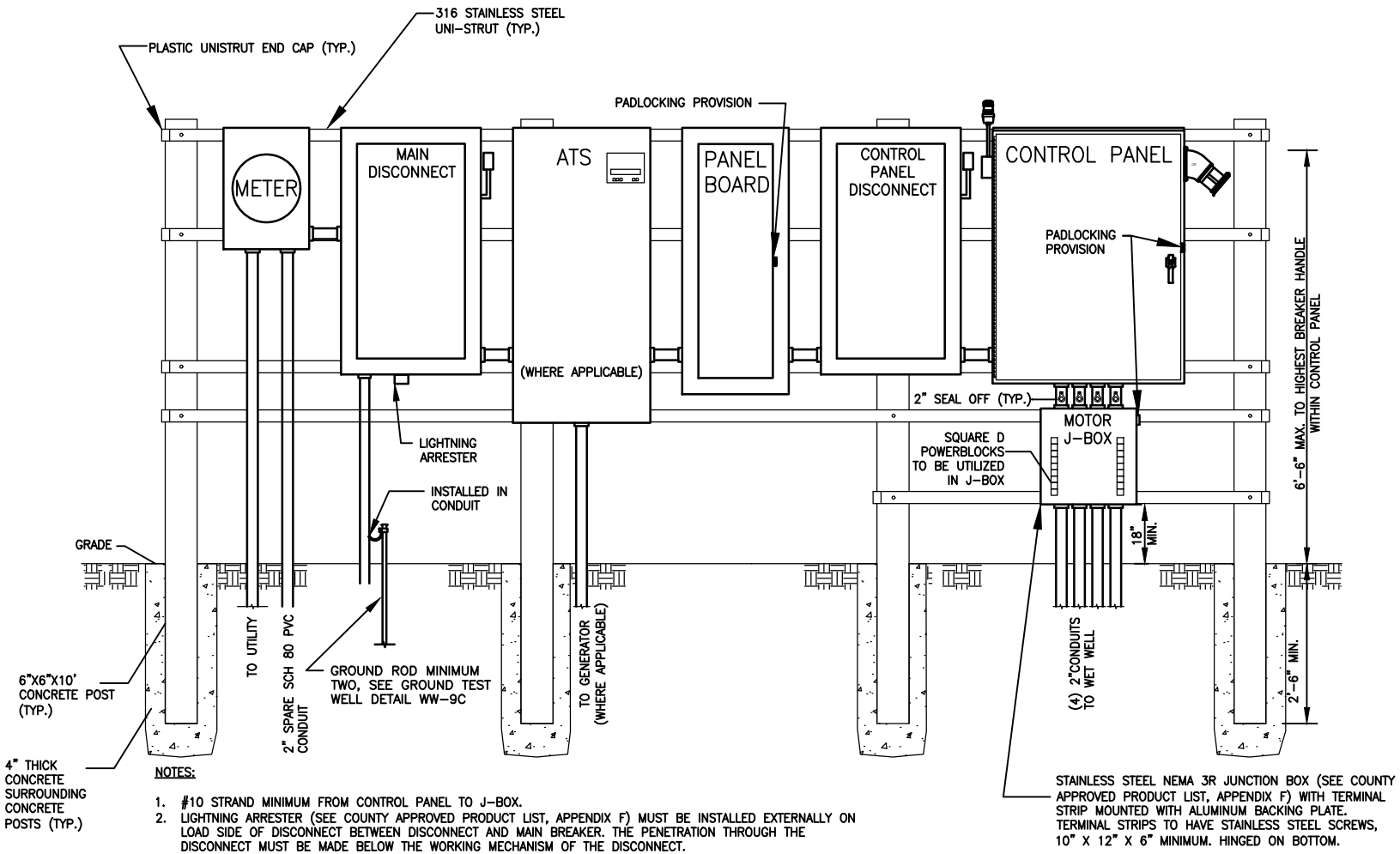
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW-9A



NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BETWEEN DISCONNECT AND MAIN BREAKER. THE PENETRATION THROUGH THE DISCONNECT MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT.
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 4X STAINLESS STEEL ENCLOSURE. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.
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8. SIDE PANEL PENETRATIONS ARE ACCEPTABLE WITH USE OF MYERS HUBS.
9. PHASE MONITOR TO BE INSTALLED PARALLEL WITH FPL METER (ON FPL SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD EMERGENCY STOP FOR GENERATOR AND FIRE EXTINGUISHER ON POST FURTHEST FROM GENERATOR WITH APPROPIATE SIGNAGE.
12. ALL UNI-STRUT TO BE MOUNTED FLUSH WITH POST AND PENETRATE POST WITH STAINLESS STEEL HARDWARE.
13. ALL MOUNTED EQUIPMENT MUST BE EVENLY SPACED, LEVEL, PLUMB AND INSTALLED IN A WORKMANLIKE MANNER.

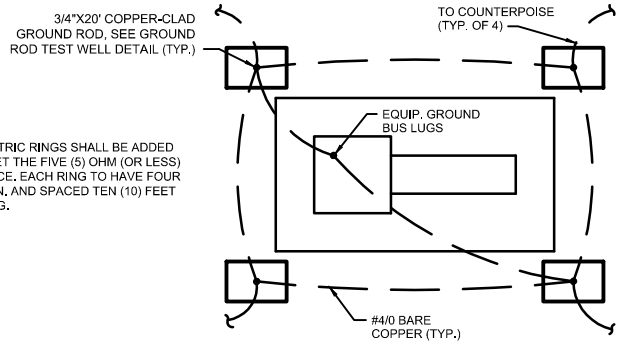
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JANUARY 2025

Collier County

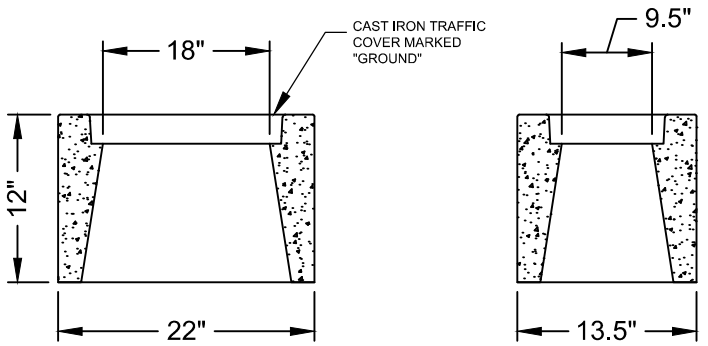
SHEET NO.
WW-9B

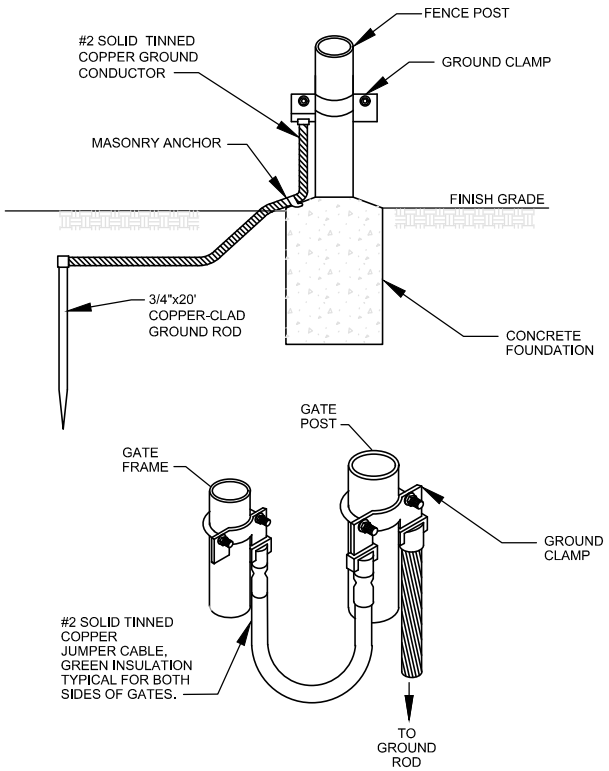


NOTES:
1. ADDITIONAL CONCENTRIC RINGS SHALL BE ADDED AS REQUIRED TO MEET THE FIVE (5) OHM (OR LESS) SPECIFIED RESISTANCE. EACH RING TO HAVE FOUR (4) GROUND RODS MIN. AND SPACED TEN (10) FEET FROM THE INNER RING.

GROUND MAT DETAIL

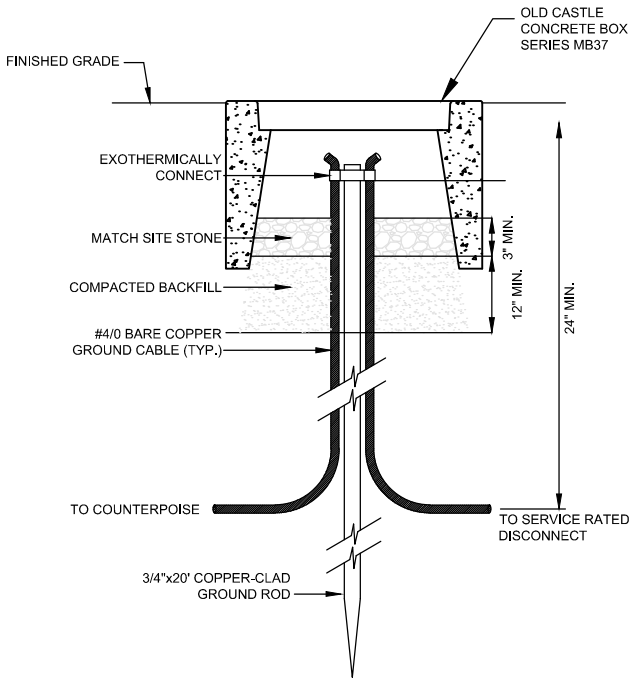
NOT TO SCALE





FENCE POST/GATE BONDING DETAIL

NOT TO SCALE



GROUND TEST WELL DETAIL

NOT TO SCALE

PUMP STATION LIGHTNING PROTECTION DETAILS

NTS

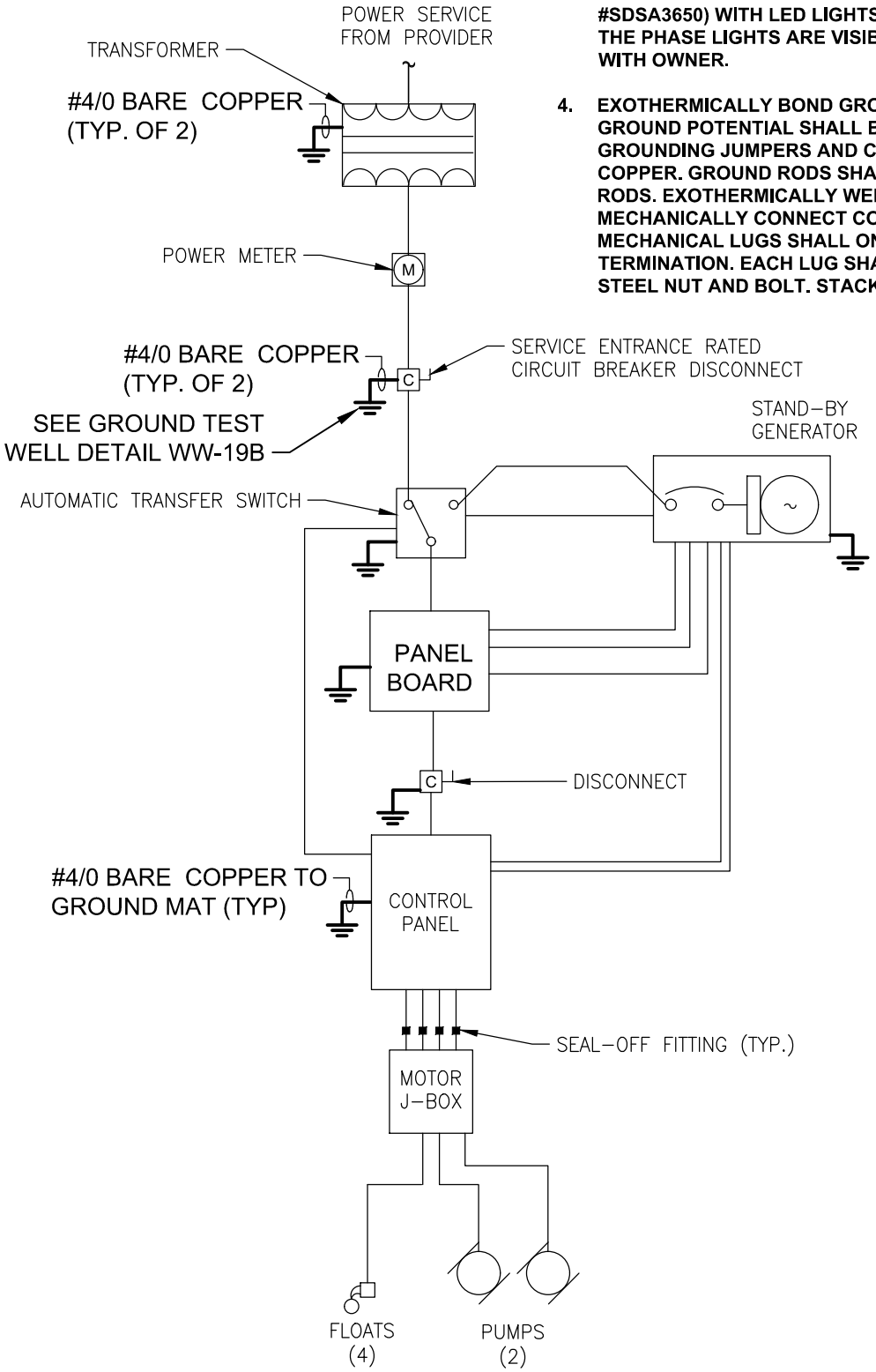
REVISION DATE:
JAN. 2015

Collier County

SHEET NO. WW-9C

NOTES

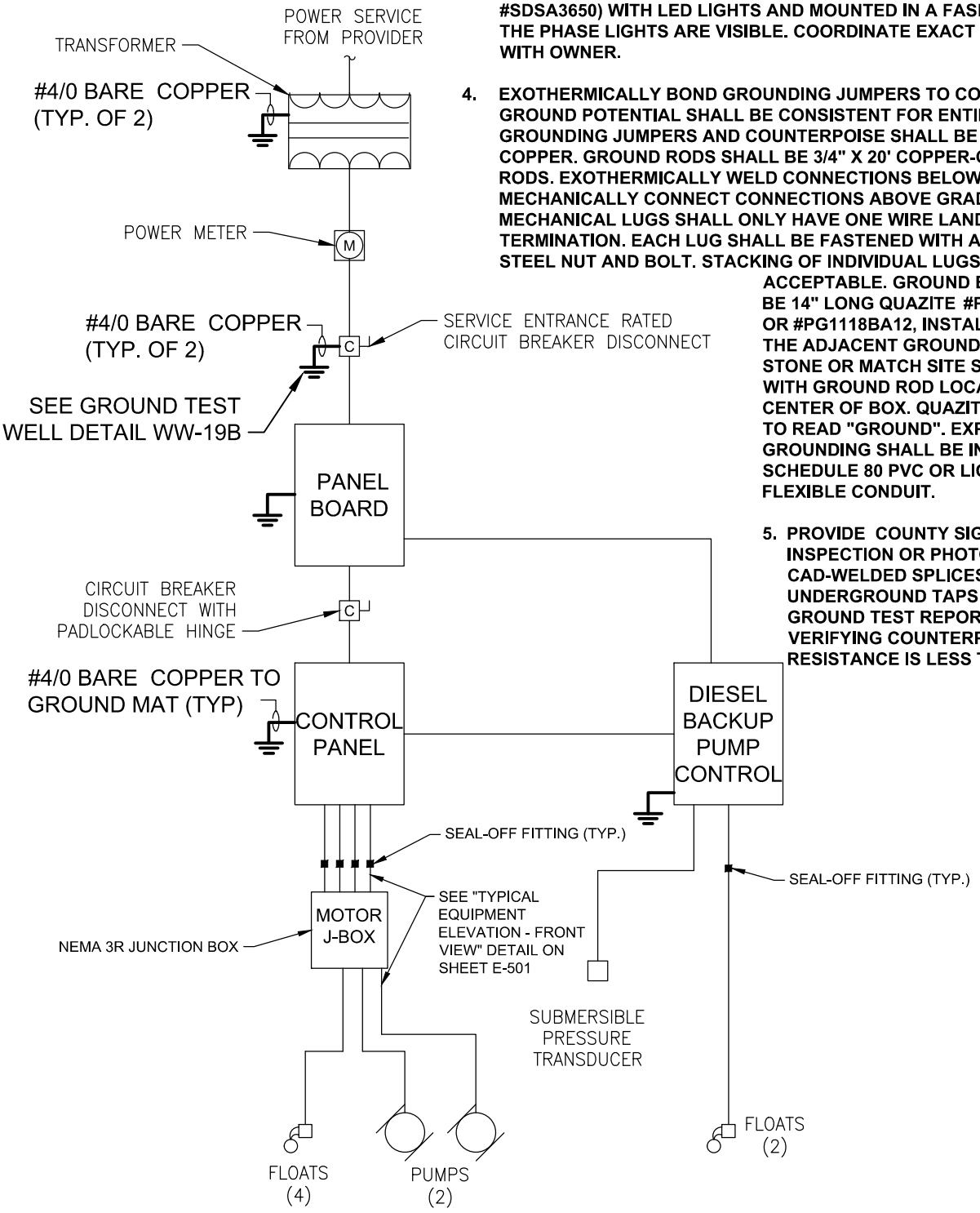
1. **BOND FENCE AND VEHICLE ACCESS GATE TO COUNTERPOISE.**
2. **PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.**
3. **SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.**
4. **EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.**
5. **PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.**



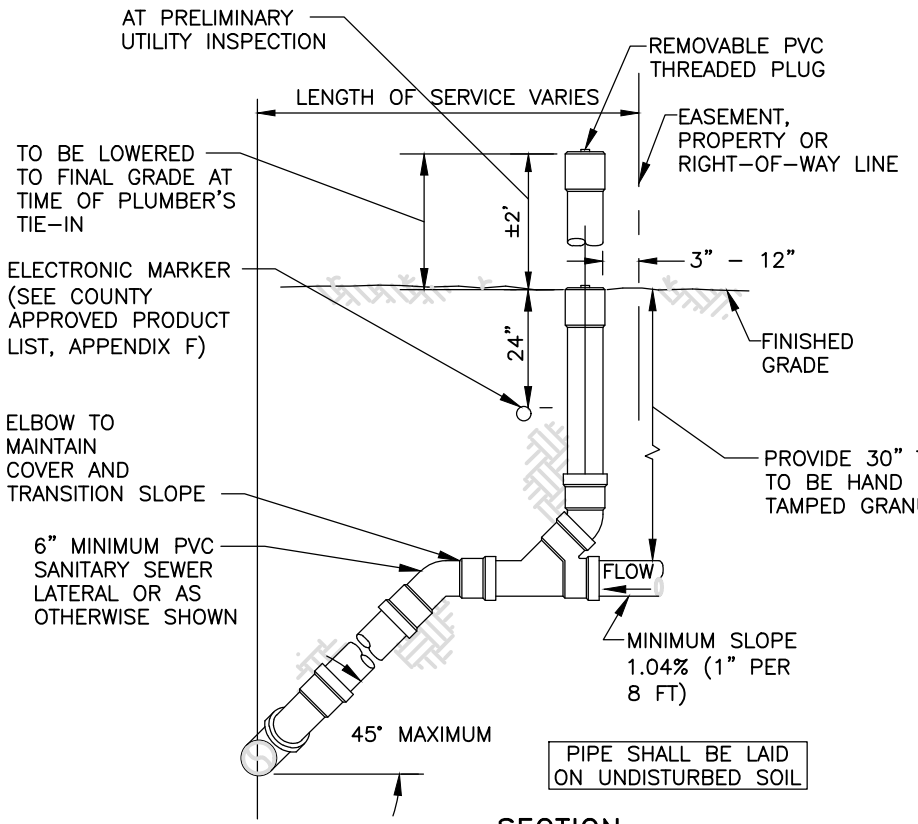
COMMUNITY PUMP STATION – RISER DIAGRAM WITH GENERATOR BACKUP NTS	REVISION DATE: JAN. 2015	Collier County	SHEET NO. WW-9D

NOTES

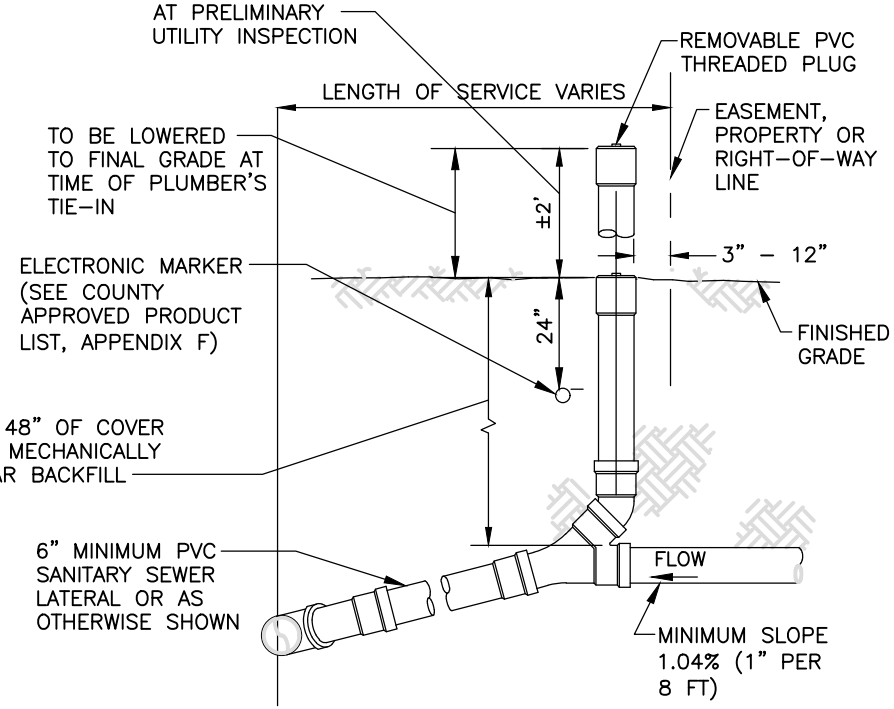
1. BOND FENCE AND ACCESS GATE TO COUNTERPOISE.
2. PROVIDE LIGHTNING PROTECTION FOR SCADA ANTENNA.
3. SURGE PROTECTION SHALL BE SQUARE D (THREE PHASE: #SDSA3650) WITH LED LIGHTS AND MOUNTED IN A FASHION THAT THE PHASE LIGHTS ARE VISIBLE. COORDINATE EXACT LOCATION WITH OWNER.
4. EXOTHERMICALLY BOND GROUNDING JUMPERS TO COUNTERPOISE. GROUND POTENTIAL SHALL BE CONSISTENT FOR ENTIRE SITE. GROUNDING JUMPERS AND COUNTERPOISE SHALL BE #4/0 BARE COPPER. GROUND RODS SHALL BE 3/4" X 20' COPPER-CLAD GROUND RODS. EXOTHERMICALLY WELD CONNECTIONS BELOW GRADE. MECHANICALLY CONNECT CONNECTIONS ABOVE GRADE. MECHANICAL LUGS SHALL ONLY HAVE ONE WIRE LANDED IN EACH TERMINATION. EACH LUG SHALL BE FASTENED WITH A STAINLESS STEEL NUT AND BOLT. STACKING OF INDIVIDUAL LUGS WILL NOT BE ACCEPTABLE. GROUND BOXES SHALL BE 14" LONG QUAZITE #PC1118CA0017 OR #PG1118BA12, INSTALL LEVEL WITH THE ADJACENT GROUND, PROVIDE 57 STONE OR MATCH SITE STONE IN BOX, WITH GROUND ROD LOCATED OFF CENTER OF BOX. QUAZITE BOX COVER TO READ "GROUND". EXPOSED GROUNDING SHALL BE IN 1" SCHEDULE 80 PVC OR LIQUID TIGHT FLEXIBLE CONDUIT.
5. PROVIDE COUNTY SIGNED INSPECTION OR PHOTO OF ALL CAD-WELDED SPLICES AND UNDERGROUND TAPS. PROVIDE GROUND TEST REPORT TO COUNTY VERIFYING COUNTERPOISE RESISTANCE IS LESS THAN 5 OHMS.



COMMUNITY PUMP STATION – RISER DIAGRAM WITH DIESEL BACKUP PUMP	REVISION DATE: JAN. 2015	Collier County	SHEET NO. WW–9E
NTS			



SECTION
DEPTH 8' AND OVER



SECTION
DEPTH LESS THAN 8'

NOTE:

AT TIME OF PLUMBER'S TIE-IN, ADD CONCRETE COLLAR AS PER DETAIL WW-12.

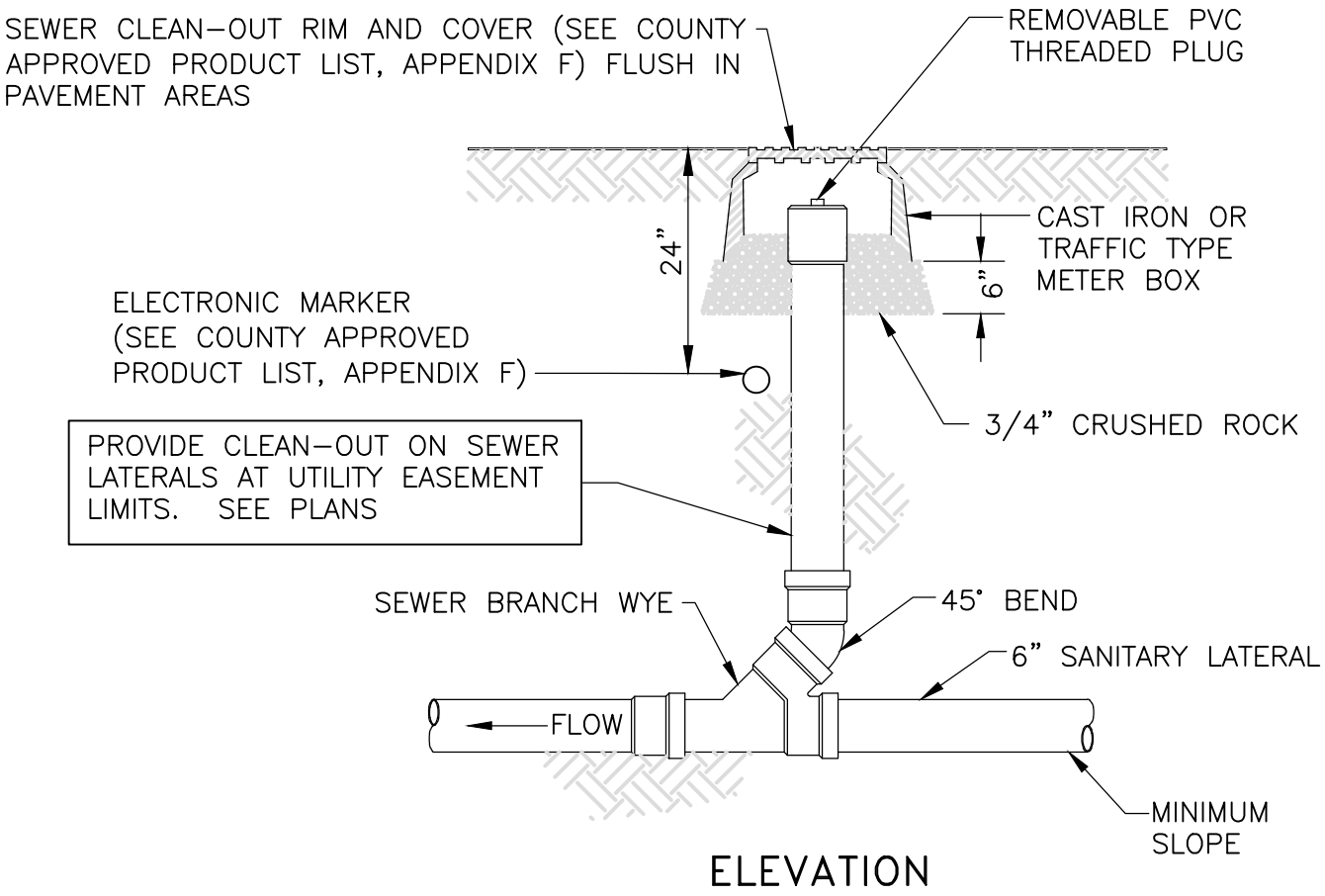
SEWER CONNECTION DETAILS
PROPERTY, RIGHT-OF-WAY OR EASEMENT LINE

NTS

REVISION DATE:
MAY 2009

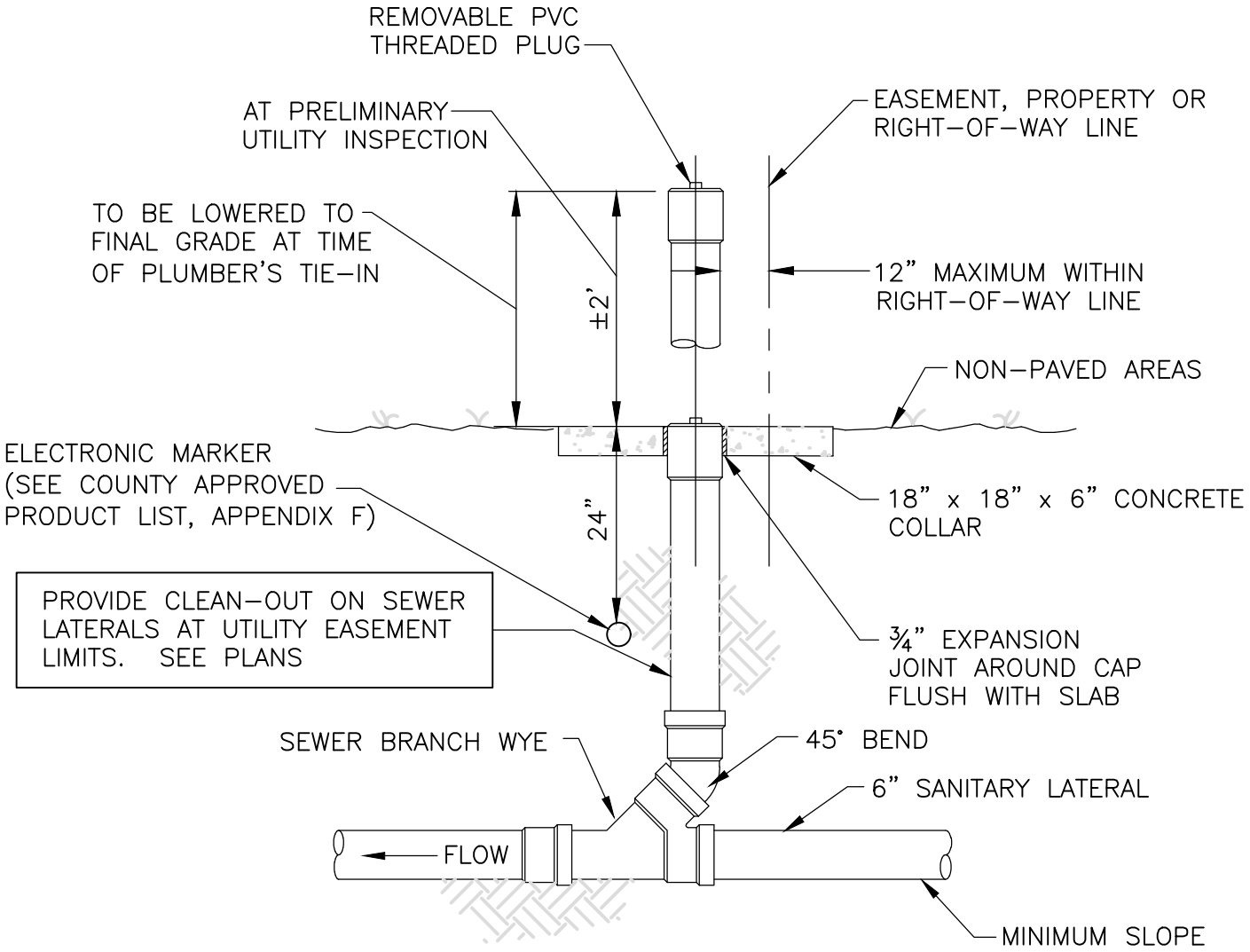
Collier County

SHEET NO.
WW-10



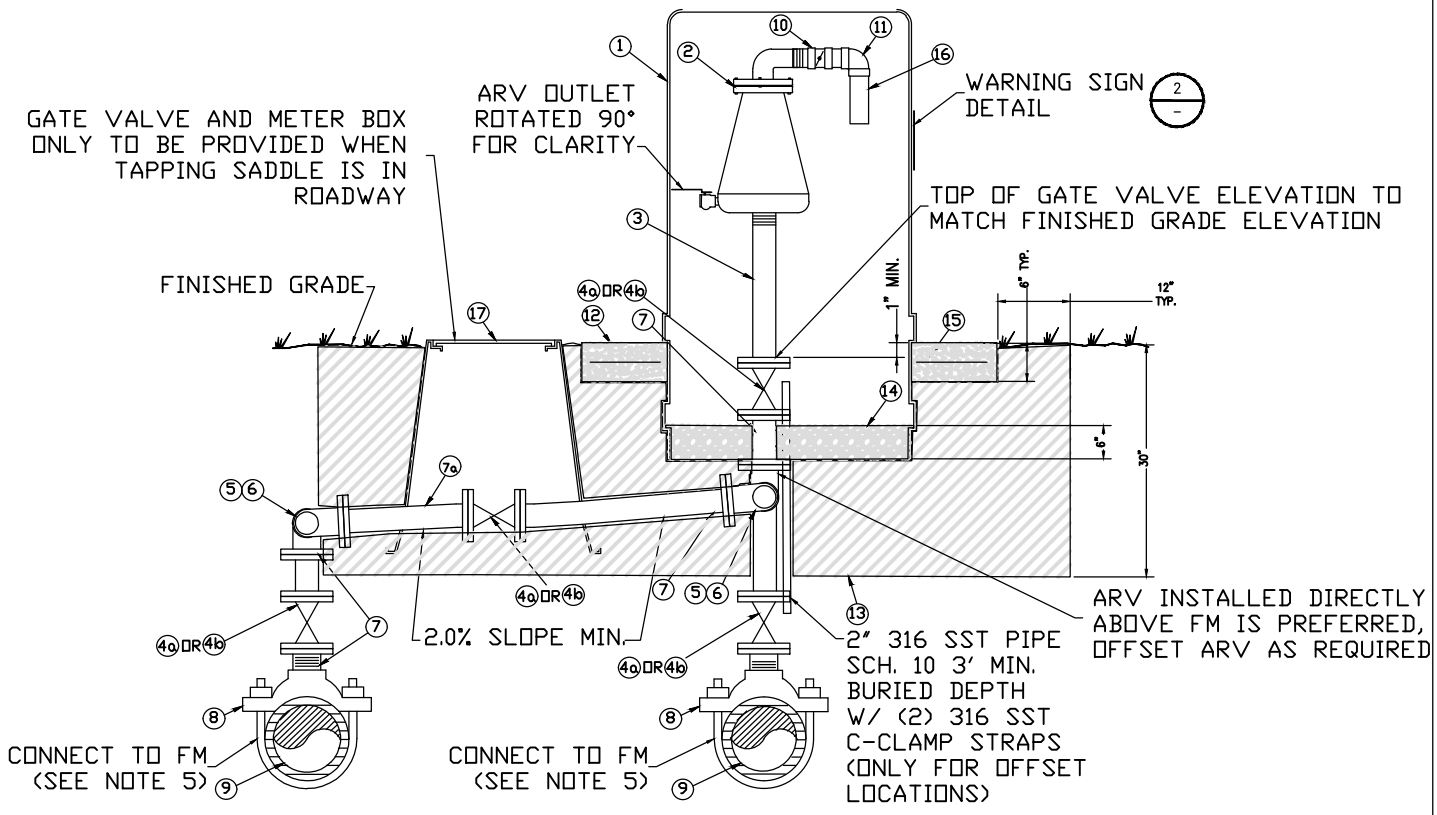
ELEVATION

SEWER CLEAN–OUT DETAIL PAVED AREAS	REVISION DATE: JULY 2018	Collier County	SHEET NO. WW–11
NTS			



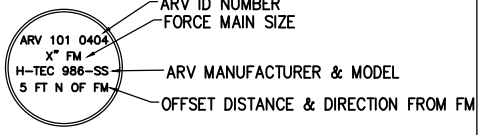
ELEVATION

SEWER CLEAN-OUT DETAIL NON PAVED AREAS	REVISION DATE: JANUARY 2014	Collier County	SHEET NO. WW-12
NTS			



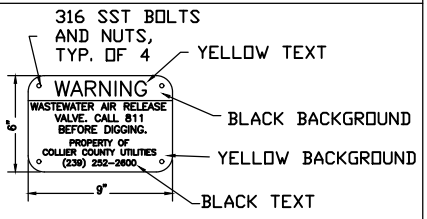
NOT TO SCALE

NOTE:
PROVIDE 3" DIAMETER BRASS DISC ANCHORED IN CONCRETE SLAB.



1 ARV BRASS DISC DETAIL
NOT TO SCALE

NOTE:
WARNING SIGN SHALL BE ATTACHED TO ENCLOSURE ANDSHALL BE FIBERGLASS.



2 WARNING SIGN DETAIL
NOT TO SCALE

MATERIAL		
ITEM	QUANT.	DESCRIPTION
1	1	VENTED ENCLOSURE, WATER PLUS H30 MODEL FOR 2"&3" ARVS, WATER PLUS H40 MODEL FOR ARVS ≥4"
2	1	AIR RELEASE VALVE, (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (2" AND 3" THR, ≥4" FLG)
3	1	SCH 80 PVC NIPPLE, LENGTH AS REQUIRED, THR X THR (2"& 3" ARV), 316 SST VAN STONE FLANGE (VSF) X 316 VSF (≥4" ARV)
4a	UP TO 3	2" OR 3" 316 SST BALL VALVE, FULL PORT, 316 SST HANDLE (THR)
4b	UP TO 3	4" - 8" PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (FLG)
5	UP TO 4	90° ELBOW, 316 SST (THR FOR 2" AND 3" ARVS, FLG FOR >4" ARVS)
6	2	SHORT NIPPLE, 316 SST, (THR BOTH ENDS FOR 2" AND 3" ARVS, FLG FOR >4" ARV)
7	2	316 SST PIPE, LENGTH AS REQUIRED, THR CONN FOR 2" AND 3", FLG CONN >4"
7a	2	2" PE 3408/3608 FOR 2" ARVS. 3" - 8" HDPE PIPE, PE 3608, DR 17 FOR ARVS 3" - 8".
8	1	DOUBLE STRAP TAPPING SADDLE, 316 SST WITH THREADED OUTLET FOR 2" & 3" ARV'S, DI TEE (MJ X MJ X FLANGE) FOR ARV'S >4"
9	2	4" & LARGER PIPE, D.I. OR PVC (DR-18)
10	1	1-1/2" CHECK VALVE, PVC, BY ARV MANUFACTURER
11	1	1-1/2" X 90° ELBOW, PVC SCH 80, BY ARV MANUFACTURER
12	1	CONCRETE SLAB FOR ENCLOSURES, 3000 PSI CONCRETE
13	1	COMPACTED FILL PER COLLIER COUNTY TYPICAL DETAIL, G-1
14	1	57 STONE
15	1	(2) #4 BARS CONTINUOUS & (4) #4 BARS DIAGONAL (2" MIN. COVER)
16	1	1-1/2" SCH 80 PVC, LENGTH AS REQUIRED
17	1	12" ALLIANCE METER BOX (ARV'S <4"), 18" ALLIANCE METER BOX (ARV'S >4"), BLACK

NOTES:
1. PROVIDE DARK GREEN REFLECTIVE MARKER ON CURB OR EDGE OF ROADWAY CLOSEST TO THE ARV.
2. PROVIDE 3'-0" RADIUS AROUND ARV ENCLOSURE CLEAR OF ALL LANDSCAPING FOR MAINTENANCE ACCESS.
3. PROVIDE 316 SST PIN ALLEN BOLT KEY SYSTEM WITH EACH ENCLOSURE.
4. THE THREADED OR FLANGED OUTLET SIZE OF THE ARV SHALL BE SIZED BY THE DESIGN ENGINEER. A MINIMUM DIAMETER OF 2-INCHES SHALL BE PROVIDED.
5. TAPPING SADDLE IS DEPICTED HOWEVER A TEE (DIA. OF FM X SIZE OF ARV) SHALL BE INSTALLED INSTEAD OF A TAPPING SADDLE FOR ARV'S >4".

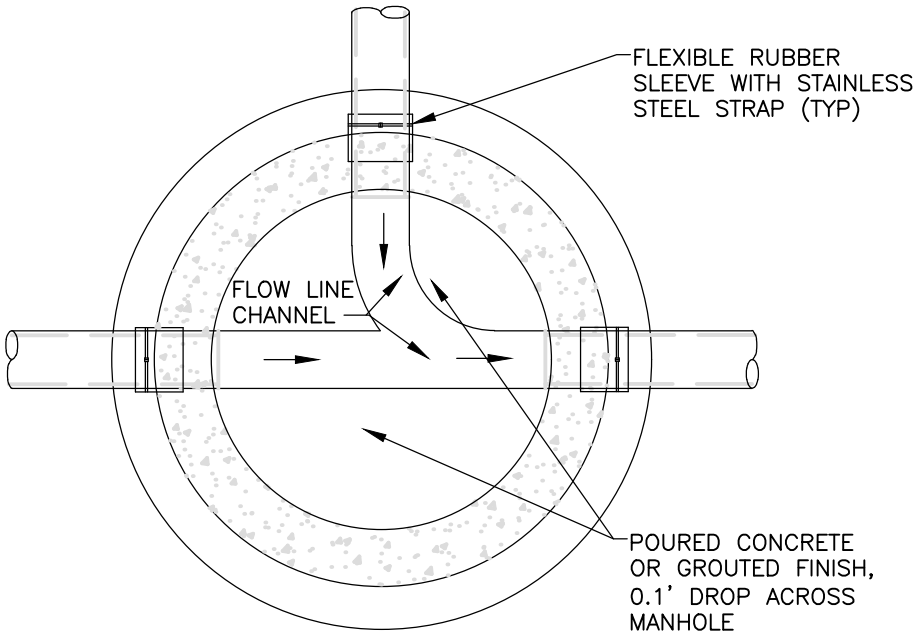
FORCE MAIN AIR RELEASE VALVE DETAIL

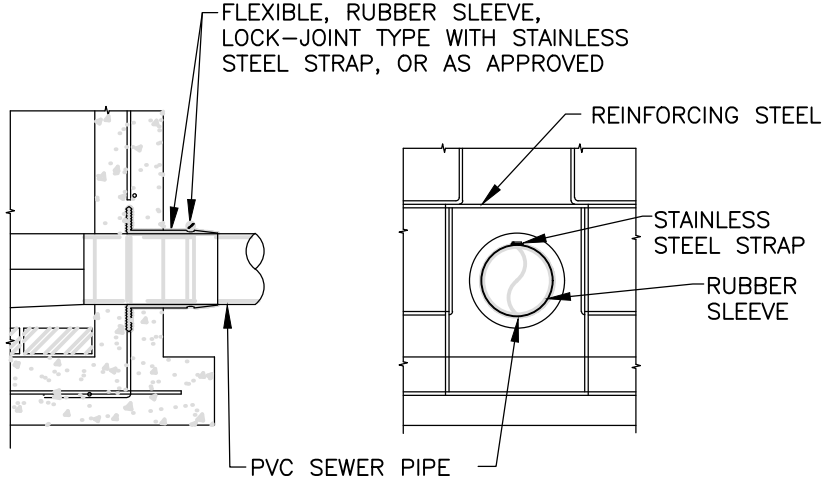
NTS

REVISION DATE:
JAN. 2015

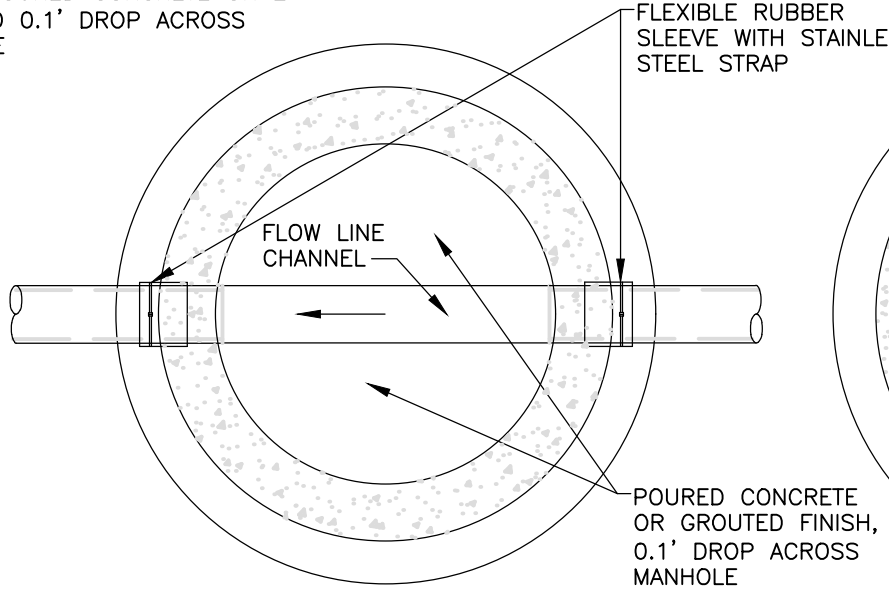
Collier County

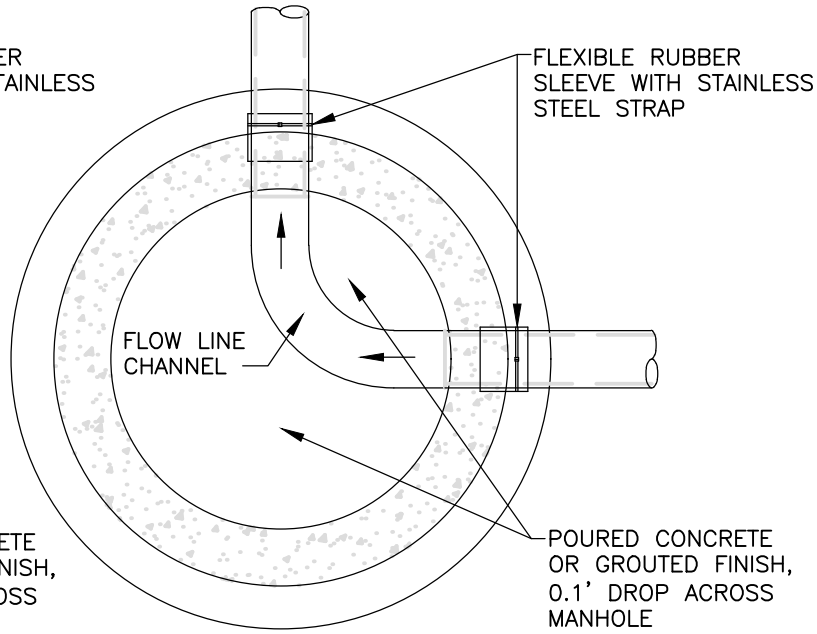
SHEET NO.
WW-13





FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MINIMUM OF 2" POURED CONCRETE OR 2" GROUTED 0.1' DROP ACROSS MANHOLE





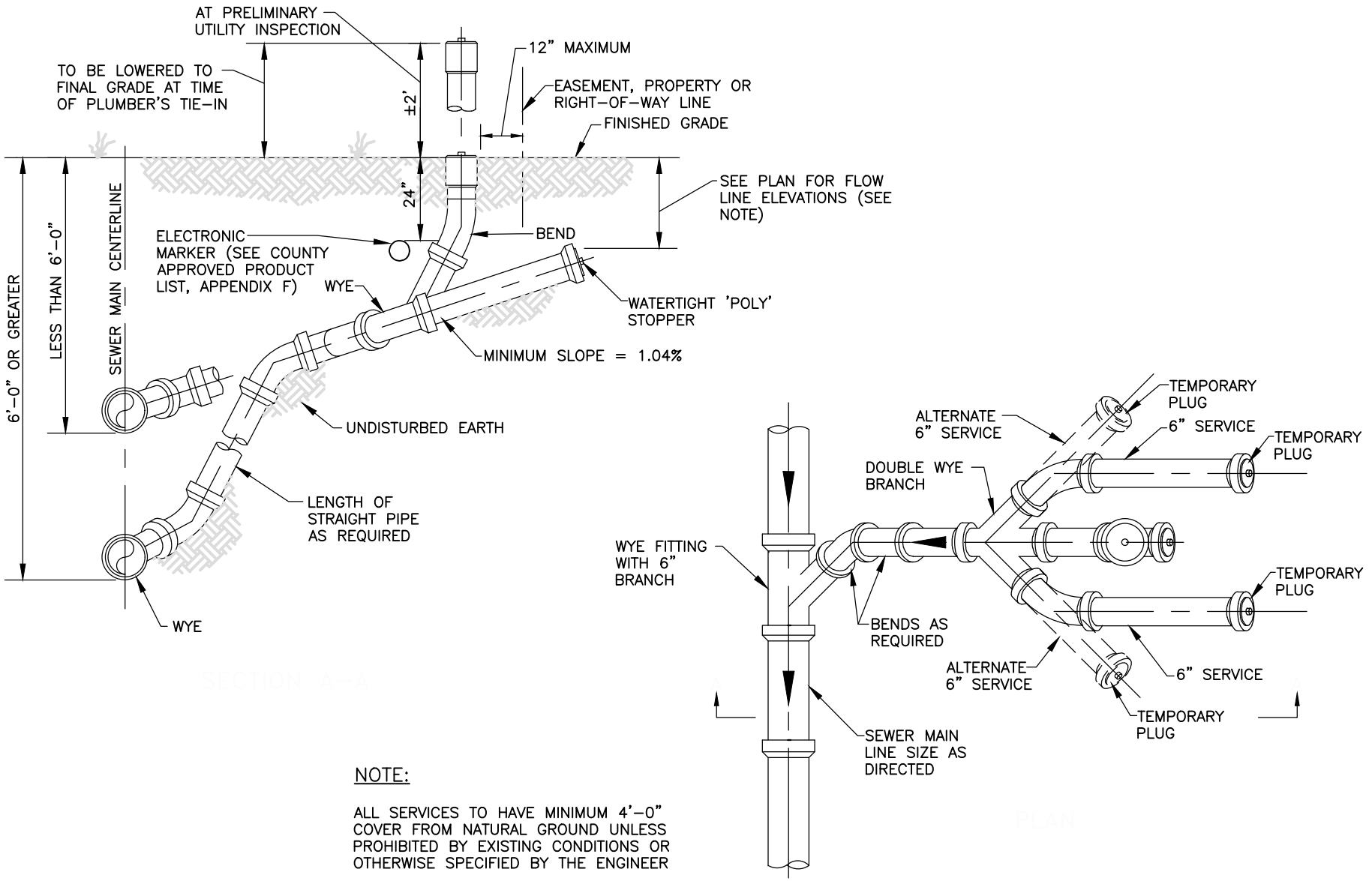
TYPICAL FLOW LINE CHANNELS DETAIL

NTS

REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
WW–15



NOTE:

ALL SERVICES TO HAVE MINIMUM 4'-0" COVER FROM NATURAL GROUND UNLESS PROHIBITED BY EXISTING CONDITIONS OR OTHERWISE SPECIFIED BY THE ENGINEER

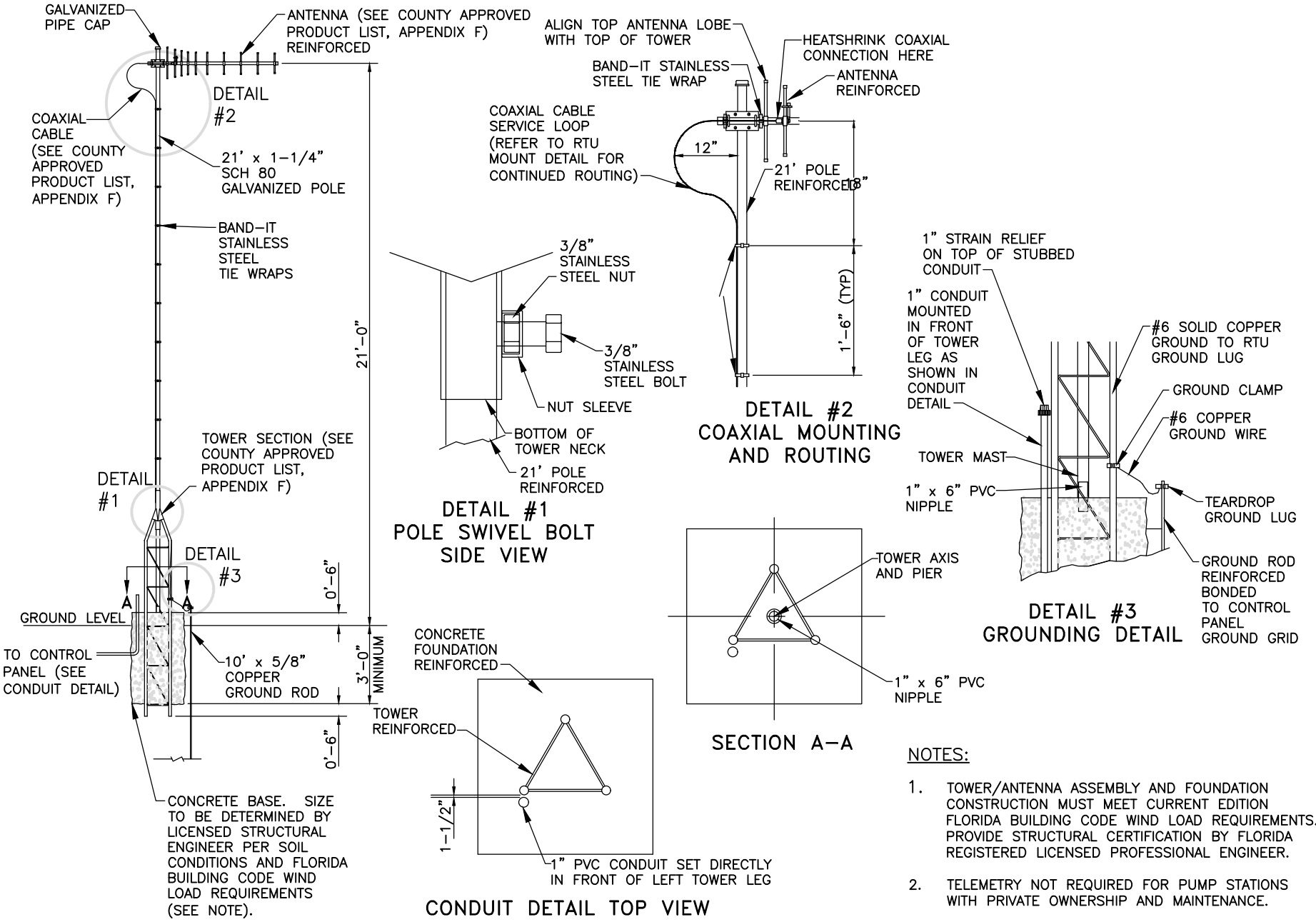
DOUBLE SEWER CLEAN-OUT DETAIL

NTS

REVISION DATE:
MAY 2009

Collier County

SHEET NO. WW-16



NOTES:

1. TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.
2. TELEMETRY NOT REQUIRED FOR PUMP STATIONS WITH PRIVATE OWNERSHIP AND MAINTENANCE.

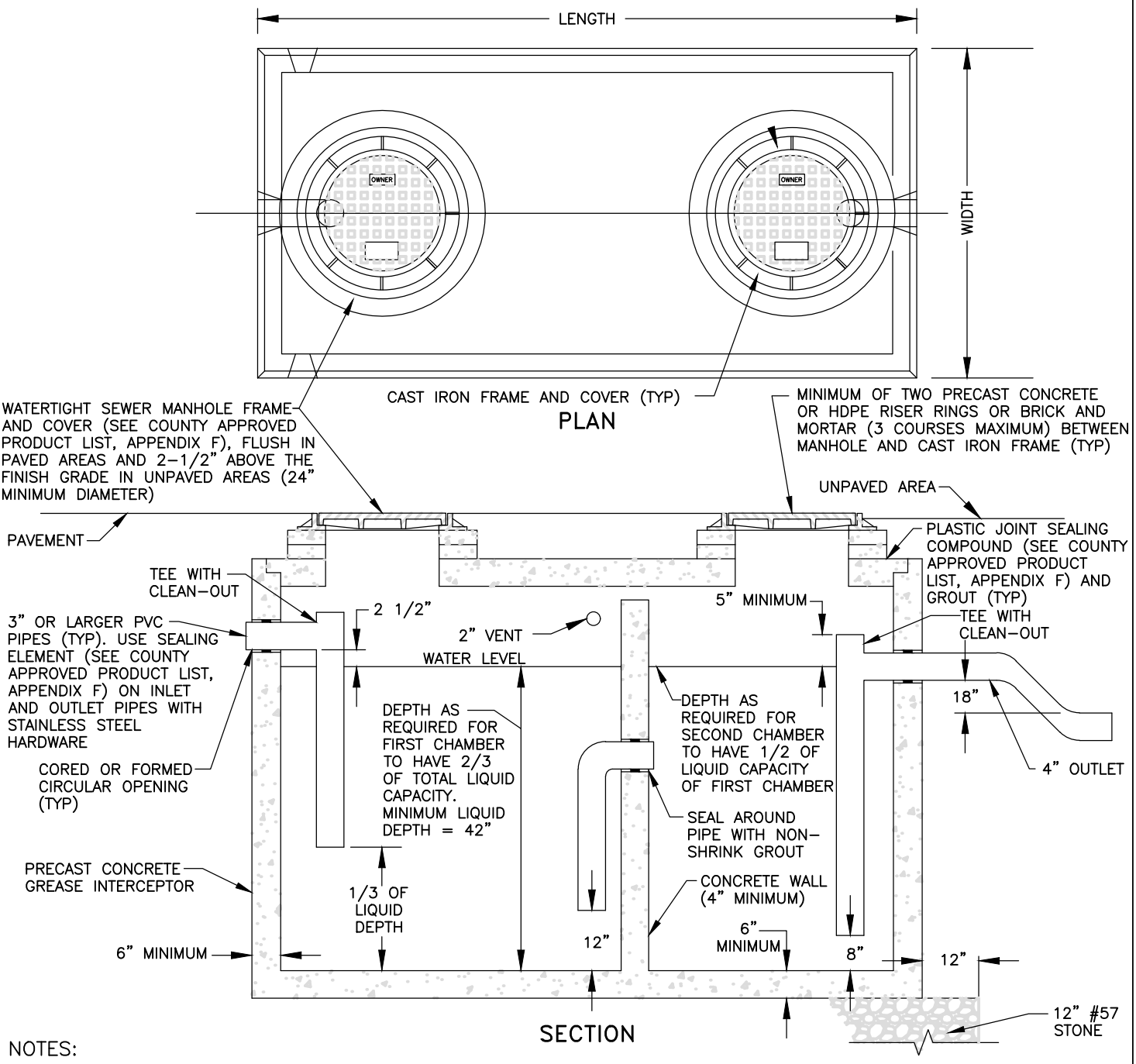
TELEMETRY ANTENNA MOUNT DETAIL

NTS

REVISION DATE: AUGUST 2008

Collier County

SHEET NO. WW-17



NOTES:

1. GREASE INTERCEPTOR SHALL COMPLY WITH STRUCTURAL REQUIREMENTS APPLICABLE TO SEPTIC TANKS EXCEPT THAT THE INLET INVERT SHALL DISCHARGE A MINIMUM 2–1/2 INCHES ABOVE THE LIQUID LEVEL LINE AND THE OUTLET PIPE SHALL HAVE A TEE WITH A MINIMUM DIAMETER OF FOUR (4) INCHES THAT EXTENDS TO WITHIN 8 INCHES OF THE BOTTOM OF THE TANK.
2. INTERCEPTOR MUST BE LOCATED SO AS TO PROVIDE EASY ACCESS FOR ROUTINE INSPECTION AND CLEANING.
3. WHERE A GREASE INTERCEPTOR IS REQUIRED, ONLY KITCHEN WASTEWATER SHALL FIRST PASS THROUGH THE INTERCEPTOR AND THEN BE DISCHARGED INTO THE FIRST COMPARTMENT OF A SEPTIC TANK OR OTHER APPROVED SYSTEM.
4. SIZING OF GREASE INTERCEPTORS SHALL BE BASED ON THE DETAIL WW–18A EQUATIONS. THE MINIMUM VOLUME OF ANY GREASE INTERCEPTOR SHALL BE 750 GALLONS AND THE MAXIMUM VOLUME OF A SINGLE GREASE INTERCEPTOR SHALL BE 1250 GALLONS. WHEN THE REQUIRED EFFECTIVE CAPACITY OF THE GREASE INTERCEPTOR IS GREATER THAN 1250 GALLONS, INSTALLATION OF GREASE TRAPS IN SERIES IS REQUIRED.
5. KEYED JOINT SEALED WITH BUTYL RUBBER.

GREASE INTERCEPTOR	REVISION DATE: AUGUST 2008	Collier County	SHEET NO. WW–18
NTS			

SIZING FORMULA FOR RESTAURANTS, COUNTRY CLUBS AND ASSISTED LIVING FACILITIES

(S) x (GS) x (HR/12) x LF = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

S = NUMBER OF SEATS IN DINING AREA.

GS = GALLONS OF WASTE WATER PER SEAT
(USE 25 GALLONS FOR RESTAURANTS WITH CHINA DISHES AND/OR AUTOMATIC DISHWASHER)
(USE 10 GALLONS FOR RESTAURANTS WITH PAPER OR BASKETS AND NO DISHWASHER)

HR = NUMBER OF HOURS RESTAURANT IS OPEN

LF = LOADING FACTOR
(USE 2.00 INTERSTATE HIGHWAY; 1.50 OTHER FREEWAYS; 1.25 RECREATIONAL AREA; 1.00 MAIN HIGHWAY; 0.75 OTHER HIGHWAY)

SIZING FORMULA FOR SCHOOLS AND OTHER ESTABLISHMENTS WITH COMMERCIAL KITCHENS (NO DISHWASHER)

(M) x (GM) x (LF) = EFFECTIVE CAPACITY OF GREASE INTERCEPTOR IN GALLONS

WHERE:

M = MEALS PREPARED PER DAY

GM = GALLONS OF WASTE WATER PER MEAL
(USE 5 GALLONS)

LF = LOADING FACTOR
(USE 1.00 WITH DISHWASHING MACHINE AND 0.75 WITHOUT DISHWASHING MACHINE)

NO COMMERCIAL DISHWASHER, NO CHINA OR DISPOSAL CHINA ONLY CAPACITY OF GREASE TRAPS

TOTAL FLOW–THROUGH RATING (GPM)	GREASE RETENTION CAPACITY (POUNDS)
4	8
6	12
7	14
9	18
10	20
12	24
14	28
15	30
18	36
20	40
25	50
35	70
50	100

SECTION 4

APPENDICES

For the latest revisions to the Appendices visit:

Collier County Public Utilities
Engineering and Project Management Resources Webpage.

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 4

APPENDICES

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COLLIER COUNTY PUBLIC UTILITIES DEPARTMENT

ENGINEERING AND PROJECT MANAGEMENT DIVISION

3339 East Tamiami Trail
Suite 303
Naples, FL 34112
Phone: (239) 252-8836

Any request for a deviation from the Collier County Water-Sewer District Utilities Standards and Procedures must be submitted on the Utility Deviation Form and should include all required information for a faster and more efficient process. Please email your request to UtilityPlanning@colliercountyfl.gov.

Please maintain on deviation per form and select the appropriate type(s) of deviation (Wastewater, Water, IQ Water, or Grease Trap). Provide the associated land use application number assigned by the Growth Management Department. Ensure to select whether the deviation is on a privately owner or county owner system. Include a drawing that has the area(s) of interest highlighted for quick referencing.

Please include any and all equipment specification information, pressures and velocities of flows, or other pertinent documentation and a cover letter to give additional information that may not be addressed on the form.

For Grease Trap Deviations, please include a cover letter giving any relevant information regarding the kitchen and its use, a copy of the menu of what is to be cooked and served, and a floor plan of the kitchen and seating area.

Typically, Utility Deviation requests are processed within 5-10 business days. You will be notified by email of the outcome of your deviation request. If the deviation is rejected, a meeting may be requested with the appropriate Director and staff to discuss.

If you have any questions regarding this process, please call (239) 252-8836 or email your questions to UtilityPlanning@colliercountyfl.gov.

UTILITY DEVIATION FORM
Petitioners Request

Date:_____ ☐ **Wastewater** ☐ **Water** ☐ **IQ Water** ☐ **Grease Trap**

Land Use Application #_____ ☐ **Privately Owned** ☐ **County Owned**

Project Name: _____

Folio Number(s): _____

Petitioner's Name & Business Name: _____

_____

Business Address: _____

_____

Phone #: _____

Email: _____

REQUIRED INFORMATION

Cover Letter w/Pertinent Information

Site Drawings

Detail Specifications (include MFR Maint. Procedures for Grease Trap Deviations)

Menu & Seating (Only for Grease Trap Deviations)

Reason for Request: _____

_____

_____

How does this Request Differ from Ordinance: _____

_____

Impact of this Request of Affected Area:_____

_____

Impact of this Request on the Maintenance of the System: _____

_____

Explain Benefits Request Will Have to the Operation/Maintenance of the Collier County Utility System: _____

_____

Additional Comments: _____

_____

Collier County

Water Meter Sizing Form

One Form Per Meter

Preparer's Information:

Name ==========> _____

Title ==========> _____

Company=========> _____

Address ==========> _____

_____

Phone ==========> _____

Email Address =====> _____

Project Information:

Date ====> _____

Permit or AR Number _____

Name of Project ===> _____

Project Address ===> _____

Please Note:

1. All commercial facilities must be metered separately from residential facilities with the exception of those commercial facilities that are within a master metered residential development and designed for the exclusive use of the residents within such development.

2. The Design Engineer/Architect must submit signed and sealed documentation supporting meter sizing. Sizing shall be based upon fixture flow values, as shown on the following page and the table on page 3, unless approved otherwise by Utility Deviation. If an increase in meter size is requested to accommodate for fire flow, the Engineer/Architect should check appropriate box below. A Utility Deviation will not be required for increasing meter size for fire flow requirements. For all meter sizes, the Engineer/Architect must consider all relevant factors before selecting the final meter size.

3. For remodeling projects this form must be submitted only if there is a net increase in fixture flow value.

This Section to be filled out by Engineer/Architect of Record:

Demand in accordance with the Fixture Flow Value Worksheet and the Table for Estimating Demand

_____ **GPM**

Meter Size Required: _____

Meter Size Requested: _____

Existing Meter Size: _____

If the meter size requested is larger than the meter size required per the table velow, please indicate the reason for the request by checking the appropriate box:

☐ **Fire Flow** ☐ **Other (Please attach Utility Deviation approval)**

_____

Type or Print Name of Engineer/Architect of Record for Project

_____

Signature of Engineer/Architect of Record for Project and Date

[Affix Engineering/Architect Seal Here]

Demand Range (GPM)	Meter Size
0 to 30	3/4"
30.1 to 50	1"
50.1 to 100	1 1/2"
100.1 to 160	2"
160.1 to 435	3"
435.1 to 750	4"
750.1 to 1600	6"
1600.1 to 2800	8"
2800.1 to 4200	10"

Demand ranges from AWWA M22 Table 6-1 Third Edition

Collier County

Fixture Flow Value Worksheet

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow Value

Fixture	Occupancy	Type of Supply Control	Load Values, in Water Supply Fixture Units (wsfu) Total		# of Fixtures Per Unit	Fixture Flow Value
Bathroom group	Private	Flush tank	3.6	x		=
Bathroom group	Private	Flushometer valve	8	x		=
Bathtub	Private	Faucet	1.4	x		=
Bathtub	Public	Faucet	4	x		=
Bidet	Private	Faucet	2	x		=
Combination fixture	Private	Faucet	3	x		=
Dishwashing machine	Private	Automatic	1.4	x		=
Drinking fountain	Offices, etc.	3/8″ valve	0.25	x		=
Kitchen sink	Private	Faucet	1.4	x		=
Kitchen sink	Hotel, restaurant	Faucet	4	x		=
Laundry trays (1 to 3)	Private	Faucet	1.4	x		=
Lavatory	Private	Faucet	0.7	x		=
Lavatory	Public	Faucet	2	x		=
Service sink	Offices, etc.	Faucet	3	x		=
Shower head	Public	Mixing valve	4	x		=
Shower head	Private	Mixing valve	1.4	x		=
Urinal	Public	1″ flushometervalve	10	x		=
Urinal	Public	3/4″ flushometervalve	5	x		=
Urinal	Public	Flush tank	3	x		=
Washing machine (8 lb)	Private	Automatic	1.4	x		=
Washing machine (8 lb)	Public	Automatic	3	x		=
Washing machine (15 lb)	Public	Automatic	4	x		=
Water closet	Private	Flushometer valve	6	x		=
Water closet	Private	Flush tank	2.2	x		=
Water closet	Public	Flushometer valve	10	x		=
Water closet	Public	Flush tank	5			=
Water closet	Public or private	Flushometer tank	2	x		=
For any fixtures not listed, submit manufacturer's data sheets and enter appropriate description and value:						
Other:				x		=
Other:				x		=
Other:				x		=
Other:				x		=
Other:				x		=

Total Fixture Value Per Unit =====>	
Number of Units with this Fixture Count =====>	
Grand Total of Fixture Flow Value (Per Unit Total x Number of Units) =====>**	

****Use total Fixture Flow Value on "Table for Estimating Demand" to estimate water meter demand.**

Fixture Flow Value worksheet from FBC 2023 edition

Collier County

Table for Estimating Demand

Please call Public Utilities Engineering (239) 252-2380 with any questions.

Enter # of Fixtures of each Fixture Type, per unit, then multiply by appropriate Load Value to get Fixture Flow		SUPPLY SYSTEMS PREDOMINANTLY FOR FLUSH VALVES	
Load	**Demand**	**Load**	**Demand**
Fixture Flow Value	Gallons per minute	Fixture Flow Value	Gallons per minute
1	3.0	---	---
2	5.0	---	---
3	6.5	---	---
4	8.0	---	---
5	9.4	5	15.0
6	10.7	6	17.4
7	11.8	7	19.8
8	12.8	8	22.2
9	13.7	9	24.6
10	14.6	10	27.0
11	15.4	11	27.8
12	16.0	12	28.6
13	16.5	13	29.4
14	17.0	14	30.2
15	17.5	15	31.0
16	18.0	16	31.8
17	18.4	17	32.6
18	18.8	18	33.4
19	19.2	19	34.2
20	19.6	20	35.0
25	21.5	25	38.0
30	23.3	30	42.0
35	24.9	35	44.0
40	26.3	40	46.0
45	27.7	45	48.0
50	29.1	50	50.0
60	32.0	60	54.0
70	35.0	70	58.0
80	38.0	80	61.2
90	41.0	90	64.3
100	43.5	100	67.5
120	48.0	120	73.0
140	52.5	140	77.0
160	57.0	160	81.0
180	61.0	180	85.5
200	65.0	200	90.0
225	70.0	225	95.5
250	75.0	250	101.0
275	80.0	275	104.5
300	85.0	300	108.0
400	105.0	400	127.0
500	124.0	500	143.0
750	170.0	750	177.0
1,000	208.0	1,000	208.0
1,250	239.0	1,250	239.0
1,500	269.0	1,500	269.0
1,750	297.0	1,750	297.0
2,000	325.0	2,000	325.0
2,500	380.0	2,500	380.0
3,000	433.0	3,000	433.0
4,000	535.0	4,000	535.0
5,000	593.0	5,000	593.0

Table for estimating demand taken from Florida Building Code 2023 Edition

FINAL WAIVER OF LIENS -
CONVEYANCE OF UTILITY FACILITIES TO COUNTY

KNOW ALL MEN BY THESE PRESENTS, that for and in consideration in the amount of $_____ lawful money of United States of America, to me in hand paid, the receipt whereof of which is herby acknowledged, does hereby waive, release, remiss and relinquish any and all right to claim any lien(s) for work performed and/or for material furnished, and/or for any claim whatsoever with regard to utility facilities constructed in, over or under the below-described real property. The undersigned certifies to the County that the undersigned has all requisite authority to execute this Waiver for all intended purposes.

Every individual who, and each entity that, pursuant to the undersigned's agreement with regard to the subject utility facilities, has supplied or furnished service(s), labor, material(s) and/or supplies used in installation, construction, maintenance, repair, location, relocation, or otherwise, with regard to utility facilities thereby located in, on or over the real property described below, have been paid in full (or have been adequately bonded) whereby as to all such services, labor, materials and/or supplies there exist no claim(s) from any such individual or entity that will affect conveyance of good and marketable title to the utility facilities to Collier County and/or to the Collier County Water-Sewer District.

Legal description of the site where the subject utility facilities have been constructed or installed is _____
_____.

Signed: _____
Printed (or typed) Name

STATE OF FLORIDA)
COLLIER COUNTY)

The foregoing instrument was acknowledged before me this _____ day of _____, 200__ by _____, who is personally known to me OR who provided identification Type of identification produced: _____.

_____ My Commission Expires _____
Notary Public, State of Florida

08/26/03

Utilities Conveyance Checklist

POTABLE WATER, NON-POTABLE IRRIGATION WATER AND WASTEWATER FACILITIES ACCEPTANCE

Today's Date: _____

Project Name: _____

Original Project No. (AR/PL): _____ **Utility PL#:** _____

Submittal Requirements

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Final Utility Acceptance Application	
2.	☐	☐	☐	Addressing Checklist (ID number or Folio number of Property)	

Legal Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Attorney's Affidavit	
2.	☐	☐	☐	Owner's Affidavit	
3.	☐	☐	☐	Warranty Deed/Bill of Sale with Exhibit B per Utilities Standards and Procedures Ordinance Section 10.2.6	
4.	☐	☐	☐	Utilities Facilities Securities Subordination (required when any security interest in the utility facilities/systems is involved). UCC-1(s) can be subordinated by a Subordination or by use of UCC-3(s) if not released by Subordination.	
5.	☐	☐	☐	Deed of Utility Easement - Copy of last Deed that conveyed title of the Associated Real Property and Copy of all Utility Easements then being conveyed to the County, including legal description with Surveyor's Sketch of Easement. (Utility easements are not required provided all utility facilities then being conveyed are in public right-of way, are in then existing utility easements, or are in CUEs)	
6.	☐	☐	☐	Utilities Performance Security (UPS) 10% of **Total Cost** plus Final Obligations cash bond of not less than $4,000 (AR-5939 & above)	
7.	☐	☐	☐	Final Release of Lien from Utility Contractor for the system(s) or portion(s) thereof constructed	
8.	☐	☐	☐	Facilities Lease (when applicable)	

9. ☐ ☐ ☐ Facilities Lease (including Sub-Developer) use Form 10.1

Tests, Certifications and Supplemental Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	Sewer Video of constructed gravity sewer (Sewer Report & Master Utility Sheet)	
2.	☐	☐	☐	Certification of pressure testing of wastewater force mains by Engineer of Record	
3.	☐	☐	☐	Certification of the infiltration/exfiltration tests for the sewer lines by Engineer of Record	
4.	☐	☐	☐	Coating certification from the manufacturer or a professional testing laboratory for all manholes, wet wells and valve vault.	
5.	☐	☐	☐	Lift station(s) start up report(s)	
6.	☐	☐	☐	Electrical Contractor's certification of Lift Station electric service wire sizing and voltage drop pursuant to National Electrical Code Specifications	
7.	☐	☐	☐	Start-up and successful testing of Data Flow telemetry equipment (AR-7936 & above)	
8.	☐	☐	☐	Certification of pressure testing of water and non-potable irrigation mains by Engineer of Record	
9.	☐	☐	☐	Letter by Engineer certifying that: • All water, non-potable irrigation and/or sewer facilities are located within the public right-of-way or dedicated easements • All the utilities system(s), or portion(s) thereof, has been constructed in accordance with County Ordinances and Regulations, including the required color for piping	
10.	☐	☐	☐	One year (1) Warranty on work performed and system(s) or portion(s) thereof installed by Utilities Contractor	
11.	☐	☐	☐	Engineer's Final Payment Confirmation	
12.	☐	☐	☐	DEP Certification and copy of General Permit for **WATER** facilities (including interim facilities, if applicable);	
13.	☐	☐	☐	DEP WATER Certification approval to be forwarded when received	

14.	☐	☐	☐	DEP Certification and copy of General Permit for **SEWER** facilities (including interim facilities, if applicable);	
15.	☐	☐	☐	DEP SEWER Certification approval to be forwarded when received	
16.	☐	☐	☐	DEP Certification and copy of General Permit for (RECLAIMED) **NON-POTABLE IRRIGATION WATER** facilities (including interim facilities, if applicable); In-service Letter to be forwarded when received	
17.	☐	☐	☐	Lab results on bacteriological tests for potable water mains	
18.	☐	☐	☐	Satisfactory Test Reports and Certification of backflow device by Certified Laboratory.	
19.	☐	☐	☐	Verification of Final Cost (Include materials **and** labor, misc.) Cost breakdown – Contributory Assets for County/Private Materials (materials **only**) **(i.e. detailed quantities, sizes, unit cost, total cost, etc)**	
20	☐	☐	☐	Letter from the Fire District regarding ownership and maintenance of fire hydrants	
21.	☐	☐	☐	Signed copy of field fire flow testing by the applicable Fire Control District	

Engineering Documents

	N/A	In review	Item accepted	Item Needed	Notes
1.	☐	☐	☐	One (1) complete set of Record Drawings to include all utilities and all related underground work signed and sealed by the Engineer of Record for potable water, non-potable irrigation water and / or wastewater system(s) or portion(s) thereof	
2.	☐	☐	☐	One (1) computer-generated disk of Record Drawings in CAD and PDF format in accordance with Section 10.4: Record Drawings of the Utilities Standards and Procedures Ordinance	
3.	☐	☐	☐	Longitude and latitude shall appear on detail sheet. (AR-7936 & above)	

Office Use Only below this line

☐W ☐W/S ☐S ☐IRR

VENDOR AND MANUFACTURER APPROVAL APPLICATION FORM

Please prepare the completed Approval Application Form along with all requested information, and email all documents to the Public Utilities Engineering and Project Management Division as noted below. All documents must be in either PDF or WORD or EXCEL format. Other file formats will not be accepted. Faxes will not be accepted.

UtilityPlanning@colliercountyfl.gov

VENDOR AND MANUFACTURER APPROVAL APPLICATION FORM

Date: _____

A. Application Contact Name & Business:

_____

Address _____

Phone # _____ Fax # _____

Email address _____

B. Manufacturer of Product

_____

Address _____

Phone # _____ Fax # _____

Email address _____

C. Specific Location(s) of Product Manufacture and Assembly

_____

Address _____

Phone # _____ Fax # _____

Email address _____

D. Identify specific County Detail(s) or Specification(s) on which approval is sought.

_____

E. **Is the applicant the product manufacturer? If not, describe the relationship of the applicant to the manufacturer.**

Yes _____

No _____

_____

F. **Is the product available through more than one vendor? Describe who will provide sales and service to the County for the submitted product.**

Yes_____ No ____

_____

G. **Is the product is manufactured in whole or in part outside of the United States?**

Yes_____ No ____

H. **If the answer to Item G is Yes, attach copy of ISO 9001 Quality Control current certification certificates for the manufacturer and the point of manufacture.**

I. **How long has the specific product or service being proposed been on the market for public purchase?**

No. of Years _____

J. **In the case of applicators or installers, for how long has work been commenced and completed using the specific product or service being proposed?**

No. of Years _____

K. **Provide a product or service customer reference list that identifies the organization, location, contact person, email address, phone number, date of first installation, date of completion, number of products used, and the specific application of the product with each reference. Applicators and installers must have at least three references using the specific product or service being proposed.**

L. **Provide a list identifying the public utility departments or organizations that have approved your product. Preference should be given to utility departments within the state of Florida. The list must include a contact name, email address and phone number at each public utility.**

M. **Attach legible copies of pertinent product data sheets, shop drawings and performance data to assist with the County's review. All information must be submitted with the Application form. Clearly identify what product and product sizes are being proposed. Complete submittals are required with initial application, and supplemental submittals will not be accepted.**

N. **As applicable, provide copies of certifications that specific product being proposed meets the following standards:**

UL Approval attached **Yes_____ No _____**

FM Approval attached **Yes_____ No _____**

NSF 61 Approval attached **Yes_____ No _____**
(NSF 61 approval is mandatory for all products that may be in contact with potable water.)

O. **Summarize the advantages of the submitted product or service. Provide no more than one page of text.**

P. **Provide estimated unit cost for the submitted product or service.**

_____

Q. **Provide separate estimated unit costs for the operation and the maintenance of the submitted product or service.**

_____

R. **Based on the references identified above, identify the anticipated life of the submitted product or service before either replacement or major repair is needed.**

_____

S. **Explain benefits this application will have to the operation and maintenance of the Collier County Utility system:**

_____

_____

_____

The applicant hereby affirms the information provided with this Application Form is complete, accurate and current.

Submitted by _____

Signature _____

Firm name _____

Date _____

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Casing Spacer End Seals	Power Seal	EndSeal	Section 330523.16, Page 4, 3.1 B
Casing Spacer End Seals	Cascade Waterworks MFG Co.	CCES	Section 330523.16, Page 4, 3.1 B
Casing Spacers Stainless Steel	Power Seal	4810	Section 330523.16, Page 4, 3.1 BG-5
Casing Spacers Stainless Steel	Cascade Waterworks MFG Co.	CCS	Section 330523.16, Page 4, 3.1 B-5
Electronic Markers	3M Electronic Ball Marker	1423, 1424 & 1428	Section 1: 2.6.1, 3.1.4, 3.2.1/WW-10/WW-12/WW-16
Electronic Markers	Tempo Communications - Omni Marker	160, 161, 162 & 168	Section 330518, Page 9, 3.2 O.2
Electronic Markers	Tempo Communications - Omni Marker II	OM-01 (66.4 kHz), OM-04 (92.0 kHz), OM-06 (121.6 kHz), OM-08 (145.7 (kHz), OM-09 (169.8 (kHz)	Section 330518, Page 9, 3.2 O.2
Electronic Marking System (EMS)	3M	3M EMS Warning Tape 7900 Series	Design Criteria Part 2 2.1, Part 3 3.2, 3.2.1 Section 330518 Part 3 3.2 O.1
Joint Restraint Devices	EBAA Iron Sales		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Romac Industries		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Sigma		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Star Pipe Products		Section 1: 2.3/Section 330503, Page 5, 2.1 L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices	Ford Meter Box Company		Section 1: 2.3/Section 330503, Page 5, L/Section 330504, Page 7, 2.5 F
Joint Restraint Devices, Push-On joints for push joint pipe	American Cast Iron Pipe Company	Flex-Ring & Lok-Ring	Section 330504, Page 7, F.3
Joint Restraint Devices, Push-On joints for push joint pipe	McWane Inc.	Super-Lock & TR Flex	Section 330504, Page 7, F.3

Collier County Public Utilities Department
County Approved Product List
All Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Joint Restraint Devices, Push-On joints for push joint pipe	U.S. Pipe		Section 330504, Page 7, F.3
Metalized Tape	Reef Industries, Inc. Houston, TX	Terra Tape	Section 330518, Page 9, O.1
Metalized Tape	Proline Safety Products	Detectable Tape	Section 330518, Page 9, O.1
Rubber Gasket pipe	McWane Inc.	Long-Span Pipe	Section 330518, Page 10, Q.1
Rubber Gasket pipe	American Cast Iron Pipe Company	Flanged	Section 330518, Page 10, Q.1
Rubber Gasket pipe	US Pipe	Flanged	Section 330518, Page 10, Q.1
Single Sealed Gasket Push-on type joint	American Cast Iron Pipe Company	Fastite -	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	U.S. Pipe	Tyton	Section 330504, Page 10, 3.3.C
Single Sealed Gasket Push-on type joint	McWane Inc.	Tyton	Section 330504, Page 10, 3.3.C
Two-part Coal tar Epoxy	Madewell Products Corp.	Madewell 1104	Section 330518, Page 6, 3.2 G.4

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Automatic Flushing Device, Ground Mounted	Mueller/Hydro-Guard	HG-1	W-2
Automatic Flushing Device, Ground Mounted	Kupferle Foundry Company	Eclipse #9400-WC	W-2
Automatic Flushing Device, Hydrant Mounted	Mueller/Hydro-Guard	HG-6	W-2
Automatic Flushing Device, Hydrant Mounted	Kupferle Foundry Company	Eclipse #9700	W-2
Backflow Preventer Assembly	See Approved Backflow Devices List, Appendix G		
Bushing	Ford	C18	W-6
Corporation Stops	Ford	F1100NL SERIES	W-6
Corporation Stops	Ford	FB1100NL SERIES	W-6
Corporation Stops	A.Y. McDonald	4104NL	W-5
Corporation Stops	A.Y. McDonald	4101 BF NL	W-5
Corporation Stops	Mueller	H10045N, H15008N	Section 331200, Page 2, 2.3 A.1
Corporation Stops	Mueller	H-10046N/ H-10046	W-5
Coupling	Ford	Model numbers vary by application	W-6
Coupling	A.Y. McDonald	Model numbers vary by application	W-6
Coupling	Mueller	Model numbers vary by application	W-6
Curb Stop	Ford	B43xxxW-NL	W-12
Curb Stop	A.Y. McDonald	76102-22	W-12
Curb Stop	Mueller	Mark II Oriseal H-15172N	Section 331200, Page 2, 2.3 A.1

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
HDPE Stab Fitting	Elster	Hydrosert	
Hydrant	American Darling	6-inch B-84-B	Section 331619, Page 2, 2.1 G
Hydrant	Clow	Medallion	Section 331619, Page 2, 2.1 G
Hydrant	Mueller	Centurion A-423	Section 331619, Page 2, 2.1 G
Meter Box (Staff Use)	Carson	Fiberlyte FL12	W-12
Meter Box (Staff Use)	Carson	Fiberlyte FL30	W-12
Meter Box (Staff Use)	Oldcastle	Lid-FL12 GP (AMR)	W-12
Meter Box (Staff Use)	Oldcastle	Box, FL12 T 12 (w/mouseholes)	W-12
Meter Box (Staff Use)	Oldcastle	Unit, FL30 P	W-12
Meter Box (Staff Use)	DFW	DFW1324XX-12-AF1PT MUE	W-12
Meter Box	DFW	DFW37F-12-AF1PT MUE	W-12
Meter Box	DFW	DFW1324F-12-AF1PT MUE	W-12
Meter, Fire Protection (3", 4", 6", 8")	Elster AMCO	evoQ4 Electromagnetic Meter	W-9/W-14
Meter, Fire Protection (3", 4", 6", 8", 10")	Neptune	HP Fire Service Turbine Meter	W-9/W-14
Meter, Fire Protection (3/4", 1", 1-1/2", 2")	Mueller Systems - Hersey	Residential Fire Meter	W-9
Meter, Fire Protection (4", 6", 8", 10")	Neptune	HP Protectus III Fire Service Meter	W-9/W-14
Meter, Potable Water	Neptune	Tru/Flo	W-13
Meter, Potable Water	Neptune	Mach 10	W-13
Pedestal Housing	Channel	CCWD Signature Series SPH	W-5
Pedestal Housing	Water Plus Corp	131632	NP-4
Pedestal Housing	PenCell Plastics	AV142034HDHS001009	NP-4
Sampling Station	Kupferle Foundry Company	Eclipse 88	W-6
Sampling Station	Mueller Company	Safety Guard BOSS SMPL STA	W-6

Collier County Public Utilities Department
County Approved Product List
Water Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sampling Station	Mueller Company	2" BOSS-BSS0212CHANLCSR	W-6
Service Saddles (Brass)	Ford	F202B	Section 331200, Page 7, 2.3 G.1
Service Saddles (Brass)	Mueller	DR2 B	Section 331200, Page 7, 2.3 G.1
Service Saddles (PVC) Perm Bact Sample Point	Powerseal	P3401 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Saddles (PVC) Perm Bact Sample Point	Ford	S 90 SERIES	Section 331200, Page 7, 2.3 G.1/W-6
Service Wye	Ford	Y44-xxx-NL	W-12
Strainer, Flanged (Staff Use)	Mars	Z-plate	
Strainer, Flanged (Staff Use)	Neptune	Rilsan nylon-coated ductile iron	
Tapping Saddle/ Hot taps	Powerseal	P3490MJ Series	W-12
Valve Box	Tyler/Union	461	Section 331200, Page 4, 2.3 B.2
Valve Box, Locking Cover	AMPro USA	LL562	Section 331200, Page 4, 2.3 B.2.
Valve Setter	Wilkins	WMJS	W-9A/W-11A
Valve, Air	Val-Matic	Model 801AS	W-11/W-14/W-16
Valve, Air Release	A.R.I.	D-040 (nylon), D-040 ST ST (SS)	W-5
Valve, Bacterial Sampling Station Line	Mueller	Mark II Oriseal	Section 331200, Page 3, 2.3 A.1
Valve, Ball	Ford		Section 331200, Page 3, 2.3 A.1
Valves and Appurtenances	American Darling		Section 331200 2.3 A
Valves and Appurtenances	A.Y. McDonald		Section 331200 2.3 A
Valves and Appurtenances	Clow		Section 331200 2.3 A
Valves and Appurtenances	Ford		Section 331200 2.3 A
Valves and Appurtenances	Kennedy		Section 331200 2.3 A
Valves and Appurtenances	Mueller		Section 331200 2.3 A
Valves and Appurtenances	U.S. Pipe		Section 331200 2.3 A

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
120VAC Surge Suppressor	Edco	HSP121	NP-E3
12VDC Power Supply	Allen Bradley	1606-XLS	NP-E3
12VDC Power Supply	Sola HD	SDN-P	NP-E3
12VDC Power Supply	PULS	Dimension - QS	NP-E3
24VDC Power Supply	Allen Bradley	1606-XLE	NP-E3
24VDC Power Supply	Sola HD	SDN-P	NP-E3
24VDC Power Supply	PULS	Dimension - QS	NP-E3
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	NP-E9
Back Pressure Sustaining Valve	Ames	No. 920	NP-1/NP-E2
Plate Strainer, Top Access	Mars		NP-1/NP-E2
Corporation Stops	Ford	FB 1100-NL/ FB 1100	NP-2
Corporation Stops	A.Y. McDonald	74704B	NP-2
Corporation Stops	A.Y. McDonald	74104NL/ 74104	NP-4
Corporation Stops	A.Y. McDonald	74101 BF NL/ 74101 BF	NP-4
Corporation Stops	Mueller	H-10046N/ H-10046	NP-4
Curb Stop	Ford	B43-444W-NL, Compression x Meter Swivel	NP-2
Data Radio	Integra	TR	NP-E3
Data Signal Line Surge Processor	Edco	PC642 Series	NP-E3
Geomembrane	GSE Environmental		Section 334713, Page 4, 1.6 A.1
Level Transducer	Wika		NP-E6

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Meter Box (Staff Use)	Carson	Fiberlyte FL12	NP-2
Meter Box (Staff Use)	Carson	Fiberlyte FL30	NP-2
Meter Box (Staff Use)	Oldcastle	Lid-FL12 GP (AMR)	NP-2
Meter Box (Staff Use)	Oldcastle	Box, FL12 T 12 (w/mouseholes)	NP-2
Meter Box (Staff Use)	Oldcastle	Unit, FL30 P	NP-2
Meter Box (Staff Use)	DFW	DFW1324XX-12-AF1PT MUE	NP-2
Meter Box	DFW	DFW37F5-12-AF5PT MUE	NP-2
Meter Box	DFW	DFW1324F5-12-AF5PT MUE	NP-2
Flow Meter, Magnetic	Mueller		
Meter, Non-Potable Propeller			
Pedestal Housing	Endress+Hauser	W400	NP-1/NP-E2
Pedestal Housing	McCrometer	Water Specialties No. ML-04-X with 4-20 MA Output Transmitter, TR-16	NP-1/NP-E2
Pedestal Housing	Channel	CCWD Signature Series SPH14206C1B1L01	NP-4
Rain Gauge	Water Plus Corp	131632	NP-4
Service Wye	PenCell Plastics	AV142034HDHS001009	NP-4
Service Wye	ISCO	674	NP-E5
Service Wye	Ford	Y44-264-NL	NP-2
Surge Suppression	A.Y. McDonald	708YS22	NP-2
Surge Suppression	Mueller	P-15343N	NP-2
Surge Suppression, Main Service	Edco	SS65 Series	NP-E6/NP-E7
Tapping Saddle/ Hot taps	CITEL	TSP15M	NP-E6/NP-E7
Valve, Air Release	Lea	USP-M Series	NP-E5
Valve, Air Release	Powerseal	P3490MJ Series	NP-2
Valve, Air Release	A.R.I.	D-040	NP-4

Collier County Public Utilities Department
County Approved Product List
Irrigation Quality (IQ) Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, Air Release	A.R.I.	D-040 SS	NP-4
Valve, Rising Stem Gate/ OS&Y	GA Industries	942SS	NP-4
Valve, V-Port Ball	GA Industries	Combination	Section 1 2.7/NP-1/NP-4/NP-E2
Valve, V-Port Ball - Motor (Actuator)	Rotork	IQTM	NP-E2
	American Flow Control	AFC-2500 SERIES	NP-1/NP-E2
	DeZurik	VPB - flanged, type 317 stainless, and Teflon seat and bearings	NP-1

Collier County Public Utilities Department
County Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Access Frame (Pump Station)	U.S. Foundry	AHD	WW-7/WW-8
Access Hatch, Aluminum	Bilco	J-AL H20 (5-1/2" depth)	WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	Halliday	H1W (3-1/2" depth)	WW-8/WW-8A/WW-8B
Access Hatch, Aluminum	U.S. Foundry	AHS (5" depth)	WW-8/WW-8A/WW-8B
Antenna Subsystem	Data Flow Systems, Inc.	RTA209 Yagi Antenna	Section 333200, Page 4, 2.1 J/WW-17
Biofiltration Odor Control System	Evoqua	Zabocs (pre-engineered)	Section 333200, Page 5, 2.1 P
Ceramic Epoxy Lining	Vulcan Painters	Protecto 401 Coating	Section 330504, Page 3, 2.1.B
Chimney Seal	Cretex		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Chimney Seal	Trelleborg		Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Coaxial Cable	Data Flow Systems, Inc.	RTC 400	Section 333200, Page 2.1 J/WW-17
Diaphragm Seals	Ashcroft		Section 333313, Page 8, 2.2 G
Diaphragm Seals	Mansfield and Green	Type SB	Section 333313, Page 8, 2.2 G
Diaphragm Seals	Trerice		Section 333313, Page 8, 2.2 G
Flanged Adapter Connections	EBAA Iron Sales	E2100 SERIES	Section 333313, Page 8, 2.2 F.1.c.
Flanged Adapter Connections	Victaulic	Vic Flange Style 741	Section 333313, Page 8, 2.2 F.1.c.
Flow Meter	Endress-Hauser	Promag W400	Section 333313, Page 9, 2.2 M.1
Generator Receptacle and Angle Adapter	Crouse-Hinds	AR2042 with S22 option, and an AJA1 angle adaptor	WW-7/WW-9
Grass Covered Porous Pavement	Invisible Structures	Grasspave2	WW-8/WW-8A/WW-8B
Inflow Protector, Stainless Steel	Sewer Shield, Inc. Maitland, FL		Section 333913, Page 4, 2.2 K
Inflow Protector, Stainless Steel	Rainstopper LLC.		Section 333913, Page 4, 2.2 K
Inflow Protector, Stainless Steel	L.F. Manufacturing, Inc.		Section 333913, Page 4, 2.2 K
Internal Protection	IET Systems	IET Coating System	Section 333913, Page 5, 3.1 F/Section 099723/WW-3/WW-4/WW-5/WW-7

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Internal Protection	Raven Lining Systems - Broken Arrow, OK	Raven 405	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Internal Protection	Kerneos - Chesapeake, VA	Sewpercoat Lining System	Section 333913, Page 5, 3.1F/Section 099723/WW-3/WW-4/WW-5/WW-7
Junction Box	Hoffman	A12106NFSS	WW-9
Lightning Arrestor	Square D	SDSA-1175 for 1-phase	Section 333200, Page 5, 2.1 O/WW-9
Lightning Arrestor	Square D	SDSA-3650 for 3-phase	Section 333200, Page 5, 2.1 O/WW-9
Liquid Level Regulators (Float Switch)	Roto-Float		WW-7/WW-8
Liquid Level Regulator (Float Switch)	Dura-Float	2900 Series B4	WW-7/WW-8
Pipe Interior Lining	Permox CTF	Ceramic Epoxy Lining	Section 330504, Page 3, 2.1 B
Plastic Joint Sealing Compound	Hamilton Kent, Toronto/Ontario, Canada	Kent-Seal	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Plastic Joint Sealing Compound	Henry	Ram-Nek	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Polymer Concrete Manholes	US Composite Pipe, Inc.		Section 034100, Page 5, 2.2 D
Polymer Concrete Manholes	Armorock		Section 034100, Page 5, 2.2 D
Power Distribution Blocks	Schneider (Square D)	Class 9080 Power Distribution Blocks	WW-9/WW-9A/WW-9B
Pump Control Panel	ECS		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Control Panel	Suncoast Hydraulic		Section 333200, Page 43, 2.1 I/WW-7/WW-9
Pump Controller	Data Flow Systems, Inc.	TCU	Section 333200, Page 3, 2.1 J
Riser Ring, HDPE/EPP	Ladtech/Cretex(EPP)	Riser Ring	Section 333913, Page 4, 2.2 L
Sealing Compound	Crouse-Hindz	Chico Sealing Compound	WW-9/WW-9A/WW-9B

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Sealing Element	GPT	Link-Seal	Section 333313, Page 9, 2.2 I.1/WW-18
Sewage Pump	Flygt	N-Series	Section 333200, Page 2, 2.1 D
Sewer Clean-Out Rim and Cover	U.S. Foundry	7621	WW-11
Sewer Manhole Ring and Cover	U.S. Foundry		WW-3, WW-4, WW-5, WW-6, Section 333913
Sewer Manhole Frame and Covers	Pamrex		WW-5
Sewer Manhole Frame and Covers	U.S. Foundry	105M	WW-2
Sewer Manhole Frame and Covers	U.S. Foundry	420-C-ORS	Section 333913, Page 2, 2.1A/WW-3/WW-4/WW-5/WW-6/WW-18
Sleeve Type Couplings	Powerseal	STYLE 3501	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Dresser	Style 38	Section 333313, Page 8, 2.2 F.1.d.
Sleeve Type Couplings	Smith Blair	Style 413	Section 333313, Page 8, 2.2 F.1.d.
Tower	Rohn		WW-17
Valve Box	Brooks		WW-9
Valve, 3-Way Plug (Staff Use)	Milliken Valve Co.	Model M604	WW-7/WW-8
Valve, 3-Way Plug (Staff Use)	Dezurik	Model D202	WW-7/WW-8
Valve, Air Release	HTECH	2" SS MODEL # 8889860041	WW-13/Section 333313, Page 7, 2.2 D.11
Valve, Air Release	A.R.I.	D-025	WW-5/Section 333313, Page 7, 2.2 D.11
Valve, Check	Kennedy Valve Manufacturing Co.	MODEL 1106LW/106LW	WW-7/WW-8/Section 333313, Page 5, 2.2 C
Valve, Check	Mueller	A-2600, A2602	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	Milliken Valve Co.	8001	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	GA Industries	340-W	WW-7/WW-8, Section 333313, Page 5, 2.2 C
Valve, Check	VSI Waterworks	CVIX AWWA C508	Section 333313

Collier County Public Utilities Department County
Approved Product List
Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Manufacturer	Model(s)	Location in Standards Manual
Valve, Duckbill (Staff Use)	Red Valve Co., Inc. Longwood, FL	"Tideflex"	WW-7
Valves, Plug	DeZurik	Model PEC & PEF (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	Milliken Valve Co.	Model M600 & M601 (MJ & Flange)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	Cam-Centric	55XX, 56XXF,57XXF, 58XXR, 59XXR (TN, N, TL, XF)	WW-7/WW-8(A)(B)/Section 333313, Page 2, 2.2 A.1
Valves, Plug	VSI Waterworks	PVII & PVIF AWWA C517	Section 333313

Collier County Public Utilities Department
County Approved Contract List

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Contract #	Applicability
Epoxytech CPP Epoxy coating, equipment and services	Florida Service Painting, Inc.	23-8169	Water, Wastewater, and Irrigation Quality (IQ) Systems
Commodities and services for utility plant operations	John Mader Enterprises, Inc.	PB-421	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Division	Applicability
Teledyne ISCO Refrigerated Autosampler, sampler bottles, tubing, spare and replacement parts and services.	Accutech Instrumentation, Inc.	Wastewater	Wastewater Systems
Belt Press Dewatering Equipment & Services	Alfa Laval	Engineering & Project Management	Water Systems
McCrometer meters, repair, parts, and services	Avanti Inc.	Wastewater	Wastewater Systems
HOMA submersible sewage pumps and services	Barney's Pump Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
NOV/Moyno progressive cavity pumps and services	Carl Eric Johnson	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Flowserve vertical turbine pumps and services	Carter & Verplanck	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Chemtrac's HydroAct Residual Chlorine Analyzer	ChemTrac	Water	Water Systems
CROM utility storage tanks and services	CROM Coatings and Restorations (CCR)	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Contractor shall provide Supervisory Control and Data Acquisition equipment and software (SCADA) as well as technical support.	Data Flow Systems, Inc.	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Master Meter Flow Meter and software	Empire Pipe and Supply Company Inc.	Wastewater	Wastewater Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
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Item	Vendor	Division	Applicability
Promag Electromagnet Flow Meters, Analyzers, Level Transmitters, replacement parts, and service	Endress Hauser	Wastewater	Wastewater Systems
Aqua-Aerobic Systems Cloth Media, Traveling Bridge Filtration equipment, parts and services	EnviroSales of Florida, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
NozzTeq nozzles and services	Evervac Equipment	Wastewater	Wastewater Systems
Chemicals, components, services, etc.	Evoqua Water Technologies	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Centrifugal/Chopper/Conditioning Pumps and Services	FJ Nugent & Associates, Inc.	Wastewater	Wastewater Systems
Replacement parts, maintenance, and equipment.	Fluid Control Specialties, Inc (Rosemount)	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Rotork valve actuators, replacement parts and repair services.	Fluid Control Specialties, Inc (Rotork)	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Aeration Blower & Service	Gardner Denver Nash	Wastewater	Wastewater Systems
License, service, and support for the SCADA System	GE Digital LLC	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Siemens Level Sensor - Ultrasonic and services	Gilson Engineering Sales of Florida	Wastewater	Wastewater Systems
Service, and support for the SCADA System, including licensing for supporting applications	Gray Matter Systems	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Division	Applicability
Laboratory Equipment, Supplies, and Materials, Testing Services, etc.	Hach Company	Water	Equipment, Chemicals, & Services
Parts, Services, and Repairs for Sand Separator	HC Warner	Water	Water Systems
Screening and Screening Handling and services	Hydra Service Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Grit Removal System	Hydro International & Huber	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Laboratory parts, supplies, and services	IDEXX Distribution, Inc.	Wastewater	Laboratory Parts, Supplies, & Services
Valve Exercise / Operator and services	Illinois Tool Works dba E.H. WACHS	Water	Water Systems
Belt Press Parts and Services	Komline-Sanderson	Engineering & Project Management	Wastewater Systems
Service Agreement and Updates	Labworks, LLC	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
HF Scientific equipment, parts, and services	Lazenby & Associates, Inc.	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Lime Feed and Slaker system and services	Merrick Industries, Inc.	Water	Water Systems
Xylem- Sanitaire Diffused Aeration Equipment and UGSI Chemical Feed, Inc. Liquid Polymer Dosing System	Moss Kelley/MKI Services, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Grit Removal Equipment, Clarifiers parts, sludge thickener parts, and service	Ovivo USA, LLC	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
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Item	Vendor	Division	Applicability
Aqua Guard Self Cleaning Bar/Filter Screen	Parkson Corporation	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
New York Blower Odor Control Blowers and services	Pero Engineering & Sales Co.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
ASME pressure valves and replacement parts	Protec Arisawa	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
SCADA components, parts, panels, etc.	Rexel USA, Inc	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Service Agreement, Parts and Supplies	Seal Analytical, Inc.	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Seepex Progressive Cavity Pumps, and services	Tencarva/Hudson Pumps	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Service/ Repair of CO2 Tanks	TOMCO2 Systems	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telog Software, Pressure Sensor, Recorders and Services.	Trimble, Inc.	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProMinent Equipment, Parts, and Services	TriNova Inc	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Trillium Flow Technologies Grit Pumping, Sludge Pumping, Grit Separation Equipment, and services	TSC-Jacobs South	Engineering & Project Management	Water, Wastewater, and Irrigation Quality (IQ) Systems
Component parts, equipment, software and support to maintain the Itron meter systems.	United Systems and Software Inc	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver List
Single/ Sole Source

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor	Division	Applicability
Limitorque Valve Actuators and Services	Valve & Actuation Service	Water	Water, Wastewater, and Irrigation Quality (IQ) Systems
ATI Analytical Products	Volition Controls Corp	Water/ Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Internal Recycling Dry Pit Submersible Pumps, Repair/Replacement Parts, and services.	Xylem Water Solutions U.S.A.	Water/ Wastewater	Wastewater Systems

NOTES:
1) Substitutions for any item listed below shall be submitted using the "Vendor and Manufacturer Approval Application Form," Appendix E, and reviewed to be considered an equal.
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Item	Vendor / Manufacturer	Model(s)	Applicability
Analog Control Module (ACM002)	Data Flow Systems, Inc.	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Data Flow Systems, Inc.	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Data Flow Systems, Inc.	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-01) AC 8DO, 4DI	Data Flow Systems, Inc.	DFS-00297-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-02) AC 4DO, 8DI	Data Flow Systems, Inc.	DFS-00297-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-03) AC/DC 8DO, 4DI (Requires the use of snubbers 007-0084)	Data Flow Systems, Inc.	DFS-00297-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-04) AC/DC 4DO, 8DI (AC Requires the use of snubbers 007-0084 / DC requires 006-0019)	Data Flow Systems, Inc.	DFS-00297-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-05) DC 8DO, 4DI	Data Flow Systems, Inc.	DFS-00297-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-06) DC 4DO, 8DI	Data Flow Systems, Inc.	DFS-00297-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Data Flow Systems, Inc.	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, 100W)	Data Flow Systems, Inc.	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Data Flow Systems, Inc.	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC001)	Data Flow Systems, Inc.	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Programmable Logic Controller (PLC800) w/PMT	Data Flow Systems, Inc.	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
PLC Bypass Card (PBC001)	Data Flow Systems, Inc.	DFS-00309-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007-34 (VDR002-01, 217-220 MHz)	Data Flow Systems, Inc.	DFS-00513-008-34	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007 Board-Only (no radio, all TIM007 versions)	Data Flow Systems, Inc.	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01 (for TIM007-34, 217-220 MHz)	Data Flow Systems, Inc.	DFS-00530-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module - (NIM001)	Data Flow Systems, Inc.	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module (SIM001, 5 PORT)	Data Flow Systems, Inc.	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM001, 8 PORT)	Data Flow Systems, Inc.	DFS-00375-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (5-Port, Prosafe, -04 NSM & SIM)	Data Flow Systems, Inc.	002-0567	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (8-Port, Prosafe, -16 NSM)	Data Flow Systems, Inc.	002-0568	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Fiber Module - (NFM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Media Converter 10/100 (AT-MMC200/ST) This part is used on the FIM001 and NFM001	Data Flow Systems, Inc.	002-0566	Water, Wastewater, and Irrigation Quality (IQ) Systems
NFM Cable - For connecting extra NFM's in an HSS	Data Flow Systems, Inc.	002-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Network Cell-Router Module - (NCM001)	Data Flow Systems, Inc.	DFS-00375-008-15	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module (HSM003)	Data Flow Systems, Inc.	DFS-00543-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Assembly- includes: (1) Fiberglass Enclosure, (1) MBP202, (1) PSM003-1, (1) Polyphaser, (1) SPS00l, (1) RF Pigtail, (1) 2.6 aH Battery DEDUCT DFS-00349-008-04 for NO Tower Mount Brackets DEDUCT DFS-00392-008-01 for Network	Data Flow Systems, Inc.	DFS-00349-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 "CUT FOR PLC" includes: (1) Fiberglass Enclosure, (1) MBP202-3, (1) PSM003-1, (1) Polyphaser, (1) SPS00l, (1) RF Pigtail, (1) 2.6 aH Battery DEDUCT DFS-00349 008-04 for NO Tower Mount Brackets DEDUCT DFS-00392-008-01 for Network	Data Flow Systems, Inc.	DFS-00349-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 "Solar" Assembly- includes 18 X 16 Fiberglass Enclosure with backplate, MBP202-2, Solar PSM, Polyphaser Coaxial Surge Protector, RF Pigtail, & 12V 18Amp Battery DEDUCT DFS-00349-008-04 for NO Tower Mount Brackets	Data Flow Systems, Inc.	DFS-00349-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU204 w/MBP00l - includes: (1) 204 316SS NEMA 4X Enclosure, (1) MBP00l, (1) PSM003-1, (1) Polyphaser Coaxial Surge Protector, (1) SPS00l, (1) RF Pigtail, (1) 2.6 Ah Battery, (1) l0A Breaker. DEDUCT DFS-00392-008-01 for Network (NO Polyphaser/Pigtail) 16.5" Din-Rail space	Data Flow Systems, Inc.	DFS-00280-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP002 (the rest is same as 204 above)	Data Flow Systems, Inc.	DFS-00280-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP00l-3 for PLC (the rest is same as 204 above) Add PLC Backplane Switch Options	Data Flow Systems, Inc.	DFS-00280-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP00l-4 for FTU - includes: (1) 204 Enclosure, (1) MBP00l- 4, (1) PSM003-1, (2) Polyphaser Coaxial Surge Protector, (1) SPS00l, (2) RF Pigtail, (1) 2.6 Ah Battery	Data Flow Systems, Inc.	DFS-00280-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU210/216 - Special Quote Required from Systems Engineering	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Fiberglass Enclosure (MBP NOT INCLUDED) 14"h 12"w 811d	Data Flow Systems, Inc.	038-0053	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-01	Data Flow Systems, Inc.	DFS-00348-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU202 Modular Backplane, MBP202-02 (CUT FOR SOLAR)	Data Flow Systems, Inc.	DFS-00348-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-03 (CUT FOR PLC)	Data Flow Systems, Inc.	DFS-00348-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Aluminum Plate for 202 Enclosure 14x 12 (BP1412AL)	Data Flow Systems, Inc.	039-0135	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 Enclosure (MBP NOT INCLUDED) 15.5"h 23"w 7.S"d	Data Flow Systems, Inc.	DFS-00280-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-1) (for single backplane use)	Data Flow Systems, Inc.	DFS-00279-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-2) (2nd & 3rd for 210, 216)	Data Flow Systems, Inc.	DFS-00279-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-3) (for PLC use)	Data Flow Systems, Inc.	DFS-00279-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-4 for Solar Power Module SPM)	Data Flow Systems, Inc.	DFS-00279-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00I-5 for FTU - requires 2 RIMs)	Data Flow Systems, Inc.	DFS-00279-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TAC Pack Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00I) - No Radio, controller only (add P3 and P4 connectors for Mod bus application)	Data Flow Systems, Inc.	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TAC Pack TCU w/VDR002 (217-220 MHz)	Data Flow Systems, Inc.	DFS-00367-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 - NO RADIO, MODBUS CONFIG	Data Flow Systems, Inc.	DFS-00540-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 - NO RADIO, SERIAL FOR EXTERNAL RADIO	Data Flow Systems, Inc.	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800-IP - NETWORK INTERFACE (NO RADIO)	Data Flow Systems, Inc.	DFS-00540-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 w/VDR002 (217-220 MHz)	Data Flow Systems, Inc.	DFS-00540-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 w/DUAL COMMS (VDR002 217-220 MHz & NETWORK)	Data Flow Systems, Inc.	DFS-00540-008-31	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Basic Snap-In" Installation Kit - Includes: snap-in mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery.	Data Flow Systems, Inc.	DFS-00392-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Deluxe Snap-In" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS- Includes: snap-in mounting bracket, spring loaded connectors, Wago terminals for every wire termination, (1) EDCO DRS036 Analog Surge Protector, SPS00l, 10A Circuit Breaker, TFS, TFS.	Data Flow Systems, Inc.	DFS-00396-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU00l "Basic Front-Mount" Installation Kit- Includes dead-front mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00392-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l "Deluxe Front-Mount" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: dead-front mounting bracket, spring loaded connectors, Wago terminals for every wire termination, (1) EDCO DRS036 Analog Surge Protector, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00396-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU001 Harness Upgrade Kit for TCU800, Includes: 002-0596 USB, 002-0597 USB Cover, 019-0174 USB Lanyard, 016-0270 20 pin P3 Connector	Data Flow Systems, Inc.	DFS-00540-108-07	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 "Basic Snap-In" Installation Kit - Includes: snap-in mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-08	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 "Deluxe Snap-In" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: snap-in mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for every wire termination, (4) ASI Analog Surge Protectors, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 "Basic Front-Mount" Installation Kit - Includes dead-front mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for resistors and fuses only, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase)	Data Flow Systems, Inc.	DFS-00552-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 "Deluxe Front-Mount" Installation Kit WITH WIRE HARNESS & ADDED COMPONENTS - Includes: dead-front mounting bracket, Pl/P2/P3 spring loaded connectors, Wago terminals for every wire termination, (4) ASI Analog Surge Protectors, SPS00l, l0A Circuit Breaker, TFS, TFS Install kit for TCU, 7aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Data Flow Systems, Inc.	DFS-00552-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 HARNESS 480V 3-PHASE UPGRADE KIT. (Use this 480V upgrade if purchasing a Deluxe Installation Kit)	Data Flow Systems, Inc.	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Pl,P2 Connector (Wire Enters Top, Snap-In, 24-Pin) Each	Data Flow Systems, Inc.	016-0154	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Pl,P2 Connector (Wire Enters Rear, Front Mount, 24-Pin) Each	Data Flow Systems, Inc.	016-0182	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l ONLY- P3 Connector (Configuration/ Address Board)	Data Flow Systems, Inc.	DFS-00391-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 ONLY- P3 Connector (Added 1/0)	Data Flow Systems, Inc.	016-0270	Water, Wastewater, and Irrigation Quality (IQ) Systems

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TCU P4 Connector (RS-232 / R-S485) - Spring-Load Terminal (Not included with Installation Kits - Required for RIO and Modbus Interface)	Data Flow Systems, Inc.	016-0156	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU P4 Connector (RS-232 / R-S485) - Spring-Load Terminal (Not included with Installation Kits - Required for RIO and Modbus Interface) - FOR FRONT-MOUNTED TCU	Data Flow Systems, Inc.	016-0184	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Snap-in Mounting Bracket	Data Flow Systems, Inc.	DFS-00370-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (4.5") Bracket (Short), Snap-In Bracket Req'd For 6-8" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (8.75") Bracket (Medium), Snap-In Bracket Req'd For 10-12" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Adjustable Depth (12.25") Bracket (Tall), Snap-In Bracket Req'd For 14-18" deep enclosure	Data Flow Systems, Inc.	DFS-00394-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Accu-CT split-core current transformer (20A), ACTL-0750-020 (EACH)	Data Flow Systems, Inc.	008-0076	Water, Wastewater, and Irrigation Quality (IQ) Systems
Accu-CT split-core current transformer (50A), ACTL-0750-050 (EACH) NOTE: 50A is TCU800 default setting	Data Flow Systems, Inc.	008-0077	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Accu-CT split-core current transformer (lO0A), ACTL-0750-100 (EACH)	Data Flow Systems, Inc.	008-0078	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiberglass Enclosure Assembly for TAC Pack TCU Includes: (1) Fiberglass 18x16 Enclosure w/Backplate, (1) Snap-In Install Kit w/240V 3-Phase protector, Polyphaser & RF Pigtail. ADD 480V 3-PHASE KIT UPGRADE IF REQUIRED	Data Flow Systems, Inc.	DFS-00275-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
316 SS Enclosure Assembly for TAC Pack TCU Includes: (1) 316 SS 18x16 Enclosure, (1) Snap-In Install Kit w/240V 3- Phase protector, Polyphaser & RF Pigtail. ADD 480V 3-PHASE KIT UPGRADE IF REQUIRED	Data Flow Systems, Inc.	DFS-00275-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l Harness Upgrade Kit for TCU800, Includes: 002-0596 USB, 002-0597 USB Cover, 019-0174 USB Lanyard, 016-0270 20 pin P3 Connector	Data Flow Systems, Inc.	DFS-00540-108-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l SS Enclosure - ENCL ONLY 18"h 16"w l0"d	Data Flow Systems, Inc.	038-0012	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l Fiberglass Enclosure - ENCL ONLY 18"h 16"w 8"d	Data Flow Systems, Inc.	038-0051	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU00118x16 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Data Flow Systems, Inc.	039-0127	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 &TCU Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiberglass Enclosure Assembly for TCU800 (with radio) Includes: (1) Fiberglass 24Hx20W Enclosure w/Backplate, (1) Snap-In Install Kit w/Harness, 240V 3-Phase protector, 7aH battery, Polyphaser & RF Pigtail. ADD price of DFS-00393-008-03 480V 3-PHASE KIT IF REQUIRED	Data Flow Systems, Inc.	DFS-00552-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems
316 SS Enclosure Assembly for TCU800 (with radio) Includes: (1) 316 SS 24Hx20W Enclosure w/Backplate, (1) Snap-In Install Kit w/Harness, 240V 3-Phase protector, 7aH battery, Polyphaser & RF Pigtail. ADD price of DFS-00393-008-03 480V 3-PHASE KIT IF REQUIRED	Data Flow Systems, Inc.	DFS-00552-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 HARNESS RELAY ADDER (adds interposing relays for all outputs)	Data Flow Systems, Inc.	DFS-00552-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 SS Enclosure- ENCL ONLY 24"h 20"w lO"d	Data Flow Systems, Inc.	038-0197	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 Fiberglass Enclosure - ENCL ONLY 24"h 20"w l0"d	Data Flow Systems, Inc.	038-0206	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 24x20 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Data Flow Systems, Inc.	039-0337	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TCU Enclosures	Data Flow Systems, Inc.	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
2.6 aH Battery (12V Battery w/Leads)	Data Flow Systems, Inc.	DFS-00363-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7 aH Battery 12V Battery w/Leads)	Data Flow Systems, Inc.	DFS-00363-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
18aH Battery (12V battery as used in RTU202 solar assembly) No leads - Universal Battery, Part# UB12180	Data Flow Systems, Inc.	023-0045	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Lead (battery-side for 2.6, 3.0 and 7.0 aH)	Data Flow Systems, Inc.	DFS-00165-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU204/202, 12"	Data Flow Systems, Inc.	DFS-00165-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU210, 36"	Data Flow Systems, Inc.	DFS-00165-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 48"	Data Flow Systems, Inc.	DFS-00165-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 72"	Data Flow Systems, Inc.	DFS-00165-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
10' Big-Ass Battery Cable Assembly (see Battery White Paper)	Data Flow Systems, Inc.	DFS-00501-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Shelf (for 2.6, 3.0 and 7.0 aH batteries only)	Data Flow Systems, Inc.	039-0018	Water, Wastewater, and Irrigation Quality (IQ) Systems

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RTU Surge Protection Kit includes: the following: (1) Polyphaser Coaxial Surge Protector, (1) SPS001, (1) TFS.	Data Flow Systems, Inc.	DFS-00364-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Surge Protection Kit includes: (1) SPS001120V, (1) TFS, (1) TFS Install Kit for TCU (Add 3-Phase Surge Protector per below)	Data Flow Systems, Inc.	DFS-00364-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPS001, 120VAC Single-Phase Surge Protector	Data Flow Systems, Inc.	005-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 1-Phase Surge Protector {Ditek, UL LISTED) (Also 208VAC)	Data Flow Systems, Inc.	005-0120	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 3-Phase Surge Protector (Ditek, UL LISTED)	Data Flow Systems, Inc.	005-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector {Ditek, UL LISTED)	Data Flow Systems, Inc.	005-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector KIT (Ditek, UL LISTED)	Data Flow Systems, Inc.	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Kit- includes Polyphaser and RF Pigtail (specify length)	Data Flow Systems, Inc.	DFS-00392-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Coax Surge Protector (Standard, BS0LN-C2)	Data Flow Systems, Inc.	005-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco DRS-036 (DIN MOUNT ANALOG SURGE PROTECTOR)	Data Flow Systems, Inc.	022-0231	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PC-642C-036 {MODULE)	Data Flow Systems, Inc.	022-0056	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Edco PC-642C (BASE)	Data Flow Systems, Inc.	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (MODULE)	Data Flow Systems, Inc.	022-0129	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (BASE)	Data Flow Systems, Inc.	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems
API ANALOG LOOP ISOLATOR {API-4380-G-D)	Data Flow Systems, Inc.	022-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems
API OCTAL BASE (NDS-8)	Data Flow Systems, Inc.	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems
Zone Barrier CATS/CAT6 Network Surge Protector (Network RTU/TCU/HSS)	Data Flow Systems, Inc.	002-0584	Water, Wastewater, and Irrigation Quality (IQ) Systems
Transient Filter Shield - TFS00l-2	Data Flow Systems, Inc.	DFS-00306-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for TCU and TAC Pack TCU	Data Flow Systems, Inc.	DFS-00319-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for RTU2XX with PCM001	Data Flow Systems, Inc.	DFS-00319-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
10 Amp Breaker (Din Mount)	Data Flow Systems, Inc.	014-0010	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B Converter, RS-232 to RS-485	Data Flow Systems, Inc.	022-0340	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B RS485 Surge Protector (typical for TCU P4 / Modbus)	Data Flow Systems, Inc.	005-0165	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tripp-Lite DTEL2 "Inline" Telephone Line Surge Protector (replaces both Edco PCTEL MODULE & BASE)	Data Flow Systems, Inc.	002-0605	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Wago Operating Tool (Wago Bone)	Data Flow Systems, Inc.	026-0003	Water, Wastewater, and Irrigation Quality (IQ) Systems
1 Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
¼ Amp fuse holder assembly (mounts to din-rail)	Data Flow Systems, Inc.	DFS-00271-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
FUSE BLOCK, MIDGET, 3 POS,30A,600V (for 480V 3PH kit) (add fuses)	Data Flow Systems, Inc.	040-0044	Water, Wastewater, and Irrigation Quality (IQ) Systems
lA FUSE, MIDGET, TIME DELAY, 600 VAC, KTQ (for 480V 3PH kit)	Data Flow Systems, Inc.	040-0043	Water, Wastewater, and Irrigation Quality (IQ) Systems
47K RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
249 Ohm RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
l00K lW RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
200K 2W RESISTOR 2 COND WAGO TERMINAL	Data Flow Systems, Inc.	DFS-00271-008-08	Water, Wastewater, and Irrigation Quality (IQ) Systems
100K 1/2W,0.1% RESISTOR (for old "pre-2020" 480V 3PH kit)	Data Flow Systems, Inc.	DFS-00271-008-14	Water, Wastewater, and Irrigation Quality (IQ) Systems
49.9K RESISTOR 2 COND WAGO TERMINAL (for new 480V 3PH kit)	Data Flow Systems, Inc.	DFS-00271-008-24	Water, Wastewater, and Irrigation Quality (IQ) Systems
4 COND WAGO THRU BLOCK (feed through, 4 hole)	Data Flow Systems, Inc.	026-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
3 COND WAGO THRU BLOCK (feed through, 3 hole)	Data Flow Systems, Inc.	026-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 COND WAGO THRU BLOCK (feed through, 2 hole)	Data Flow Systems, Inc.	026-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (GREY)	Data Flow Systems, Inc.	026-0021	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (ORANGE)	Data Flow Systems, Inc.	026-0022	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO END STOP (Qty 50 in package)	Data Flow Systems, Inc.	026-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ADJACENT GREY	Data Flow Systems, Inc.	026-0034	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ALTERNATE GREY	Data Flow Systems, Inc.	026-0035	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 120VAC, SPDT	Data Flow Systems, Inc.	012-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 12VDC, SPDT	Data Flow Systems, Inc.	012-0064	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC RJ SLIM POWER RELAY BASE	Data Flow Systems, Inc.	012-0065	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 120 VAC COIL, DPDT (use 012-0019 base)	Data Flow Systems, Inc.	012-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 24 VDC COIL, DPDT (use 012-0019 base)	Data Flow Systems, Inc.	012-0023	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY BASE (NDS-8)	Data Flow Systems, Inc.	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
SNUBBER,0.lUF,47 OHM,1/2WATT	Data Flow Systems, Inc.	007-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
.375A, SLOW BLOW FUSE FOR TCU, 1.25"x.25"	Data Flow Systems, Inc.	040-0042	Water, Wastewater, and Irrigation Quality (IQ) Systems
WIN-RTU / PLC Test Kit- includes: (1) Resource CD, (1) RIM/ PLC Service Interface Cable (6'), (1) Serial Male to USB Male Adapter	Data Flow Systems, Inc.	DFS-00242-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU / PCU Test Kit - includes: (1) Resource CD, (1) TCU / PCU Service Interface Cable (6'), (1) Serial Male to USB Male Adapter	Data Flow Systems, Inc.	DFS-00242-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RETROFIT KIT, BIRD 4300-400 PEAK POWER (use with high speed TIM)	Data Flow Systems, Inc.	035-0037	Water, Wastewater, and Irrigation Quality (IQ) Systems
36" RG-58 cable w/BNC Connector (Watt Meter & Attenuator to radio)	Data Flow Systems, Inc.	DFS-00125-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIM/PLC Service Port Cable, 9-Pin Female "D" to PLC	Data Flow Systems, Inc.	DFS-00128-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7' TCU/PCU Service Port Cable, 9-Pin to Telephone Style	Data Flow Systems, Inc.	DFS-00128-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
GENDER CHANGER,25PIN FEMALE TO FEMALE	Data Flow Systems, Inc.	016-0020	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Panel Simulation Fixture (aka TCU Test Fixture/ TCU Demo Box)	Data Flow Systems, Inc.	DFS-00243-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTA209 -VHF (217-220 MHz) 9.2 db Yagi	Data Flow Systems, Inc.	DFS-00303-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
LAA217 - 217 MHz "0 dB" Grounded Antenna (Length: 68 inches)	Data Flow Systems, Inc.	DFS-00322-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA209 Dipole (4 lobes)- (217-220 MHz) (Telewave ANT220D6-9) - Assembled antenna cannot be shipped (requires DFS Delivery@ SQR) TOP-MOUNT ASSEMBLIES:DFS-00322-008-04: CTA209, 200MHZ, 9DB OFFSET (TOP) DFS-00322-008-07: CTA209, 200MHz, 9DB CARDIOID (20") (TOP) DFS-00322-008-11: CTA209, 200MHZ, 9DB BIDIRECTIONAL (TOP) SIDE-MOUNT ASSEMBLIES: DFS-00322-008-19: CTA209, 200MHz, 9DB OFFSET (SIDE) DFS-00322-008-20: CTA209, 200MHZ, 9DB CARDIOID (20") (SIDE) DFS-00322-008-21: CTA209,200MHZ, 9DB BIDIRECTIONAL (SIDE)	Data Flow Systems, Inc.	DFS-00322-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA206 Dipole (2 lobes)- (217-220 MHz) (Telewave ANT220D3) Assembled antenna cannot be shipped (requires DFS Delivery@ SQR)	Data Flow Systems, Inc.	DFS-00322-008-12 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA203 Dipole (1 lobe)-(217-220 MHz) (Telewave ANT220D)	Data Flow Systems, Inc.	005-0118 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Rubber Duck for 217-220 MHz - Antennex BEXB000BN NOTE: Connector type is BNC, may require a BNC to N-Type Adapter	Data Flow Systems, Inc.	005-0074	Water, Wastewater, and Irrigation Quality (IQ) Systems
BNC to N-Type Adapter (Female BNC to Male N-Type)	Data Flow Systems, Inc.	016-0059	Water, Wastewater, and Irrigation Quality (IQ) Systems
RF Pigtails (BNC to N-Type)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
811 RF Pigtail - (used in RTU202 and 204)	Data Flow Systems, Inc.	DFS-00125-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
20" RF Pigtail - (used in TAC Pack Enclosure)	Data Flow Systems, Inc.	DFS-00125-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
33" RF Pigtail - (used in RTU210)	Data Flow Systems, Inc.	DFS-00125-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
46" RF Pigtail - (used in large RTU panels & TCU control panels)	Data Flow Systems, Inc.	DFS-00125-008-12	Water, Wastewater, and Irrigation Quality (IQ) Systems
72" RF Pigtail - (used in large RTU panels & TCU control panels)	Data Flow Systems, Inc.	DFS-00125-008-18	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 Pre-assembled 23' with connectors	Data Flow Systems, Inc.	DFS-00316-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 (price per foot) LMR400-DB (500' Roll)	Data Flow Systems, Inc.	019-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 coax connectors (RFN-1006-3I) (crimp pin)	Data Flow Systems, Inc.	016-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 (price per foot) LMR600-DB	Data Flow Systems, Inc.	019-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
DFS RTC-600 N-Type Male coax connector (crimp pin) 3190-1268	Data Flow Systems, Inc.	016-0123	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 N-Type Female coax conn (unique, crimp pin) 3190-616	Data Flow Systems, Inc.	016-0147	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 9" coated SS cable tie (100 in bag)	Data Flow Systems, Inc.	020-0016	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 18" coated SS cable tie	Data Flow Systems, Inc.	020-0050	Water, Wastewater, and Irrigation Quality (IQ) Systems
1" Glue-Type Heat Shrink, LIST PRICE IS PER FOOT (comes in 4' lengths)	Data Flow Systems, Inc.	020-0001	Water, Wastewater, and Irrigation Quality (IQ) Systems
N-Type Barrel Connector (female-to-female)	Data Flow Systems, Inc.	016-0094	Water, Wastewater, and Irrigation Quality (IQ) Systems
Anatech Filter	Data Flow Systems, Inc.	005-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM00l) obsolete	Data Flow Systems, Inc.	DFS-00185-009-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM002)	Data Flow Systems, Inc.	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM00l) obsolete	Data Flow Systems, Inc.	DFS-00108-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Data Flow Systems, Inc.	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Data Flow Systems, Inc.	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00101-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM002) (obsolete)	Data Flow Systems, Inc.	DFS-00211-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver Product List

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Item	Vendor / Manufacturer	Model(s)	Applicability
Digital Control Module (DCM003-01, -03, -OS)	Data Flow Systems, Inc.	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-02, -04, -06)	Data Flow Systems, Inc.	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00100-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM002) (obsolete)	Data Flow Systems, Inc.	DFS-00285-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Data Flow Systems, Inc.	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM002, S0w) (obsolete)	Data Flow Systems, Inc.	DFS-00209-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, l00W)	Data Flow Systems, Inc.	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM00l) (obsolete)	Data Flow Systems, Inc.	DFS-00260-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Data Flow Systems, Inc.	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC00l)	Data Flow Systems, Inc.	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC033)	Data Flow Systems, Inc.	DFS-00507-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC800) w/PMT	Data Flow Systems, Inc.	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-XX) (all versions)	Data Flow Systems, Inc.	DFS-00279-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane (all versions)	Data Flow Systems, Inc.	DFS-00348-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RIM006 Module (no radio)	Data Flow Systems, Inc.	DFS-00295-008-26	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007 Board-Only (no radio, all TIM007 versions)	Data Flow Systems, Inc.	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Back Pack Radio (BPR) Board-Set (no radio)	Data Flow Systems, Inc.	DFS-00264-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01, -02, 217-220 2W Radio (for TIM or TCU)	Data Flow Systems, Inc.	024-0040	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-03, 450-470 2W Radio (for TIM or TCU)	Data Flow Systems, Inc.	024-0042	Water, Wastewater, and Irrigation Quality (IQ) Systems
Integrated Network Adapter (for TCU00I-IP)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
Integrated Network Adapter (for TCU800-IP)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
Pump Control Unit (PCU00I) (no radio)	Data Flow Systems, Inc.	DFS-00219-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00I) (no radio,IP,AD,C)	Data Flow Systems, Inc.	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU800) (no radio,IP,AD,C)	Data Flow Systems, Inc.	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module - (NIM00I)	Data Flow Systems, Inc.	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module - (SIM00I)	Data Flow Systems, Inc.	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM00I)	Data Flow Systems, Inc.	DFS-00375-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00I-10/100)	Data Flow Systems, Inc.	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Network Fiber Module- (NFM00l-10/100)	Data Flow Systems, Inc.	DFS-00375-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module-HSM003 (STANDARD REPAIR)	Data Flow Systems, Inc.	DFS-00525-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE DRIVE - REPAIR ADDER)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE PROCESSOR- REPAIR ADDER)	Data Flow Systems, Inc.		Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-128 Input/ Output Device	Data Flow Systems, Inc.	DFS-00398-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-032 Input/ Output Device	Data Flow Systems, Inc.	DFS-00408-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS Hybrid Biological Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM Carbon Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
LOPRO Chemical Scrubber Odor Control Units	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
BTF Bio-trickling Odor Control Scrubbers	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide Plus 71	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioxide AE	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Odophos	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Odophos Plus	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Ferric Sulfate (9%)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
50% Hydrogen Peroxide	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VX-456 (Bulk Tanker)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VX-456 (Tote)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Aktivox (Full Truck)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Aktivox (Partial Load)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Perox Pus	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Alkaqen AO	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-30 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-42 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZB-54 Mini	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-4000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-5000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems

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ZABOCS-6000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7010	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7012	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7015	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7018	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7020	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-7025	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
ZABOCS-8025	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0150	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0200	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0250	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0300	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0350	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems

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RJMC-0400	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0450	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
RJMC-0500	Evoqua Water Technologies LLC	Carbon	Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb P60 Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb P60 Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb 36C Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
VoCarb 36C Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS C20 (coconut based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS C30 (coconut based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM (coal based) Supersack	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
MIDAS OCM (coal based) Bag	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Biofilter Nutrient 8-2-8 (5-Drum Quantity)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Biofilter Nutrient 8-2-8 (5-Gallon Minimum)	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Bioglas Media	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
Acrulog 0-50 ppm Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acrulog 0-200 ppm Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq 0-1000 ppm Loqqer	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
LRSS-2 Sampling System	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Sinqle Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Two Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
CEM Three Point	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
DiCom Perimeter Monitor	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Differential Pressure Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq IPX Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq PPB Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Dilution Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloa NH3 Logger	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Acruloq Shelter	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Calibration Gas Kit	Evoqua Water Technologies LLC		Water, Wastewater, and Irrigation Quality (IQ) Systems
Rotork valve actuators, replacement parts and repair services	Fluid Control Specialties, LLC (Rotork)		Water, Wastewater, and Irrigation Quality (IQ) Systems
Process & Lab instruments & accessories	Hach Company		Equipment, Chemicals, & Services
Chemistries, reagents, and solutions	Hach Company		Equipment, Chemicals, & Services
Service contracts	Hach Company		Equipment, Chemicals, & Services
Hach Samplers	Hach Company		Equipment, Chemicals, & Services
Belt Filter Press equipment, parts and services	Komline- Sanderson		Wastewater Systems
MTOL+ IR 0-100 AUTO CLN	Lazenby & Associates	28052	Water, Wastewater, and Irrigation Quality (IQ) Systems
MTOL+ WL 0-100 AUTO CLN	Lazenby & Associates	28053	Water, Wastewater, and Irrigation Quality (IQ) Systems
FLOW THRU ASSY, MICRO 200/M-TOL	Lazenby & Associates	50125	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP ASSY I/R MTOL	Lazenby & Associates	21396S	Water, Wastewater, and Irrigation Quality (IQ) Systems
DESICCANT REFILL FOR MTOL/M200	Lazenby & Associates	21555R	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP ASSY WT/LT MTOL	Lazenby & Associates	24082S	Water, Wastewater, and Irrigation Quality (IQ) Systems
STILLING CHAMBER	Lazenby & Associates	20106	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE AUTO CLN TOL3 & 4	Lazenby & Associates	24166S	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
KIT TUBING, VALVE, FTGS M200TOL	Lazenby & Associates	21062	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL KIT.02,1,10 NTU MTOL LR	Lazenby & Associates	H-39950	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL KIT.02,10,100 NTU TOL3 H/P	Lazenby & Associates	39953	Water, Wastewater, and Irrigation Quality (IQ) Systems
CALKIT 02,10,1000 M100/TOL H/P	Lazenby & Associates	39957	Water, Wastewater, and Irrigation Quality (IQ) Systems
PRESSURE REGULATOR MTOL	Lazenby & Associates	24306S	Water, Wastewater, and Irrigation Quality (IQ) Systems
KIT MTOL+ EASY MOUNT ADAPTER PLATE	Lazenby & Associates	28157	Water, Wastewater, and Irrigation Quality (IQ) Systems
O-RING & SEAL KIT	Lazenby & Associates	28168S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE FLOW THRU 28MM 3/PK	Lazenby & Associates	50036	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPANNER WRENCH	Lazenby & Associates	50122S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CORD POWER SET OF 2 120/240V	Lazenby & Associates	20779S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT JCT BOX POWER SUPL	Lazenby & Associates	24017S	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC SERVICE MODULE MTOL+ WL	Lazenby & Associates	02853	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC SERVICE MODULE MTOL+ IR	Lazenby & Associates	02852	Water, Wastewater, and Irrigation Quality (IQ) Systems
KEYPAD KIT	Lazenby & Associates	29240S	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
M100+ WL LAB TURBIDIMETER 0-4000	Lazenby & Associates	28060	Water, Wastewater, and Irrigation Quality (IQ) Systems
M100+ IR LAB TURBIDIMETER 0-4000	Lazenby & Associates	28061	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProCal Calibration Kit (0-4000 NTU), W/L	Lazenby & Associates	39940	Water, Wastewater, and Irrigation Quality (IQ) Systems
ProCal Calibration Kit (0-4000 NTU), IR	Lazenby & Associates	39941	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT LAMP ASSEMBLY, W/L	Lazenby & Associates	24082S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT LAMP ASSEMBLY, IR	Lazenby & Associates	21396S	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP MD FOR MICRO 100/1000 WL	Lazenby & Associates	19972	Water, Wastewater, and Irrigation Quality (IQ) Systems
KIT TUBING, VALVE, FTGS M200TOL	Lazenby & Associates	21062	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE SAMPLE 28MM 3/PK	Lazenby & Associates	50051	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE SAMPLE 28MM 10/PK	Lazenby & Associates	50052	Water, Wastewater, and Irrigation Quality (IQ) Systems
Kit, Formazin Stock Solution	Lazenby & Associates	50040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 1LT HF PRIMARY	Lazenby & Associates	53070	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 125ML HF PRIMARY	Lazenby & Associates	53090	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 1LT HF PRIMARY	Lazenby & Associates	53030	Water, Wastewater, and Irrigation Quality (IQ) Systems

Collier County Public Utilities Department
County Approved Waiver Product List

NOTES:
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2) If a product is not listed, refer to the Specifications for performance standards.

Item	Vendor / Manufacturer	Model(s)	Applicability
STD, 4 NTU 1LT HF PRIMARY	Lazenby & Associates	53040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.5 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53120	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53130	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 125ML HF PRIMARY	Lazenby & Associates	53140	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.1 NTU 125ML HF PRIMARY	Lazenby & Associates	53380	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 5.0 NTU 125ML HF PRIMARY	Lazenby & Associates	H-53420	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD, 10 NTU 1LT HF PRIMARY	Lazenby & Associates	53000	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 1LT HF PRIMARY	Lazenby & Associates	53030	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 4 NTU 1LT HF PRIMARY	Lazenby & Associates	53040	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 1LT HF PRIMARY	Lazenby & Associates	53050	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 20 NTU 1LT HF PRIMARY	Lazenby & Associates	53060	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 1LT HF PRIMARY	Lazenby & Associates	53070	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 1LT HF PRIMARY	Lazenby & Associates	53080	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.5 NTU 1LT HF PRIMARY	Lazenby & Associates	53170	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
STD, 5.0 NTU 1LT HF PRIMARY	Lazenby & Associates	53180	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, .02 NTU 500ML HF PRIMARY	Lazenby & Associates	53240	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 2.0 NTU 500ML HF PRIMARY	Lazenby & Associates	53250	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 10 NTU 500ML HF PRIMARY	Lazenby & Associates	53260	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 50 NTU 1 LITER HF PRIMARY	Lazenby & Associates	53280	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 0.02 NTU 1GL HF PRIMARY	Lazenby & Associates	53290	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 10 NTU 1GL HF PRIMARY	Lazenby & Associates	53300	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 1GL HF PRIMARY	Lazenby & Associates	53310	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1000 NTU 500ML HF PRIM	Lazenby & Associates	53340	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 20 NTU 1GL HF PRIMARY	Lazenby & Associates	53370	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 100 NTU 500ML HF PRIM	Lazenby & Associates	53390	Water, Wastewater, and Irrigation Quality (IQ) Systems
STD, 1.0 NTU 500ML HF PRIM	Lazenby & Associates	53400	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD.10000NTU WL HF PRO CAL	Lazenby & Associates	39938	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD.10000NTU IR HF PRO CAL	Lazenby & Associates	39939	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
CAL STANDARD 4000 NTU PRO CAL	Lazenby & Associates	53410	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD 100 NTU, 125ML HF PRIMARY	Lazenby & Associates	39824	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL STD 10 NTU, 125ML HF PRIMARY	Lazenby & Associates	39825	Water, Wastewater, and Irrigation Quality (IQ) Systems
39845+M-TPW PORTABLE TURB W	Lazenby & Associates	20000	Water, Wastewater, and Irrigation Quality (IQ) Systems
39845+M-TPI PORTABLE TURB	Lazenby & Associates	20008	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE MICROTPI 3 PK	Lazenby & Associates	19856	Water, Wastewater, and Irrigation Quality (IQ) Systems
CAL SET POCKET TPI/TPW HF POL	Lazenby & Associates	39845	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL3 IR	Lazenby & Associates	02056	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL4 W/L	Lazenby & Associates	02063	Water, Wastewater, and Irrigation Quality (IQ) Systems
ELECTRONIC MDL TOL 5 W/L	Lazenby & Associates	04060	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPANNER WRENCH	Lazenby & Associates	50122S	Water, Wastewater, and Irrigation Quality (IQ) Systems
CUVETTE STAND	Lazenby & Associates	19981	Water, Wastewater, and Irrigation Quality (IQ) Systems
CORD POWER SET OF 2 120/240V	Lazenby & Associates	20779S	Water, Wastewater, and Irrigation Quality (IQ) Systems
TUBING,BLK TYG R3400 50FT ROLL	Lazenby & Associates	21201S	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
LAMP MODULE IR M100	Lazenby & Associates	22423S	Water, Wastewater, and Irrigation Quality (IQ) Systems
FLOW THRU ASSY NYLON TOL/ACCUV	Lazenby & Associates	24165S	Water, Wastewater, and Irrigation Quality (IQ) Systems
PRESSURE REGULATOR MTOL	Lazenby & Associates	24306S	Water, Wastewater, and Irrigation Quality (IQ) Systems
REPLACEMENT JCT BOX POWER SUPL	Lazenby & Associates	24017S	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAMP MD FOR MICRO 1000 IR	Lazenby & Associates	24547S	Water, Wastewater, and Irrigation Quality (IQ) Systems
DETECTOR ASSY LAMP TOL REPLACE	Lazenby & Associates	28332S	Water, Wastewater, and Irrigation Quality (IQ) Systems
PLC Hardware - ControlLogix, CompactLogix	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Micro Control System	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
I/O Devices	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Operator Interface- Panelview Plus, Versa views, Power monitors, Optix, ASEM Cmptrs & Mntrs	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Monitoring Equipment	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Low Voltage Drives & Medium Voltage Drive Parts	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Industrial Controls	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Ethernet Switches Stratix Family	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Drives & Accessories	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
End of Life Products (EOL)	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Software	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Custom Support Services & Equipment	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
Refrigerated Autosampler Products and Services	Teledyne ISCO		Wastewater Systems
67 l 2FR Refrigerated Sampler (120 V AC, 60 Hz).	Teledyne ISCO	68-6710-072	Wastewater Systems
1-bottle Configuration.	Teledyne ISCO	68-6700-038	Wastewater Systems
3/8-inch ID x 25 ft. long vinyl suction line with standard weighted polypropylene strainer. Includes tubing coupler.	Teledyne ISCO	60-9004-379	Wastewater Systems
Temperature Sensor	Teledyne ISCO	60-9004-226	Wastewater Systems
Evaporator Sensor	Teledyne ISCO	60-9004-240	Wastewater Systems
BLZZRD Package with 14 x 950ml poly bottle configuration and 3/8-inch ID x 25 ft. long vinyl suction line standard weighted polypropylene strainer	Teledyne ISCO	68-2960-028	Wastewater Systems
BLZZRD 14-bottle configuration. Includes 14 polypropylene 950-mL bottles with caps, two discharge tubes, bottle carrier and adapter.	Teledyne ISCO	68-2960-020	Wastewater Systems

Collier County Public Utilities Department
County Approved Waiver Product List

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Item	Vendor / Manufacturer	Model(s)	Applicability
BLZZRD 2.5-gal (IO liter) glass bottle with PTFE lined caps	Teledyne ISCO	68-2960-021	Wastewater Systems
2.5-gallon (9.5-liter) glass round bottle with PTFE lined cap	Teledyne ISCO	68-2700-005	Wastewater Systems
BLZZRD Mobility Kit	Teledyne ISCO	60-2974-048	Wastewater Systems
3/8-inch vinyl suction line - 500 ft.	Teledyne ISCO	68-1680-059	Wastewater Systems
Discharge tubing for 5800/4700 and 6700 Series/Avalanche Sampler, pump tubing for 3800 series, GLS, and Glacier Samplers	Teledyne ISCO	60-6700-047	Wastewater Systems
Tubing coupler, 3/8 inch. One-piece, clampless coupler made of stainless steel.	Teledyne ISCO	60-3709-002	Wastewater Systems
3/8-inch stainless steel strainer, low flow.	Teledyne ISCO	69-2903-138	Wastewater Systems
Distributer arm	Teledyne ISCO	60-2974-025	Wastewater Systems
Model 913 High-Capacity Power Pack. Converts 120 V AC, 50/60 Hz to 12 VDC	Teledyne ISCO	60-1684-088	Wastewater Systems
Model 934 Nickel-Cadmium Battery. Rechargeable, 12 VDC, 4 amp-hours	Teledyne ISCO	60-1684-040	Wastewater Systems
Flygt Pumps	Xylem Water Solutions U.S.A.		Wastewater Systems
Flygt Parts	Xylem Water Solutions U.S.A.		Wastewater Systems

Approved Backflow Devices

VENDOR	SIZE	MODEL NO.	TYPE	USE
Ames / Watts	3/4" - 2"	LF4000B / LF009	RP	Residential or commercial potable water locations
Watts	3/4" - 2"	LF919	RP	Residential or commercial potable water locations
Wilkins	3/4" - 2"	975XL	RP	Residential or commercial potable water locations
Ames / Watts	2.5" - 10"	C400 / 957	RP	Large size meter - potable water for commercial or residential applications
Watts	2.5" - 10"	LF909	RP	Large size meter - potable water for commercial or residential applications
Wilkins	2.5" - 10"	375 or 375AST	RP	Large size meter - potable water for commercial or residential applications
Ames	3/4" - 2"	LF4000B	RP	Combo services: fire and domestic lines
Watts	3/4" - 2"	LF009	RP	Combo services: fire and domestic lines
Wilkins	3/4" - 2"	975XL	RP	Combo services: fire and domestic lines
Ames Colt	2.5" - 10"	C400 (w/OSY)	RP	Combo services: fire and domestic lines
Watts	2.5" - 10"	LF909 (w/OSY)	RP	Combo services: fire and domestic lines
Wilkins	2.5" - 10"	375 or 375AST (w/OSY)	RP	Combo services: fire and domestic lines
Ames	2"	3000B	DCDA	Fire Lines - Standard
Watts	2" - 3"	007DCDA	DCDA	Fire Lines - Standard
Wilkins	2"	950XLTDA	DCDA	Fire Lines - Standard
Ames	2.5" - 10"	C300/M300	DCDA	Fire Lines - Standard
Watts	3" - 10"	709DCDA	DCDA	Fire Lines - Standard
Wilkins	2.5" - 12"	350DA or 350ASTDA	DCDA	Fire Lines - Standard
Wilkins	4" - 10"	450DA or 450STDA (N-Shape)	DCDA	Fire Lines - Standard

Note: All fire line Backflow Devices shall be UL or FM approved for fire service installation. Above is a small list, others may be used if requirements are met and information is provided

Collier County

Appendix H

Basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water

1. Property & Customer Information

Property Owner Name:	Date:
Mailing Address:	Phone Number:
Service Address:	Email Address:
Section_____Township_____Range_____	Folio (Parcel) Number:
Total Property Acres:	Acres irrigated by IQ Water only:

2. Irrigation Information

Total Number of Zones:

Each Zones Gallons per Minute-Use another sheet if necessary		
Zone1 =	Zone 6 =	Zone 11 =
Zone 2 =	Zone 7 =	Zone 12 =
Zone 3 =	Zone 8 =	Zone 13 =
Zone 4 =	Zone 9 =	Zone 14 =
Zone 5 =	Zone 10 =	Zone 15 =
Maximum number of zones running at once =		

3. Do you have a backflow prevention device installed on your potable (drinking) water line?

Yes	No	Unknown

4. For what purpose are you using IQ Water? Please select all that apply.

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)
	Single Family Home landscape irrigation
	Cooling Tower
	Other, please specify_____

5. How many total individual dwelling units will this serve? Please enter a number or N/A. A single family home = 1, a condo with 20 units = 20

	Golf Course Irrigation
	Common Area Irrigation (i.e. condo associations, parks, schools, medians)

6. What is your estimated average and maximum IQ Water usage in gallons per day?

_____

I,_____, (property owner) have read, understand, and shall abide Collier County Ordinance, No. 2013-48 as amended; Collier County Ordinance No. 1997-33, as amended; Ordinance No. 2001-73, as amended, the Federal, State, and local laws, rules, and regulations that pertain to the use of IQ Water.

I understand that due to the composition of IQ water, it may not be suitable for the irrigation of certain susceptible vegetation, and I agree that the District will not be held liable for damages that may occur to susceptible vegetation or any damages that may occur due to the uses of IQ Water, and agree to defend and hold harmless the Collier County Water-Sewer District (District) from all claims and judgments arising therefrom against the District by any person. It is further agreed that submission of this application does not ensure IQ water delivery and the Owner further agrees that the County shall not be liable to the Owner for any damages or expenses incurred by the Owner as a result of the District's failure to deliver IQ Water.

It is further agreed that District employees or authorized agents shall have the right to enter the applicant's property served by the District with IQ Water to inspect the IQ Water System and shall have the right to discontinue IQ Water service should any infraction exist.

Sign and return the completed application, an 8.5"X11" drawing of property detailing desired meter location, and the Legal Property Description to: Reuse Manager, 4370 Mercantile Ave, Naples, FL 34104.

Printed Name:_____Signed:_____Date:_____

Frequently Asked Questions

1. Where can I find the applicable Ordinances? **www.municode.com**
2. Where can I find my Legal Property Description? On your deed which may be found at **www.collierappraiser.com**
3. Where can I find applicable State laws regarding IQ/reclaimed water? **www.dep.state.fl.us/water/reuse**
4. Where do I find billing information? **www.colliercountyfl.gov**
5. How do I report IQ water, potable water, or sewer issues? **Call (239) 252-2600 for IQ water and wastewater and (239) 252-6245 for potable water.**
6. What are irrigated acres? **The acres that are irrigated, you can calculate irrigated acres by subtracting non irrigated areas such as ponds, mulched areas, etc; from the site's pervious acres.**

For District Use Only

Service Level:	Bulk	Pressurized	Pressurized & Distributed
User Type:	Major User	Basic User	
Base Charge:	Allocation Based	Meter Based Charge	

Peak GPM for proposed system_____ Minimum Meter Size Required_____
Existing Service Tap/Tap Fee $_____ Existing Customer_____
Meter Hang Fee $_____ Total Fees $_____
Approved by:_____ Date:_____
Notes:_____
_____
_____

Attendance Roster – Date: November 18, 2024

DSAC – Utilities Subcommittee

Must have (3) members for a quorum

Committee Members	
Name	Signature
Blair Foley:	
Mario Valle:	
Chris Mitchell:	
John English:	

Staff Members	
Matthew McLean, Public Utilities, Division Director	
Derek Perry, Assistant County Attorney	
Anthony Stolts, Public Utilities, Supervisor – Project Management	
Drew Cody Public Utilities, Supervisor – Project Management	
Stephen Sarabia, Public Utilities, Project Manager II	
Claudia Vargas, Public Utilities, Project Manager I	
Jesse Komorny, Public Utilities, Manager – Meter Services	
Rey Torres Fuentes, Operations Support Specialist I	

Attendance Roster – Date: November 18, 2024

DSAC – Utilities Subcommittee

Public Sign-in Sheet

Please Print

NAME	REPRESENTING	PHONE NO.
Jared Mellein – Consultant	Bowman Engineering	239-254-2062
David Schmitt – Consultant	Bowman Engineering	239.254-2000

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

November 6, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Development Services Advisory Committee
Utilities Subcommittee
Collier County, Florida

November 18, 2024
2:00 p.m.

Notice is hereby given that the **Collier County Development Services Advisory Committee – Utilities Subcommittee** will meet on **Monday, November 18,** at **2:00 p.m.** in Conference Room 609/610 of the Growth Management Community Development Department building, 2800 N. Horseshoe Drive, Naples, Florida.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting.

All interested parties are invited to attend and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380 as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Rey Torres Fuentes at (239) 252-5727.

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Collier County

Growth Management Community Development

Development Services Advisory Committee Meeting

Wednesday, December 4, 2024
3:00 pm

2800 N. Horseshoe Dr.
Naples, FL 34104
Growth Management Community Development Department
Conference Room 609/610

If you have any questions or wish to meet with staff, please contact,
Rey Torres Fuentes at (239) 252-5727

Collier County

Development Services Advisory Committee

Agenda

Wednesday, December 4, 2024

3:00 pm

2800 N. Horseshoe Dr., Naples, FL 34104

Growth Management Community Development, Conference Rooms 609/610

NOTICE:

Persons wishing to speak on any Agenda item will receive up to three (3) minutes unless the Chairman adjusts the time. Speakers are required to fill out a "Speaker Registration Form", list the topic they wish to address, and hand it to the Staff member before the meeting begins. Please wait to be recognized by the Chairman and speak into a microphone. State your name and affiliation before commenting. During the discussion, Committee Members may direct questions to the speaker.

Please silence cell phones and digital devices. There may not be a break in this meeting. Please leave the room to conduct any personal business. All parties participating in the public meeting are to observe Roberts Rules of Order and wait to be recognized by the Chairman. Please speak one at a time and into the microphone so the Hearing Reporter can record all statements being made.

1. Call to order - Chairman.
2. Approval of Agenda
3. Approval of Minutes
    a. DSAC – Meeting – November 6, 2024 Page 4
    b. DSAC – LDR – July 29, 2024 Page 21
    c. DSAC – LDR – October 15, 2024 Page 45
4. Public Speakers

For more information, please contact Rey Torres Fuentes at (239) 252-5727
or at Rey.TorresFuentes@colliercountyfl.gov

5. Staff Announcements/Updates
    a. Zoning Division – [**Mike Bosi**]
    b. Community Planning & Resiliency Division – [**Christopher Mason**]
    c. Housing Policy & Economic Development Division. **– [Cormac Giblin**]
    d. Development Review Division – [**Jaime Cook**]
    e. Operations & Regulatory Mgmt. Division – [**Michael Stark**]
    f. Building Review & Permitting Division- [**John McCormick**]
    g. Collier County Fire Review – [**Michael Cruz, Captain**]
    h. North Collier Fire Review – [**Chief Sean Lintz or designee**]
    i. Code Enforcement Division – [**Thomas Iandimarino**]
    j. Public Utilities Department – [**Matt McLean or designee**]
    k. Transportation Management Services

       Transportation Engineering Division – [**Jay Ahmad or designee**]
6. New Business
    a. Recommended Updates: Utilities Standards Manual Page 76
7. Old Business
8. Committee Member Comments
9. Adjourn

FUTURE MEETING DATES:

January 1, 2025 – TBD
February 5, 2025 – 3:00 PM
March 5, 2025 – 3:00 PM

MINUTES OF THE COLLIER COUNTY
DEVELOPMENT SERVICES ADVISORY COMMITTEE MEETING

Naples, Florida
November 06, 2024

LET IT BE REMEMBERED, the Collier County Development Services Advisory Committee Meeting and Collier County, having conducted business herein, met on this date at 3:00 PM in REGULAR SESSION at the Collier County Growth Management Community Department Building, Conference Room #609/610, 2800 N. Horseshoe Dr., Naples, Florida, 34102 with the following members present:

Chairman:	William J. Varian
Vice Chairman:	Blair Foley
	Hannah Roberts – AHAC – Non-Voting (Absent)
	Mark McLean
	Jeffrey Curl
	Marco Espinar
	Chris Mitchell
	Jeremy Sterk (Excused)
	John English (Excused)
	James E. Boughton (Excused)
	Robert Mulhere
	Laura Spurgeon DeJohn
	David Dunnavant
	Clay Brooker
	Norm Gentry
	Mario Valle

Also Present:

James French, Department Head – GMCD
Mike Bosi, Director – Zoning, GMCD
Christopher Mason – Community Planning & Resiliency, GMCD
Cormac Giblin, Director – Housing Policy & Economic Development, GMCD
Jaime Cook, Director – Development Review, GMCD
Michael Stark, Director – Operations & Regulatory Management, GMCD
John McCormick, Director – Building Review & Permitting Division, GMCD
Captain Bryan Horbal – North Collier Fire Review
Thomas Iandimarino, Director – Code Enforcement, GMCD
Claudia Vargas, Project Manager I – PUD
Lorraine Lantz, Manager – Transportation Planning, Transportation Management
Diane Lynch, Management Analyst I, Staff Liaison – GMCD
Rey Torres Fuentes, Ops. Support Specialist I, Staff Liaison – GMCD

1. CALL TO ORDER

- Meeting called to order at 3:00pm

2. APPROVAL OF AGENDA

Mario Valle made a motion to accept the agenda, the motion was seconded by Jeff curl. The Motion passed unanimously.

3. APPROVAL OF MINUTES

a. **DSAC Meeting: October 2, 2024**

Jeff Curl made a motion to approve minutes, the motion was seconded by Mark McLean. The Motion passed unanimously.

4. PUBLIC SPEAKERS

We have 2 public speakers for guest houses. We'll hold them for our discussion.

5. STAFF ANNOUNCEMENTS / UPDATES

a. **Zoning Division – [Mike Bosi, Director]**

We're still actively pursuing a Planner 3 to replace our Comp. Plan Manager. We've got a few applicants and hoping to close that gap and get fully staffed. Tomorrow, Planning Commission with 3 new members. Michelle McLeod, Mike Petscher, and Chap Colucci. We've had orientations with each of them. They all seem astute, reasonable, levelheaded folks, and we're hoping they will be a good addition to the Planning Commission. We've got a car wash in a GMP that Mr. Mulhere is bringing forward that the staff agrees with.

We have created a little bit of a backup with what we had originally reserved for the November 12th Board of County Commissioners meeting, specifically to hear the Fiddlers Creek 3 trio petitions for the affordable housing. We had only allowed any land use petitions that were summary. Everything else got pushed to December. Last week, Commissioner LoCastro asked staff and the applicant to continue to December. He'd like to have more time to digest it and work with staff, the applicant, and the community. Mr. Yovanovich agreed, and the County Manager has moved that item to December. We're going to have an extremely busy agenda in December. Not sure if we're going to be able to get through all the land use items.

December 10th is the is the only Board meeting in December. We've got a little bit of backup with 5 additional petitions scheduled for the 1st meeting in January.

Right behind that, we have the Myrtle Lane rezone, which is the relocation of the U Haul, which is critical for the Bayshore and the Bayshore redevelopment progress. They want to relocate U Haul from its current location to by Myrtle Lane off East Trail. We think it's a good arrangement in freeing up that property for use with the redevelopment efforts within Bayshore.

b. **Community Planning & Resiliency Division – [Christopher Mason, Director]**

I was absent for the last DSAC meeting at the beginning of October. Hurricane Helene was probably talked about beforehand. We've been working with FEMA and

tracking all our damaged structures. We're standing by from any reporting request from FEMA now but if there are any inquiries from FEMA, we will be ready. Same problematic areas as Ian.

c. **Economic Development & Housing Division – [Cormac Giblin, Director]**
Good news story. The first closing on property that we are using the surtax money from is scheduled to close on to next Tuesday, the 12th. That's $3,750,000 for about 7 and a half acres on Collier Boulevard South. Earlier this week there was a grand opening for a new affordable development called Ekos Cadenza, in Allegra, which is a sister property right next door. One hundred and sixty affordable rental units dedicated to senior housing
It's the 1st senior housing development affordable senior housing and development to open in Collier County since 1975. Another 160 units in about 3-4 months.

d. **Development Review Division [Jaime Cook, Director]**
One major piece of news, Brett Rosenblum, our Planning Manager for Engineering, is leaving. His last day is next Friday. I know some of you may email things with regards to plats or insubstantial change preapproval, continue to send those to Lisa Blackledge and myself.
We're working on redistributing his workload and the position is posted.

e. **Operation & Regulatory Management Division [Jason Badge]**
Good afternoon. Jason Badge, Supervisor Project Management of the Operations and Support and Regulatory Management Division. In October, the Department received 3,710 permit applications. One hundred and twenty-nine of these were related to Hurricane Helene, and 110 were related to Hurricane Milton. The average turnaround time for intake staff is 1.1 days.
We welcomed 1,244 customers to our business center and the satellite offices, and staff answered 5,384 calls in our call center. We also removed the building permit application on October 1st as a permit requirement, except for right away well and owner builder applications, and so far, it's been a successful launch. On the 18th we deployed the new changes that were requested for allowing multiple text messages to be sent to different phone numbers and email addresses. Hopefully, you have seen that as you've been scheduling inspections on our portal.
Chairman Varian
It's been great. Thank you. So Awesome to hear.
Jason Badge
We appreciate the opportunity to share this information and data with you. My team and I are readily available to answer any questions and address any concerns, and we're open to feedback on how we can improve our processes.
Robert Mulhere
Jason, I think it was the last meeting we're talking about some of the bosses and things. They do a great job. I was thinking that there's a lot of training that must occur there because there's so many different types of petitions and there's nuances here and there.

For example, if we ask for a waiver of a pre app, we usually get an email from Ray Bellows, and we submit that with the application so that intake is aware because otherwise, they will hold it up.
Another thing, it was a PUD amendment of a of an older PUD, so it doesn't follow the typical format of a of a PUD with exhibits a, b, c, d, and e. that was going to be put on hold because it wasn't following the typical format, except, of course, it wasn't following the typical format because it was about amendment. I was just thinking something for consideration, and I've said this before. I think it's as much my responsibility as it is Steph's, maybe there could be a section on the pre app notes that talks about either destruct or instructions for intake if it's something unique. Because then it doesn't sit somewhere. It's all taken care of upfront, puts the burden on us to ask for those special conditions that might apply upfront.
Jason Badge
Sure. I'll make a note and bring it up with pre app staff as an idea.

f. **Building Review & Inspection [John McCormick]**
Good afternoon. It's my 3rd day here but I've been here 10 years. I started with Jamie in the same Division and spent the last 7 years as Director of Facilities and Sir Tac Liaison helping the County spend about half a billion dollars. I was in a family construction company for 30 years. I'm a mechanical engineer by trade, and I love what I do. I'm anxious to get to know you folks, and if I can help in any way, I'm a quick learner. Rich was here like 19 years. If there's anything I can do to help I have the same phone number and will pass out new business cards next meeting.

g. **Collier County Fire Review NO UPDATE**

h. **North Collier Fire Review [Brian Horbal]**
We had another busy month in October. We did 1414 new construction permitted inspections. That's on par for our busy months.
We interviewed 4-5 Plan Reviewers and have 3 that we like. We were hoping for one but we're trying to see if the Chief will give us a couple more because we're just so busy. September was just as busy, 655 plan reviews, and we are averaging a 4-day turnaround. That's all-permitted stuff. Planning review, we did 63 with a 3-day turnaround.
The Ritz Carlton Beach Project is done for now. The remodel, addition, new CEP outback, and all the hurricane stuff, we're done. That's been my baby for the last couple of years, so I'm glad to have it have it done.

i. **Code Enforcement [Thomas Iandimarino, Director]**
It's been status quo back in Code. We've been steadily gearing up for season.
Chairman Varian
The uptick in unlicensed people trying to do contracting work with the new work?
Tom Iandimarino
Not so much since the Hurricanes, but we have had Contractor Licensing Staff working Saturdays and Sundays out in the field. You know, we do get a few cases

here and there. And when we get a call on a Sunday for something that we miss, we try to catch it next Sunday, and sometimes that's how it works.

GMCD [Jamie French, Department Head]

- With the transition of Parks and Recreation and Domestic Animal Services coming into the Community Development Model, Tom will be picking up 16 Park Rangers, and he has 9 Animal Control Officers. We're looking at trying to flatten the job descriptions to where you have code 1, code 2, code 3 type of a scenario so that entry level may be a Park Ranger, Code Enforcement Officer, or Licensing Person. With more advanced licensing and training offered throughout the State, we're looking at Tom doing it now, for example, like the ACOs. That training's very difficult to get in. We just reached out to the Company. They're coming in I think, next week. It's a 4-day course we're putting Park Rangers and Code Enforcement People through. It really takes on that force multiplier approach, and the same thing with Licensing and everything else.
- They're all Code Enforcement employees that operate under that consolidated Code Enforcement Ordinance through the County, and Tom was already processing all their hearings anyway. The idea is that having that type of multi-tiered level of training, it enables us during vacations, busy seasons, off time to be able to take that apparatus, that vehicle that's been specialized, for example, for ACOs, for the Animal Control Officers and that way that van is never off the road.
- One of the things that Tom has done is shift work and you'll see it is much like what the Park Rangers are doing. They've all brought different aspects of business that we appreciate. Much like the Sheriff's Office, the way they run their dispatch.
- You'll see that level of service from 7 AM until 10 PM and nights and weekends on call services. So that it's more of an accommodation to the Sheriff's Office and to our 911 Centers so that we can get that specialized trained person in the field. There will be some budget constraints but at the end of the day, we think having that additional staff will not influence in any way, shape, or form your enterprise funds. We look at it as a cost savings because that way we're spending less time bringing these cases through for prosecution.
- For example, with the ACOs, $26,000 in fines got away because of how bad it was managed. Now we are at 100% conviction.
- If we're bringing a case forward, our goal is the educational path. But you are if you are resistant and don’t get your license or pull a permit or register your dog, you will get a ticket. And we're going to enforce fines and lien on property, however the law allows. That’s our goal.
- One of the things Tom has not disclosed is that we'll be moving Code Enforcement much like Sheriff's Office where you'll have individual offices.
- With the merger of Parks, we're going to create a North Naples Code Office at North Collier Regional Park like we have at Heritage Bay in Immokalee.
- Conservation Collier needs more space and we're looking at some additional lease spaces through another State Agency.
- We're looking at taking all the calls for Parks, DAS, and Growth Management and putting them all in the same call center.

- I've asked the Board and the County Manager to give me the transition of the Park Rangers and that should be completed by the end of this month.
- We've been going through some growing pains for the last 9 months with these transitions, and I apologize for that.

Jeff Curl

My hat's off to you, it's a world of difference, and I don't mean to be disrespectful to Mike but Tom with his law enforcement background, you're hitting the nail on the head.

Jamie French

I agree. I think it's a combination of Tom being 32 years in federal law enforcement, but then also having Tim Crotts there who spent a lifetime as an executive officer for a small police force and then a Police Chief up in the New England States, having that level of administration helps with prosecution.

Taking this force multiplier approach will allow us to have consistent messaging across the entire agency as one unified Code effort. With that the ACOs as well as Park Rangers have the training and know what to look for. It also offers them a multifaceted career path.

And hats off to the Sheriff Office because I've learned so much from them in my 21 plus years here. They've been wonderful partners throughout this venture.

j. **Public Utilities Engineering & Project Management [Claudia Vargas, Project Manager]**

We had our first Subcommittee meeting last week, the next one is November 18th. Mario can give a brief update on where we are and the process and how the review went.

Mario Valle

Thanks. I appreciate everybody voting me in as Vice-Chair of the Subcommittee while I was on vacation.

There are over 571 pages for us to review. There were about a dozen highlights I wrote down. Chris and John English were both there. We've asked staff to allow us to have enough time to review this diligently. It's been a long time since it's been reviewed, and it looks like we're making good progress towards the sustainability of our infrastructure.

We started off with a half an hour conversation about introducing liability to the civil engineers and design professionals and it was something we asked to have to go back and review. It was onerous in terms of how much they were asking the design professionals to ascertain. With that major caveat out of the way, we went through and most of it seemed to flow well. It's just a lot to go through.

David Dunavant

Just a little curious. I used to track it a little closer when I was getting them, but I've never understood how response times for letters of availability could be at 6 business weeks. There was an exerted push a couple years ago to try and reduce that, and it seems to have fallen off again.

Claudia Vargas

So right now, our response time is 10 business days. While I was starting training, there were some anomalies and time frames due to the training, but other than that, we're back on schedule.

k. **Transportation Planning [Lorraine Lantz, Manager]**

The first thing is Wilson Boulevard, the south project, for the extension, not the widening. This is Golden Gate Boulevard to City Gate North, that connection. I probably haven't spoken to you about that for 2 years. That was shelved as we were having some timing in staffing. We're bringing that back.

I believe we're scheduling that for December 9th meeting, which is a Monday. That's a public meeting to explain where we are in the corridor and to talk about the alignment. We are also working on our access management study and revising the access management policies.

Mike Sawyer or Kathy came to you a little bit ago and said we would kick that off. We've had one meeting already with the Development Community. It's going well. We're will have another one and then bring that to the Board of County Commissioners in September.

Mostly we're adopting FDOT's guidelines. Just updating them.

Tonight, they're at the IFES Center, there's a public meeting for the Randall, Immokalee intersection project that's at 30% design plans. They're anticipating that for construction for the intersection improvements in late 2026.

Jeff Curl

It seems like Transportation is infatuated with these. I heard that one is going in at DeSoto and Golden Gate. A lot of 18 wheelers go through there and isn't a good scenario.

That is one we are looking at. Roundabouts in the right place with the right design are effective. They're good traffic calming and sustainable if power goes out. The one in Immokalee and 29 functions. intersection improvement, but it is an intersection improvement.

Clay Brooker

The Wilson extension. Do you know where that meeting will be held on December 9th?

We're looking at Heritage Bay, Immokalee and Collier Boulevard.

6. NEW BUSINESS

a. Expiring Terms

Five of us are expiring our terms here. We've done great and I think we have 6 applications.

We'll go one at a time because some of us must excuse ourselves from voting.

Chairman Varian

So first up

i. ***Architect***

Blair Foley motioned to recommend ***Mark McClain***

Robert Mulhere seconded

Motion passed unanimously

ii. ***Planner***
Blair Foley motioned to recommend ***Robert Mulhere***
Mario Valle seconded
Motion passed unanimously

iii. ***Environmental Consultant***
Blair Foley motioned to recommend ***Jeremy Sterk***
Jeff Curl seconded
Motion passed unanimously

iv. **General Contractor**
Mario Valley motioned to recommend ***William Varian***
Blair Foley seconded
Blair Foley needs to take over as Chair for this vote only.
Motion passed unanimously

Dave Dunnavant's spot we will be filling

v. ***Developer***
Blair Foley motioned to recommend ***Nick Cole Harris***
Mario Valle seconded
Motion passed unanimously

b. PL20240009067 Guesthouse Rentals in Urban Estates
Eric Johnson, LDC Planning Manager

This Land Development Code amendment would establish interim regulations for the rental of guest- houses with Urban Estate Zone Lots. The provisions for guesthouses have been on the books in the county since the seventies, as well as in the seventies has been the prohibition about renting the guest- houses.
In 2023, The Board discussed the prospect of amending the Land Development Code to allow for the rental of these guesthouses on a State Zone Lots.

- On May 14th this year, The Board directed staff to move forward with an LDC amendment with a provision in writing of the 1-year revisit and a specific report from Code Enforcement to amend the Land Development Code to allow the rental of guesthouses.
- The focus is to be on Estate Zone Lots in the Urban Part of the County. That affects the Golden Gate Area Master Plan. There are 3 sub elements, the Golden Gate City, The Rural, and The Urban. This would only affect estates and lots in the Urban Golden Gate Estates Element Sub Element, as well as other Estate Zone lots west of Collier Boulevard.
- I provided an exhibit for you in your packet, exhibit A that shows where the study area is, including the, Estate Zone Lots that are not in the Urban Sub element of the GBA and P.
- In your package, you'll also find there's yellow highlighting, text that represents the changes that were made to this amendment since it went to the Subcommittee

on October 15th. Basically, staff is looking to amend, LDC sections 2.03.01, agricultural districts, as well as LDC section 5 guesthouses. You'll see that in 5 of the most proposed text is in 50303, particularly F. You have the leasing or rental renting of guesthouse shall be prohibited unless the following requirements are met. And it shows 1, 2, 3, 4, 5, and 6. We have also added 7 and 8, and you'll notice that 7 is a minimum duration of a lease between a lessor and lessee, shall be 9 months. Then number 8, this code is supposed to sunset unless it's extended by the Board of County Commissioners by a resolution. The amendment has been reviewed by staff and I wanted to read for the record what transportation planning had to say. I provided 5 bullets.

1. *There are a limited number of parcels affected by the amendment.*
2. *The Urban Sub District contains an established road network with major north south and east west arterials and collectors.*
3. *Traffic impacts resulting from the rental units should be more widely distributed within the sub district compared to the compared to traditional PUD developments with single point trip impacts.*
4. *There is a reasonable network of interconnected local neighborhood roads providing alternative routes.*
5. *There are numerous goods and services employment opportunities adjacent to the Sub*
   District area to reduce lengths on the network compared to longer and rural commuter residential trips.

- Our comprehensive planning staff reviewed the previous iteration. They have not seen the yellow yet. I'm still waiting for their approval. I suspect that they're not going to have an issue with the minimum duration of a lease of 9 months.
- After consulting with our County Attorney's Office, there was concern about having a minimum duration lease. Do the State Statutes preempt us from instituting that? Conclusion was no. We, as in staff, conducted a survey of some apartment complexes within the County, and you'll note in the overhead, behind you that many of the minimum durations that they have is 12 months 11 months, so we feel like we are justified with a minimum of at least 9 months and this will help further the prospect of having , or the supply of rentals in the community that helps with the affordable housing problem in the County. But I would like to point out that no one is compelling any property owner to rent to any of the categories of affordable housing qualified applicants.
- This is strictly a property owner who would want to rent out their guesthouse, they can do so under these provisions, if it is in the study area. The property owner would have to figure out through their own due diligence whether it would be financially feasible for them to continue with this because, in doing so, we are mandating that only homesteaded properties would be eligible to rent out the guesthouses. And as you know, or maybe you don't know, when you do a rental the property appraiser's office is going to look at that guesthouse structure differently and you will lose that homestead exemption on the guesthouse structure but not the main structure. Staff is looking for a recommendation of approval with that.

- And the subcommittee did review this on October 15th and recommended approval.

Robert Mulhere
Why the sunsetting? I don't I don't understand that.
Eric Johnson
That was directed by The Board so we must follow through with what they want from us. So, they actively want to report within 5 years. They may extend it, but if they don't like it, they can sunset it.
It's my understanding they want an annual report.
Laura Spurgeon DeJohn
I am a property owner in the red box. I learned in past experiences, usually, if you're1 out of 1,000, you're not a heavily affected party. Is anyone else in the red box?
Clay Brooker
I can comment. I mean, my understanding of the law under these circumstances, you would not be conflicted from participating and voting. But that's my understanding of it.
Chris Mitchell
I know the basis behind losing your exemption on the structure only? In the last 3-4 years, the land value is probably going to far outweigh the construction cost of the structure. I don't understand the benefit. I mean, do you get that small square footage of the land comes out of that homestead too? And why are we doing that?
Eric Johnson
This is not the zoning staff's area of expertise. Obviously, we would have to get feedback from the Property Appraiser, and whoever will eventually want to rent out their guesthouse will have to make their own decision as to whether it's financially beneficial to them.
It's my understanding that the Property Appraiser assesses a property on 3 different matters. The land itself, the principal dwelling, and the guesthouse structure. That would be the guesthouse structure would lose its homestead exemption, and therefore not be protected under the same save our homes cap, and I think that's 3%.
Clay Brooker
The Subcommittee heard from the public and I suspect we'll be hearing from the public again on that issue. They're all valid points, but this is a zoning exercise. We made an informal suggestion that the County have a brochure or a pamphlet that if you decide to do this there are consequences, and you should be aware of them before you make that decision.
Chris Mitchell
Was there any discussion that if you subsequently pull that out of the rental, do you get re-homesteaded and at what value?
Eric Johnson
I just think that those are questions for the property appraiser and not subject to DSAC from a zoning perspective.
Clay Brooker
I would suggest that we don't even go down that road because we could possibly getting get something wrong, and I don't want to mislead anyone in that respect. Tax

consequences, homestead exemption consequences, save our homes consequences, all of that should be outside of our purview, in my opinion.

Eric Johnson

I just wanted to mention that in the future, administrative code amendment, to support this land development code effort. And we envision having a zoning certificate process, like comparable to the guesthouse rental being associated with this as well.

Laura Spurgeon DeJohn

I understand that this formalizes something however, it has been going on prolifically and regularly for decades and those folks did not get hacked by the tax office because they had been renting their guest- houses. People have been doing this, and it's a little crooked to now say we're going to encourage it and make sure there's affordable opportunities in this County, and then here's all the consequences that make it harder to be affordable.

Eric Johnson

There is a short-term registration program that it will remain separate from this. Before, I envisioned having a zoning certificate and a registration that's separate from this.

Except the thousands of people doing it, like, the 40 or 50% of homeowners on my street who do it are not going to sign up.

Keep in mind that this will make it lawful for someone to rent out their guesthouse.

Rey Torres

Buddy Smith. You have 3 minutes, Sir.

5170 10th Avenue Southwest off Logan. I bought that property in 78. I look through this information have a couple of questions. I'm not unhappy with the information because I have a rented guesthouse, but here's a hole in the time frame of 9 months being a minimum and12 months being a maximum.

According to Naples Board of Realtors you can only rent for 12 months. I'm glad to see that the 9 months minimum which eliminates short term rentals. I am a licensed realtor. But there's also a question about the sales tax and bed tax.

You can't have a tourist tax when you're renting a guesthouse, but you can have a bed tax. And I see we've got to get a $50 permit.

But are the taxes going to also apply?

Chairman Varian

It's above our level right here, but it's a good question.

Laura Spurgeon DeJohn

Can I ask because I don't know if I heard you correctly in the beginning? Did you say you do rent out a guest house presently?

Buddy Smith

I was referring to other properties

Robert Mulhere

The Property Appraiser would have a lot of this information. My recommendation for staff, if we get through this, it's probably going to be important to have somebody here that can answer these questions.

David Dunnavant

I'm just curious what violates the principle of paragraph C that the owner can't live in the guesthouse and rent out as principal.

Clay Brooker

From a zoning perspective, it doesn't matter. We brought that up at the Subcommittee meeting, but there was not an answer for that.

Chris Mitchell

Did the Subcommittee confirm that current Code says that guesthouse distance between structures is 20 feet?

Eric Johnson

D4 says a detached guest detached guest houses shall not be closer than 20 feet to the principal dwelling. I don't think that means you can't have an attached guest house. Yes, it must be 20 feet.

Rey Torres

Our next speaker is Jill Rosenfeld.

- Jill Rosenthal, 2230 10th Avenue at East West Valley Road, Wilmington Estates. I just wanted to bring up a couple of points. I asked about the properties identified that have guest houses, how many of those are homesteaded properties and would qualify for this program? I got an email this morning that someone in the public records department is going to help me with that. I'll get that information soon.
- Another point is once a homesteaded property owner enters the program to rent the guesthouse, they lose their homestead exemption, and more importantly, the homestead protection, that is protection from judgment creditors on the guesthouse. Additionally, the guesthouse will be reassessed the following January at the current market value. I'm just trying to figure out as this goes forward, what is the estimated projected increase in tax assessment and property taxes for these properties?
- I think it's a prior priority to determine that now before we go ahead and start changing the Code and any regulations. I think we really should focus on what is this going to do to the property owners.
- The State has preempted short term rentals, so the County cannot limit or ban them. I don't understand how a guesthouse or a house compares to apartment buildings, because apartment buildings are solely for rentals. I think that needs to be investigated.
- Then the 5-year pilot program had already been addressed by the County Attorney at the BCC meeting. He advised that once the County gives a property owner a right such as a rental of guesthouses, the County cannot then restrict it or the County could be subject to a Bert Harris claim. So that needs to be investigated before it goes forward. The affected property owners deserve a thorough analysis. Let's not be short sighted and let's take the time now while it's in front of us and look at what are the actual ramifications.
- Why don't we do this as a referendum to the voters and let them decide whether they want to go through with this program? Because I think there's a lot of issues that are just not being addressed.

Chairman Varian
Both speakers mentioned concerns about taxes, and we're just focused on the zoning side.
You mentioned that once before. I don't think we should get clouded in that. I mean, they're all valid points.
Robert Mulhere
If I was making the presentation, I'd certainly have somebody there to answer questions.
Blair Foley

- I think so too. There is a lot of this going on now. We've investigated this. There's this promulgated rule, and I think we're trying to separate the zoning from the tax implications, but, invariably, they're connected.
- And I'm not quite sure why that wasn't part of all the research initially. I'm really of the position that it's a collective, collaborative deal between the two, and they should be looked at not just bring somebody at the time of a vote at the public hearing, but maybe they should have been involved early on. Perhaps it could be still discussed before it goes to those public hearings.

Chris Mitchell

- I thought it might be beneficial. The public doesn't come here very often, so you might define our role in this whole process as a as a review committee.
- Chairman Varian
- For the public, just to explain. We are an advisory committee with 15 members. We make a recommendation to the planning commission of BCC. The Board members come various industries or trades that we represent, but we are just an advisory committee.
- And what we say doesn't really matter once it gets to the higher end. They may take it under consideration. That's where we're at as a Board.
- I had a question and I'm just curious as to why it's only west of 951.

Eric Johnson
That's because that's what we were directed to do. Okay. We were not advised to open it up in the rural subelement of the GGA&P.
Jeff Curl
I would just add one thing too because the last public speaker just brought up probably the best point of all. How do you grant a zoning for only 5 years and then take it away?
Eric Johnson
That is highlighted in yellow, language has been reviewed by the County Attorney's Office and they felt that this would be acceptable at this point.
Clay Brooker
When you have a sunset clause, meaning the right is automatically going to go away, Burt Harris Act only applies to things that are reasonably foreseeable in the future. If you have something that's automatically going away, an argument exists that you don't have a Burt Harris claim when that right is taken away from you because everyone knows it's going away. It's not reasonably so foreseeable.
Jeff Curl

That to me, is why the Property Appraiser needs to be there because that homestead exemption or carve out also needs to sunset in theory.

Clay Brooker

My suggestion would be we need to just a couple of observations that I've already been made by Eric is this is BCC directed from a pure zoning we put on our zoning blinders. Does this make sense from a zoning perspective?

I guess. At least personally, it does, but there's serious consequences. Any recommendation from this Board should come with that kind of qualification. However, we recommend that all future public hearings be advised of with expert advice as to the tax implications that are embedded.

Laura Spurgeon DeJohn

- Just make part of a recommendation moving forward that the fiscal impacts quantify the ramifications of the property tax adjustments. There's going to be a positive fiscal impact on the County, so that could be quantified.
- The statement that this is hoping to promote the goal of addressing the affordable housing problem should be qualified with however, if there are unknowns of the, you know, fiscal impacts to the property owner who will be renting that home, it may not help the affordable housing problems in the County. You know, you have to say both sides of the story because it sounds positive, and it sounds like these great affordable opportunities are out there. We're talking about financial outcomes that could be different.

Eric Johnson

- Let me just remind everyone that right now, renting of a guesthouse is not allowed. Legally, with respect to taxing, I'd love to know more about it myself. Uh, remember back in 2008 when there was the, you know, the recession, the great recession, property values went down. So, there's a lot of different things that impact property taxes, millage rates, you know, that could change from one administration to the next. But certainly, I think having someone be on hand at the public hearing from the tax office is a very legitimate and, uh, prudent advice to staff.

Chairman Varian

Was the thought process of the BCC that more homes more of these guesthouses might be built? Or they're just trying to take the ones that are already built and put them into the legal mix? Out of curiosity, do you was there any discussion on that?

Mike Bosi

- There was no discussion in terms of, uh, specifically if they anticipated more, their urban estates are allowed guest houses. The relationship between the prices that landlords can command and what the market's bearing is related to your supply and demand curve. And the more supply that we can add, the more positive we're in effect what those rents are. That's the overriding message of what we're trying to do.
- We're trying to add a little bit more supply. The more supply should help with, uh, a little bit of providing loosening of the demand side of the shop towards where it may have an effect upon what the rents that are being commanded. At the end of the day, I think there was anticipation if the if it was a legitimacy, uh, to allowing guest houses to be ridden to be rented, that would spur the

construction of more guest houses. I mean, we've had there there's over 3,000 guest houses within the within the study area, and there's only it's a little bit above 10% of the of those that have guest houses. So, it's a very low number.

- And I think what they were hoping is if there is an allowance, more property owners would build guest houses that could be rented that could help with the supply and demand imbalance that we currently have. Um, so I think that was the whole intent. And we had spoken with the property appraiser. We have spoken with the tax collector. We had public information meetings.
- We had handouts from them, and we'll include those within the packages that go to the planning commission and the board of county commissions with an invitation from each one of those agencies to make sure that they're they have representatives there to be able to expel why that they're obligated by state statute to exempt properties that are being commercially rented from an exemption that that's to provide for homeowners to, you know, to lessen that tax burden. I understand that there's an increase in taxes, but there's an increase in value that's going on for that individual property owner because they're now renting out their house. And because of that, that doesn't that disqualifies them from having that 3% cap upon there. And it's a different cap there's a different tax rate that's associated with it. But we'll have, uh, uh, members from each of those agencies to be able to describe why and why and how specifically those taxing app implications are.
- We may add as part of one of the disclaimers in the actual land development code itself, if the county attorney's office would agree, to suggest that any property owner should explore their individual situation with both the tax collector and the property appraiser because of the unique sec situation for each individual property. Um, so that's I think that's the nutshell of what the board was looking for. I I don't think that they were anticipating that this was going to be a huge windfall for additional supply, but they thought it was one measure to potentially explore within the urbanized area that has the network of, uh, of transportation network to be able to handle the additional loads, um, and potentially add additional supply to the to the equation.
- Any other questions? Do we take a I guess I can entertain a motion if that's what we're going to do.
- Come on, Clay.
- The attorney. Again, you the subcommittee, you guys approved it.

Clay Brooker

I move to recommend approval of the proposed LDC amendment with a few qualifications.

1. *The Planning Commission and BCC be fully apprised of the tax implications or potential tax implications of the proposal.*
2. *The fiscal impact on the memo proposal should be revised to raise that as a potential fiscal impact as well.*
3. *Both sides that the fiscal impact to the County might be positive given the additional revenue. On the flip side, the increase in the additional tax rate to the homeowner might have an impact in the rents, which might affect affordability.*

4. Be that qualification for the from the fiscal side of the of the cover memo for the LDC amendment. That's my motion.

Mario Valle seconded

Chairman Varian

2 opposed

David Dunavant

Unintended consequences, you're gonna reduce the housing availability, and the traffic load already exists right now. You're not changing the traffic load.

Claudia from Public Utilities wants to give a quick update on the slides.

Just for the record I wanted to clarify the availability chart. The number of days is referring to the bar chart, and the number of requests is for the line graph. The max number of days we had for a response was 21 days in June, and that was due to training.

Again, for the number of business days, it's referring to the bar chart, and so we've been reducing the number of days that we've been getting back to the applicants. He's at 4 now.

Laura Spurgeon DeJohn

You're just updating us to say in September it was a 4-day turnaround?

Blair Foley

Huge improvement. It's only a month ago. Then you're doing a wonderful job.

7. OLD BUSINESS

Clay Brooker

Manning the door at the voting poll yester was Stan Chudzianowski. He wanted me to say hello to everyone, and he misses us all dearly.

Chairman Varian

Any other old business? Any other committee member comments?

Hearing none, I can entertain a motion to adjourn.

8. COMMITTEE MEMBER COMMENTS

9. ADJOURN

There being no further business for the good of the County, the meeting was adjourned at 4:18 p.m.

COLLIER COUNTY
DEVELOPMENT SERVICES ADVISORY COMMITTEE



Chairman William Varian

These minutes were approved by the Committee/Chairman on 12/4/24,
(check one) as submitted ✓ or as amended _____.

MINUTES OF THE COLLIER COUNTY
DEVELOPMENT SERVICES ADVISORY COMMITTEE

2024 LAND DEVELOPMENT CODE AMENDMENTS
SPECIAL PUBLIC MEETING

Naples, Florida July 29, 2024

LET IT BE REMEMBERED, the Collier County Development Services Advisory Committee, in and for the County of Collier, having conducted business herein, met on this date at 3:00 p.m. in REGULAR SESSION at the Collier County Growth Management Community Department Building, Conference Room #609/610, 2800 Horseshoe Drive North, Naples, Florida, with the following members present:

Chairman: Clay Brooker
Mark McLean
Jeffrey Curl

ALSO PRESENT: Eric Johnson, LDC Planning Manager
Richard Henderlong, Planner III
Jaime Cook, Development Review Division Director
Lisa Blacklidge, Planning Manager
Rachel Hansen, Consultant, The Neighborhood Company
Patrick Vanasse, Consultant, The Neighborhood Company
Brett Rosenblum, Planning Manager
Rey Torres Fuentes, Ops Support Specialist I

Any persons in need of the verbatim record of the meeting may request a copy of the audio recording from the Collier County Growth Management Community Department.

1. Call to order:

Chairman - The meeting was called to order at 3:00 p.m.

2. Approval of agenda

Motion to approve today's Agenda passed with item 4b preceding item 4a and add architectural standards to the Estates

3. Old Business

a. PL202400005299 -

Major Transportation Hub (f.k.a. Major Transit Stop Definition)

Comment - Johnson

- We met in May and had a different iteration of this amendment.
- We learned that Florida Statutes changed and signed by Governor May 16th.
- Major Transit Stop was no longer a valid definition.
- Last meeting Mr. Foley made a motion to accept the change to define Major Transportation Hub and the designated area along a fixed local Public Transit Route where a publicly funded bus stop to load and unload passengers.
- We took that from what would have been the Major Transportation Hub and incorporated that into Transit Stop and the following are what we consider those to be.
- The 3 major transit stops are
    1. The Government Center transfer station
    2. The Radio Road transfer station
    3. Immokalee transfer station
- Looking for a discussion.

Comment - McLean

- Do we have the authority to further define a transit stop?
- i.e. Someone wanting to do a 300-unit affordable housing complex somewhere and they insert a bus stop that's going to have 200 people a day on it; could they get the parking reduction?
- I've not seen that materialize and don't know if this helps achieve the goal it was after which was to incentivize reduced paring for affordable housing.
- The CAT guy was supposed to get back to us regarding this.

Comment - Johnson

- I will investigate.

Comment - Brooker

- My understanding is that Live Local was amended to read if you are a major transportation hub, the local government shall reduce the parking.
- When you have just a transit stop, the local government can consider reduced parking, so it is not mandatory.

Comment - Curl

- I like where Mark was headed. Try to rectify if the CAT route existed there or not and/or the possibility of expanding the CAT route.
- That is what the CAT fellow was going to get back to us on.

Comment - Brook

- The Bill's definition on page 2 "Any transit station, whether bus, train, or light rail, which is served by public transit with a mix of other transportation options."
- It expressly requires a mix of other transportation options

Comment - McLean

- I know of a bus stop those services 12 people a day
- We are looking to do a 300-unit housing complex.
- We are going to need a definition like this, and I think it needs to be defined more broadly.

Comment - Brooker

- Motion to approve as written petition 2040005299 for the definitions of "major transportation hub" and "transit stop" as written. Additionally, we would like to recommend that the BCC allow us to explore defining parking reductions on a transit stop in the future.

Mr. McLean made a motion to approve petition 2040005299 as written with the recommendation to the BCC that they allow for Staff and DSAC to explore defining "parking reduction under the term 'Transit Stop'". Seconded by Mr. Curl. Motion passes unanimously, 3-0.

Comment - Curl

- Mark and Peter were going to get together on architectural standards.
- They are blowing out a CPUD at the Randall Curve and it is another missed opportunity that is frustrating.

Comment - Johnson

- Last meeting Mark asked Marissa to give guidance.

Comment – McLean

- Staff has not reached out to discuss.

Comment – Johnson

- Staff will reach out to you.

Comment - Curl

- So, at the October meeting we will have language in front of us to check out.

Comment - Johnson

- I think that is doable.

1. NEW BUSINESS

b. PL20240008157 - Updated Approval of Residential Building Permits

Richard Henderlong, Planner III
Assigned planner for this LDC amendment for the Growth Management Community Department zoning division.
Jaime Cook, Director and Lisa Blackridge, Planning Manager for the Development Review Division as present.

This petition is being submitted. It is petition PL20248157, which the project name is update the approval of residential building permits.

It's an amendment that is being introduced to comply with the newly created 2024 Florida statute. Section 177-073 called Expedited Approval of a Residential Building Permits Before Final Plat is Recorded. This was approved by the governor on May 29th, 2024. So, this amendment in the companion administrative code for on a fast track to meet the state-mandated deadline. It requires by no later than October 1st, 2024, the county update the building permit process.

So, an applicant may request up to 50% and then up to 75% or more by December 31st, 2024 of planned homes or the number of building permits that will be issued for a residential subdivision or planned community before a PLA is recorded with the clerk of before to meet this deadline, the amendment is scheduled to be heard DSAC August 7th next week, planning commission August 15th and the board in September amendment has been deemed to be consistent with a growth management plan in any fiscal impacts associated with the application will be at the expense of the applicant.

In general, the LDC text changes that are before you accomplish the following. First, it renames the optional preliminary subdivision plat to Conceptual Plat with Deviations. This allows for the deviations from design standards that are not elsewhere within, within the county. And it also recognizes that PPL process is the developer's preference over a PSP process. Secondly, to rename LVC section 10 0 2 0 4 to collectively be requirements for subdivision plat rather than preliminary and final subdivision plat.

Thirdly, Florida statute 177-073 refers to a preliminary plat and final plat. Since the county only

has one submission to the board for a final plat, it will serve as the preliminary plat and the final plat on the statute. Lastly, it allows for an applicant to identify up to 50% of plain homes or number of building permits that may be issued before a final plat is recorded. If you have any questions, staff is here to answer them.

We're seeking your recommendation of approval to the textual changes and those minor changes that were submitted to you on Friday's packet July 26th. And they primarily did a textual change, minor textual change, and then some add-ons through the administrative code.

Comment - Curl

- The Attorney's Office has reviewed all of this?

Comment - Henderlong

- Yes, we've had a preliminary review on it. It gets final review when it gets to the Planning Commission.

Comment - Cook

- We are simply renaming our PSP process as plat with deviations so that if a developer comes in and applies for the preliminary plat in accordance with the Statute, they are applying for the correct item.

Comment - Brooker

- If the developer either goes preliminary or conceptual with deviations, they are still entitled to do this 50% of residential permits?

Comment - Cook

- Not the plat with deviations. If they apply for a PPL, which will serve as both the preliminary and the final plat to meet the state statute, they will be able to apply for building permits up to the 50%. They'll just identify on the application how many they're requesting.
- The plat deviation simply identifies the tracks of land. So, it's going to identify the track of road and the track where whatever the development may be, it doesn't have to specify out the lot lines. So, if they do it choose to do a plat with deviations, they're going to come back with a PPL anyway.

Comment - Brooker

- At that point they become eligible under the Statute.

Comment - Blacklidge

- You don't have to use the master building permit process. They were saying you need to implement one. If you still come in for them, you'll still be allowed to use them but as part of this, if you want to just come in for individual homes, that's fine. In discussion with Fred, we're just going to put a CO hold on these permits.
- There's gonna be a CO hold, update the address, and there'll be a TCO and CO hold so that the permits do not get CO'd.

Comment – Cook

- Part of the state statute is that you can't get TCO's or CO's until the plat is actually reported.

Comment – Henderlong

- It allows entry into sales and contracts, but you can't close until the final plat is recorded.

Mr. McLean made a motion to approve petition PL20240008157 as amended. Seconded by Mr. Curl. Motion passes unanimously, 3-0.

a. PL20240004278 - Immokalee Urban Area Overlay Eric Johnson, Planning Manager LDC

Also present, Rachel Hansen, The Neighborhood Company, and Patrick Vanasse Company, The Neighborhood.

A brief history and overview of the proposal. The Immokalee Area Master Plan, IAMP, was first adopted by the county in 1991. There have been numerous updates to the IAMP through the years.

Sections changing with this amendment, 2.03.07, 4.02.27/28//29/30/31/32/33, and 5.03.02.

The team worked with the community stakeholders to analyze existing regulations including subdistricts principal uses, accessory uses, bonus densities, and design standards.

There are substantive changes that are proposed including but limited to the reorganization of the subdistricts and creation of new subdistricts, new architectural site design standards, and new uses in subdistricts.
Overall map of Immokalee Area Urban Overlay District is presented with different colored sections. (See handout)

I wanted to just point out that the comprehensive planning staff reviewed this and determined that it may be consistent with the GMP.

Comment - Curl

- Is there really a buy-in from the Community on this?

Comment - Vanasse

- With the approval of the Immokalee Area Master Plan, there was a call to update the land code. So, we, we started on this over a year ago.
- We had 15-20 one-on-one group meetings.
- We asked the CRA to target the folks that are more involved in Immokalee and with our community representatives. And they came to the table. We also looked at all the applications that have been submitted in the last few years either building permits or PDs. We wanted to identify the friction points in the last 5 years. i.e. Looking at a PUD, what were the deviations that kept coming up?
- In starting this draft, we looked at the way the Golden Gate Master Plan was structured.

SEE ADDENDUM FOR CONVERSATION.

2. PUBLIC SPEAKERS None

3. Upcoming DSAC-LDR Subcommittee Meeting Dates
Tuesday, Oct. 15, 2024

4. Adjourn

There being no further business for the good of the County, the meeting was adjourned by the order of the Chairman at 5:10 p.m.

ADDENDUM

Patrick Vanasse

The first part of our process was to analyze all that, put a white paper together and kind of explain what those themes were.
What kept coming up, what we heard from the public, and to summarize everything we heard through that white paper. Using the white paper feedback, we target those areas of the land development code. So, in starting to draft this, we looked at how Bayshore Overlay and the Golden Gate Area Master Plan was structured. We tried to make our LDC amendments consistent with that existing structure.
The only friction point I can think of is when you have deviations sometimes in PUDs the neighbors go, oh man, you overdid, you know, buffer widths are compressed trees, shrubs, walls, whatever. So, was there any negative reaction from the community about hey, that did have deviation? So, we don't like the end product as a community. Yeah.

The balance with the MAFI is making it truly a land development code that's reflecting the community. We all know MAFI is not coastal Collier here, but the CRA had certain things that they wanted to be prescriptive. So, for the downtown area, the main street, the CRA years ago, we'd come up with a design guideline, a little handbook of what they'd like to see. The CRA wasn't ready to make that regulatory and impose that on businesses.

Because it's always a fear of we want redevelopment we make it to owners on them. We might stifle redevelopment, right? But if we want to get there from a design standpoint, we also have to, to recommend those guidelines. So, we looked at those guidelines and some of 'em are included now as we want this to happen.

And then when it came to landscaping a lot of times was what's that balance of not necessarily being as generous as coastal Collier, but how do you keep some vegetation but maybe, you know, instead of being vegetation throughout the parking lot, you push that to the boundaries and do it through the buffers. Maybe you take that extra vegetation, you put in the buffers and have clustered landscaping so you're saving on irrigation. We still get the green space, the neighbor's okay with it, but it's a little less constant.

So, we try to find that balance and we got quite a bit of comments from Mark Templeton. We need to consider, for example, shade and heat islands. And we made some adjustments. What we heard from the public was eliminating a lot more or reducing the requirement. So, it's striking that balance.

Comment - Curl
It’s interesting you hit on parking lots, and I brought this up and I don't even know how many years I've been on this committee, but oak trees and parking islands are just within 10 years. Sometimes I'm doing tree removal. A permits constant. So, if you're, I mean this could be a good template to update the land development code proper. I mean, if it's done correctly, you can take those trees and put 'em in a periphery or as long as it's not a huge parking field, but on a smaller compact lot Yeah.

Eliminate 'em.

Comment - Vanasse
And I think it's through the, the SIP process. Okay. When you're redeveloping a, a project throughout Colorado County, you can ask for taking some of the landscaping, putting it towards the buffers. So, we kind of model modeled ourselves after that. And, and I, I think Rachel was telling me that we did limit that you can't, you can't eliminate all the interior plantings on a big parking lot.

Right.

But if it's especially this is relegated to just the, the main street area.

Comment - Curl
Exactly. Those are tiny.

Comment - Vanasse
Small lots to start off. Yes. Yeah.

Comment - Hansen
Yeah. The, it's 25 spaces or less, you can get that relief. Anything over 25 spaces is defaults to what's existing

In the LDC. Okay. And then you can ask for variance, you know, we're, we're thinking if it's more than 25 spots it might be sizable. And then hopefully they, they that the, the pocket look that they can pay for a variance that goes through that

Comment - Curl
Process. Yeah, that's fine. 'cause one of the big things that I've encountered when I try to go to a business right there on main is you can't find a parking spot <affirmative>. So, if you can max out those parking spaces for the businesses <affirmative>, I think that's where everybody's at.

Comment - Eric Johnson
Just to further what Patrick said when we as a staff were given the proposed language, we put it in our LDC format. I did not take this anywhere beyond this subcommittee. I mean this is like the first public meeting that I'm personally involved with. So, I just wanted to state that for the Record.

Comment - Curl
I like the disclaimer.

Comment - Johnson
There's still ongoing discussion with staff and hammering out all the fine details. We feel, you know, Patrick team felt like, you know, we can move forward with this process if anything changes between now and say, you know, you have a vote or the DSAC votes. And I hate to bring up that word substantive because there's a lot of, you know, that's subjective. You know, what may be substantive to me may not be substantive to you, vice versa.

But we are still kind of like in somewhat of an evolving text here. But the goal is to move this along to try to get your feedback, as much feedback as possible to get a vote. If there's something that changes between now and you know, in the future, hopefully you have enough trust in me to determine whether or not I think it should go back to DSAC.

As long as you don't pull the three out of five of the subcommittee or incorporated. We're good brother.

I have another big picture question. Been watching the Bay Shore overlay for 20 years. Yeah. However, many years it's been in existence, and I don't, I think we're starting to see success now, but it took 20 years. So, the question I have is, are we employing the lessons learned from Bayshore? If there are any

That's why he's the man for this one to me.

If I had to compare the two, Bayshore was a lot of the design aspects I don't think it have, that's where we've seen a lot of the amendments. I think we were looking at some process issues also in creating this a different option to PUD where you could streamline the process. And I think from a process standpoint, it was untested, and a lot of people opted to not use that streamlined process.

So, I think there was some lessons learned there. If you're creating a new process and, and there's not a huge benefit, people will probably stick to the tried true PUD process. So that was an example. But the, and there's a lot of those edits that we've seen those, those few other amendments after the initial, a lot of it seem to surround around how you get through that process or how do you transfer the density like you can in Bayshore and how you deal with some of the coastal issues.

I think from the MAFI standpoint, most of it is, is a bit of a reduction in, in how owners the, the

red tape is. And so, I think from that standpoint, it, I don't think it'll imp repeat anything, but lesson I learned in working with any CRA is that, you know, a lot of times you set the groundwork and you put the regulations in place and the, when it really hits that critical mass, it's all market driven.

It's when it's, it's, it becomes a more attractive space than best versus elsewhere. And now it starts making sense. That's, that's when it's, it takes off and the best we can do is lay it around and get those regulations and be ready to embrace that develop when comes.

Comment - Curl
Totally agree. I mean, to me the best cornerstone of Immokalee that defies the entire land development code is that little Zocalo. I never can get the pronunciation correct, but there's no buffers on the south and the east. You look right into a hardscape plaza. So why not get a different identity for a community? So that's why I'm asking about stakeholders because if they feel like they can hit the ground running with this and really spur development through the CRA man, that's what we're here for.

Comment - McLean
Building off of that, Eric always mentions when we start debating text to of code that we're in, this came from here or this came from there. You mentioned Bayshore recently we did Golden Gate, we probably spent three meetings, three, you know, nine months going line by line through Golden Gate. That might have been an overkill. But I've done my first project in that overlay district and it was smooth sailing. It was exactly what we wanted to do.

It was awesome. Then we did the 41 overlays, and we did the whole thing in two hours and felt like it was a little short on our time to review that. So, I, I see on here there's no DSAC time limit. You don't have, you have a TBD on here, so we're not pushing this to be on DSAC in a week. I guess the question would be what was the base overlay district that came under this thing and what type of time constraint do you want us to abide by on this?

And then the last question I'll ask is, we always focus on property owners' rights. So as an architect, the first thing I always do is I go in and look at uses, permitted uses, conditional uses and prohibited uses. And I've seen a couple of these zones where we're creating a prohibited use for something that's already in the district. And that's always troublesome to me if we're gonna eliminate an existing use in a district. For example, a Main Street district has made gas stations of prohibitive use and there are several gas stations in the Main Street district.

So that's, that's always problematic to us.

Well the, then there's a new gas station that went in directly across the street from another gas station. So, it's like so tiny.

No, I get it, but I'm just saying we always talk about landowner's rights and if I'm a landowner

using that as an example, if, if if there's a gas station across the street I wanna put my gas station on to be competitive, we've now eliminated that one use. I'm just using that as an example. So that, that makes me question, do we want to take the next nine months in the next three meetings and go through this line by line? And I guess I would defer back to, you know, the, the neighborhood, whether or not you guys want us to take that deep of a depth look into it or do you want us to just kind of h with this versus line for this and it doesn't end there. The other one to me would be a dollar store. I mean, my god, there's family dollar across from General Dollar and I get it, we're dealing with this whole food desert, whatever that stupid thing is where a gas station, a fueling station then becomes a Pantry.
And a dollar store becomes a pantry. I think that's the stupidest thing personally around, 'cause now you get our gas stations and our stores, which then enters the moratorium on those things because otherwise that's what you're gonna have on every major corner. So, to me that's kind of a tough one to tackle.

I should, I'm just setting up my position to just say how deep do you want us to dive on this and how happy are you with the way this is written? I think we'll leave it up to you what you decide, but I've been around Collier County for a long time and, and a lot of the consulting work we do tends to be for the, the development industry. And we understand most of our clients along with any property rights. And we, we also understand how Colorado County has gone above and beyond and even in the common plan, you know, consistent making, making uses consistent by policy to say, yeah, we may have changed that, but it would if it was consistent.

It's more than just grandfathering. It's consistent by policy. So, so we understand that history. We, we looked at all the uses and, in our minds, we've allowed everything, and we've added uses. The only ones that were taken away, for example, the gas station is a good example. That was at the request of the, the stakeholders in this discussion with, with the CRA. Otherwise, we are not removing any uses. It was when it was specifically requested of us.

Comment - Brooker
If we are removing a use, are we violating the Senate bill 260?

Comment - Hansen
We're not removing anything that wasn't prohibited in the previous related table of uses. It used to be in 2 03 27, excuse me. Those used to be in the individual subdistrict, sub-districts listed, prohibited, conditional permitted uses. They were just moved into the, the table of use format. But I did do a double check on that 'cause that question of senate bill 260 did come up.
And so, nothing that we've done is more prohibitive than what was previously there.

Comment- Brooker
But I I thought I just heard gas stations were permitted in one subdistrict main street but are no longer permitted in that subdistrict. Well

Comment - Vanasse
I may have misspoke, but I I know that is what we had is, is each overlay had some little

nuances and now we've gathered everything under one, one table and we have to look at the underlying zoning, commercial zoning versus what those districts were. So, I assume that Mr. <inaudible> was correct <laugh> Well, my memory was obviously correct.

Comment - McLean
I don't even go to the chart that much. I mean, I go to the, the written, you know, section D on page 13, it's literally prohibited uses in a main street overlay district. And it is, and it eliminates, you know, I just used the facilities for fuel pumps or gas stations, and I can literally, in my mind's eye think of six in that overlay district. So how did they get there?

Comment - Hansen
It would've predated this original overlay.

Comment - McLean
But that goes back to the 1980s. I know there's one in there that's less than three years old. The one across from the casinos less than three years old.
The gas station. Yeah. Oh, there's a newer one right in the 29 curb. It's a big old seven eleven. But was that an existing convenience store fueled?
It was an empty lot. Yeah. So how did those get there if they were, they didn't. Had a house on it.

Comment - Curl
Well, I mean, did it have a smaller gas station in there and it just expanded? I'm just using a single example that, you know, just something that stands out to me that we usually discuss here as far as land user or landowner rights. Yeah. And prohibitive uses is always part of mine for me.

Comment - Brooker
So, so I guess that would be our ask of staff is simply to confirm that nothing that is permitted today would be not permitted if this gets adopted.

Comment - Vanasse
That's a fair ask. We'll go back and do a deep dive and really the, you know, we, we've done it once, but we'll do it again. And, and the, the gas station is good with the really example

Comment - Curl
Dollar stores too, man. I don't mean to make light of it, but you've already got two across the street from each other. So that may not be the only, you know, I think the, the biggest nexus that you want to create in any planning exercise is you don't want repetitive uses on the same block. You wanna spread it out, give people, you know, opportunities to move and shop here, shop here, shop here, not, you know, hey, I'm hitting the dollar store. Oh well let's hit the one over there. I mean, come on man.

And, and I think that that's a bit of a reflection of the market over there and you know, those are, those zoning districts allow those uses. But again, it's not all market. It's that food desert definition that it's the government level and the incentive that's there to abate the food desert. So

anyway,

Comment - Eric Johnson
Yeah, I think that was a legitimate ask, you know. For us to confirm what uses are being taken away and we'll provide that to you. We'll look further into it and make sure that,

Comment - McLean
And then again just going back to stakeholders again. I mean when we did the 41 overlay district, we know we were talking about building setbacks and we were talking about sidewalk placements and we got into the whole conversation of, well now we've got a sidewalk on 41 and a sidewalk adjacent to the building. Yep. We do that again here. So, it's kind of like, if this was built off the 41-overlay district, there were things in that district that we changed that's reoccurring in, in this particular district where it's talking about building placement to the property line with a sidewalk next to the building and a sidewalk adjacent to the street.

Well, if you've got a 25-foot set front setback, you've got two six-foot sidewalks in that 25 feet. It's kind of an oxymoron That's a glitch in the code that again, we found digging through the 41 code. So again, I would just ask, how deep do you want us to dive on this thing? I read through it for the most part, all of the LDC stuff came forward from the base LDC and there's not any major issues in it. There's just a couple of things that I saw.

Just so you know, the US 41, we never brought that forward because of the SB 260,

Comment - McLean
I guess, right? So, so how would this be different? But, substantively how would this be different then if we're writing a new overlay district or we're just bending the existing overlay District?

Comment - Hansen
Yeah, this is just amending the existing and basically taking, 'cause it used to be in multiple places throughout the existing LDC. This is putting it all in one spot.

Okay. So that 41 was a new overlay district so that violated SB two 50. This is amending and existing, so this does not violate SB 260.

Comment - Johnson
My silence on that is, I personally don't know. I know that our county attorney's office would ultimately warn us that if it were gonna be a violation or inconsistent with SB two 50, that they wouldn't, they would advise not moving forward. So, we're kind of moving forward thinking that everything is okay, that the growth management, the I-A-I-A-M-P was amended, so we're just trying to implement what was already approved. But certainly, if there is an issue with that, we're not gonna go anywhere.

Comment - Brooker
But in terms of the deep dive stuff, this is, a lot of this is architectural, which I know zero about,

Comment - Vanasse
Let’s clarify also on the architectural. So, we got two main sections of where we brought this into the land code, these standards with all the other. So, the 2 03 0 7, that's where all the overlays are established, and the uses are in there. So, all you know, Bayshore Gateway is also under that section.

And then we have the design guidelines. Design regulations, and same thing, Bayshore Gateway, Golden Gate City or under that 4 02. So, we brought that in and in some instances, for example, when it comes to architectural guidelines, that section is pretty big and we just wanted to change key areas, but we had multiple areas we wanted to change, and the idea was let's bring everything in and then make those changes.

So, if someone is working Immokalee they don't have to go and check both back and forth on everything. So that's why it, it's a huge strikethrough and then a whole new underline. But most of it is standard language that existed before with, and that's why you have the different colors instead of just a, a plain spray through an underline. So, you, and, and the different colors are to signify out it, this is brand new language versus just brought over.

Comment - Hansen
I do just want to clarify, I just looked in the existing LDC, all of those prohibited uses in the Main Street overlay, including facilities with fuel pumps are currently, it's the exact same language. Okay.

Comment - Vanasse
So, they would've had to have gone through some sort of variance process that they were successful. So, we're not changing any of that. Okay.

Comment - Johnson
So that's another general ask. I would request that as we go through this, and I still don't know exactly how we're doing that, but as we go through this, if there are areas of substantive change between what exists today and what is being proposed, perhaps you could point those out to us.

Comment - Hansen
Some of that is gonna be in, so in this packet, in this page, we put together a chart. It will have where like a, because like Pat was saying, a lot of it came from 5 0 5 0 8. So, it, it will note where things were modified. It doesn't tell you specifically what was modified. So, if you do want something to that level of detail, we could probably do that. But this will tell you where it came from and what the general change was.

Comment - Vanasse
I have that up on the screen.

Comment - Brooker

My thought process is not line by line, but page by page and if you have a question that might be the most efficient way of proceed.

So, I am on page 3 of my packet, that the first page of 2
0 3 0 7 in everyone's packet.

Page 5 I have a question, lines 16-22
This is where this involves this loop road overlay subdistrict and we talk about properties to the northeast, the northeast and the west, south and southwest.
Is there a way to key that on the map? So, we're not looking at very general, is that north or is that northwest.

Comment - Hansen
We don't have the alignment yet of that new ruper. So that's why it says the map is forthcoming. Once the FDOT has the alignment set, then there will eventually be a map. But until,

Comment - Brooker
So that language will ultimately change once we get the map. So, we're not referring generically to a north versus northwestern. The idea is once we have that alignment, show it graphically.

Vanasse
Any other questions on page 5, 6, 7?

Comment - Brooker
I have a question. This would be line seven through 10. The sentence is the overlay comprises approximately 363 acres, of which a maximum 30% or approximately 109 acres shall be commercial uses as permitted in the C four and C five zoning districts.

So once that maximum is reached, the next guy in line, I guess the next guy in line could do commercial uses in the C four or I guess if you're first, you're limited to C four C five until that first 109 is filled up. Is that how that works? The, the, the general question is, is is there a first come, first serve type of issue here?

Comment - Vanasse
Our intent was not to create a cap for the district unless it was already there. Okay. It, it was probably more informational as to how much C four and how much C five was within the district. But, but the intent is, is not to create a cap unless it was already there.

Comment - Curl
While you guys are looking too, I'm just lost as to where their CAT transfer station is. Which district sub-district is it in?
I just didn't know if that had any impact on the subdistrict with what we're talking about now

with the increase in density that's potentially gonna hit that, hit that district.

Comment - Vanasse
Rachel's looking it up. Meanwhile, just to give you a little background on information, when it comes to these different overlays and sub-districts, we went into this wanting to reduce those if we could, if we saw overlap or it, you know, it's like if you've got seven or eight sub-districts and they're kind of saying the same thing, do we, you need seven or eight? So, we, we in the end, this one, the AG agri business farm farm market overlay, those were two, we combined those because they were essentially doing the same thing.

Okay. And, and basically, they, they, they just opened up more opportunities for both of those overlays. But the intent was the same thing. Geographically. They were connected.

We had to add one more, which is on the map, the yellow one, which is right by the airport. And that came from the MPI area master plan. So, the MPI area master plan, it says you sh we shall, as a county, we shall create a new zoning overlay to basically support the uses at the airport. And the idea was to have commercial uses surrounding the airport. So, if someone did want to put, you know, like a diner close to, we've got some some heavier commercial uses, but then we want some lighter commercial close by to support those airport uses.

So, from, from the overlays we were looking at, I think the only two that we were able to buy is this one. The right one, which is farm market. Were they split by 29? Is that They were, yeah, they were split before, and they were just slightly different from each other.

Comment - Hansen
The CAT station is on 1st St.
But concern is related to how it would impact residential density, none of these subdistricts apply to residential properties. Only commercial.

Comment - Brooker
Be so, we'll, we'll make a note that, but the intent is, is obviously no cap unless it's already there. Otherwise, it should just be informational.
It would appear that people who come first are restricted to C four and C five and people who come after that have a variety, larger variety uses page eight. Any questions?
I just have one comment line 7 through 12. It's an incomplete sentence, I think.

Page 9 line 32 February of 2016.

Comment - Hansen
So, it's related to the adoption of the Michael area master, but there was an amendment done and the, it's, it literally is asking you to go to the property appraiser aerial maps and count how many mobile homes are on a given property.

This language did come from the original overlay, but I did look into that. It was related to an

LDC amendment that was started sometime in 2015. It was adopted in 2016.

Comment - Brooker
So, you literally go see a property appraiser website, zoom in and count. Yes.

Okay, so pages 10, 11, 12. Yes. 12 and 12 are the, is the big table. Just before we get to your comment, Jeff, just in general, those are uses that were permitted, conditional and whatever provisional, well permitted and conditional use as exists today and, and, and with some expansion.

Comment - Curl
Page 12. I'm looking at outdoor, where sales of agricultural products. I see fencing and lighting in, in Roman numeral four. And then in the buffer 11, they seem to be doing the same thing. So why couldn't you put slats in a fence to screen the outdoor storage and not have them put a five foot hedge in front of the fence? And all this other, it seems punitive to me

Maybe fences with slats or something? Yes, exactly. Just to screen the outdoor storage. I think that works. Okay. I don't think you need hedges and come on, man. So, you want to eliminate 11 pretty much. So that's, that's this direction. He wants to eliminate a left or make 11 a a right of way buffer, not a five foot edge. I mean, this is, Patrick hit the nail on the head. This is not coastal tire with I'm just, it's an AG dispatch.

Comment - Brooker
I think what I see Rachel doing is changing four and leaving five in place.
I'm, you see what I'm saying? We're going slats and still keeping 11 there. So, we didn't No, 11 to me goes away. Okay. So that's what we want to do. Just strike 11.

Comment - Johnson
All right. So, when you say strike 11, you mean lines 27 through 29? Yes Whole 11.

Comment - Curl
You got it. Exactly. And again, that gives the way it is. Yeah. Just strike a level. Yeah. And again, that gives a seven foot height and not a five. So, if we're allowing for flexibility, I can still high off on a five-foot-high fence. That's fine. $2 less galvanized fence. So, leave number four the way it is. Yes. No add fencing with slats or fencing with screening. Oh yeah. The fencing should function to screen the outdoor storage is where I'm heading.

So same thing as a buffer without damn bushes irrigation and somebody out there trimming and fertilizing 'em and mulch and blah, blah blah. Well, there's a lot of unapproved roads there too. The mulch is just gonna wash right in the road. There's no curbing. I consider the context, my man. Anything more on page 12? No, I, that one up pretty good. Yeah. Good job.

Comment - Brooker
Page 13, I think it looks like 14 through those are easy. <laugh> 2014 through the first half of 28 are strike through with a prior code. So, we can go straight to 28, I think. Okay, good. Anything on the bottom of 28? Page 29. I have three comments. Line one. And there you got another date.

November 10th, 2004. Is this another Jamie creation or?

Comment - Hansen
Yeah, that existed. That was from the previous overlay. I did not because, 'cause Jamie Co didn't ask about this one. So, I did not dig back the history of this one. But it would've, yeah,

Comment - Brooker
Okay then lines 22 through 24. I don't know what following shall be exempt. Is it, the following is, is on these lists of exemptions, but the expanded selection of materials shall apply. What does that mean? What you, you're exempt but you, you have to abide by the colors.
I'm not quite sure or materials in color.
So, this one I believe, and Pat, you can correct me if I'm wrong, if, if it's just routine repair and maintenance, you don't have to come up to the new standards in 4 0 2 27. Same for the public utility ancillary systems. But I think the idea was that if you were doing routine repair inmates, if you were gonna repaint a building that you could do, you could use, we've expanded the allowable colors I think beyond the like contrast that's typically allowed in 5 0 5, 0 8, I think it's five or 5 0 8.

So, if you wanted to use the benefit of having more colors to choose from, if you were repainting your whole building, you could.

Comment - Curl
So stupid question. I want to paint my building bright green like Cricket. Do I have to come in for approval or just get the paint?

Comment - Vanasse
I think what we heard from the public is they want way more colors.

Comment - McLean
Here's the way I understand how this works. Eric or anyone can correct me if I'm wrong. To paint a building in Collier County, it's not like the City of Naples.
You need design review, board approval. Yes. In Collier County you can paint without LDC. If the neighbors start complaining and you’re not compliant with this section of code that spells out colors, you could have to repaint.

Comment - Curl
So, nobody pre-approves the color palette.

Comment - Hansen
But the color palette is listed so people can look at it.
Also, the CRA does have the design guidelines.

Comment - Vanasse
The code is written about the hues and the saturation also. You can avoid some of those bright reds

and by limiting those hues or the saturation, you limit the possibility of some bright colors. So, what you're seeing is really an expansion of that saturation requirement.

Comment - Brooker
Back to this 21 line, 21 to 24, when I first read it, I read that second sentence as a limitation on the exemption. In other words, for example, for routine repairs you don't have to go through these architectural site design standards, but you do have to comply with the colors. But what you're explaining to me now is that's not true, so I misinterpreted that we're actually having expanded set of colors that you can choose from.

Comment - Vanasse
That is correct.

Comment - Brooker
Line 49-50, same page. The committee used the word encouraged at the end of line 49.

Comment - Curl
Strike the word encouraged.

Comment - Brooker
Okay.

Comment - Hansen
It's tough with Senate Bill 250 we can't be overly prescriptive with a lot of this. I don’t know if we can or can’t. I think even in the existing LDC and Jaime (Cook), maybe you can answer this. I don't think that there are prescriptive architectural styles.

Comment - Cook???
Right

Comment - Brooker
Page 30 anyone?

Comment - McLean
And this is where from an architecture vernacular, I’m fine with what I've read in here. So, my comments are more on page 31. The architecture vernacular is fairly broad. So, if that's what you're after, that's fine. Okay.

Moving to page 31. Again, this all comes out of the LDC when you're talking about distances of walkways, percentages of glazing. If we're trying to be led at least restrictive, then we can start reducing these percentages.

And that's where I started with the deep dive on things. These come from the LDC, and these are fine by me. I'm an architect. The more restrictive it is, the more of my competition you push out

of the market. So, I love restrictive architectural code. So, I don't want to dummy this down if this is what you guys want because I can design to this code all day long. Generally

speaking, not a whole lot of changes, but for example, the amount of GLA administration, we might have reduced it 15% if you did these numbers.

Comment - Hansen
Peter did review this.

Comment - McLean
Then I'm fine with all these numbers.

Comment - Brooker
Anything else on page 31, 32, 33

Comment - Curl
Page 42 The 10 shrubs per hundred feet. What is that supposed to do?

Comment - Hansen
We will take out the 10 ft. on center and call it 10 clustered shrubs.

Comment - Curl
Or planted in clusters whatever you want.

Comment - Brooker
On 42?

Comment - Curl
I like that the foundation planting is 10% back to Patrick's because that's a lot more forgiving than the standard LBC. Same comment as we just had online. 41. Yeah. Clusters. Yeah. Thank you. <affirmative>. I probably saying the obvious but page 43. Yeah, on 43, does this have the crazy, again, back to our normal land development code, we've got that gigantic buffer and then an ungodly amount of bushes and trees. Are we following that or is this different?

Comment - Vanasse
The fuel pump?

Comment - Curl
They call for a meandering buffer is my point. I don't see as referred to 44 buffer and landscape requirements. I see it. Got it. Thank you.

Comment - Brooker
44, 45

Comment - Curl
Back to 44 on lighting line 18 where is it? Line 34.

Comment - Brooker

45, 46, 47, 48

Comment - Curl
It’s all per hundred linear feet and we will add a cluster right?

Comment - unknown?
Yes

Comment - Brooker
49, 50, 51, 52, 53, 54, 55, 56

Comment - Curl
So, if there's a way in line 31, foundation planting area shall be located adjacent to add a comma and with the exception of trees. That would add clarity.

Comment - Brooker
56, 57

Comment - McLean?
What I don't understand is the 25% . You’re saying with a parking lot that has four parking if you've got four parking spaces or more, you can substitute one for a bike rack. The 25% throws me. If I've got a hundred parking spaces, can I do 10 bike racks and substitute 10 parking spaces?

Comment - Hansen
We can talk about this, but maybe it needs to have a maximum threshold added to that.

Comment - Brooker
58, 59

Okay. So, are we recommending line 30 that this language be changed to full cutoff or dark sky?

Comment - unknown
Yes sir.

Comment - Vanasse
I think we will bring up, but my understanding is the CRA does want to take a look at a proposed development, provide some feedback, some advice perhaps. But when it comes to regulatory issues where you've got code enforcement, they kind of say, well maybe it's better that we don't enter flying? things that keep it separate.

Comment - Brooker
60-69

Comment - Hansen
If we look at line 42, 43 and, and I can't really speak to comparing it to the other one, but just in this case I know that we wanted to be cognizant of if it's a blend residential.

Comment - Curl
I'm pointing out an inconsistency within the land development on shrub height of 4 ft. at time of planting.

Comment - Vanasse
Change 4 ft. to five ft. of planting and keep the six feet within one year.

Comment - Curl
Yeah, if you want to save money, go back to the tree spacing. 25 to 30.

Page 69, line 5. One tree per 40 linear feet?

Comment - Hansen
This applies to four small parcels. Because this only applies when it has a total building square footage of less than or able to 5,000 square feet.

Comment - Brooker
70-75
Page 76
Section J. These are deviation regulations.

Comment - Hanse
This came from the original.

Comment - Brooker
So, the definitions of being substantial are identical of what exists today? Okay.

Top of page 80, 81, 82, 83, 84, 85 are all strikethroughs.

Page 86 was discussed, and it was agreed to be okay.

Comment - Hansen
His proposal was to make a very small amendment to 2 0 6 0 1, which is that affordable housing chapter. And it would be just be under the review and recommendation section. So, it basically says instead of having to go to the planning commission and BCC, that the zoning division director designee can approve it. So, it would be a staff approval.

Comment - Brooker
Was Bob bringing that up because it would be reflected in the proposed amendment, we are reading today part somewhere. It would be injected into it.

Comment - Vanasse
Yeah. Instead of him doing a privately initiated amendment, it'll probably be quicker if we just incorporate it.

COLLIER COUNTY DEVELOPMENT SERVICES ADVISORY COMMITTEE LAND DEVELOPMENT REVIEW SUBCOMMITTEE

Clay Brooker, Chairman

These minutes were approved by the subcommittee/chairman on Nov 4, 2025, (check one) as presented X, or as amended _____.

MINUTES OF THE COLLIER COUNTY
DEVELOPMENT SERVICES ADVISORY COMMITTEE
LAND DEVELOPMENT REVIEW SUBCOMMITTEE MEETING
Naples, Florida
October 15, 2024

LET IT BE REMEMBERED, the Collier County Development Services Advisory Committee – Land Development Review Subcommittee, having conducted business herein, met on this date at 3:00 PM at the Collier County Growth Management Community Department Building, Conference Room #609/610, 2800 N. Horseshoe Dr., Naples, Florida, 34102 with the following members present:

Chairman: Clay Brooker
Jeff Curl
Mark McLean

Also Present:

Mike Bosi, Director – Zoning Division, GMCD
Eric Johnson, Manager – Planning, GMCD
Angela Galiano, Planner II, GMCD
Rey Torres Fuentes, Operations Support Specialist I, GMCD

1. **Call to Order – Chairman**

2. **Approval of Agenda**

   Jeff Curl motioned to approve the agenda, seconded by Mark McLean. Motion passed 4-0

3. **Old Business**
   None

4. **New Business**
   a. **Guest House Rentals**

Eric Johnson, LDC Planning Manager

- This a Land Development Code Amendment that seeks to amend two LDC sections of the Land Development Code, specifically 2.03.01 agricultural districts, as well as 5.03.03 guest houses. The amendment would establish interim regulations for the rental of guest houses within Urban Estates.
- The provisions for guest houses have been on the books since the seventies and since the seventies. LDC also contained the prohibition for leasing and renting the guest houses. Within the last couple of years, the Board of County Commissioners has been discussing guest houses, specifically the prospect of allowing them to be rented. Right now, there is a prohibition on the rental of guest houses. Earlier this year, specifically on May 14, the board directed staff to move forward with the Land Development Code amendment that would allow for guest house rentals in Urban Estates.
- When I say Urban Estates, what I mean by that is not only just urban zone properties in the Golden Gate Area Master Plan (GGAMP) but also any Estates zoning districts that are west of Collier 951. I had written in the staff report that we were only dealing with a GGAMP and that's an error. It needs to be just expanded a little bit more. The area that we're dealing with, I have the map shown on the visual.
- This is 3558 lots that would be affected. I wanted to read a bullet list from our transportation planning staff because we all know that traffic and congestion and just the street networks, how does that fit in with this amendment? I'm just going to say for the record, a few points.
- Number one, transportation planning staff reviewed the proposed amendment and anticipates there will be minimal impacts on the road network. Based on the following findings, there are 5 bullets.
    1. There are a limited number of parcels affected by the amendment.
    2. The urban sub-district has an established road network with major north-south and east-west arterial deflectors.
    3. Traffic impacts resulting from the rental units should be more widely distributed within the sub-district compared to the traditional PUD developments with single-point trip impacts.
    4. There is a reasonable network of interconnected local neighborhood roads providing alternative routes.

5. There are numerous goods and services employment opportunities adjacent to the subdistrict area to reduce trip lengths on the network compared to longer rural commuter residential trips. We are going to continue to work through this amendment to do some fact-finding for fiscal and operational impacts, but for GMP consistency, the proposed LDC amendment has been reviewed by Comprehensive Planning staff and may be deemed consistent.

- The first page changes the word “guest houses” to the singular “guest house”. You can see the change in the proposed change to 5.03.03. The leasing or rental of a guest house accommodation facility will constitute a violation of this LDC except as provided for in LDC section 5.03.03. F. You can see a minor change to paragraph C.
- Instead of saying “if a main residence is leased or rented,” it will say “if the principal dwelling is leased or rented.” Finally, the bulk of this amendment, F the leasing or rental of a guest house shall be prohibited unless the following requirements are met.
- And then you'll see here you have six different items. The last one is a future change to the land-development administrative code that's not contained in this packet. I'll have to have that for you in the future.
- Here are the changes and the areas that we're talking about. Here's Lockley Road to the north, Collier Boulevard to the east, and then everything that's circled or squared off in red would be the effective parcels. Those are E-zone properties.
- These are interim regulations, and I was discussing the matter with the County Attorney’s Office I originally had language in here about sunsetting and was told by the County Chair's Office that that would be better left in the actual ordinance itself and not so much in the Land Development Regulations.

Jeff Curl

- I don’t remember reading that. When would this be sunsetted?

Eric Johnson

- The County Attorney’s office suggested an examination of it for a year and our staff, Mike Bosi determined that we would do this 5-year exploration. But instead, we would have to report back to the Board of County Commissioners.

Jeff Curl

- Every year for 5 or every 5 years?

Mike Bosi

- When we identified the 3500 plus parcels, there were under 500 of those that have had a developed guest house on the property.

Clay Brooker

- And those 500 are all homesteaded?

Mike Bosi

- We do not know if all those are homesteaded. I'm not sure if we did that analysis based on where it is. Probably most of them.

Mark McLean

- This is more of me not understanding. It starts off with agricultural districts, the rural agricultural district A, but then it transitions to Estates E zoning district.

Mike Bosi

- Our LDC has the agricultural zoning district, the Estates is a subset of that.
- It's a second tier, different purpose, different functions. But it is a subset of the Agricultural zoning districts.
- Keeping with your line item, 6 of the 1 guest versus guest houses, that 5.03.03 is guest houses.

Mark McLean

- Should that also be a guest house? If you go to line 37, page 3.

Eric Johnson

- I don't think that's necessary. These regulations pertain to all guest houses.
- I just wanted to change the rural agricultural district specifically because I was looking in earlier ordinances where it said one guest house, and through the course of time it got changed to some guest houses. You're only allowed one guest house per lot.

Jeff Curl

- I think it's the same thing as when they mention accessory structures. They may be referring to one on the property or multiple. I think it's just a terminology thing, but I would be ok with guest house in there because of what Mark said.

Jeff Curl

- It might make it clearer that you're allowed one, not multiple, just a perception thing.

Eric Johnson

- Mark was looking at line 37 and changing that to something singular. I don't know if that's advisable. I would advise it.

Mark McLean

- I'd advise against that.

Jeff Curl

- On page 6, line 10, minimum lot width. I'm on a 1.15. I don't know
- I see where you say 1.14 somewhere in here and I'm still not conforming. Still over an acre, but its 75 feet wide not 105 versus this minimum width.

Eric Johnson

- The minimum width is existing regulation. It takes 75 feet to have an E-zoned lot be considered legal.

Jeff Curl

- To build nonconforming.

Eric Johnson

- If you have a lot that's less than 105 feet, if 75 feet is the minimum width for a lot, an E-zoned lot, then that would be a nonconforming lot.

Jeff Curl

- No 75-foot-wide lot could have a guest house. Is that what you're saying?

Eric Johnson

- You cannot. Assuming I'm not looking at the code, I could bring it up if you want.

Jeff Curl

- No, it's fine. However, you're going with that. I'm just saying that there are 75-foot-wide lots out there that currently cannot get a guest house.

Eric Johnson

- Right.

Jeff Curl

- So, you're taking some out of the picture. I just wanted staff to be aware.

Eric Johnson

- We're not revising guest houses. We're revising the use of said guest house. We're not revising what criteria allows you to have a guest house, we're revising the criteria that you can't rent that guest house.

Jeff Curl

- It's not meant to expand it to additional properties, just to clarify the meaning that's already in the code. It's already existing 105 feet.
- We're not changing that.

Mark McLean

- Currently you can have a guest house of you have a 105-foot lot, you just can't rent it.

Jeff Curl

- Nowhere in here did I read, because I thought in estate zoning, you had to have 1000 square feet as a minimum residence square footage primary.

Mike Bosi

- Correct.

Jeff Curl

- So, does that apply to guest house?

Mark McLean

- If you have 1000 square foot house, you can only have a 400 square foot guest house with air-conditioned space.

Eric Johnson

- Nothing is proposed to change under D which is the minimum lot area shall be 43,560 square feet.
- Minimum lot width shall be 105 ft and so forth. We're not changing any of that.

Mark McLean

- This specifically says a detached guest house on line 16, page 6, item D-4 shall not be closer than 20 feet.
- It can be attached, and you can still rent it.

Eric Johnson

- Yes, and number 4 says the guest house must contain sleeping, facilities, a bathroom and a kitchen.

Jeff Curl

- Is there anything prohibiting renting to 12 people?

Eric Johnson

- It's not aligned with open code. It would be governed by the Florida Building Code. Code enforcement would investigate that.

Mike Bosi

- We have a minimum housing code standard is 450 for 2 people and 200 square feet for each additional. That's on Code of Laws and Ordinances.

Clay Brooker

- It says the owner can't live in a guest house, and the guest can't live in a principal or dwelling.

Eric Johnson

- Issues with homesteading and taxation are the responsibility of the Property Appraiser.

Clay Brooker

- Question on line 43. Off street parking.

Eric Johnson

- We just want to make sure that if you're going to rent out your guest house, that you can accommodate an extra parking spot on your property. Each single-family detached home is supposed to have 2 parking spaces and that can occur on the driveway.
- If you're going to rent out your guest house, there needs to be 3 parking places somewhere on the property.

5. PUBLIC SPEAKERS

Jill Rosenfeld

- I live out in the rural Estates. I heard through the grapevine that once this gets approved for urban, there's potential for it coming out to the rural area. So, there are a few questions or issues that were brought up previously. But one of the things I noticed when I was looking at the proposed change and, on this page, you could go to line one. It's that same line, one through four.
- So, it's saying the principal dwelling is leased or rented. A guest accommodation facility, accessory to it, may not be occupied by the property owner since that would constitute the unlawful utilization of single-family zone property for two-family dwelling purposes. With this whole program, it's going to be the reverse. So why would that not still be an unlawful utilization?
- Would that make the property rezoned to two family?

Mike Bosi

- this is talking about guest houses in all the Estates zoning district. So, the regulation is you can't bring your guest house up. If the principal dwelling unit is leased or rented, the combination, it may not be our credit, private or system. That's correct. But then 500 503 f. That's the exception.
- That's the exception the Board of County Commissioners directed us to modify the Land Development Code.

Jill Rosenfeld

- There also was a study done by consulting and they identified 352 guest houses. I think someone already asked this question. In the Urban Estates, it did not identify how many were homesteaded. Also, how many have kitchens. I don't know if it's a standard thing that they always have a kitchen.
- I try to get that information in some. I just want to know how to go about getting that information.

Eric Johnson

- I guess that's something that we could look at. I don't think the Land Development Code really discusses much about homestead exemptions because that's more of a, that's a different, that's not land development. That's a taxing implication.

Cheryl Koncsol

- Hi, I'm Cheryl Koncsol. I live on Standing Oaks, in the Urban Estates area. I started a guest house plan around COVID, and I have a plan for a beautiful garage and a two-bedroom, bath-and-a-half kind of apartment guest house. I abandoned the construction because building materials were not available.
- I don't understand how you're going to police that. There are plenty of people who have these guest houses now that are renting them out, even though all this says you can't do that. I know factually that people are doing that, and I'm not going to be the neighbor that rats on any neighborhood.

Mark McLean

- Unfortunately, a large portion of the code is the honor system, and the only way it's policed is by people saying, you can't do that. And this is a portion of it. I do have immediate with our client experience of how that affected them. And you're right. If you bought your home or were in your home and had the guest home and you had a save our homes, let's just say the house was worth $500,000.
- And that's where your save our home, that basically limits you to a 3% tax increase per year. But if you pull that guest house out, say you're there for five years, and you pull that guest house out, when you bought that house, let's say you bought it at $400 a foot. Well, now the current rate is $600 a foot. You're going to get that 150% taxation on that guest house. And then it's no longer subject to 3%, it's subject to 15% per year.
- They can increase your taxation on that portion of your property. Now that's a taxation problem. That's not a land development code issue. We're just saying, can you do it or not? From a land development perspective.

Mike Bosi

- What I would say is, when we were going through the public study, we had the questions about would you want to rent your guest house if it was strictly income restricted type of a unit? And the pushback we got, and I think it's very legitimate, the development, we know this saying, to build and construct a guest house, the costs associated with it, you couldn't, you couldn't get a return on your investment till 30, 40 years out if you were income restricted. So that was the thing that really pushed staff to recognize that we're not going to be able to pull this off.
- We get no bites of the apple, so to speak. If you had this income restricted, it's got to be market rate. You've got to attack it as additional supply to help with some, to ease some of the burden. But the taxation question is, I hear what you're saying, but property appraisers and tax collector, their perspective is if you're utilizing your guest house for commercial purposes, you're going to be taxed at a different rate. Just for the square footage that's associated, the acreage that's associated with the, the footprint of your house, of your guest house.

Mark McLean

- And that's really all we're doing in it. Clay said earlier, is the juice worth the squeeze? I don't think we're spending a tremendous amount of money here to afford people the ability rent their property if they see fit.

Eric Johnson

- The way the amendment will go is that we'll go to the next stop will be the Development Services Advisory Committee (DSAC). Same room, same place.
- And then the Collier County Planning Commission and finally the Board of County Commissioners. From our experience, the Collier County Planning Commission and Board of County Commissioners are more attended, so. But we create advertisements in the newspaper for any kind of Land Development Code amendment. We may not do that in the newspaper anymore because we're now allowed to do that on our county's website. I want to just make sure that if you're interested in following this amendment, that you write down your email address on that sign-in sheet.
- We'll keep you apprised of when the next meeting will occur.
- This will result in a draft ordinance, and the draft ordinance will go before the Planning Commission and certainly before the Board of County Commissioners.

Clay Brooker

- The DSAC meeting is the first Wednesday of every month.

Mark McLean

- Understanding our role, I do think that the potential squeeze is there for somebody who wants to do this. I think we're providing a legal avenue.
- How that is legally implemented is up to someone beyond this committee's assignment. This committee is just opening the avenue to allow someone to do this legally.

Mark McLean made a motion to approve the recommendation that this LDCA, PL2024009067, go before the Development Advisory Committee. The motion was seconded by Jeff Curl.
Motion passes unanimously

Eric Johnson

- Question, what information do you want me to find out before we meet a DSAC? I know that we had discussed about the prospect of allowing the main residence, the principal dwelling, to be rented and the owner live in the guest house. I think those are our marching orders.

Jeff Curl

- Clarification on that and then maybe a refresher on the whole Airbnb situation.
- Code enforcement. You guys may cross-pollinate with code or at least give code a heads up, you know, for Tom to at least speak to it at DSACS volume.

Mike Bosi

- The one thing I will say about the Airbnb for rentals, once this is opened for rentals, the county has no ability to have a say whether it is permanently rented or short-term.

Jeff Curl

- I think what everybody's trying to get at is the enforcement issue. Because if you're in violation, if you're renting without being registered in some capacity, you're penalized.

Mike Bosi

- Well, the County has rental registration program. We're going to have to work that in with the guest house issue in a unique way that calls it out to be able to have that information.

6. Upcoming LDR SUBCOMMITTEE meeting date, November 19

Clay Brooker

- The upcoming meeting dates are November 19 and December 17.

Eric Johnson

- If we have something ready right now, I'm not sure what's going to be ready, but if there's going to be something ready, would you be available November 19?

Jeff Curl

- Yeah, I think so.
- But I'm gonna ask you again about the architectural standards for the estates and when we're gonna see that it's serious.

Eric Johnson

- Did I introduce Angela?
  Angela, would you introduce yourself please?

Angela Galliano

- My name is Angela Galiano, and I'm one of the newest additions to the LDC team.
- I did tweak some things today with your recommendation and I hope to bring it then to November.

Clay Brooker

- So, will you be doing land use application as well as LDC amendments?

Eric Johnson

- Just LDC.

Mike Bosi

- Angela has a lot of experience in the Building Department as well, so she's a very multifaceted faceted employee. We are happy to have her.

Eric Johnson

- She’s a Planner II.

7. **Meeting Adjourned**

There being no further business for the good of the County, the meeting was adjourned by the order of the chairman at 4:06 p.m.

COLLIER COUNTY
DEVELOPMENT SERVICES ADVISORY COMMITTEE
LAND DEVELOPMENT REVIEW SUBCOMMITTEE

Clay Brooker

Clay Brooker, Chairman

These minutes were approved by the Committee/Chairman on Nov 4, 2024, (check one) as submitted X or as amended _____.

Collier County

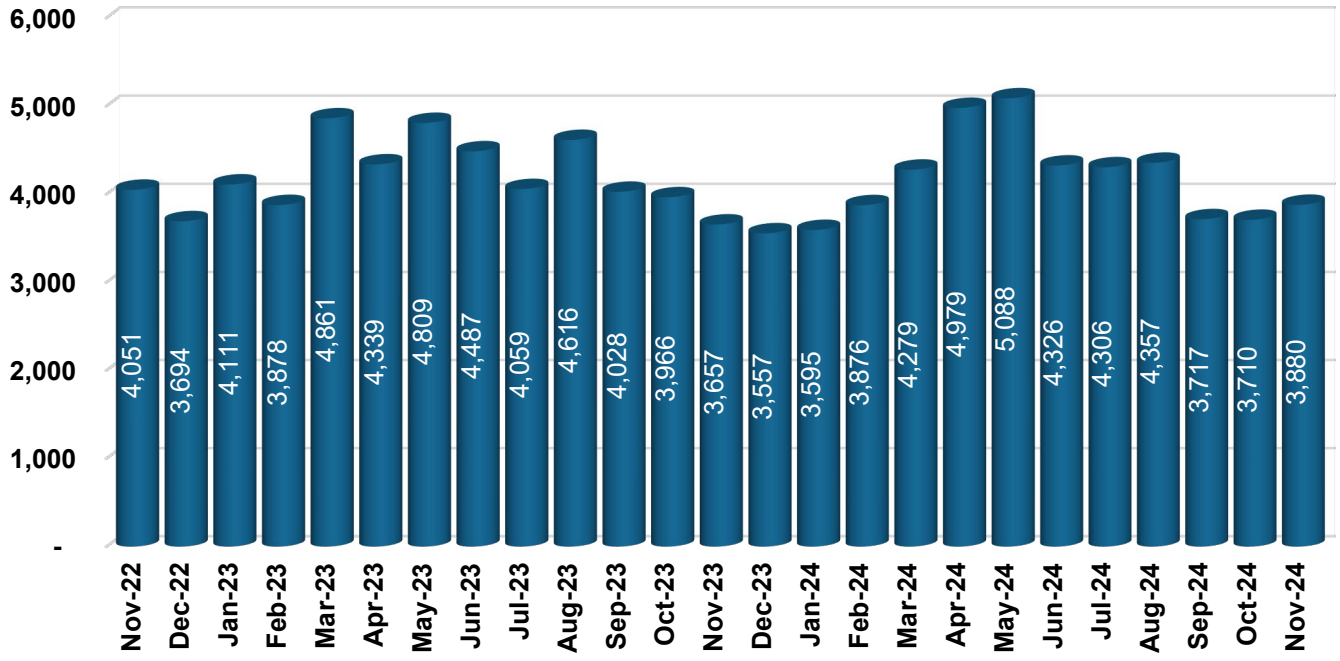
November 2024

Monthly Statistics

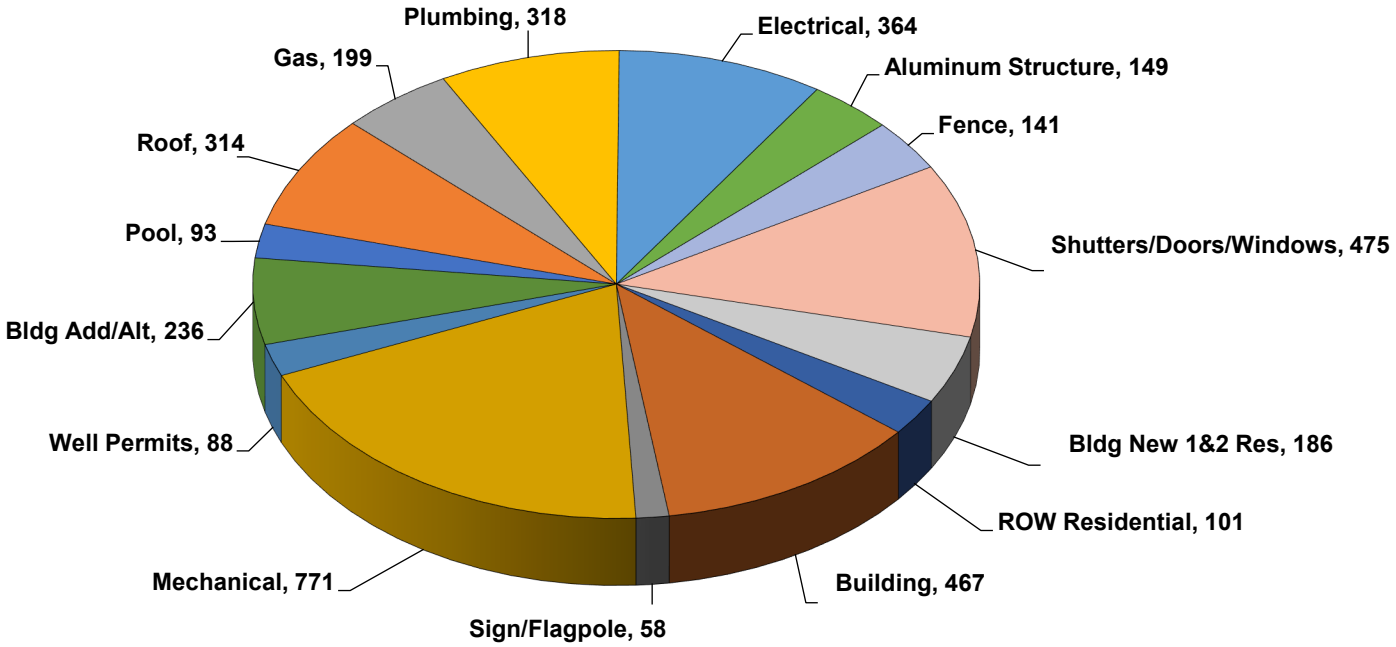


Building Plan Review Statistics

All Permits Applied by Month

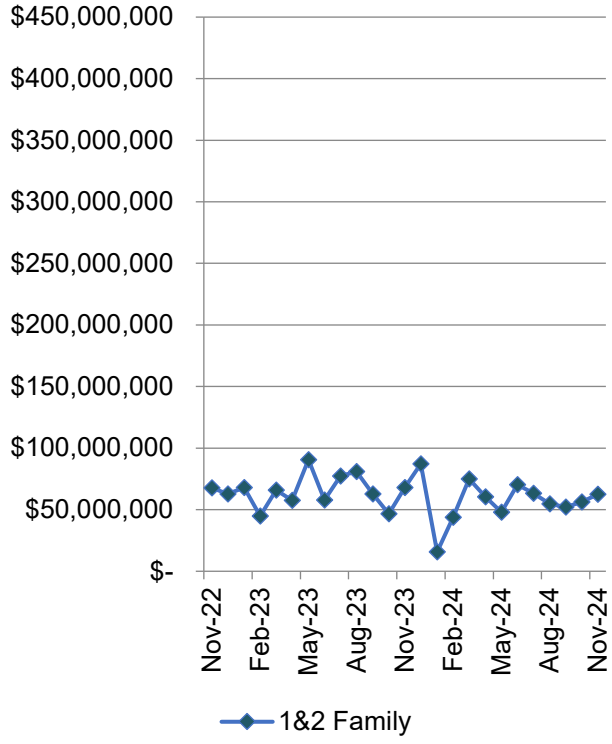


Top 15 of 35 Building Permit Types Applied

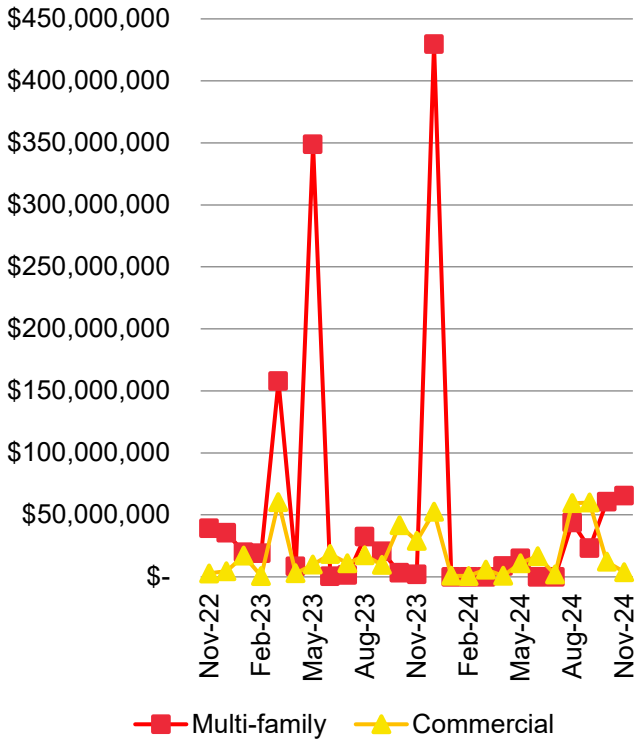


Building Plan Review Statistics

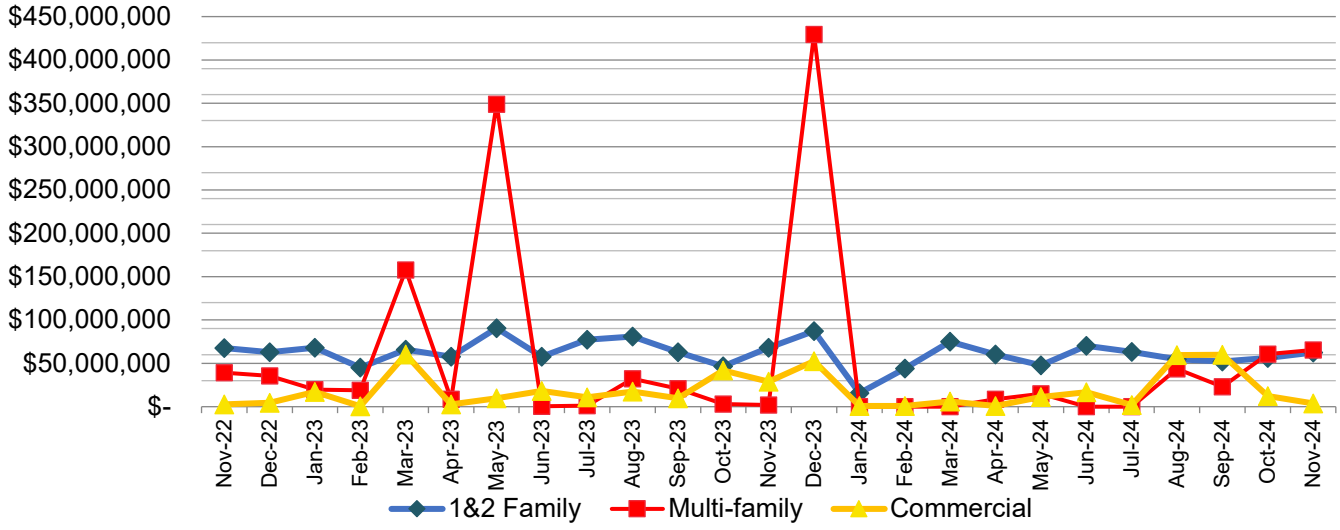
Monthly 1 & 2 Family Total Construction Value by Applied Date



Monthly Multi-family & Commercial Total Construction Value by Applied Date

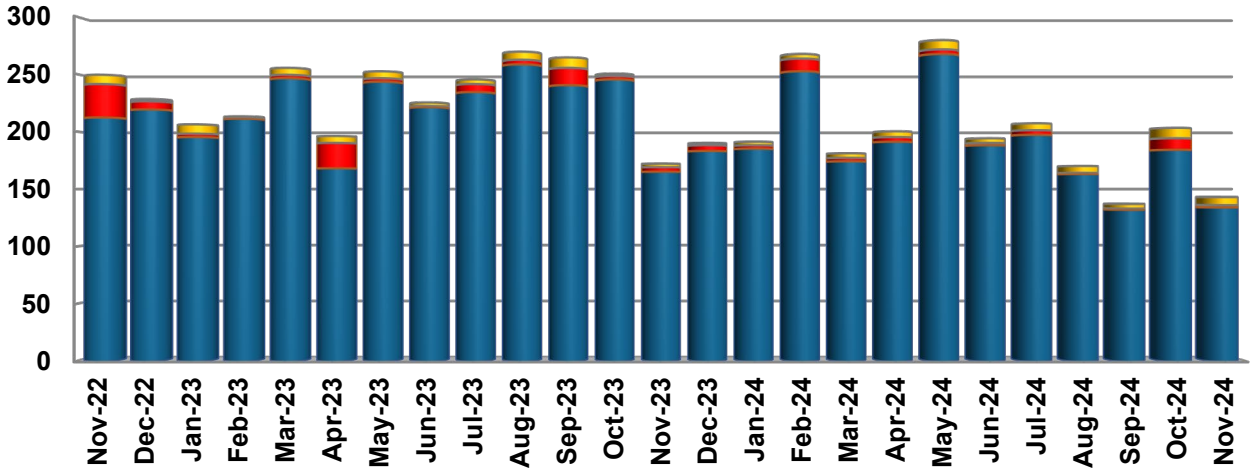


Monthly Total Construction Value by Applied Date



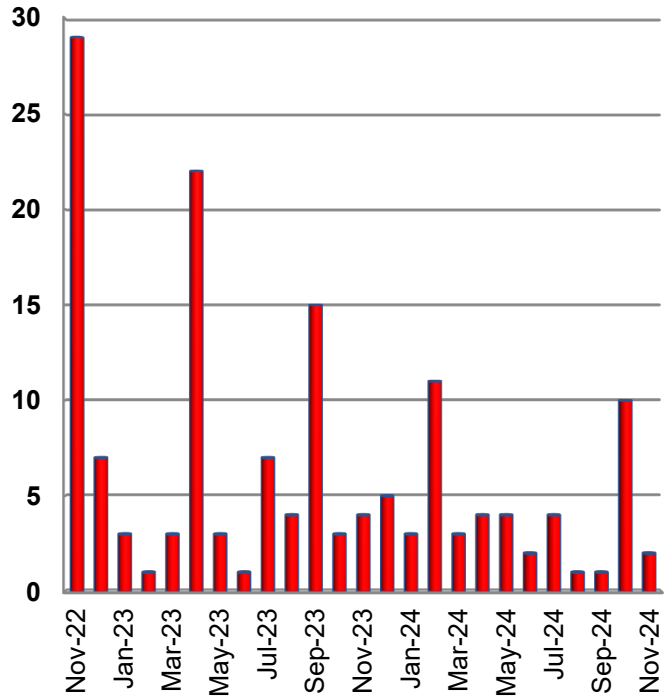
Building Plan Review Statistics

New Construction Building Permits Issued by Month

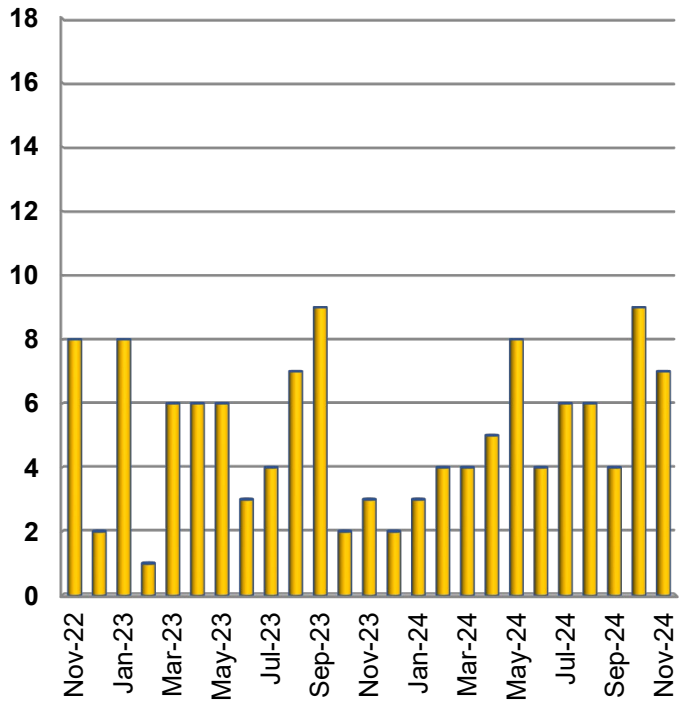


	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
Commercial	8	2	8	1	6	6	6	3	4	7	9	2	3	2	3	4	4	5	8	4	6	6	4	9	7
Multi-family	29	7	3	1	3	22	3	1	7	4	15	3	4	5	3	11	3	4	4	2	4	1	1	10	2
1&2 Family	212	219	195	211	246	168	243	221	234	258	240	245	165	183	185	252	174	191	267	188	197	163	132	184	134

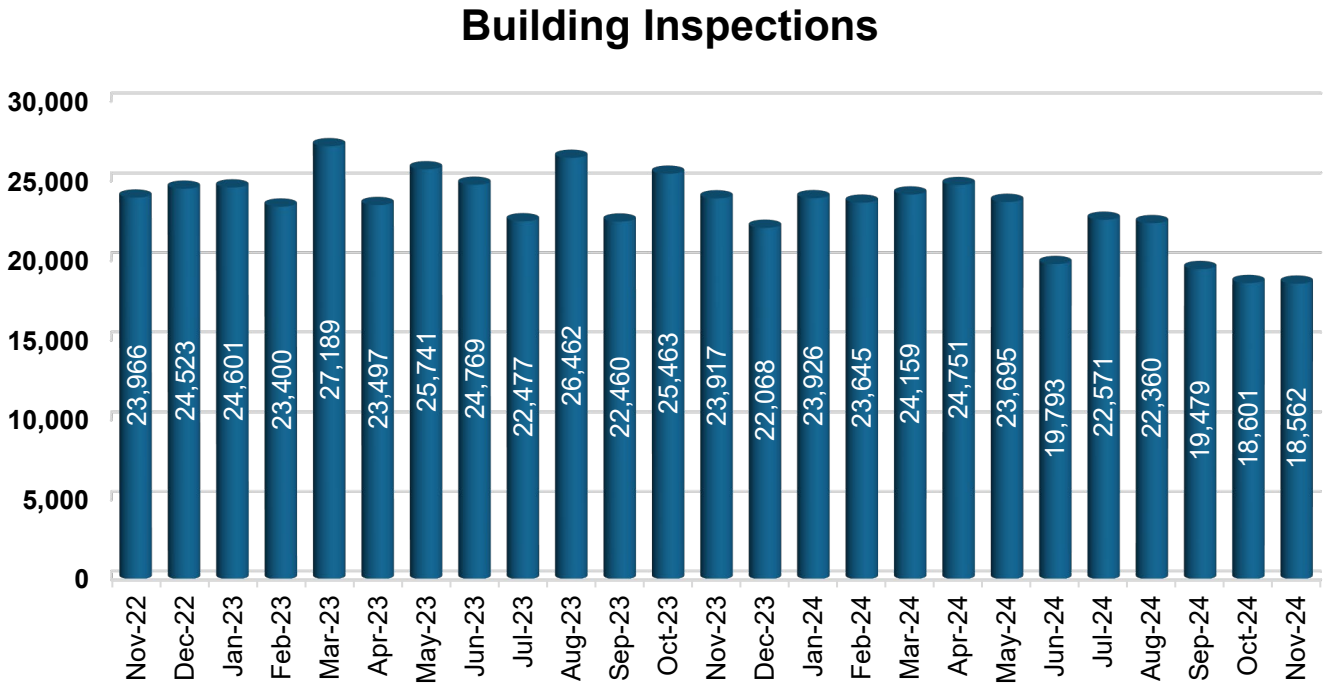
New Multi-family Building Permits Issued by Month

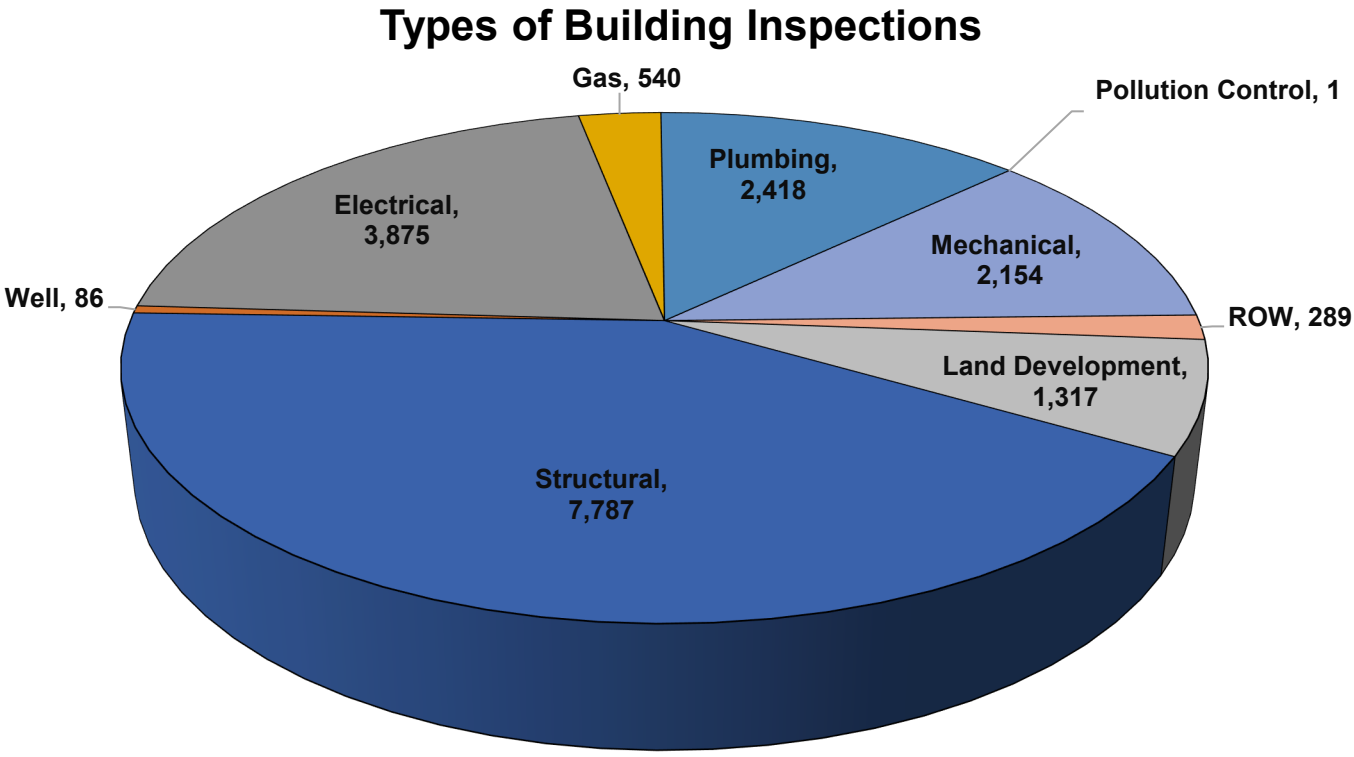


New Commercial Building Permits Issued by Month



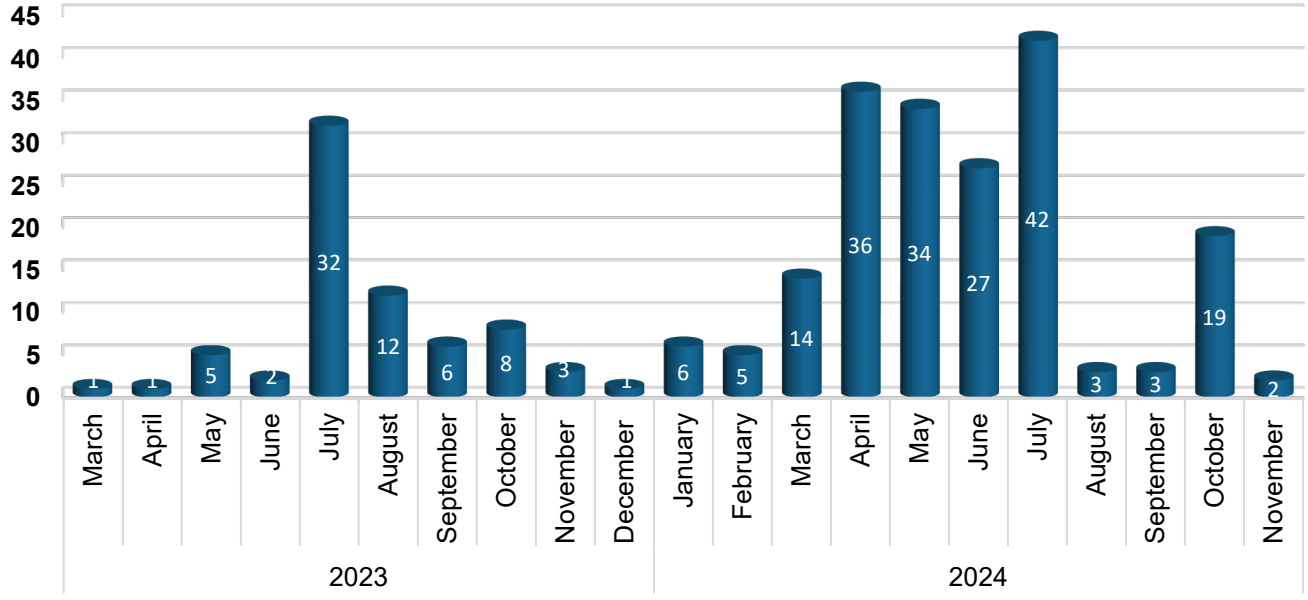
Building Inspections Statistics



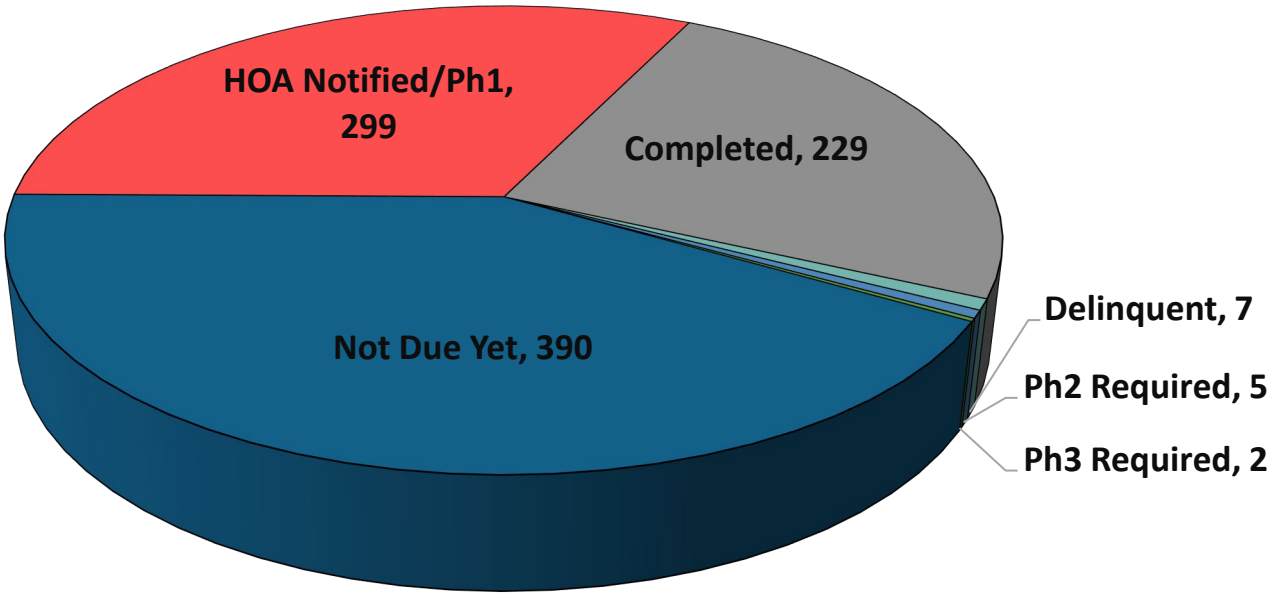


Building Inspections Statistics

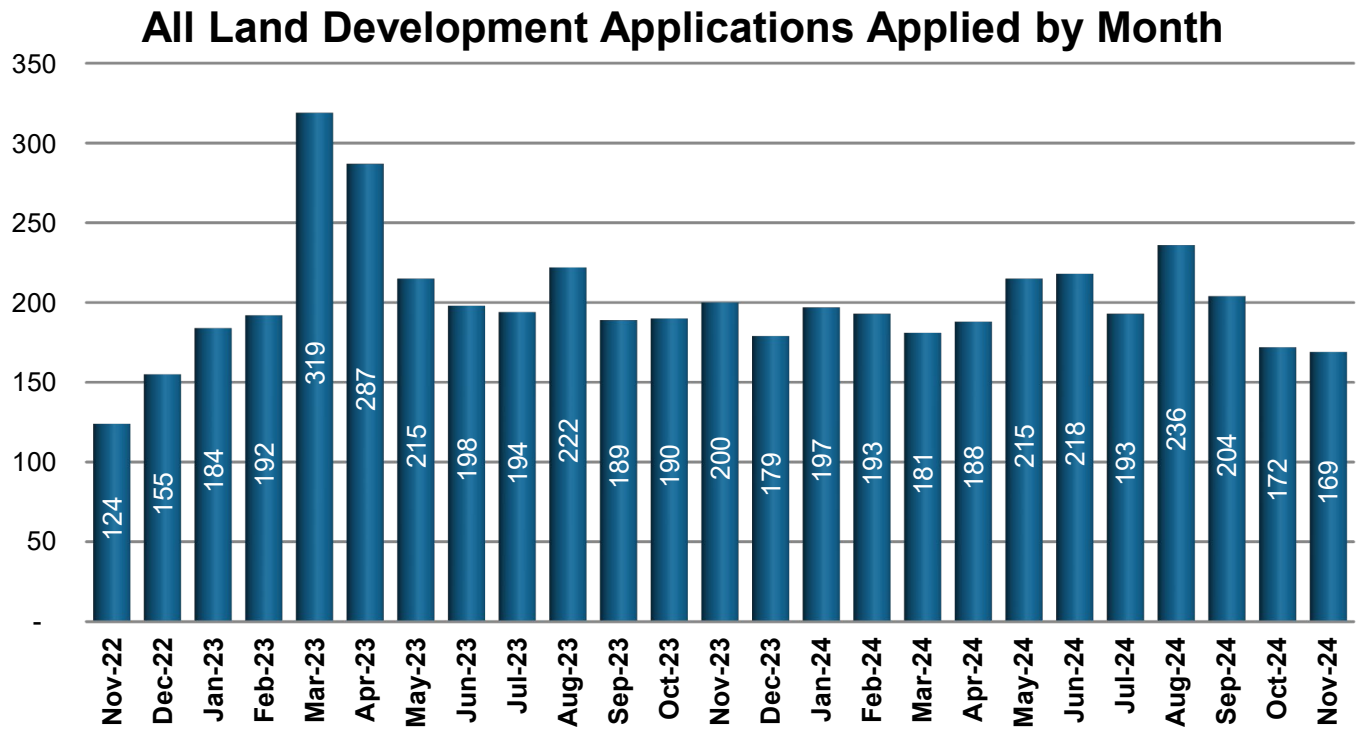
Milestones Received by Month

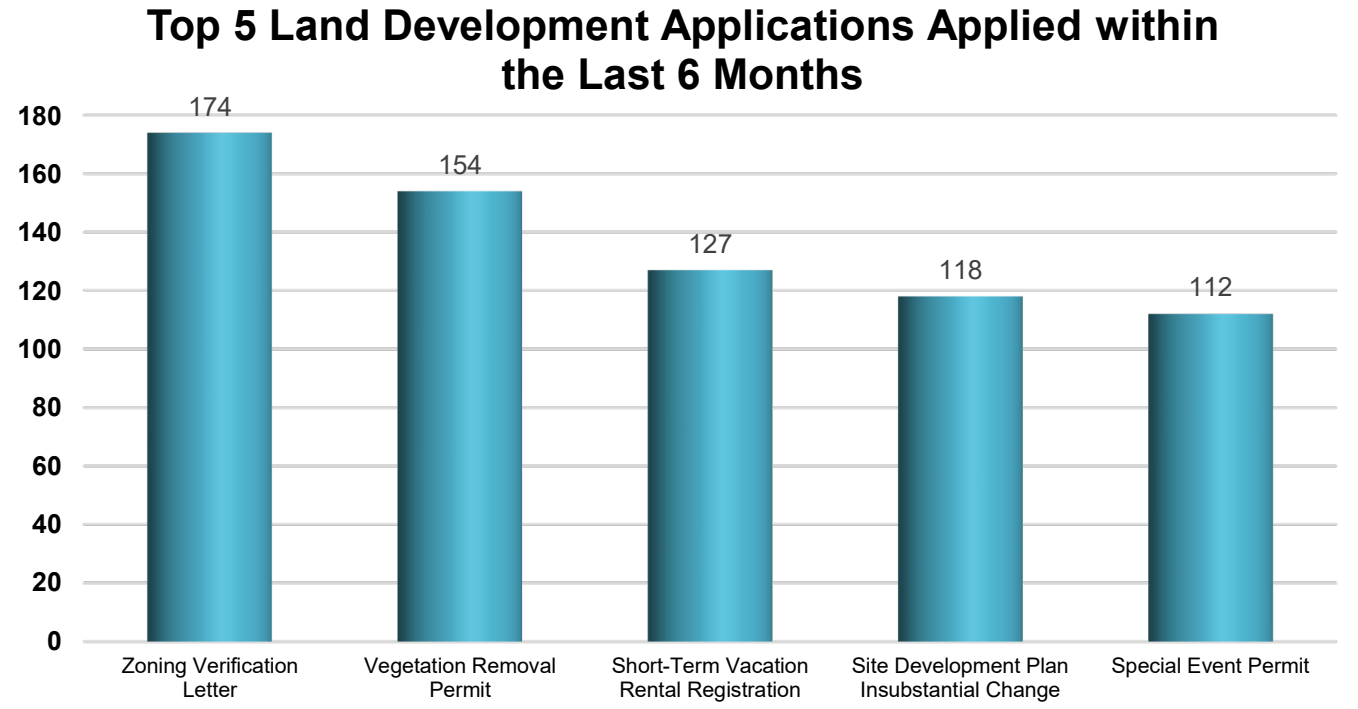


Milestone Inspection Status



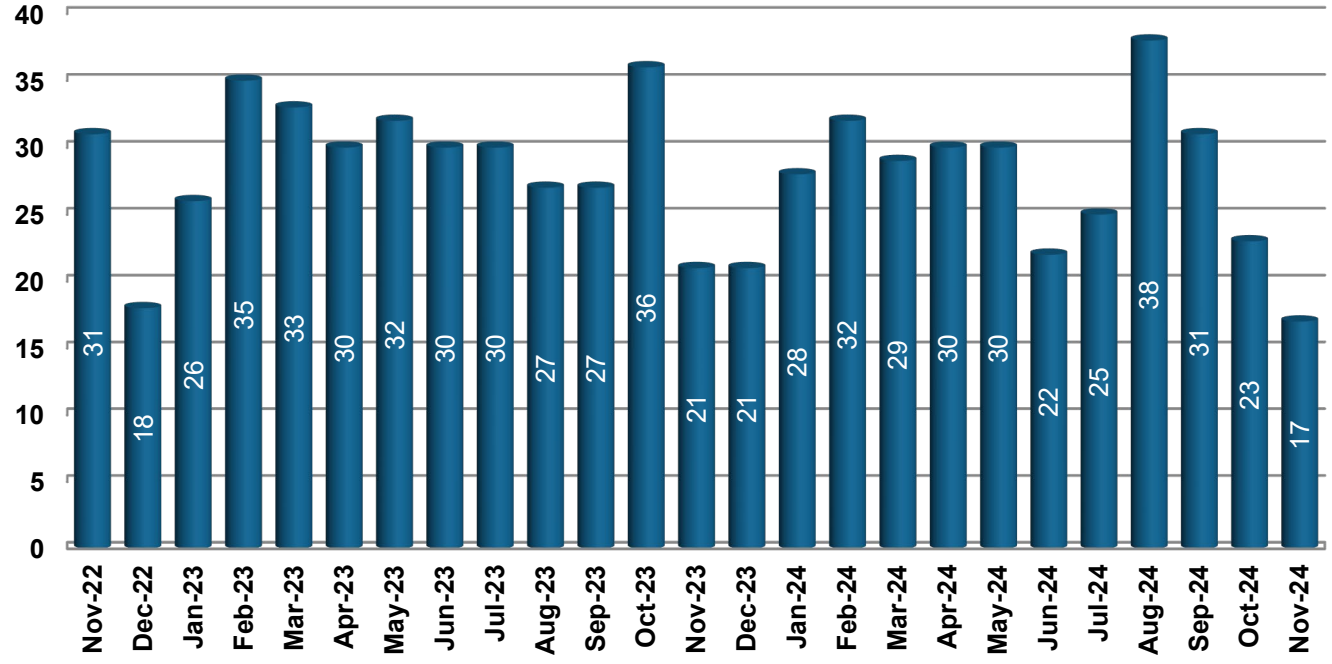
Land Development Services Statistics



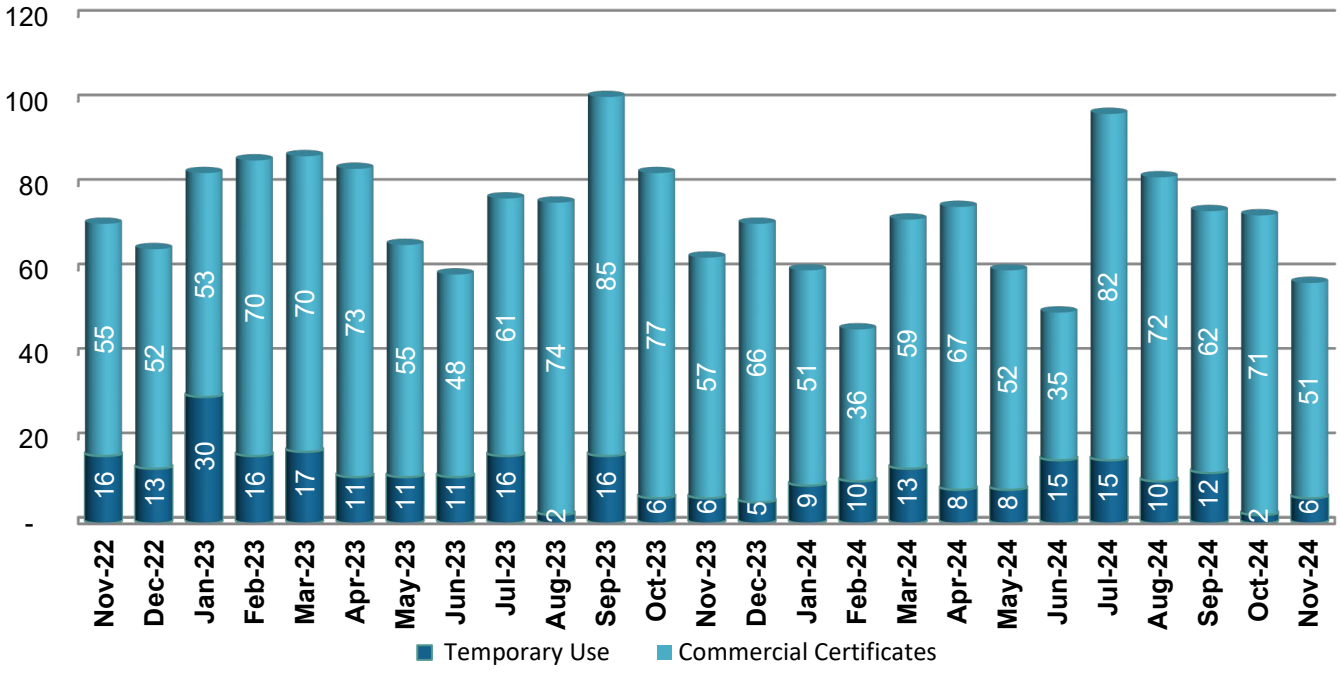


Land Development Services Statistics

Pre-application Meetings by Month

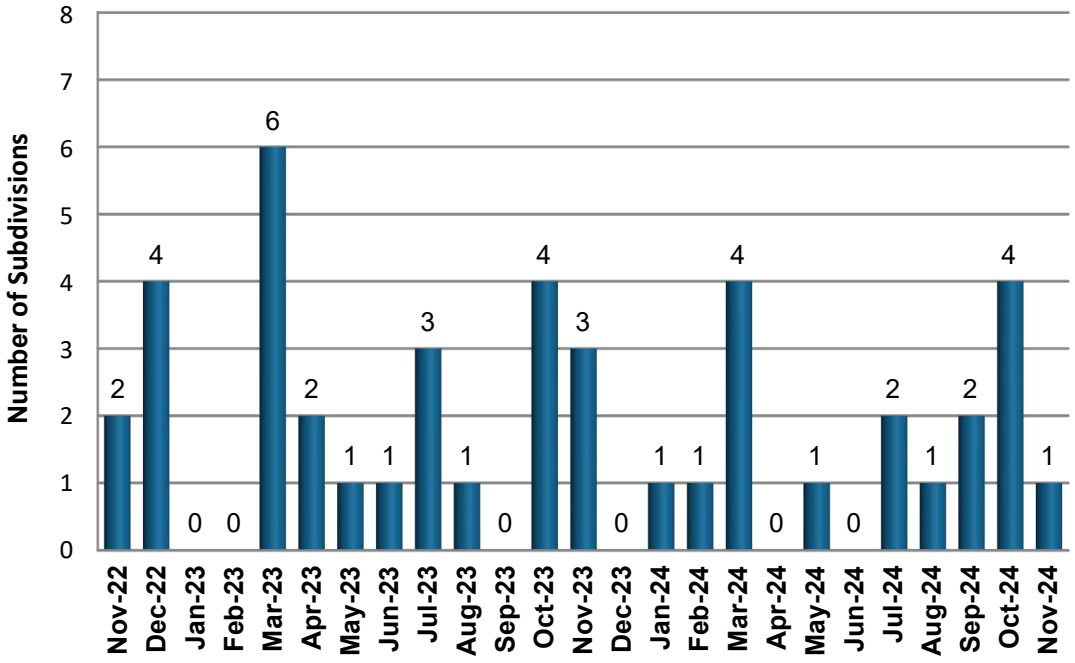


Front Zoning Counter Permits Applied by Month



Land Development Services Statistics

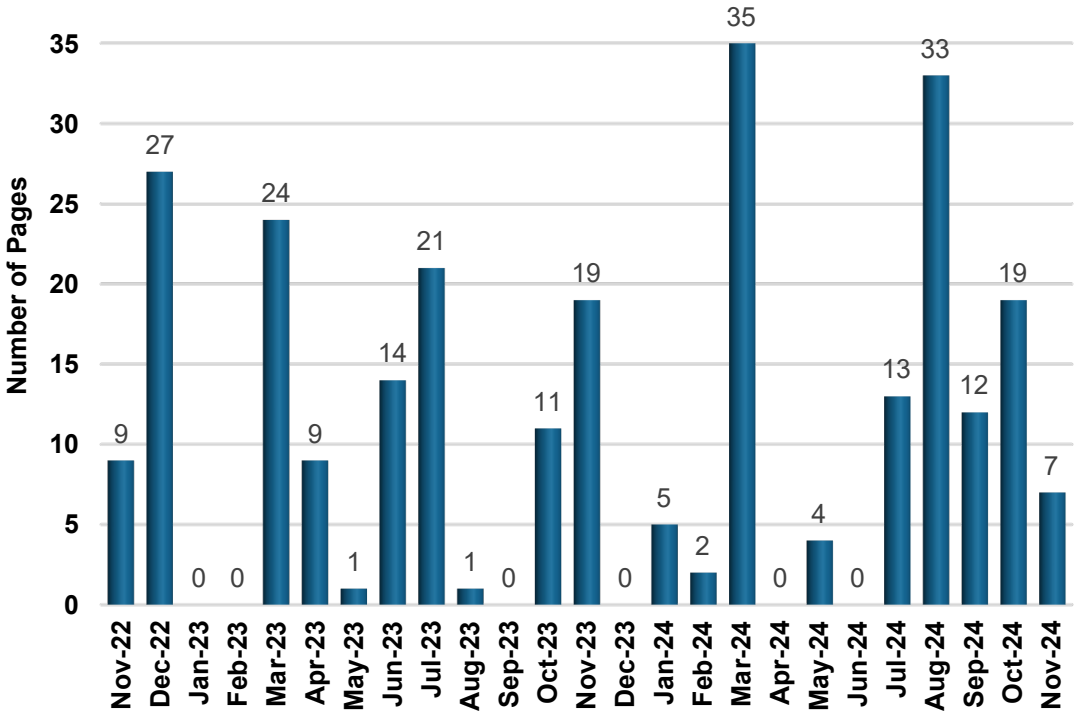
Number of New Subdivisions Recorded per Month



Yearly Totals Subdivisions
2020 – 25
2021 – 33
2022 – 29
2023 – 21
2024 YTD – 17

Yearly Totals Lots
2021 – 1353
2022 – 3100
2023 – 1212
2024 YTD – 1236

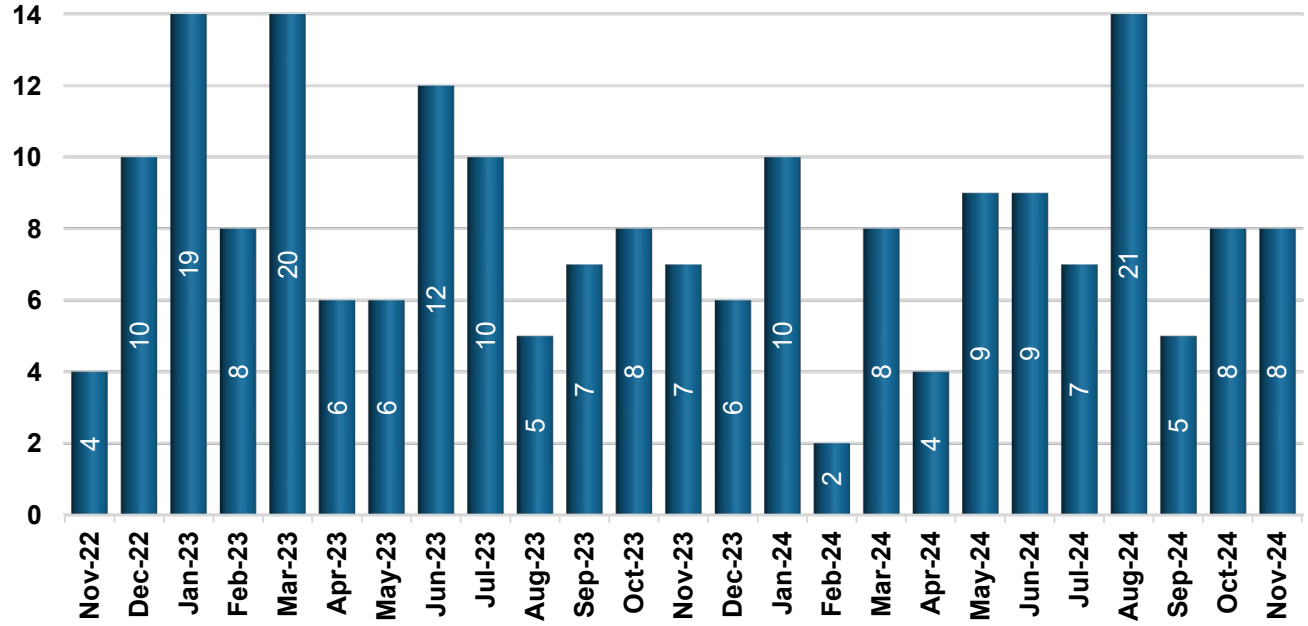
Plat Pages Recorded per Month



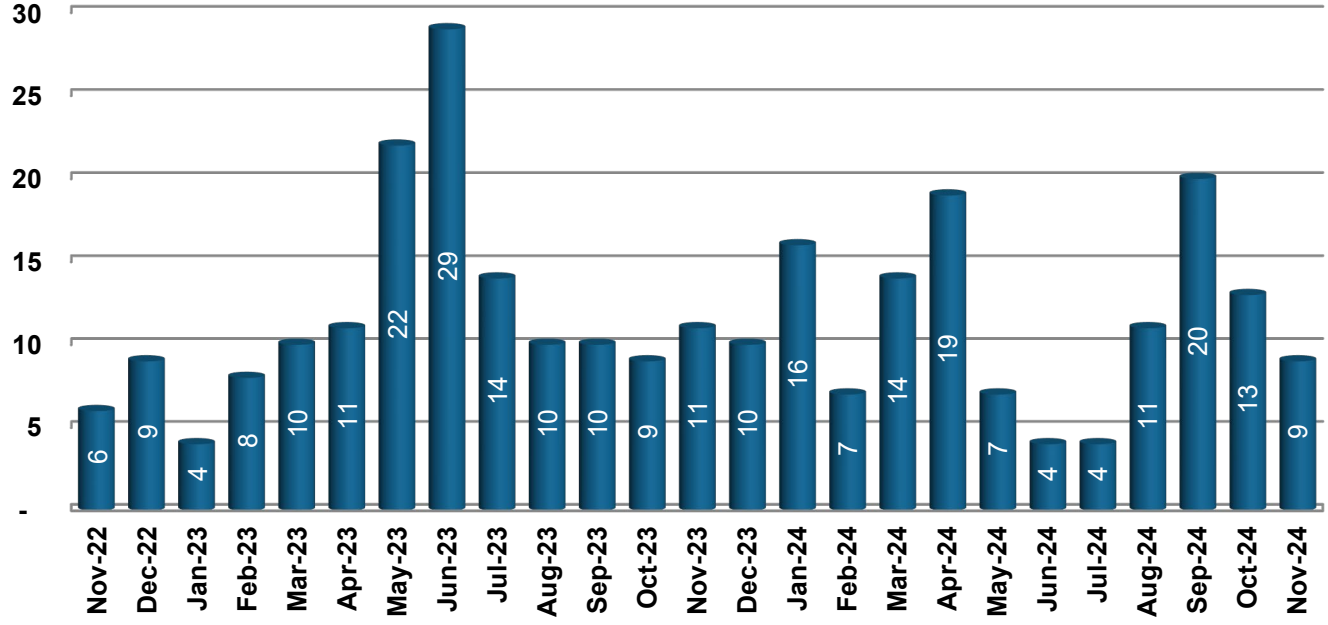
Yearly Totals Pages
2020 – 152
2021 – 188
2022 – 175
2023 – 100
2024 YTD – 135

Land Development Services Statistics

Monthly Total of Subdivision Applications (PSPA, PSP, PPL, PPLA, ICP, FP, CNST) by Month

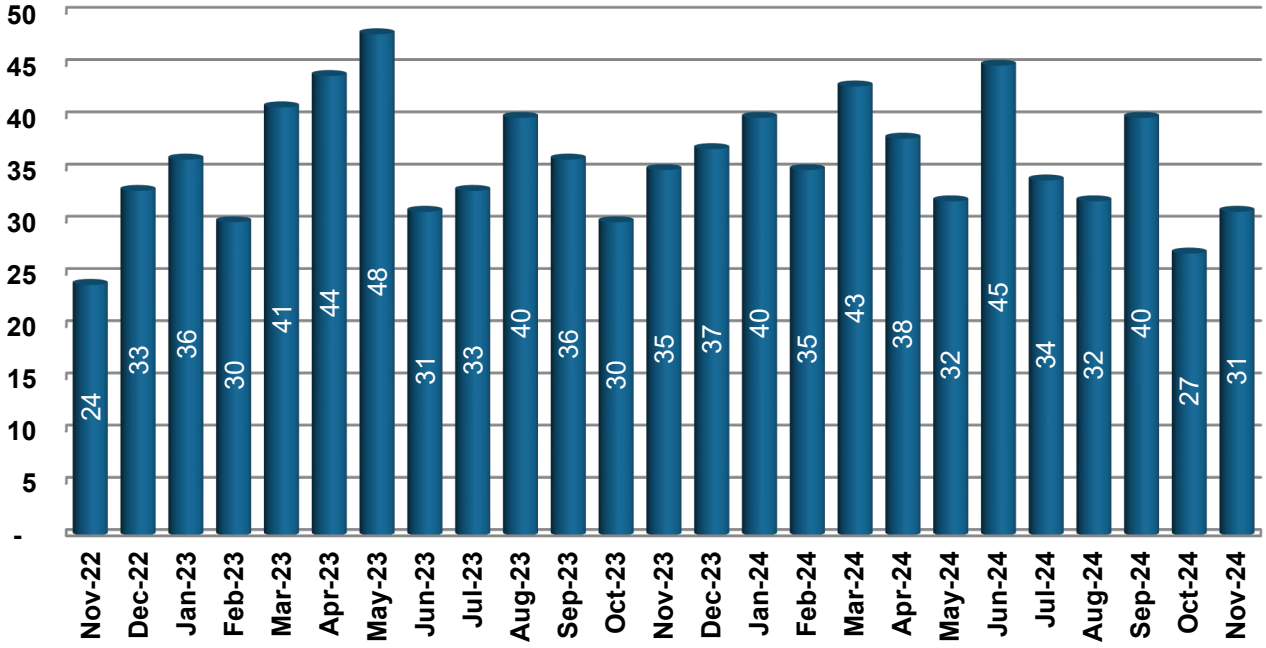


Monthly Total of Subdivision Re-submittals/Corrections (PSPA, PSP, PPL, PPLA, ICP, FP, CNST) by Month

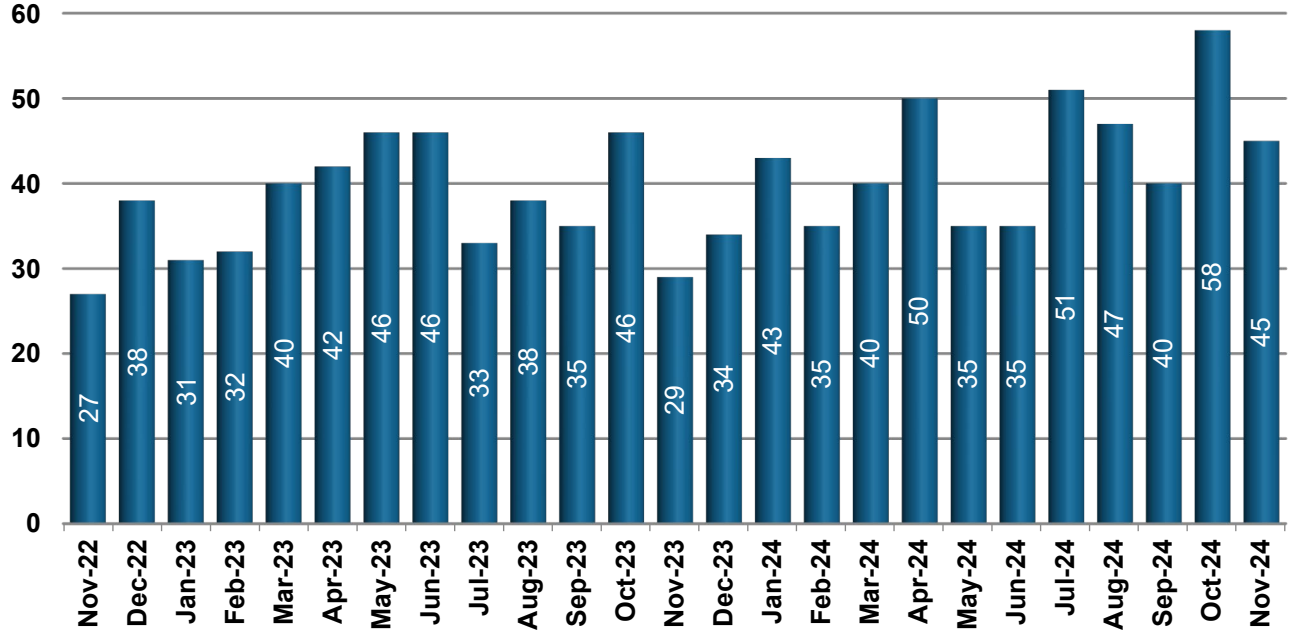


Land Development Services Statistics

Monthly Total of Site Plan Applications (SIP, SIPI, SDP, SDPA, SDPI, NAP) by Month

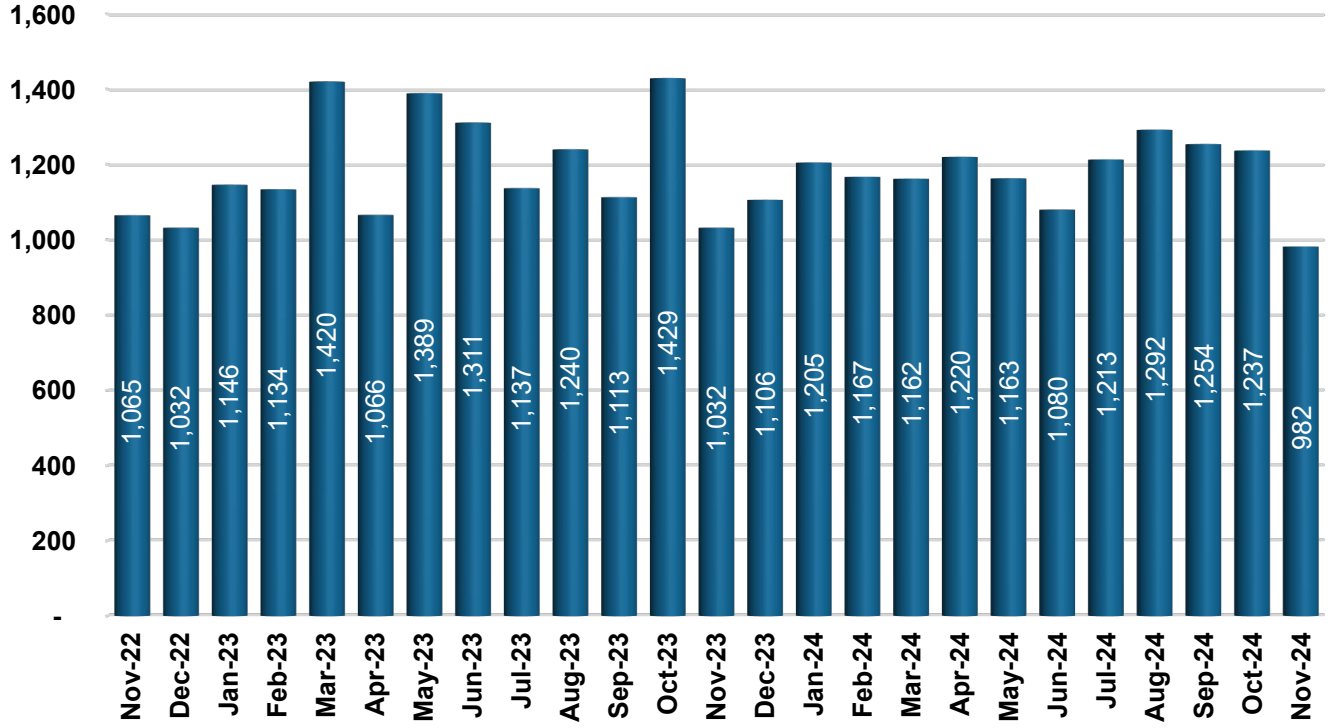


Monthly Total of Site Plan Re-submittals/Corrections (SIP, SIPI, SDP, SDPA, SDPI, NAP) by Month

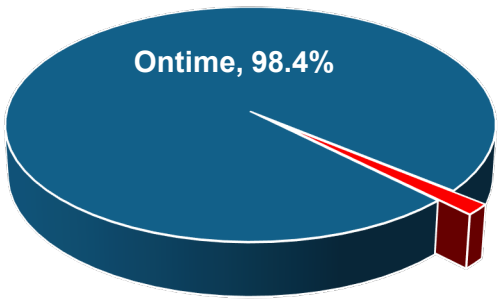


Reviews for Land Development Services

Number of Land Development Reviews

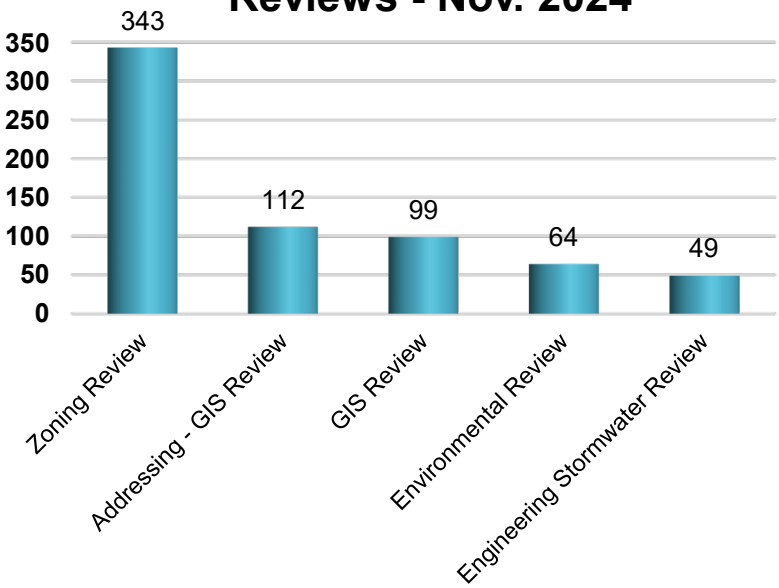


Percent Ontime for the Month



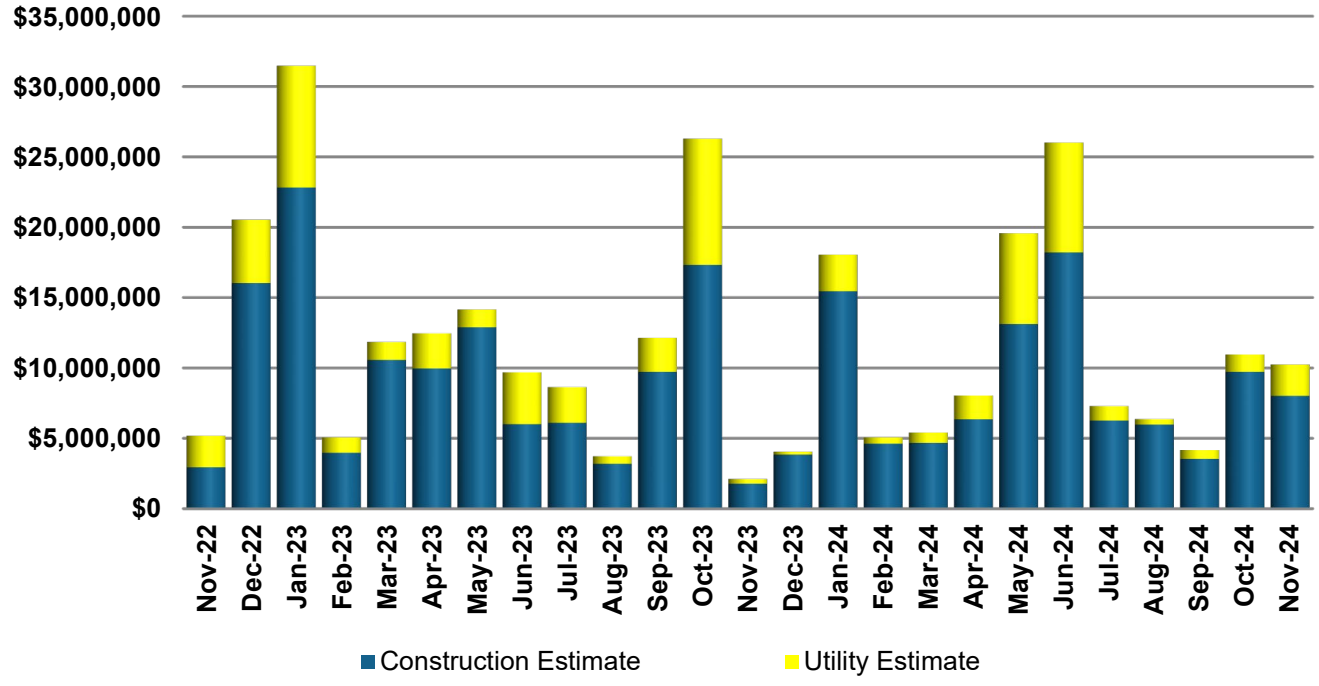
Late, 1.6%

Top 5 Land Development Reviews - Nov. 2024

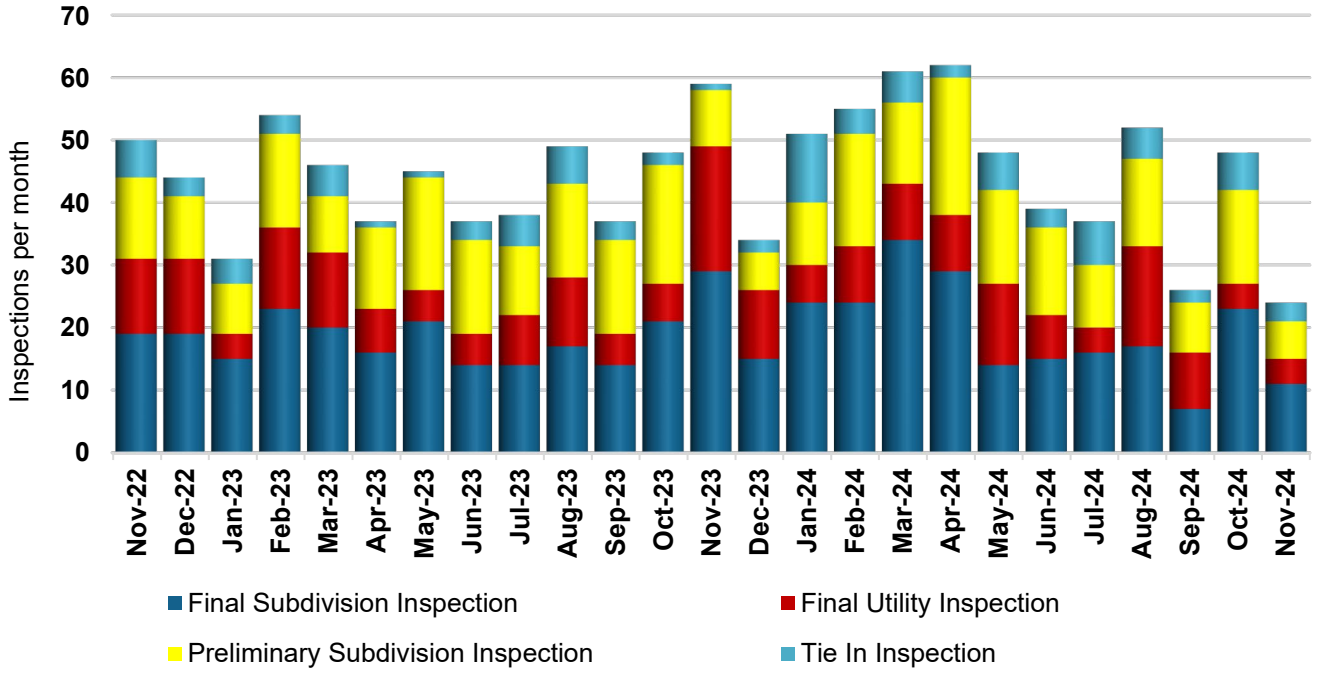


Land Development Services Statistics

Total Applied Construction Valuation Estimate

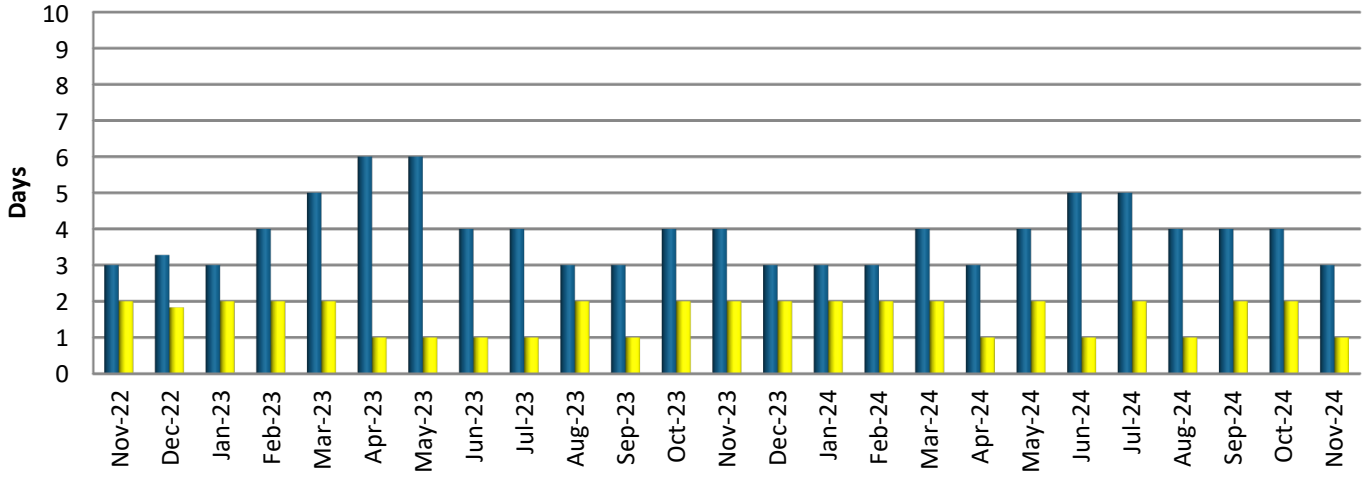


Site & Utility Inspections



Fire Review Statistics

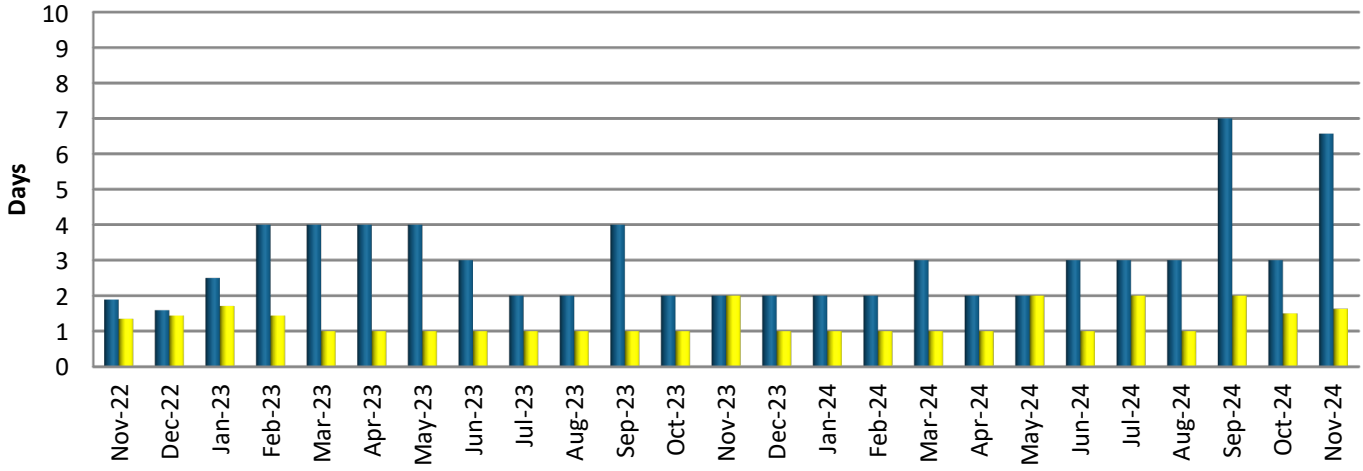
Building Fire Review Average Number of Days



Total Number of Building Fire Reviews by Month

Fire District	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
North Collier	449	391	444	450	583	490	692	650	627	636	525	616	543	411	459	406	508	581	684	634	647	646	733	655	459
Collier County (Greater Naples)	317	374	347	448	539	408	500	447	391	428	397	442	395	403	382	429	425	552	517	511	482	407	464	447	390

Planning Fire Review Average Number of Days



Total Number of Planning Fire Reviews by Month

Fire District	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
North Collier	27	41	42	28	46	25	47	56	54	50	37	52	48	57	60	57	37	44	40	43	51	51	62	63	47
Collier County(Greater Naples)	46	62	56	68	70	63	82	91	43	43	60	62	50	39	56	53	60	75	61	55	68	67	64	48	64

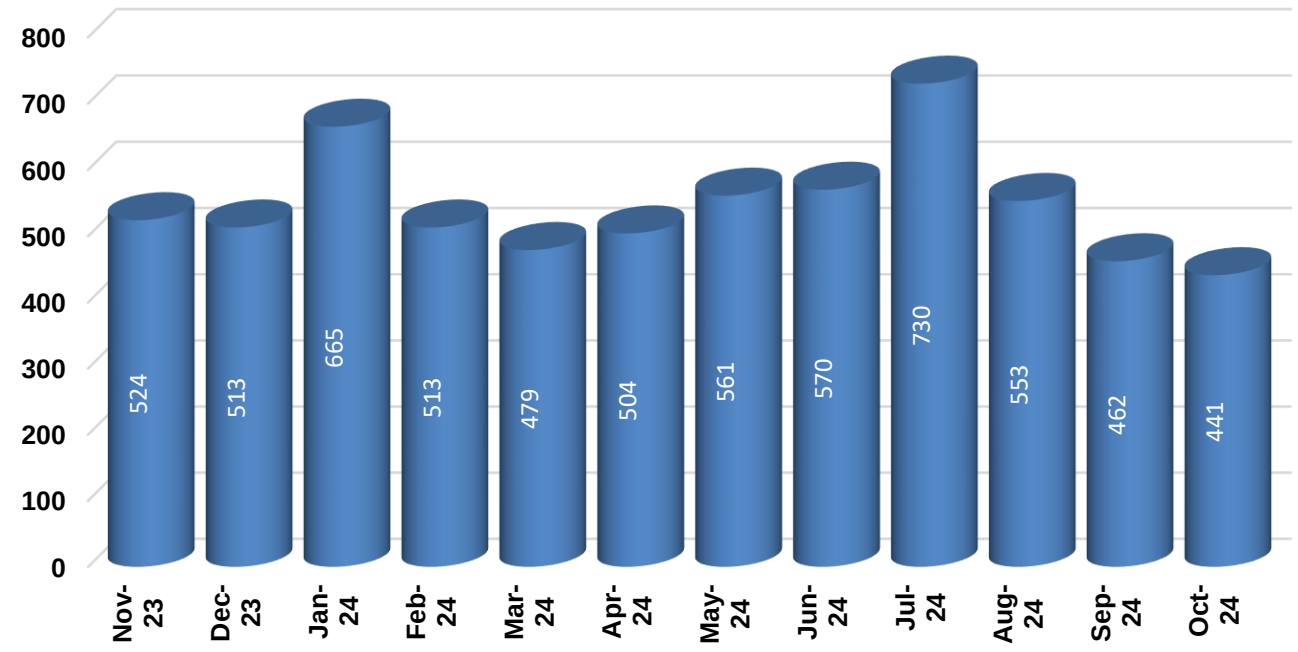
Collier County

November 2024 Code Enforcement Monthly Statistics

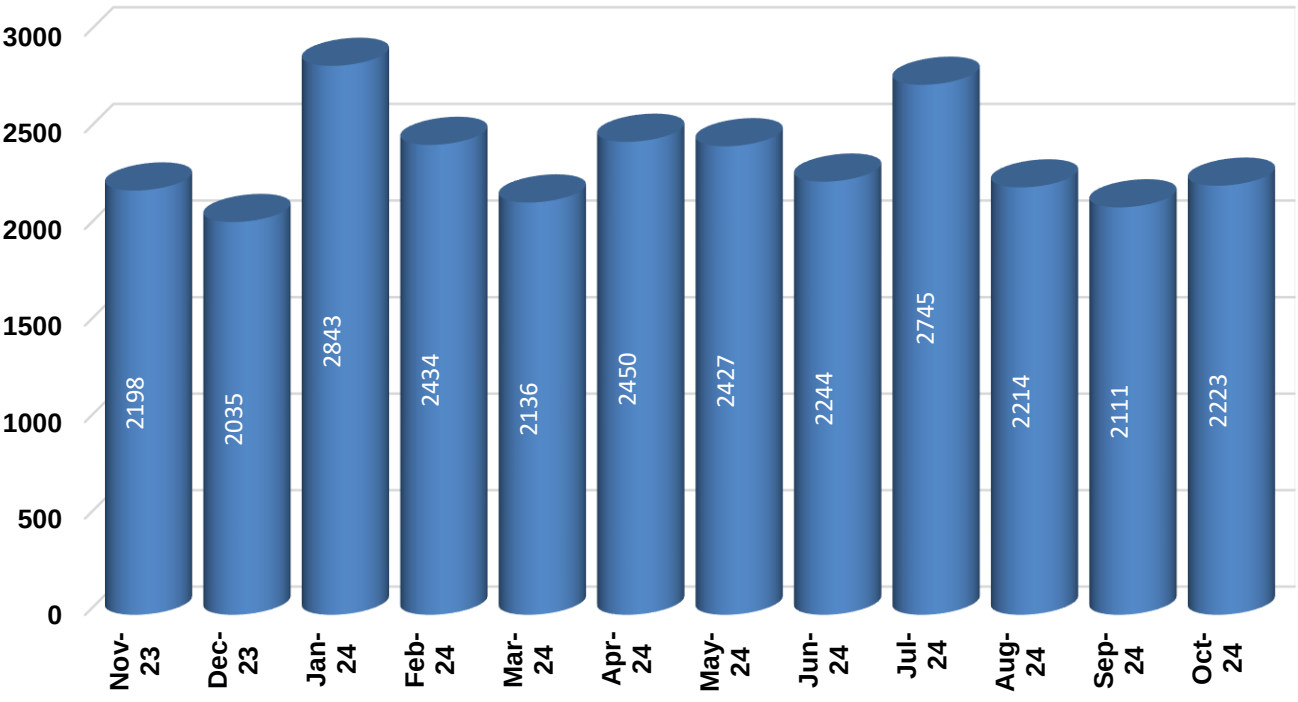


Code Enforcement Reports

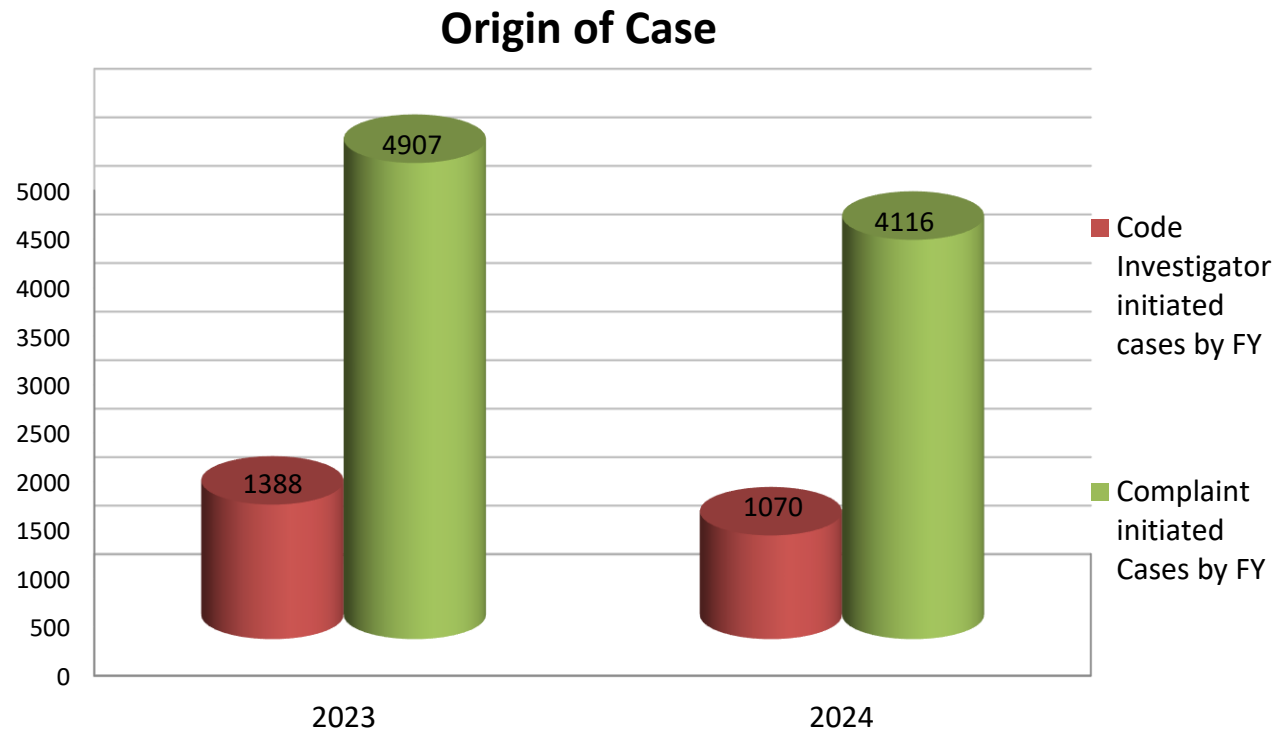
Cases Opened Per Month

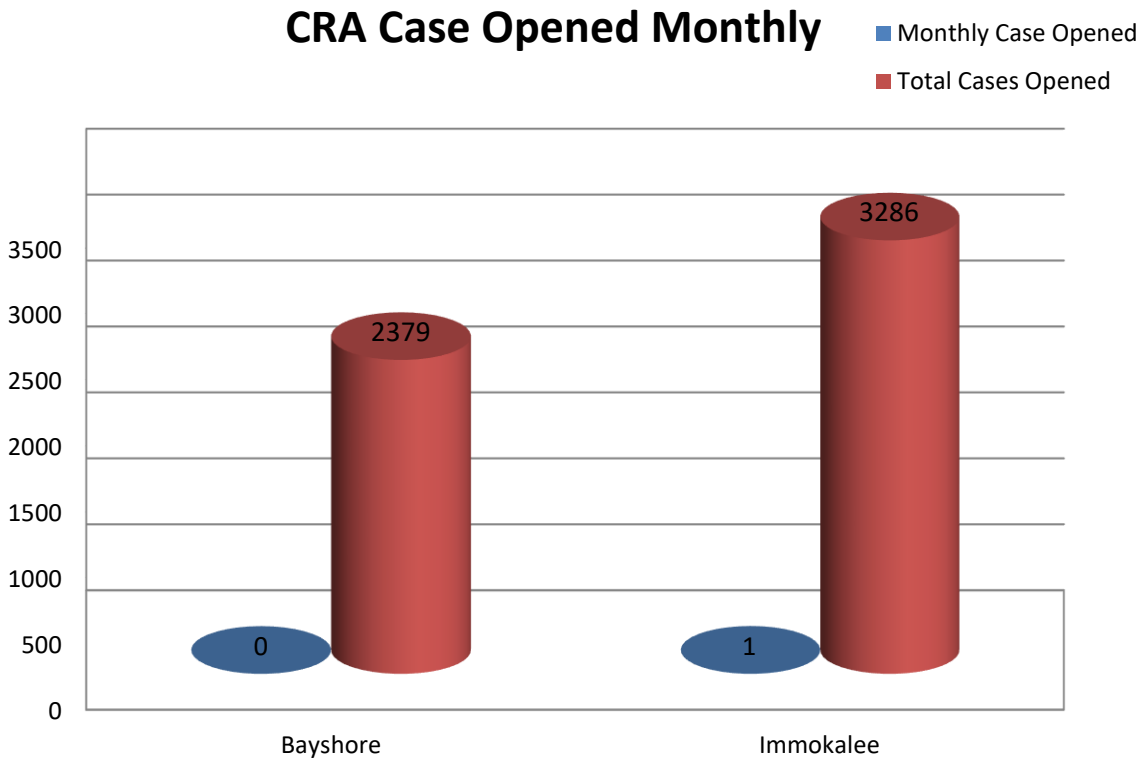


Code Inspections Per Month



Code Enforcement Reports



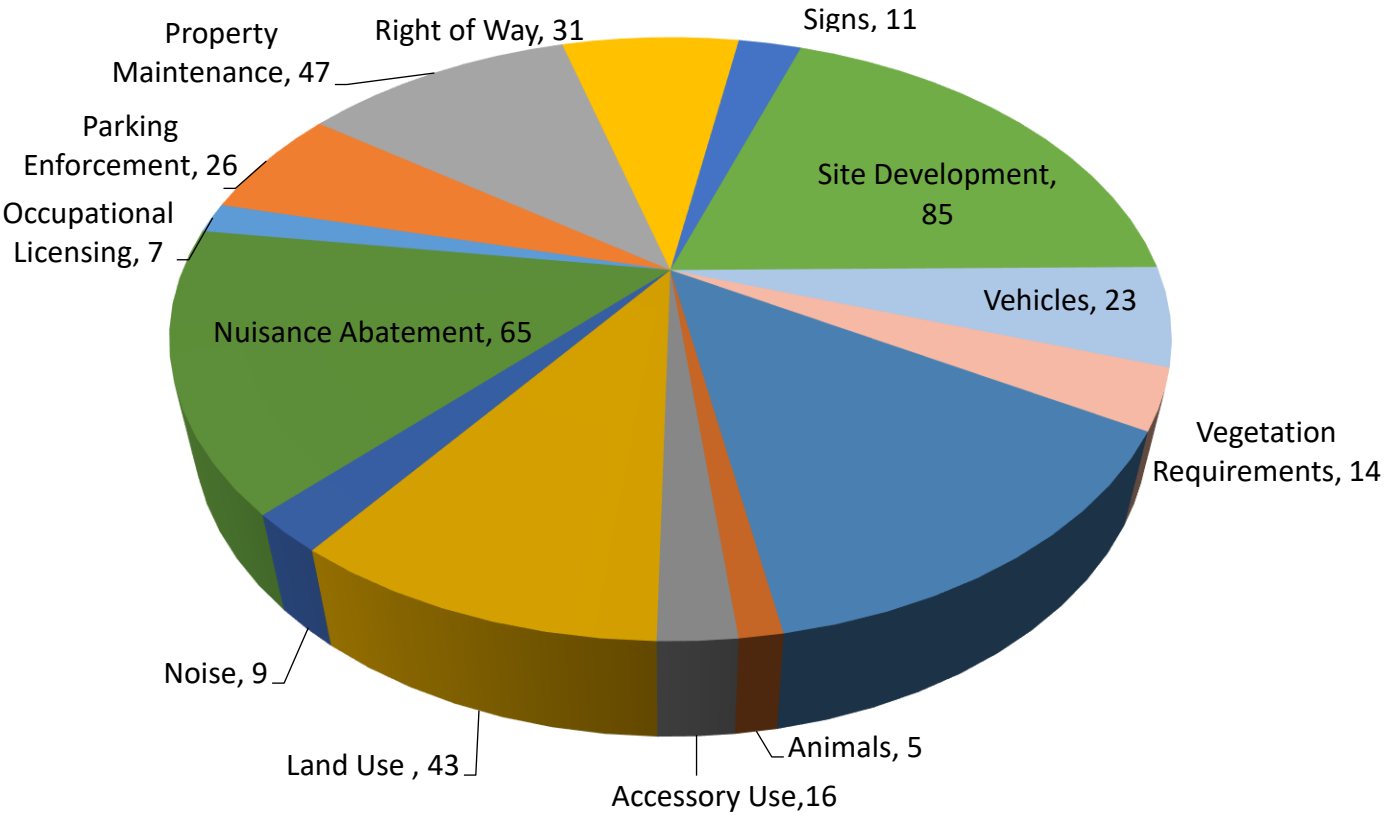


Code Enforcement Reports

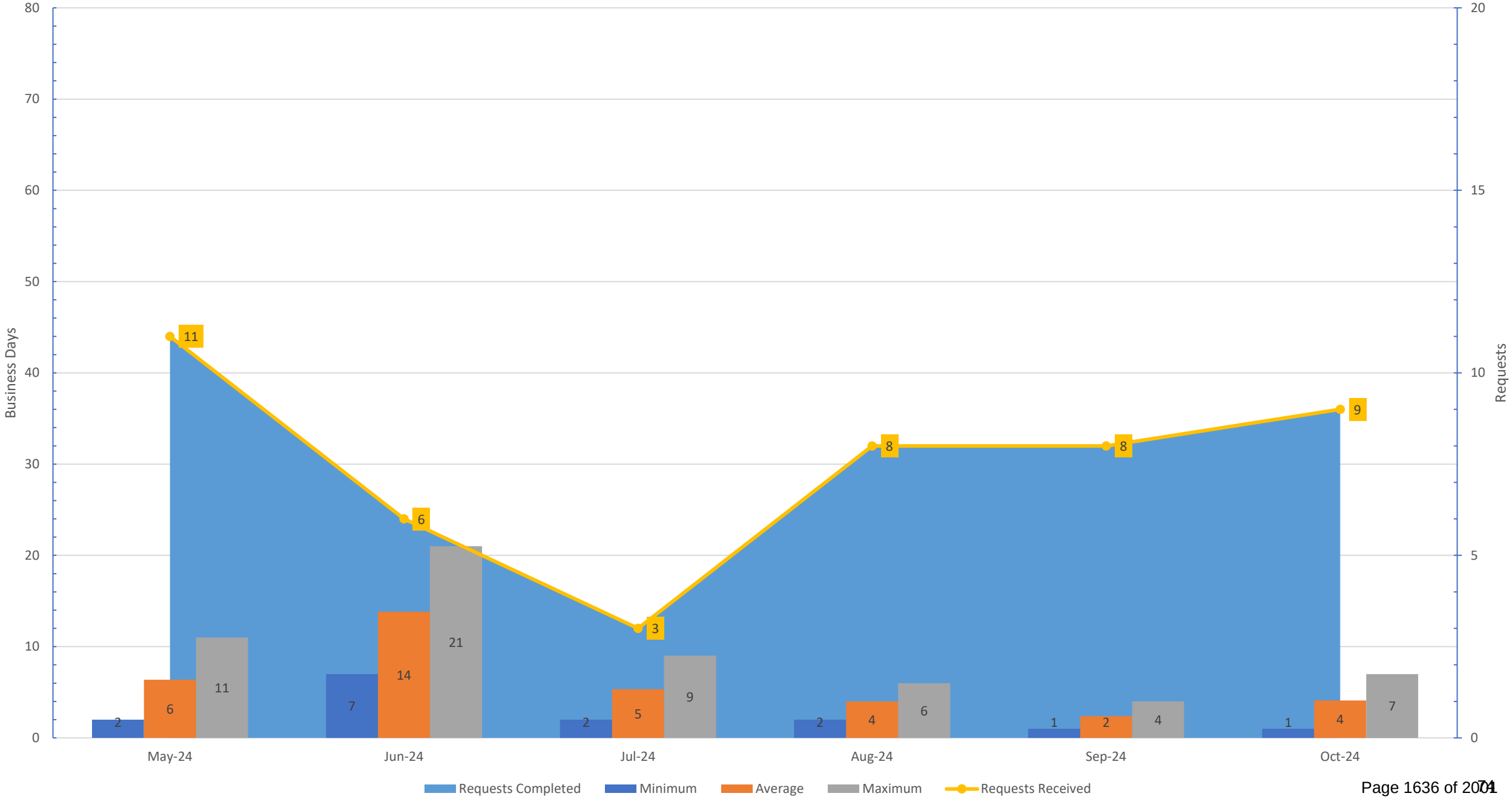
September 22, 2024 – October 21, 2024 Highlights

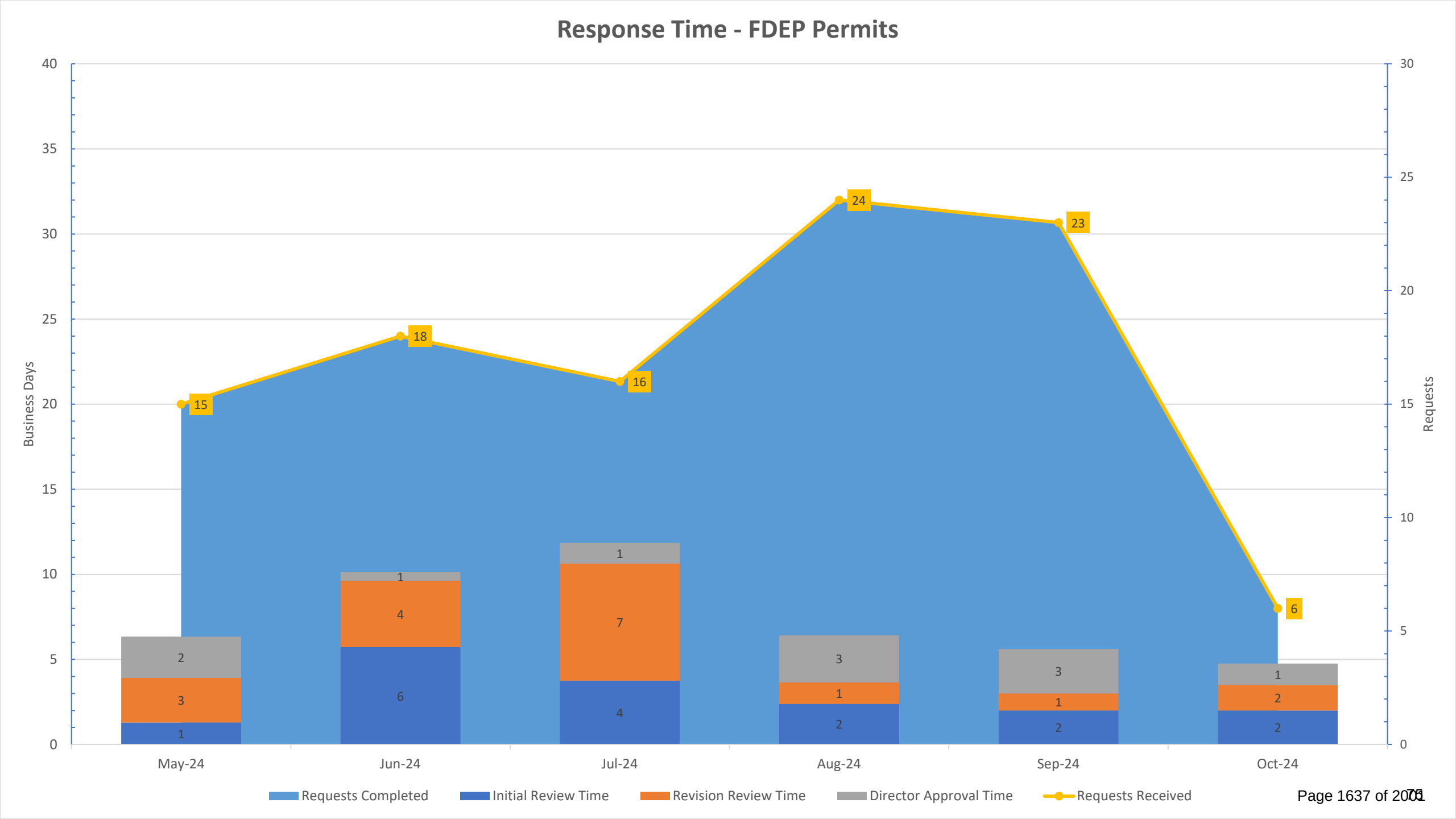
- Cases opened: 441
- Cases closed due to voluntary compliance: 129
- Property inspections: 2223
- Lien searches requested: 531

Top 15 Code Cases by Category



Response Time - Letters of Availability




Response Time - FDEP Permits
Business Days
Requests
40
35
30
25
20
15
10
5
0
30
25
20
15
10
5
0
May-24
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
15
18
16
24
23
6
2
3
1
1
4
6
1
7
4
3
1
2
3
1
2
1
2
2
Requests Completed
Initial Review Time
Revision Review Time
Director Approval Time
Requests Received

COLLIER COUNTY PUBLIC UTILITIES
ENGINEERING AND PROJECT MANAGEMENT

UTILITIES STANDARDS MANUAL

Presented to the Utility Subcommittee
October 29th, 2024
November 18th, 2024

COLLIER COUNTY PUBLIC UTILITIES
ENGINEERING AND PROJECT MANAGEMENT

Utilities Subcommittee Recommended Changes Requested at the November 18th, 2024 Meeting

Detail WW-7
Detail WW-7D
Detail WW-8
Detail WW-8A
Detail WW-8B

STRIKETHROUGH

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
(B)	DISTANCE B/W WETWELL FLOOR AND TOP OF DISCH. CONNECTION	
(C)	TOP OF WETWELL ELEVATION	
(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
(I)	TOP OF WETWELL FOOTING	
(K)	DIAMETER OF DISCHARGE RISER	
(L)	DIAMETER OF DISCHARGE FORCE MAIN	
(T)	THICKNESS OF FOOTING (MINIMUM 12")	

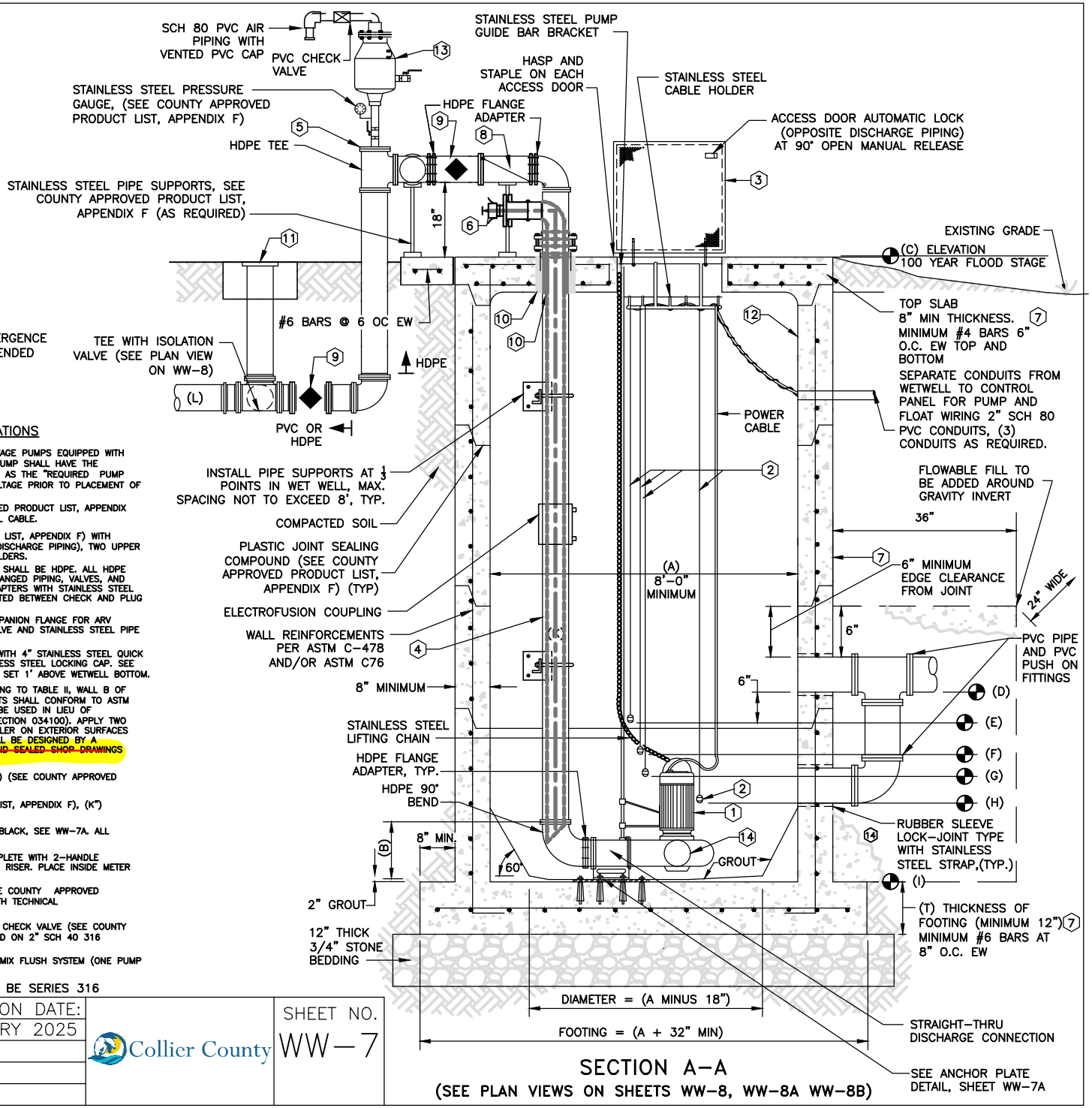
*SET ELEVATION H SO THAT THE MINIMUM SUBMERGENCE OF THE PUMPS IS 18", OR THE DEPTH RECOMMENDED BY THE MANUFACTURER, WHICHEVER IS GREATER

EQUIPMENT SPECIFICATIONS

MARK

1. DUPLEX ___ INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT OR 480 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE". VERIFY PUMP LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2. LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH 60 FEET OF ELECTRICAL CABLE.
3. ACCESS DOOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER (OPPOSITE DISCHARGE PIPING), TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS.
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACERS PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL. SUCTION PIPE TO BE SET 1' ABOVE WETWELL BOTTOM.
7. WETWELL, REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76 AND/OR ASTM C-478. O-RING JOINTS SHALL CONFORM TO ASTM C-443 WETWELL CONSTRUCTION. RAM-NEK MAY BE USED IN LIEU OF O-RING RUBBER GASKETS (SEE SPECIFICATION SECTION 034100). APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WETWELL. PUMP STATION WET WELL SHALL BE DESIGNED BY A ~~FLORIDA PROFESSIONAL ENGINEER AND SIGNED AND SEALED SHOP DRAWINGS SHALL BE SUBMITTED.~~
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") COMPLETE WITH WRENCH.
10. STAINLESS STEEL WALL PENETRATION ASSEMBLY, BLACK, SEE WW-7A. ALL PENETRATIONS SHALL BE CORED IN THE FIELD.
11. 4" STAINLESS STEEL QUICK-COUPLING UNIT COMPLETE WITH 2-HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. INTERIOR SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" SCH 40 316 STAINLESS STEEL PIPING.
14. VOLUTE PORT WITH BOLTED COVER FOR FUTURE MIX FLUSH SYSTEM (ONE PUMP ONLY).

NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



SECTION A-A

(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)

PUMP STATION DETAIL - PROFILE

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-7

REVISED DETAIL

DIMENSION TABLE

(A)	WETWELL INSIDE DIAMETER	
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(D)	INFLUENT PIPE ELEV.	
(E)	HIGH WATER ALARM ELEV.	
(F)	LAG PUMP ON ELEV.	
(G)	LEAD PUMP ON ELEVATION	
(H)	ALL PUMPS OFF ELEVATION*	
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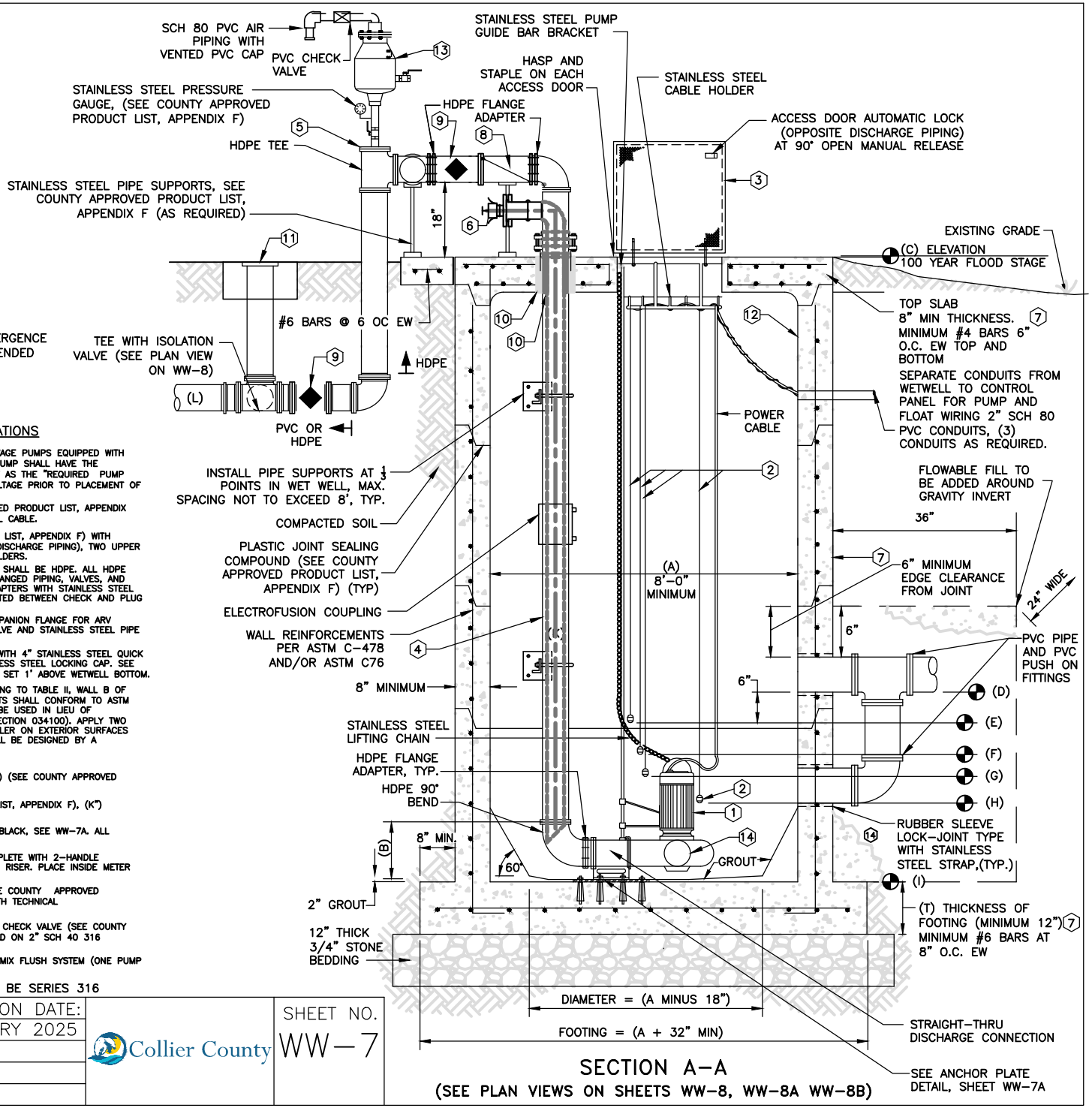
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EQUIPMENT SPECIFICATIONS

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5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND STAINLESS STEEL PIPE NIPPLES TO CONNECT TO ARV.
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NOTE: ALL STAINLESS STEEL SHALL BE SERIES 316



SECTION A-A

(SEE PLAN VIEWS ON SHEETS WW-8, WW-8A WW-8B)

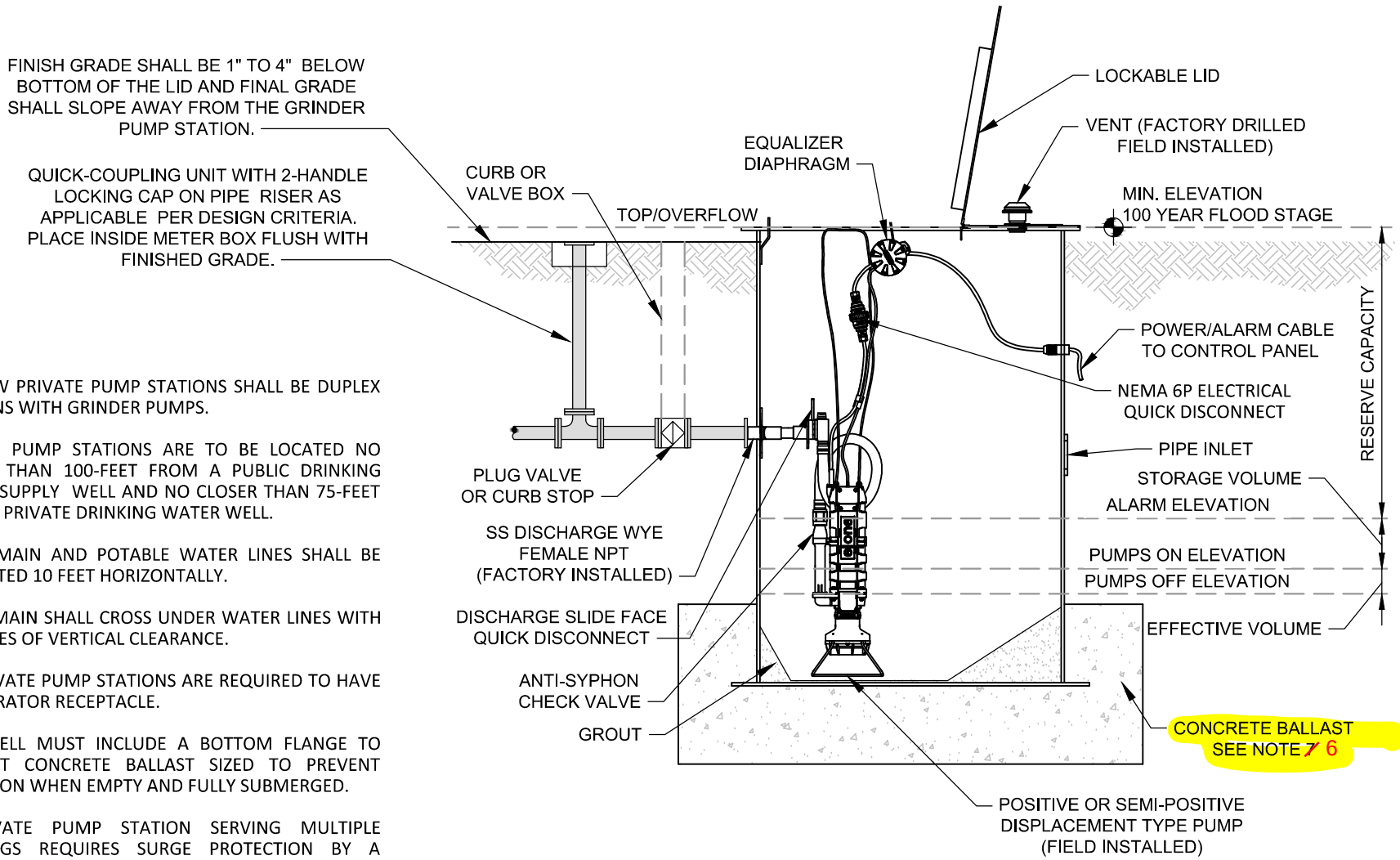
PUMP STATION DETAIL - PROFILE

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-7



NOTES:

1. ALL NEW PRIVATE PUMP STATIONS SHALL BE DUPLEX STATIONS WITH GRINDER PUMPS.
2. PRIVATE PUMP STATIONS ARE TO BE LOCATED NO CLOSER THAN 100-FEET FROM A PUBLIC DRINKING WATER SUPPLY WELL AND NO CLOSER THAN 75-FEET FROM A PRIVATE DRINKING WATER WELL.
3. FORCE MAIN AND POTABLE WATER LINES SHALL BE SEPARATED 10 FEET HORIZONTALLY.
4. FORCE MAIN SHALL CROSS UNDER WATER LINES WITH 18 INCHES OF VERTICAL CLEARANCE.
5. ALL PRIVATE PUMP STATIONS ARE REQUIRED TO HAVE A GENERATOR RECEPTACLE.
6. WET WELL MUST INCLUDE A BOTTOM FLANGE TO SUPPORT CONCRETE BALLAST SIZED TO PREVENT FLOTATION WHEN EMPTY AND FULLY SUBMERGED.
7. A PRIVATE PUMP STATION SERVING MULTIPLE BUILDINGS REQUIRES SURGE PROTECTION BY A LIGHTING ARRESTOR, SOURCE CAPACITOR, OR OTHER SIMILAR PROTECTION DEVICE, AND PHASE PROTECTION.
8. SEE PRIVATE PUMP STATIONS PANEL SPECIFICATION SECTION 333200 2.2J FOR PANEL REQUIREMENTS.

PRIVATE GRINDER PUMP STATION DETAIL

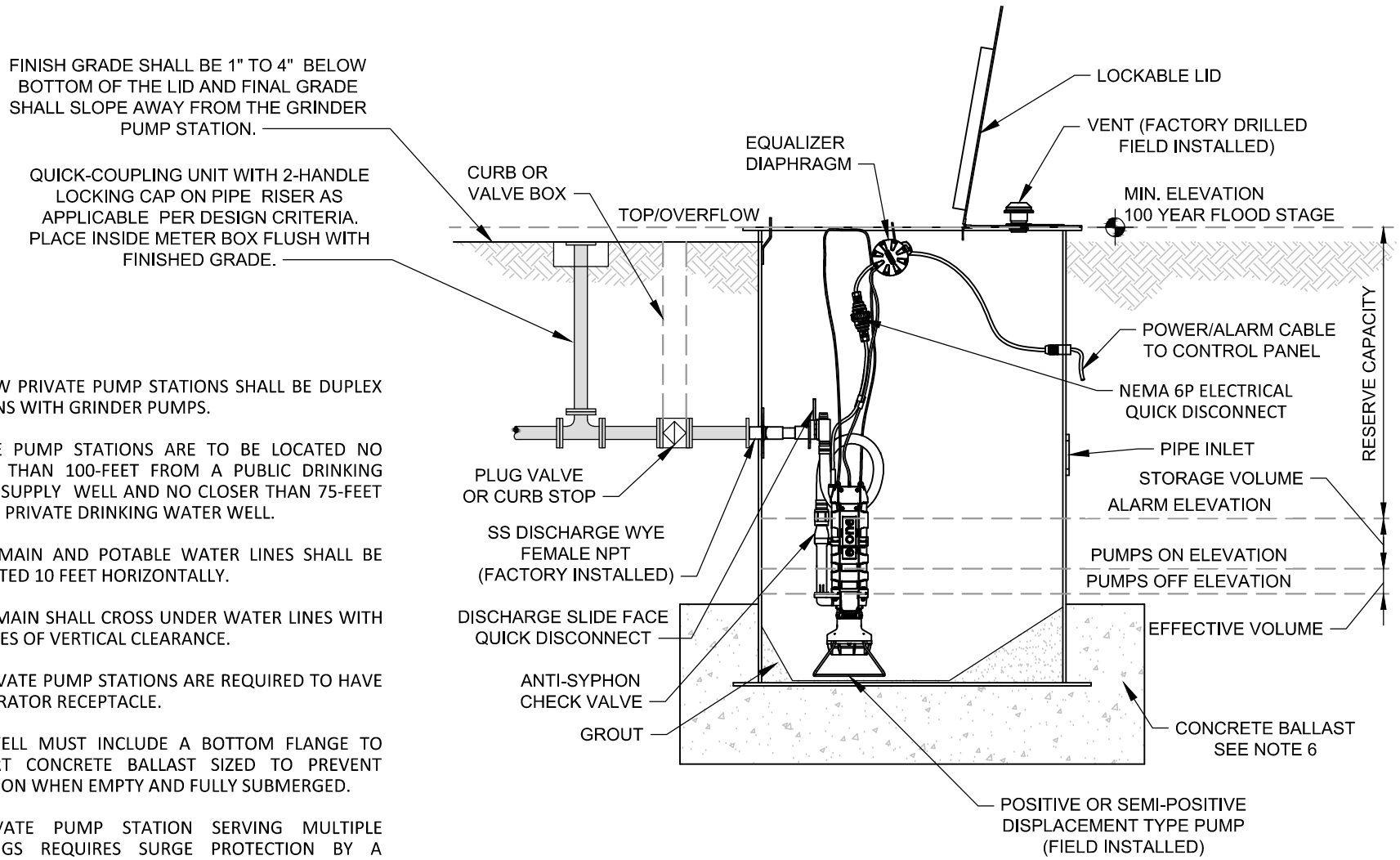
NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–7D

REVISED DETAIL



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PRIVATE GRINDER PUMP STATION DETAIL

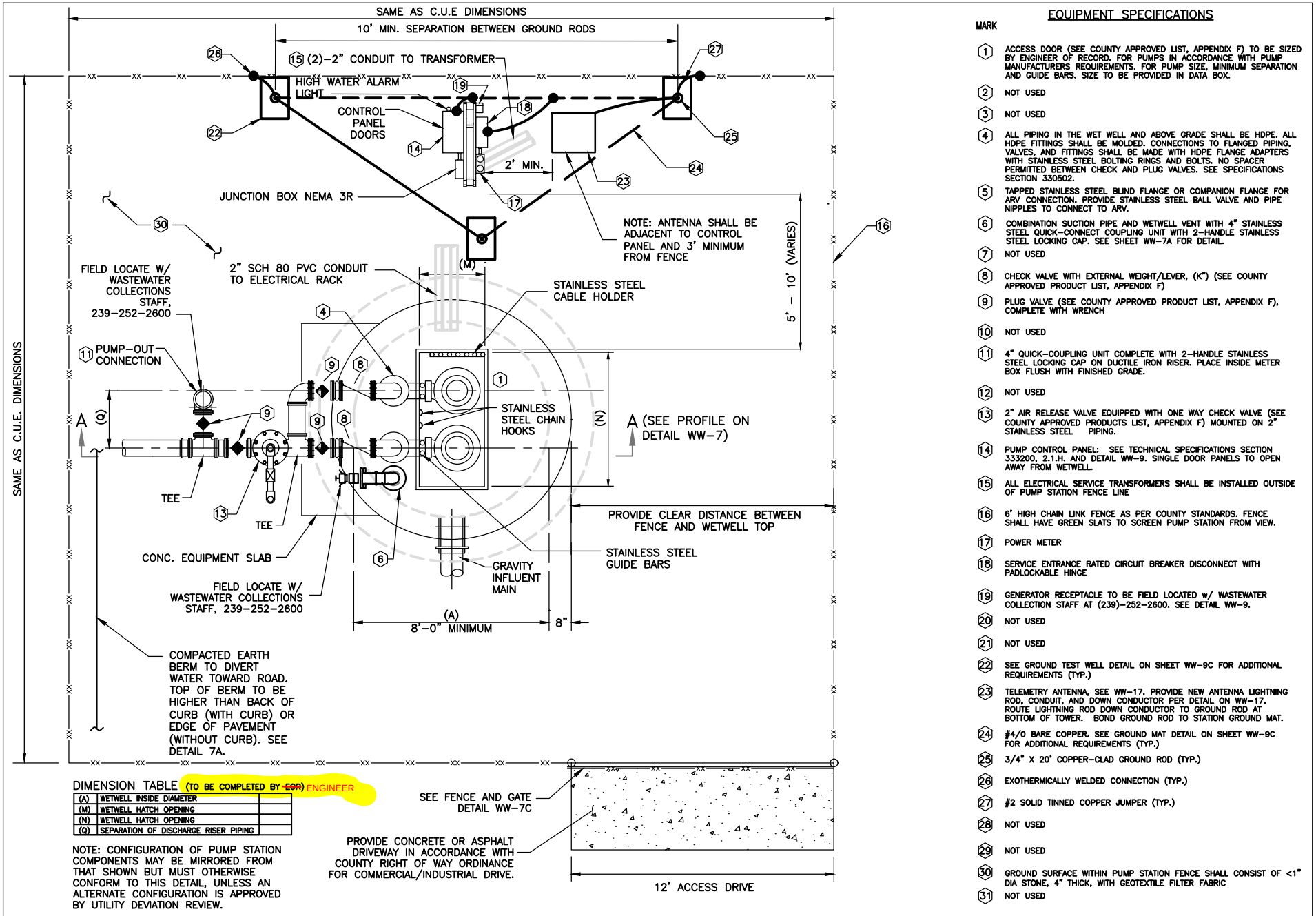
NTS

REVISION DATE:
JANUARY 2025

Collier County

SHEET NO.
WW–7D

STRIKETHROUGH



DIMENSION TABLE (TO BE COMPLETED BY ~~EOR~~ ENGINEER)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK	
1	ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2	NOT USED
3	NOT USED
4	ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5	TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6	COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK–CONNECT COUPLING UNIT WITH 2–HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW–7A FOR DETAIL.
7	NOT USED
8	CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10	NOT USED
11	4" QUICK–COUPLING UNIT COMPLETE WITH 2–HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12	NOT USED
13	2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14	PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW–9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15	ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16	6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17	POWER METER
18	SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19	GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)–252–2600. SEE DETAIL WW–9.
20	NOT USED
21	NOT USED
22	SEE GROUND TEST WELL DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23	TELEMETRY ANTENNA, SEE WW–17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW–17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24	#4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25	3/4" X 20' COPPER–CLAD GROUND ROD (TYP.)
26	EXOTHERMICALLY WELDED CONNECTION (TYP.)
27	#2 SOLID TINNED COPPER JUMPER (TYP.)
28	NOT USED
29	NOT USED
30	GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31	NOT USED

PUMP STATION DETAIL – PLAN

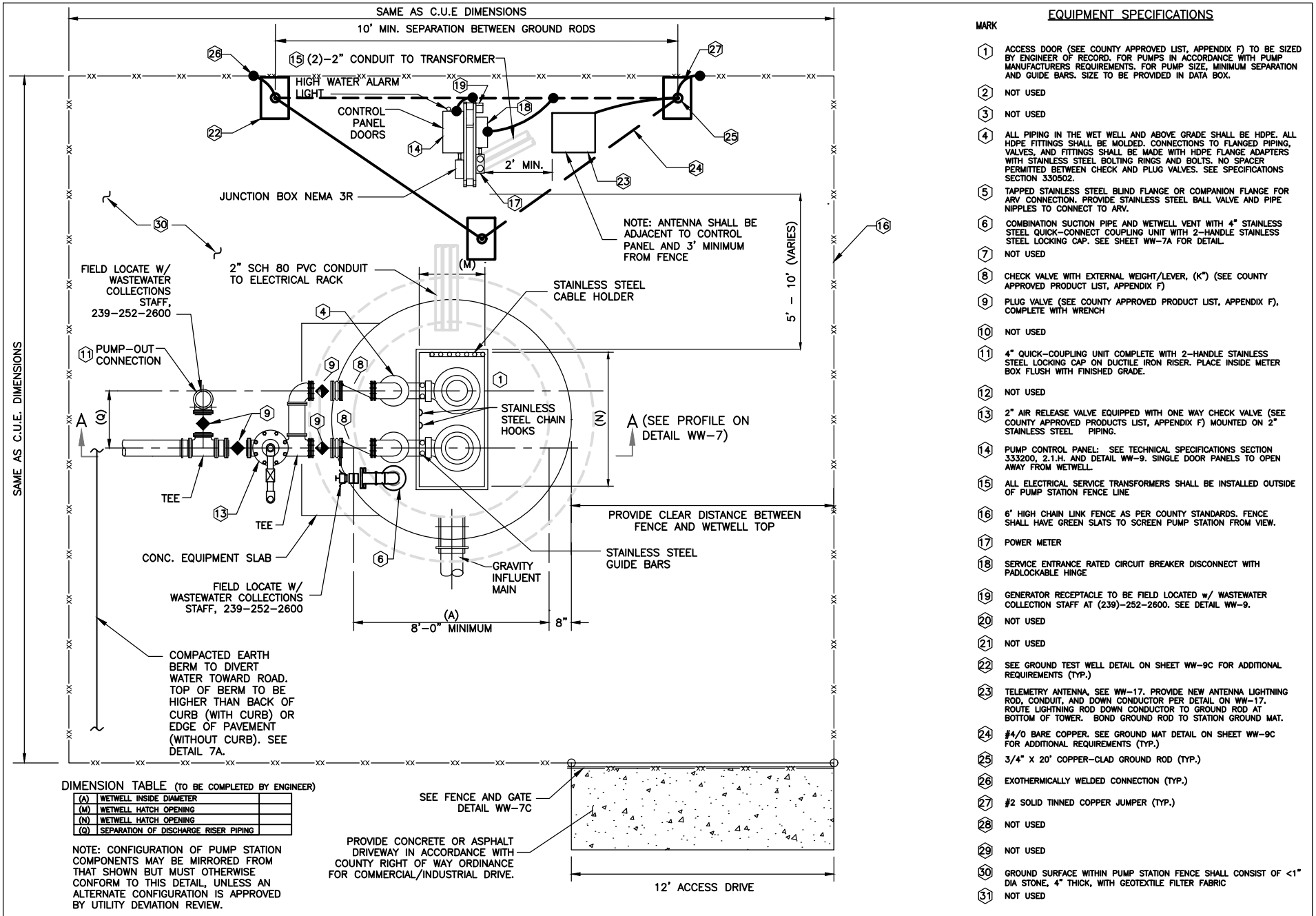
NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW–8

REVISED DETAIL



DIMENSION TABLE (TO BE COMPLETED BY ENGINEER)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
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4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES. SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK–CONNECT COUPLING UNIT WITH 2–HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW–7A FOR DETAIL.
7. NOT USED
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER, (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
9. PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), COMPLETE WITH WRENCH
10. NOT USED
11. 4" QUICK–COUPLING UNIT COMPLETE WITH 2–HANDLE STAINLESS STEEL LOCKING CAP ON DUCTILE IRON RISER. PLACE INSIDE METER BOX FLUSH WITH FINISHED GRADE.
12. NOT USED
13. 2" AIR RELEASE VALVE EQUIPPED WITH ONE WAY CHECK VALVE (SEE COUNTY APPROVED PRODUCTS LIST, APPENDIX F) MOUNTED ON 2" STAINLESS STEEL PIPING.
14. PUMP CONTROL PANEL: SEE TECHNICAL SPECIFICATIONS SECTION 333200, 2.1.H. AND DETAIL WW–9. SINGLE DOOR PANELS TO OPEN AWAY FROM WETWELL.
15. ALL ELECTRICAL SERVICE TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE
16. 6' HIGH CHAIN LINK FENCE AS PER COUNTY STANDARDS. FENCE SHALL HAVE GREEN SLATS TO SCREEN PUMP STATION FROM VIEW.
17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)–252–2600. SEE DETAIL WW–9.
20. NOT USED
21. NOT USED
22. SEE GROUND TEST WELL DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
23. TELEMETRY ANTENNA, SEE WW–17. PROVIDE NEW ANTENNA LIGHTNING ROD, CONDUIT, AND DOWN CONDUCTOR PER DETAIL ON WW–17. ROUTE LIGHTNING ROD DOWN CONDUCTOR TO GROUND ROD AT BOTTOM OF TOWER. BOND GROUND ROD TO STATION GROUND MAT.
24. #4/0 BARE COPPER. SEE GROUND MAT DETAIL ON SHEET WW–9C FOR ADDITIONAL REQUIREMENTS (TYP.)
25. 3/4" X 20' COPPER–CLAD GROUND ROD (TYP.)
26. EXOTHERMICALLY WELDED CONNECTION (TYP.)
27. #2 SOLID TINNED COPPER JUMPER (TYP.)
28. NOT USED
29. NOT USED
30. GROUND SURFACE WITHIN PUMP STATION FENCE SHALL CONSIST OF <1" DIA STONE, 4" THICK, WITH GEOTEXTILE FILTER FABRIC
31. NOT USED

PUMP STATION DETAIL – PLAN

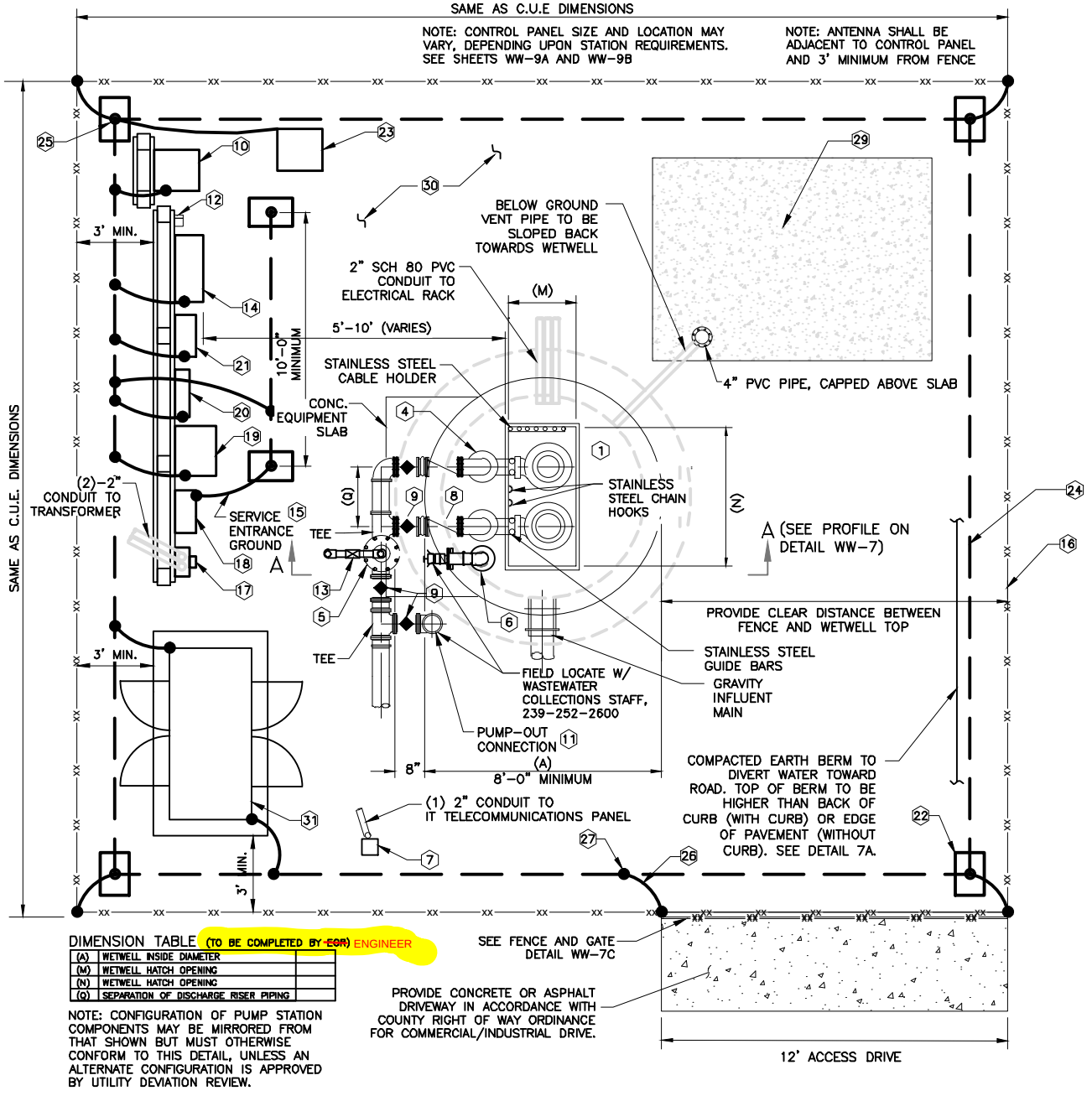
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REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW–8

STRIKETHROUGH



DIMENSION TABLE (TO BE COMPLETED BY ENGINEER)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

NOTE: CONFIGURATION OF PUMP STATION COMPONENTS MAY BE MIRRORED FROM THAT SHOWN BUT MUST OTHERWISE CONFORM TO THIS DETAIL, UNLESS AN ALTERNATE CONFIGURATION IS APPROVED BY UTILITY DEVIATION REVIEW.

EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD, FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
3. NOT USED
4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
5. TAPPED STAINLESS STEEL BLIND FLANGE OR COMPANION FLANGE FOR ARV CONNECTION. PROVIDE STAINLESS STEEL BALL VALVE AND PIPE NIPPLES TO CONNECT TO ARV.
6. COMBINATION SUCTION PIPE AND WETWELL VENT WITH 4" STAINLESS STEEL QUICK-CONNECT COUPLING UNIT WITH 2-HANDLE STAINLESS STEEL LOCKING CAP. SEE SHEET WW-7A FOR DETAIL.
7. FIBER-OPTIC HANDHOLE: SEE TECHNICAL DETAILS SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.
8. CHECK VALVE WITH EXTERNAL WEIGHT/LEVER. (K") (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)
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12. GENERATOR RECEPTACLE TO BE FIELD LOCATED w/ WASTEWATER COLLECTION STAFF AT (239)-252-2600
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17. POWER METER
18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
19. AUTOMATIC TRANSFER SWITCH
20. PANELBOARD / MINI POWER ZONE AS REQUIRED
21. CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
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31. STANDY-BY DIESEL GENERATOR, SUB BASE FUEL TANK, AND CONCRETE PAD. SEE TECHNICAL SPECIFICATIONS SECTION 263213

COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

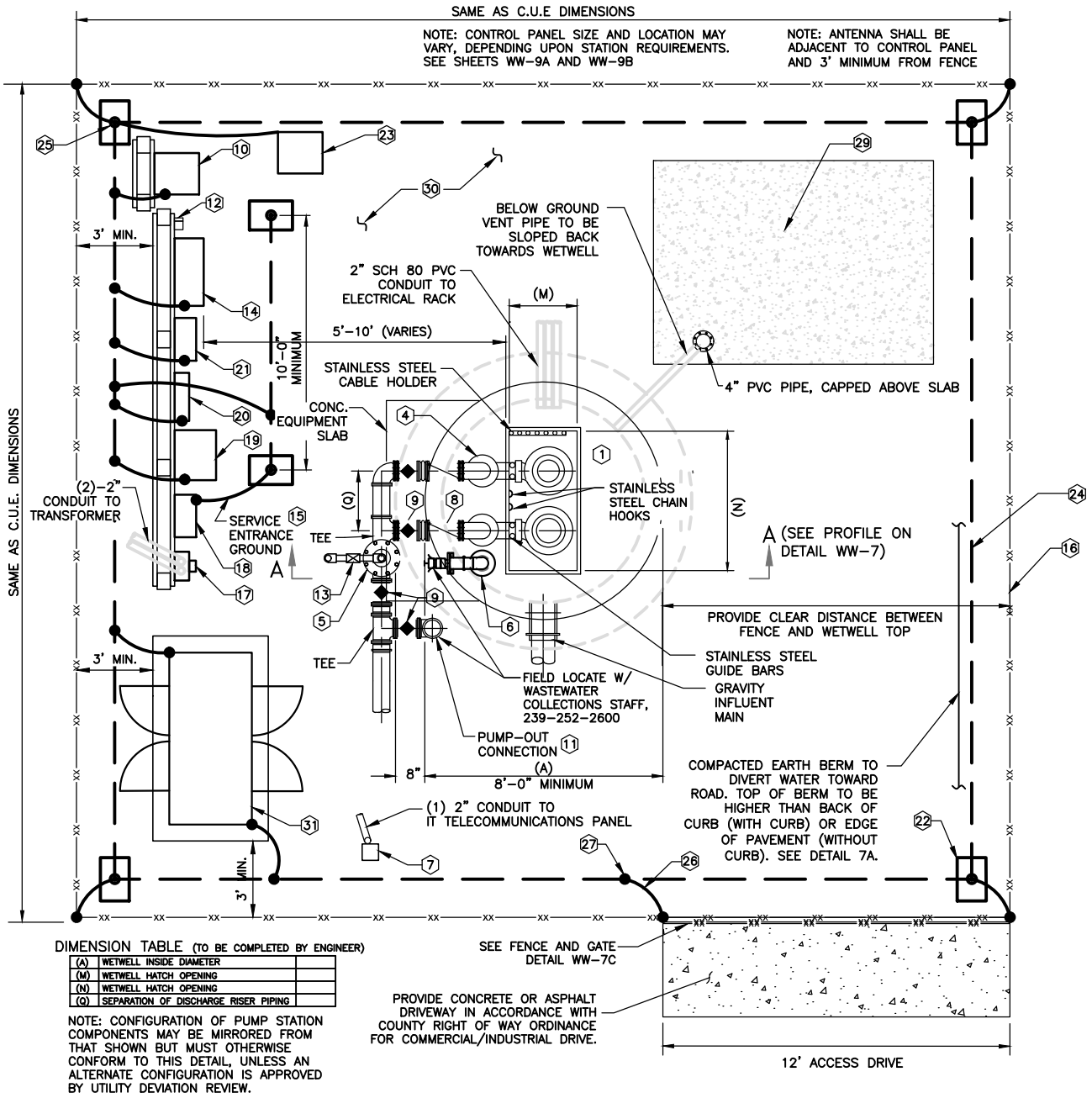
NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A

REVISED DETAIL



DIMENSION TABLE (TO BE COMPLETED BY ENGINEER)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
(Q)	SEPARATION OF DISCHARGE RISER PIPING	

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EQUIPMENT SPECIFICATIONS

MARK

1. ACCESS DOOR (SEE COUNTY APPROVED LIST, APPENDIX F) TO BE SIZED BY ENGINEER OF RECORD. FOR PUMPS IN ACCORDANCE WITH PUMP MANUFACTURERS REQUIREMENTS. FOR PUMP SIZE, MINIMUM SEPARATION AND GUIDE BARS. SIZE TO BE PROVIDED IN DATA BOX.
2. NOT USED
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4. ALL PIPING IN THE WET WELL AND ABOVE GRADE SHALL BE HDPE. ALL HDPE FITTINGS SHALL BE MOLDED. CONNECTIONS TO FLANGED PIPING, VALVES, AND FITTINGS SHALL BE MADE WITH HDPE FLANGE ADAPTERS WITH STAINLESS STEEL BOLTING RINGS AND BOLTS. NO SPACER PERMITTED BETWEEN CHECK AND PLUG VALVES SEE SPECIFICATIONS SECTION 330502.
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COMMUNITY PUMP STATION WITH GENERATOR DETAIL - PLAN

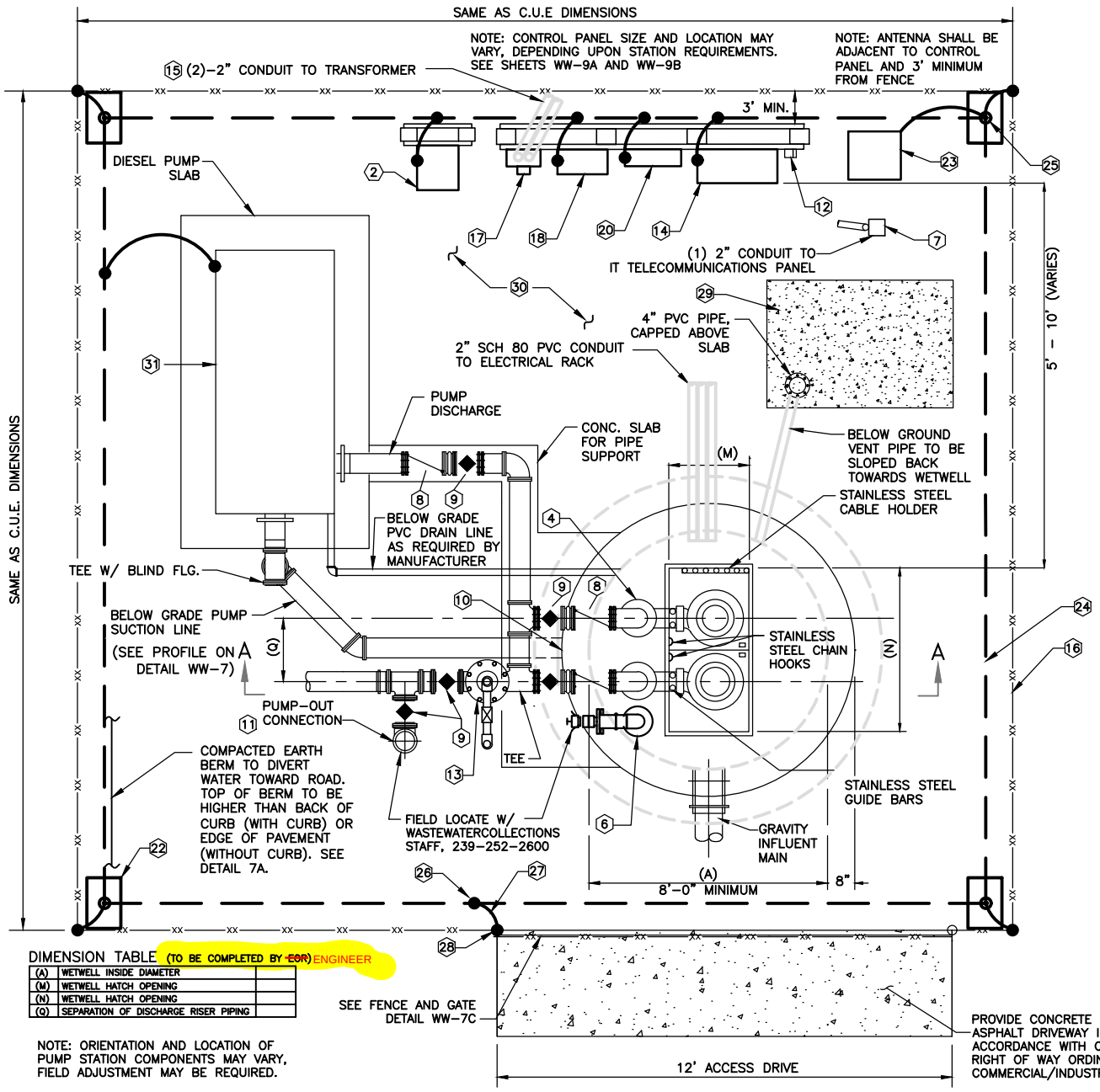
NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8A

STRIKETHROUGH



DIMENSION TABLE (TO BE COMPLETED BY ~~EOR~~ ENGINEER

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
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NOTE: ORIENTATION AND LOCATION OF PUMP STATION COMPONENTS MAY VARY, FIELD ADJUSTMENT MAY BE REQUIRED.

EQUIPMENT SPECIFICATIONS

MARK

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18. SERVICE ENTRANCE RATED CIRCUIT BREAKER DISCONNECT WITH PADLOCKABLE HINGE
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COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

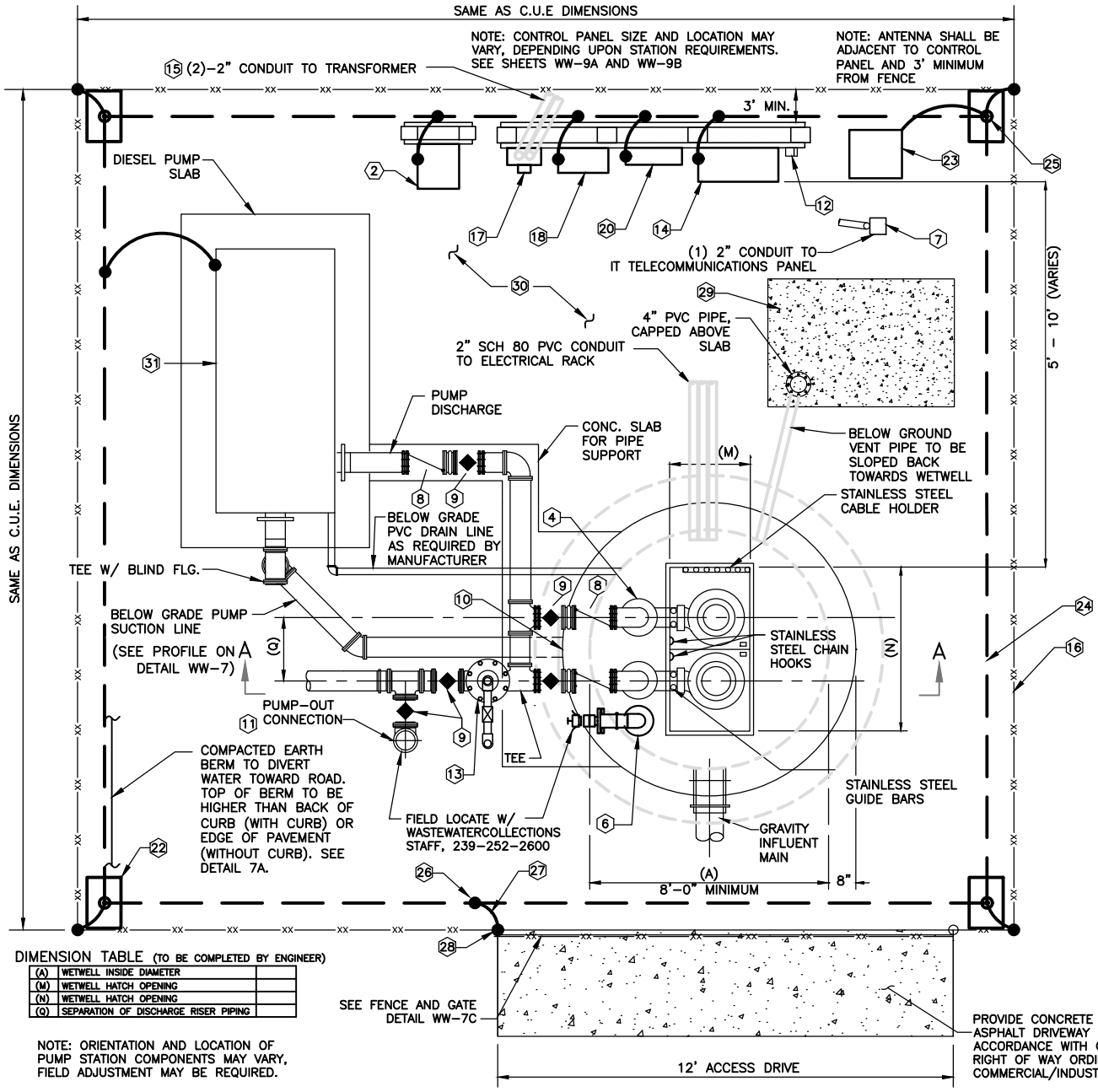
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REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8B

REVISED DETAIL



DIMENSION TABLE (TO BE COMPLETED BY ENGINEER)

(A)	WETWELL INSIDE DIAMETER	
(M)	WETWELL HATCH OPENING	
(N)	WETWELL HATCH OPENING	
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EQUIPMENT SPECIFICATIONS

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COMMUNITY PUMP STATION WITH DIESEL PUMP DETAIL - PLAN

NTS

REVISION DATE: JANUARY 2025

Collier County

SHEET NO. WW-8B

COLLIER COUNTY PUBLIC UTILITIES
ENGINEERING AND PROJECT MANAGEMENT



UTILITIES STANDARDS MANUAL

TABLE OF REVISIONS
DESIGN CRITERIA
TECHNICAL SPECIFICATIONS
UTILITY DETAIL DRAWINGS
APPENDICIES

REVISED DATE: JANUARY 2025

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
Introduction			
1	Introduction	Modified third paragraph to 'introduction' explaining PE responsibilities. Web page reference change.	None
Section 1 – Design Criteria			
2	Cover Page	Web page reference change.	None
3	Table of Contents	Modified Table of Contents to reflect changes and correct scrivener's errors.	None
4	3.3 Wastewater pump stations	Revised section 3.3 Wastewater Pump Stations. Added section 3.3.1 Private Pump Stations.	None
Section 2 - Technical Specifications			
5	Cover Page	Web page reference change.	None
6	Table of Contents	Modified Table of Contents to reflect changes.	None
7	017839 Project Record Documents	Corrected scrivener's error on paragraph 1.3.C. Added notes m and n to part (3.2 B.6) identifying that m) meter boxes and n) Locations of direct bury, conduits, handholes, junction boxes and vaults for buried electric and communication cables that will be conveyed to the County shall be depicted.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
8	020500	Connections to existing systems	Revised section 1.3 General Requirements (F.2 and F.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
9	221336	Diesel Backup Pump	Add sections 1.1 B, 2.5A, and 2.5B on platform requirements.	$10,000 - $30,000 Depending on site
10	263213.13	Standby Diesel Generators	Add sections 1.01.A.12, 2.05A, 2.05B, and 2.05C on platform requirements.	$10,000 - $30,000 Depending on site
11	330518	Laying and jointing buried pipelines	Changed language in Part 3.2 A.2. to decrease vertical dip tolerance from 1.5” to 1.0”.	None
12	312316	Excavation – Earth and Rock	Revised section 1.4 Site Conditions (C.2 and C.3). Inserted new Sunshine 811 website. Changed language regarding utility conflicts. Removed pager number and provided new emergency number.	None
13	330502	High Density Polyethylene (HDPE) Pipe and Fittings	Revised section 2.1A eliminating PE3408 and added PE4710. Revised section 2.1F eliminating PE3408 and added PE4710. Removed cell classification 345434C and 345434E and added cell classifications 445574C and 445574E.	None
14	333200	Pump Stations	Added language to 1.1 SCOPE OF WORK ‘FOR COUNTY PUMP STATIONS’. Added language to 1.1.A. This section includes the following items for ‘COUNTY owned and operated pump stations:’	None
15	333200	Pump Stations	Add section 1.2 ‘Scope of Work for Private Grinder Pump Stations’	None
16	333200	Pump Stations	Add language to 1.1F to include gates.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
17	333200	Pump Stations	Added communications (1.1G.) note requesting letter of availability	None
18	333200	Pump Stations	Add sections 1.1 H, 2.1 R, and 2.1 S on platform requirements.	$10,000 - $30,000 Depending on site
19	333200	Pump Stations	Add 'For County Pump Stations' to section 2.1 heading.	None
20	333200	Pump Stations	Revised section 2.1 J. Added language for 2-Watt digital radio. Added pump controller type to be utilized.	None
21	333200	Pump Stations	Added section 2.2 'Materials for Private Pump Stations'. Added section 3.1 'Installation'.	None
22	409500	Fiber-Optic Communication Standards	New Fiber-Optic Communication Standards	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
Section 3 - Utilities Detail Drawings				
23	Cover Page		Web page reference change.	None
24	Table of Contents		Modified Table of Contents to reflect changes and correct scrivener's errors.	None
25	Various Details – Title Block Addition		Collier County title block added to details: G-1, G-4, G-5, G-6, G-10, NP-E1, NP-E2, NP-E3, NP-E4, NP-E5, NP-E6, NP-E7, NP-E8, NP-E9, W-5, W-6, W-11A, W-16, WW-1, WW-4, WW-5, WW-6, WW-10, WW-15, WW-16, WW-17, WW-18, WW-18A.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
26	G-10	Pipe Restraint Schedule	The detail was modified to include additional restrained pipe length tables for vertical bends.	None
27	G-12	IT Fiber-Optic Telecommunications	New Detail	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
28	W-1	Temporary Blowoff Assembly with Bacterial Sample Point Detail	Corrected PDF to reflect 2014 revision.	None
29	W-2	Automatic Water Main Flushing Device Detail	Corrected PDF to reflect 2014 revision.	None
30	W-3	Fire Hydrant Detail	Added note # 9 noting fire hydrant installation requirements.	None
31	W-3	Fire Hydrant Detail	Added text 'See note 9' below FH connection point range (MIN 18", MAX 22"). Added notes 'Urban: See note 9' and 'Rural: See note 9.'	None
32	W-6	Permanent Bacterial Sample Point Detail	Brass models added to approved product list. Stainless steel models removed.	Potential cost savings
33	W-12	Typical short and long side water service meter setting detail for connection to water main	Temporary construction fence graphic added around the water meter boxes, with note referencing 'Note 8' on Detail W-12A. Revised meter callout to 'AMI/AMR meter'.	$200/installation
34	W-12A	Service connection sizing chart and notes	Added note # 8 to Equipment Specifications, calling out temporary construction fence installation.	$200/installation
35	W-13	3" and over potable water meter assembly detail	Added note # 9 to Equipment Specifications including maintenance access in County CUE or R/W.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
36	W-14	4" and over potable water fire and domestic meter assembly detail	Added note #10 to Equipment Specifications including maintenance access in County CUE or R/W.	None
37	WW-2	Private Force Main Connection to County Force Main Detail	Corrected PDF to reflect 2018 revision.	None
38	WW-3	Precast reinforced concrete manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
39	WW-4	Shallow manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
40	WW-5	Drop manhole detail	Added ASTM callouts. Added min slab and sidewall thicknesses notes.	None
41	WW-6	Manhole ring and cover detail	Updated new required manhole dimensions.	None
42	WW-6	Manhole ring and cover detail	Added note to call out for revised ring and cover models.	None
43	WW-7	Pump Station Detail - Profile	Mark # 3 for access door was modified by adding, '(Opposite discharge piping)'. Also added to detail callout.	None
44	WW-7	Pump Station Detail - Profile	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
45	WW-7	Pump Station Detail - Profile	Mark # 7 was modified by adding the sentence 'RAM-NEK may be used in lieu of o-ring rubber gaskets (see specification Section 034100)'.	None
46	WW-7	Pump Station Detail - Profile	Mark #7 was modified by adding the sentence, 'Pump Station wetwell shall be designed by a Florida Professional Engineer and signed and sealed shop drawings shall be submitted.'	None. Already a requirement

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
47	WW-7	Pump Station Detail - Profile	Mark # 8 was modified by adding the text 'with external weight/lever'.	None
48	WW-7	Pump Station Detail - Profile	Added reference to plan sheets under profile callout 'Section A-A'.	None
49	WW-7	Pump Station Detail - Profile	Added ASTM callouts. Added note, 'Top slab, 8" min thickness'. Revised footer dimension to 'A+32" min'. Added mark references.	None
50	WW-7D	Private Grinder Pump Station Detail	Detail added to County detail set.	None
51	WW-8	Pump Station Detail - Plan	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
52	WW-8	Pump Station Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
53	WW-8	Pump Station Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
54	WW-8	Pump Station Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top. Callout 'Provide clear distance between fence and wetwell top' was added.	Potential cost savings
55	WW-8	Pump Station Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
56	WW-8	Pump Station Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
57	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 4 was modified by adding the sentence 'No spacers permitted between check and plug valves'.	None
58	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
59	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
60	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 10 was added: "IT telecommunications panel: See technical specification 409500 and detail G-12, where applicable". IT telecommunications graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
61	WW-8A	Community Pump Station with Generator Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
62	WW-8A	Community Pump Station with Generator Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt. Access drive dimension was set as the distance between the fence and the wetwell top. Callout 'Provide clear distance between fence and wetwell top' was added.	Potential cost savings
63	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
64	WW-8A	Community Pump Station with Generator Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
65	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 2 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
66	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 4 was modified by adding the sentence "No spacers permitted between check and plug valves".	None
67	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 7 was added: "Fiber-optic handhole: See technical details specification 409500 and detail G-12, where applicable". Conduit and handhole graphic added to the detail.	$15,000 approx. cost to install equipment for a fiber connected site. Additional cost will be required to install fiber to the pump station from the County's network.
68	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 8 was modified by adding the text "with external weight/lever".	None
69	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Mark # 14 was modified by adding the sentence "Single door panels to open away from wetwell".	None
70	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Callout for access drive material was modified by deleting the option for grass covered porous pavement and leaving only the option for concrete or asphalt.	Potential cost savings
71	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	An additional concrete post was added to the control panel.	Approx. $500

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
72	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to Dimension Table, '(To be completed by EOR)'.	None
73	WW-8B	Community Pump Station with Diesel Pump Detail - Plan	Note added next to section A-A, referencing plan view on detail WW-7.	None
74	WW-9	Pump Station Control Panel Detail	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
75	WW-9	Pump Station Control Panel Detail	Added callouts to details: 'Square D Powerblocks to be installed in j-box' & 'Plastic Unistrut endcap callout'	$50/pump station for Square D Powerblocks
76	WW-9	Pump Station Control Panel Detail	Note # 9 was added: "Side panel penetrations are acceptable with the use of Myers Hubs".	$250.00/Hub (Only used when necessary)
77	WW-9	Pump Station Control Panel Detail	Note # 10 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
78	WW-9	Pump Station Control Panel Detail	Note # 11 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station
79	WW-9	Pump Station Control Panel Detail	Note # 12 was added: ''All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware".	None
80	WW-9	Pump Station Control Panel Detail	Note # 13 was added: "All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner".	None
81	WW-9	Pump Station Control Panel Detail	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
82	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
83	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
84	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Added callout to detail: ‘Square D Powerblocks to be utilized in j-box’.	$50/pump station
85	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 8 was added: “Side panel penetrations are acceptable with the use of Myers Hubs”	$250.00/Hub (Only used when necessary)
86	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 9 was added: “Phase monitor to be installed parallel with FPL meter (on FPL side)”.	$100-$350/Monitor (Prices vary with voltages)
87	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 10 was added: “CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings”. Updated detail to show fittings under control panel.	$50/pump station
88	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
89	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
90	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
91	WW-9A	Community Pump Station Control Panel Detail VFD Station with Generator	Pump controls conduit graphic brought forward 'in front of' panel controls conduit on detail.	None
92	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 3 was modified by adding the sentence "Single door panels to open away from wetwell".	None
93	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	An additional concrete post graphic was added to the panel.	Approx. $500
94	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Added callout to detail: 'Square D Powerblocks to be utilized in j-box'.	$50/pump station
95	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 8 was added: "Side panel penetrations are acceptable with the use of Myers Hubs"	$250.00/Hub (Only used when necessary)
96	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 9 was added: "Phase monitor to be installed parallel with FPL meter (on FPL side)".	$100-$350/Monitor (Prices vary with voltages)
97	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 10 was added: "CHICO used to seal-off in explosion proof fittings under J-box, putty for all other conduit openings".	$50/pump station

Item	Sub-Section I Detail		Revision Summary	Fiscal Impact of change to Developer (Approx.)
98	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 11 was added: “Add emergency stop for generator and fire extinguisher on post furthest from generator with appropriate signage”.	Fire Extinguisher Class C – Approx. $500
99	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 12 was added: ‘’All uni-struts to be mounted flush with post and penetrate post with stainless steel hardware”	None
100	WW-9B	Community Pump Station Control Panel Detail Non-VFD Station with Generator	Note # 13 was added: “All mounted equipment must be evenly spaced, level, plumb, and installed in a workmanlike manner”.	None
101	WW-12	Sewer Clean-out Detail - Non Paved Areas	Corrected PDF to reflect 2014 revision.	None
Section 4 – Appendices				
102	Cover Page		Web page reference change.	None
103	Table of Contents		Modified Table of Contents to reflect changes	None

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
104	Appendix B Water Meter Sizing Form	The demand range table on the Water meter sizing form (pg.1) was updated and taken from AWWA M22 Table 6-1 (Third Edition). The flow ranges for 3/4", 1", 1 ½", and 2" meter sizes are flow ranges for positive displacement meters. The flow ranges for 3", 4", 6", 8" and 10" meter sizes are flow ranges for turbine class II meters. (This table can vary depending on meter type). Modified language on signature line (pg.1). Replaced 'Stamp' with 'Seal'. The fixture flow value worksheet (pg.2) was updated and taken from the Florida Building Code (2023 Edition).	None
105	Appendix F Approved Products List	• Appendix F was revised to include new products that are to be placed on the approved product list.	Approx. $100 increase for water and IQ meter boxes (only identified fiscal impact to Developers)
106	Appendix G Approved Backflow Devices	• Added LF to models that are used in residential service and available in both Lead Free and Not Lead Free • Changed 4000B-LBV (less ball valve) to 4000B so all models in that section are comparable and include ball valves • Deleted 4000B-FP since it is not available lead free and this section serves residential requiring lead free • Deleted OSY on 975XL since it is not available lead free – All models in that section would include ball valves – No one offers a lead free ¾" – 2" OSY valve • Changed Wilkins model number to include bypass 950XLTDA – All models in this section are not lead free since these are dedicated Fire Lines – This is allowable – All models shown are standard w/OSY valves • Added large diameter stainless models	None
107	Appendix H IQ User Application and Agreement	Added basic User Application & Agreement for Delivery and Reuse of Irrigation Quality (IQ) Water	None

For the full Utilities Standards Manual, please click the link below.

https://www.colliercountyfl.gov/home/showdocument?id=108669&t=638687547869421341

FORM 8B MEMORANDUM OF VOTING CONFLICT FOR COUNTY, MUNICIPAL, AND OTHER LOCAL PUBLIC OFFICERS

LAST NAME—FIRST NAME—MIDDLE NAME	NAME OF BOARD, COUNCIL, COMMISSION, AUTHORITY, OR COMMITTEE
Robert J Mulhere	Collier County Development Services Advisory Committee
MAILING ADDRESS	THE BOARD, COUNCIL, COMMISSION, AUTHORITY OR COMMITTEE ON WHICH I SERVE IS A UNIT OF:
3613 Lacerata Lane	☐ CITY ☐ COUNTY ☐ OTHER LOCAL AGENCY
CITY / COUNTY	NAME OF POLITICAL SUBDIVISION:
Naples / Collier	Collier County
DATE ON WHICH VOTE OCCURRED	MY POSITION IS:
12-4-2024	☐ ELECTIVE ☐ APPOINTIVE

WHO MUST FILE FORM 8B

This form is for use by any person serving at the county, city, or other local level of government on an appointed or elected board, council, commission, authority, or committee. It applies to members of advisory and non-advisory bodies who are presented with a voting conflict of interest under Section 112.3143, Florida Statutes.

Your responsibilities under the law when faced with voting on a measure in which you have a conflict of interest will vary greatly depending on whether you hold an elective or appointive position. For this reason, please pay close attention to the instructions on this form before completing and filing the form.

INSTRUCTIONS FOR COMPLIANCE WITH SECTION 112.3143, FLORIDA STATUTES

A person holding elective or appointive county, municipal, or other local public office MUST ABSTAIN from voting on a measure which would inure to his or her special private gain or loss. Each elected or appointed local officer also MUST ABSTAIN from knowingly voting on a measure which would inure to the special gain or loss of a principal (other than a government agency) by whom he or she is retained (including the parent, subsidiary, or sibling organization of a principal by which he or she is retained); to the special private gain or loss of a relative; or to the special private gain or loss of a business associate. Commissioners of community redevelopment agencies (CRAs) under Sec. 163.356 or 163.357, F.S., and officers of independent special tax districts elected on a one-acre, one-vote basis are not prohibited from voting in that capacity.

For purposes of this law, a "relative" includes only the officer's father, mother, son, daughter, husband, wife, brother, sister, father-in-law, mother-in-law, son-in-law, and daughter-in-law. A "business associate" means any person or entity engaged in or carrying on a business enterprise with the officer as a partner, joint venturer, coowner of property, or corporate shareholder (where the shares of the corporation are not listed on any national or regional stock exchange).

* * * * * * * * * * * * * * * * *

ELECTED OFFICERS:

In addition to abstaining from voting in the situations described above, you must disclose the conflict:

PRIOR TO THE VOTE BEING TAKEN by publicly stating to the assembly the nature of your interest in the measure on which you are abstaining from voting; *and*

WITHIN 15 DAYS AFTER THE VOTE OCCURS by completing and filing this form with the person responsible for recording the minutes of the meeting, who should incorporate the form in the minutes.

* * * * * * * * * * * * * * * * *

APPOINTED OFFICERS:

Although you must abstain from voting in the situations described above, you are not prohibited by Section 112.3143 from otherwise participating in these matters. However, you must disclose the nature of the conflict before making any attempt to influence the decision, whether orally or in writing and whether made by you or at your direction.

IF YOU INTEND TO MAKE ANY ATTEMPT TO INFLUENCE THE DECISION PRIOR TO THE MEETING AT WHICH THE VOTE WILL BE TAKEN:

- You must complete and file this form (before making any attempt to influence the decision) with the person responsible for recording the minutes of the meeting, who will incorporate the form in the minutes. (Continued on page 2)

APPOINTED OFFICERS (continued)

- A copy of the form must be provided immediately to the other members of the agency.
- The form must be read publicly at the next meeting after the form is filed.

IF YOU MAKE NO ATTEMPT TO INFLUENCE THE DECISION EXCEPT BY DISCUSSION AT THE MEETING:

- You must disclose orally the nature of your conflict in the measure before participating.
- You must complete the form and file it within 15 days after the vote occurs with the person responsible for recording the minutes of the meeting, who must incorporate the form in the minutes. A copy of the form must be provided immediately to the other members of the agency, and the form must be read publicly at the next meeting after the form is filed.

DISCLOSURE OF LOCAL OFFICER'S INTEREST

I, Robert Mulhere, hereby disclose that on 12-4, 20 24:

(a) A measure came or will come before my agency which (check one or more)

___ inured to my special private gain or loss;

___ inured to the special gain or loss of my business associate, _____ ;

___ inured to the special gain or loss of my relative, _____ ;

___ inured to the special gain or loss of _____, by whom I am retained; or

___ inured to the special gain or loss of Bowman Consulting, LLC, which is the parent subsidiary, or sibling organization or subsidiary of a principal which has retained me.

(b) The measure before my agency and the nature of my conflicting interest in the measure is as follows:

If disclosure of specific information would violate confidentiality or privilege pursuant to law or rules governing attorneys, a public officer, who is also an attorney, may comply with the disclosure requirements of this section by disclosing the nature of the interest in such a way as to provide the public with notice of the conflict.

12-4-2024
Date Filed

Signature

NOTICE: UNDER PROVISIONS OF FLORIDA STATUTES §112.317, A FAILURE TO MAKE ANY REQUIRED DISCLOSURE CONSTITUTES GROUNDS FOR AND MAY BE PUNISHED BY ONE OR MORE OF THE FOLLOWING: IMPEACHMENT, REMOVAL OR SUSPENSION FROM OFFICE OR EMPLOYMENT, DEMOTION, REDUCTION IN SALARY, REPRIMAND, OR A CIVIL PENALTY NOT TO EXCEED $10,000.

Attendance Roster – Date: December 4, 2024

Development Services Advisory Committee

Must have (8) members for a quorum

Committee Members	
James Boughton:	**Norman Gentry:** (Excused)
Clay Brooker:	**Mark McLean:**
Jeffrey Curl:	**Chris Mitchell:**
Laura Spurgeon DeJohn:	**Robert Mulhere:**
Nicholas Kouloheras: Present	**Jeremy Sterk:**
John English: ***(Excused)***	**Mario Valle:**
Marco Espinar:	**William Varian:**
Blair Foley: Present	**Hannah Roberts:**

Attendance Roster – Date: December 4, 2024

Development Services Advisory Committee

Staff Members

James French
Department Head, GMCDD

Thomas Iandirmarino
Director, Code Enforcement

Jay Ahmad or designee
Director, Transportation Engineering



Matt McLean or designee
Director, Public Utilities

Michael Stark
Director, Operation & Regulatory Support

Jaime Cook
Director, Development Review

Michael Bosi
Director, Planning & Zoning

Christopher Mason
Director, Community Planning & Resiliency

Cormac Giblin
Director, Housing Policy and Economic Development

Diane Lynch, Management Analyst II
Staff Liaison, Operations & Regulatory Management

Heather Cartwright-Yilmaz, Management Analyst I
Staff Liaison, Operations & Regulatory Management

Other County Staff Presenting NOT listed above.

Name	Signature
Rey Torres Fuentes, Budget Analyst I, GMCD	

Attendance Roster – Date: December 4, 2024

Development Services Advisory Committee

Staff Members

James French Department Head, GMCDD	Designee: Jack McKenna
Thomas Iandirmarino Director, Code Enforcement	Present
Jay Ahmad or designee Director, Transportation Engineering	Present
Matt McLean or designee Director, Public Utilities	Claudia Vargas
Michael Stark Director, Operation & Regulatory Support	Present
Jaime Cook Director, Development Review	Present
Michael Bosi Director, Planning & Zoning	Present
Christopher Mason Director, Community Planning & Resiliency	Present
Cormac Giblin Director, Housing Policy and Economic Development	
Diane Lynch, Management Analyst II Staff Liaison, Operations & Regulatory Management	
Heather Cartwright-Yilmaz, Management Analyst I Staff Liaison, Operations & Regulatory Management	Present

Other County Staff Presenting NOT listed above.

Name	Signature
Rey Torres Fuentes, Budget Analyst I, GMCD	
Stephen Sarabia PUD Eng & Proj Mgmt	
Fred Clum designee for John McCormick	

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

November 20, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Development Services Advisory Committee
Collier County, Florida

December 4, 2024
3:00 p.m.

Notice is hereby given that the **Collier County Development Services Advisory Committee** will meet on **Wednesday, December 4,** at **3:00 p.m.** in Conference Room 609/610 of the Growth Management Community Development Department building, 2800 N. Horseshoe Drive, Naples, Florida.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item.

About the public meeting:
Two or more members of the Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future Board of County Commissioners meeting.

All interested parties are invited to attend and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380 as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Rey Torres at (239) 252-5727.

###

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

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November 25, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Forest Lakes Roadway & Drainage MSTU Advisory Committee
Collier County, Florida

December 3, 2024
10:00 a.m.

Notice is hereby given that the **Forest Lakes Roadway & Drainage Municipal Service Taxing Unit MSTU Advisory Committee** will meet on **Tuesday, December 3, 2024,** at **10:00 a.m.** in the Clubhouse at Forest Lakes, 1058 Forest Lakes Drive, Naples, Florida.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item.

The agenda will be available on the Collier County Government website at www.collierptne.com/mtsu/forest-lakes-roadway-drainage-advisory-commitee/

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Dan Schumacher at (239) 252-5775.

FOREST LAKES

ROADWAY AND DRAINAGE M.S.T.U. ADVISORY COMMITTEE

8300 Radio Road
Naples, FL 34104

AGENDA

December 3, 2024

I. CALL TO ORDER

II. ATTENDANCE

Advisory Committee:

- Greg Pollock – Chair (4/21/2026)
- Kathy Thomson – Vice Chair (4/21/2027)
- Patrick Bernal (4/21/2027)
- Marianne Fanning (4/21/2026)
- Jerry Norsic (4/21/2028)

County Staff:

- Brian Wells – Director, PTNE
- Dan Schumacher – MSTU Project Manager

Contractor(s):

- Aaron Gross – Ground Zero Landscaping

III. APPROVAL OF AGENDA

IV. APPROVAL OF MINUTES – NOVEMBER 5, 2024

V. CONTRACTOR REPORTS

A. Ground Zero Landscaping – Aaron Gross

VI. PROJECT MANAGERS REPORT – Dan Schumacher

A. BUDGET REPORT
B. Curb Replacements – Woodshire Ln
C. Shopping Center Screening – Hedge & Fence
D. Lake 9 Fountain Replacement

VII. ONGOING BUSINESS

A. Lake 15 Wall Replacement

VIII. NEW BUSINESS

A. Paving Contract
B. Quail Run Lakes – Rip-Rap Replenishment

IX. COMMITTEE MEMBER COMMENTS

X. PUBLIC COMMENTS

A. Woodshire Villa – Traffic Calming Options

XI. ADJOURNMENT

NEXT MEETING

JANUARY 7TH, 2025 - 10:00 AM
FOREST LAKES CONDO ASSOCIATION CLUBHOUSE
1058 FOREST LAKES DRIVE, NAPLES, FL 34112
(239) 261-5497

FOREST LAKES

ROADWAY AND DRAINAGE M.S.T.U. ADVISORY COMMITTEE

8300 Radio Road - Naples, FL 34104

MINUTES

NOVEMBER 5, 2024

I. CALL TO ORDER

Chair Pollock called the meeting to order at 10:00 A.M. Roll call was taken, and a quorum of five was present.

II. ATTENDANCE

Advisory Committee	Greg Pollock – Chair
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	Patrick Bernal
	Marianne Fanning
	Jerry Norsic
Staff	Brian Wells – Director, PTNE (Excused)
	Dan Schumacher – Project Manager
	Rosio Garcia – Operations Coordinator (Excused)
Contractors	Aaron Gross - Ground Zero Landscaping
	Wendy Warren - Premier Staffing (Transcription)
Public Attendance	Doug Burnham – Manager, Quail Run GC
	Paul Carletta - Resident
	John Guido - Resident
	Jack Hedenstrom – Resident
	Deborah Hestrap – Resident
	Harry Koploy – Resident
	Rick Korb – Resident
	Stacie Young – Resident

III. APPROVAL OF AGENDA

Mr. Bernal moved to approve the November 5, 2024, Agenda of the Forest Lakes Roadway and Drainage Advisory Committee MSTU. Second by Ms. Fanning. Carried unanimously 5 - 0.

IV. APPROVAL OF MINUTES – October 1, 2024

Mr. Bernal moved to approve the minutes of the October 1, 2024, Forest Lakes MSTU Advisory Committee meeting as presented. Second by Mr. Norsic. Carried unanimously 5 – 0.

V. CONTRACTOR REPORTS

A. Ground Zero Landscaping – Aaron Gross

Mr. Gross reported:

- Seasonal annuals will be planted this month.
- Shrubs damaged by Hurricane Milton were replaced.
- Perimeter tree canopies were lifted to improve sidewalk clearance.
- Fertilization is scheduled for November.
- Broken irrigation heads were replaced.

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- A determination will be made for lighting maintenance and lamp replacement responsibilities for the front entry sign.
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VI. PROJECT MANAGERS REPORT – Dan Schumacher

A. Budget Report

(*The full report is included in the distributed Agenda meeting packet, which is accessible at the link shown at the end of these Minutes).*
Forest Lakes MSTU Fund 1626 Budget for November 5, 2024, prepared October 30, 2024.

Mr. Schumacher provided an overview of the budget highlighting:

- Purchase Orders
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  2. FPL – electricity.
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     a. Incidentals – landscape materials and refurbishment.
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  j. Unexpended funds will carryforward to the FY-26 budget.

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  a. MSTU Tax Rate: 4.0 Mills (0.4%) to maintain MSTU Roadways and Stormwater Drainage within the taxing district.
  b. The millage rate of 4.00 per $1,000 of Ad Valorem taxable value will continue in FY-26 and subsequently reviewed again for FY-27.
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Mr. Schumacher noted:

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Mr. Schumacher reported:

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- Upon completion of a final design, approval by a licensed structural engineer will be obtained to proceed.
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- Upon review by the County Attorney's office (CAO), it was recommended the proposed cost sharing arrangement be submitted to the Board of County Commissioners (BCC) for approval.
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Mr. Schumacher noted:

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Mr. Schumacher will:

- Verify quantity and size of stone material required with Mr. Burnham.
- Scheduled the project for April / May 2025.

VIII. NEW BUSINESS

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- The *Asphalt Maintenance and Related Services* contract has gone out to bid and the Board of County Commissioners (BCC) is expected to award the contract in November.
- An RFQ for the Woodshire Lane paving project will be prepared upon award and issuance of the new County contract. Work is anticipated in the calendar year 2025.

IX. COMMITTEE MEMBER COMMENTS

Mr. Schumacher responded to comments:

<u>Riprap Data and Plats and Easements</u>

- LJA Engineering will incorporate recent survey data including riprap locations and easement/property lines into their plans.

- The report will enable an evaluation of the golf course swale areas which may need to be recontoured.

Pavement Maintenance

- Potholes on Forest Lakes Boulevard will be evaluated and remedial action taken, as necessary.

Lake 15 Vegetation

- Hydrilla, an invasive aquatic plant species, is present in Lake 15.
- An opinion from Mettauer Environmental regarding chemical treatment will be obtained.

X. PUBLIC COMMENTS

A. Woodshire Villas Traffic Calming Options

Mr. Schumacher presented a "Speed Range Report" generated from data collected by a Traffic Logix brand radar speed detection & display sign operating on St Andrews Blvd in the Lely Golf Estates MSTU. He noted the system which monitors speed and issues visual warnings to drivers has not acted as an enforcement mechanism to deter speeders on the roadway.

Mr. Schumacher *suggested residents in the community may wish to request installation of a rada sign from the Sheriff's Office or Road Maintenance Division, preferably including recorded speeds to assess the extent of speeding.*

XI. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned by the Chair at 11:05 A.M.

FOREST LAKES ROADWAY AND DRAINAGE MSTU ADVISORY COMMITTEE

_____

Greg Pollock, Chair

The Minutes were approved by the Committee on _____,2024 as presented ____, or as amended ____.

https://www.collierptne.com/forest-lakes-roadway-drainage-advisory-committee/

NEXT MEETING: **DECEMBER 3, 2024 - 10:00 A.M.**
FOREST LAKES CONDO ASSOCIATION CLUBHOUSE
NAPLES, FL 34105
(239) 261-5497

Forest Lakes M.S.T.U.
Fund 1626
December 3, 2024

	FY-25	Vendor	Item	PO#	Budget	Commitments	Expenditures	Available
1	MILLAGE COLLECTED & INTEREST		MSTU Revenues		$ (1,268,800.00)	$ -	$ (225,926.86)	$ (1,042,873.14)
2	CARRY FORWARD		Unexpended Prior Year Funds		$ (2,504,100.00)	$ -	$ 17.95	$ (2,504,117.95)
3	**ALL REVENUES**				**$ (3,772,900.00)**	**$ -**	**$ (225,908.91)**	**$ (3,546,991.09)**
4	ENG. FEES & OTHERS (631400)				$ 25,000.00	$ -	$ -	$ 25,000.00
5	INDIRECT COST REIMBURSE	Collier County	Indirect Cost	Direct Pay	$ 3,900.00	$ 3,900.00	$ -	$ -
		Ground Zero Landscaping	Non-Bid Schedule Items	4500233638		$ 2,280.00	$ 720.00	
		Ground Zero Landscaping	Landscape Incidentals	4500233638		$ 904.99	$ 5,095.01	
6	LANDSCAPE INCIDENTALS (634990)				$ 10,000.00	$ 3,184.99	$ 5,815.01	$ 1,000.00
		Ground Zero Landscaping	Grounds Maintenance	4500233638		$ 58,848.00	$ 7,152.00	
7	OTHER CONTRACTUAL (634999)				$ 100,000.00	$ 58,848.00	$ 7,152.00	$ 34,000.00
		Pavement Maintenance	Concrete Sidewalks, Curbs	4500233648		$ 25,000.00	$ -	
		Mettauer Environmental	Lakes Maintenance Maintenance	4500233643		$ 1,825.00	$ 1,150.00	
8	OTHER CONTRACTUAL (639990)				$ 140,600.00	$ 26,825.00	$ 1,150.00	$ 112,625.00
9	ELECTRICITY	FPL	Electricity	4700005161	$ 13,500.00	$ 11,687.69	$ 1,812.31	$ (0.00)
10	WATER & SEWER	City of Naples	Water - Reclaimed Irrigation	4700005192	$ 3,000.00	$ 2,704.20	$ 295.80	$ 0.00
11	INSURANCE GENERAL	Collier County	Insurance	Direct Pay	$ 600.00	$ 600.00	$ -	$ -
12	SPRINKLER SYSTEM	SiteOne	Irrigation Parts & Pumps	4500235293	$ 1,500.00	$ 3,500.00	$ -	$ (2,000.00)
13	MULCH				$ 1,000.00	$ -	$ -	$ 1,000.00
		Simmonds Electrical	Electrical Services	4500233651		$ 10,000.00	$ -	
14	LIGHTING MAINTENANCE (646451)				$ 6,000.00	$ 10,000.00	$ -	$ (4,000.00)
15	LICENSE & PERMITS				$ 2,000.00	$ -	$ -	$ 2,000.00
16		Premier Staffing	Transcription	4500234228		$ 2,770.00	$ 207.90	
17	OTHER MISCELLANEOUS (649990)				$ 3,000.00	$ 2,770.00	$ 207.90	$ 22.10
18	OFFICE SUPPLIES				$ 100.00	$ -	$ -	$ 100.00
19	COPYING CHARGES	J.M. Todd	Copier CPC	4500234730	$ 200.00	$ 123.63	$ 26.37	$ 50.00
20	FERT HERB CHEM				$ 500.00	$ -	$ -	$ 500.00
21	OTHER OPERATING				$ 300.00	$ -	$ -	$ 300.00
22	**OPERATING EXPENSES**				**$ 311,200.00**	**$ 124,143.51**	**$ 16,459.39**	**$ 170,597.10**
23	PTNE STAFF & DIVISION OVERHEAD				$ 72,600.00	$ -	$ -	$ 72,600.00
24	PROPERTY APPRAISER				$ 9,400.00	$ -	$ 2,209.51	$ 7,190.49
25	TAX COLLECTOR				$ 26,500.00	$ -	$ 6,382.14	$ 20,117.86
26	**COUNTY OVERHEAD**				**$ 108,500.00**	**$ -**	**$ 8,591.65**	**$ 99,908.35**
27	RESERVES FOR CAPITAL				$ 2,953,200.00	$ -	$ -	$ 2,953,200.00
28	RESERVES FOR ROADWAY REPAVING				$ 400,000.00	$ -	$ -	$ 400,000.00
29	**CAPITAL RESERVES**				**$ 3,353,200.00**	**$ -**	**$ -**	**$ 3,353,200.00**
30	**ALL EXPENSES**				**$ 3,772,900.00**	**$ 124,143.51**	**$ 25,051.04**	**$ 3,623,705.45**
31	**FY-25 BUDGET GRAND TOTAL**		= ALL REVENUES - ALL EXPENSES		**$ -**	**$ 124,143.51**	**$ (200,857.87)**	**$ 76,714.36**

Forest Lakes M.S.T.U.
Fund 1626
December 3, 2024

129,715,669	FY 13 Final Taxable Value	-2.4%		
129,977,881	FY 14 Final Taxable Value	0.2%		
140,171,072	FY 15 Final Taxable Value	7.8%		
152,711,783	FY 16 Final Taxable Value	8.9%		
165,722,702	FY 17 Final Taxable Value	8.5%		
190,428,196	FY 18 Final Taxable Value	14.9%		
202,132,375	FY 19 Final Taxable Value	6.1%		
210,299,015	FY 20 Final Taxable Value	4.0%		
219,999,549	FY 21 Final Taxable Value	4.6%		
227,701,198	FY 22 Final Taxable Value	3.5%		
257,799,765	FY 23 Final Taxable Value	13.2%	+7.0% Average	
294,456,887	FY 24 Final Taxable Value	14.2%		
$316,450,549	**FY 25 Gross Taxable Value**			
7.65%	**Adjustment FY 24 to FY 25**			
	FY 25 Gross MSTU Revenue	FY 24		
Millage	**4.0000**	4.0000	**4.0 mill cap**	
Tax Dollars	**$1,265,802**	$1,177,828	**$87,975**	**Increase**

Total Available Balance	**$**	**3,623,705.45**
Plus Commited And Not Spent	**$**	**124,143.51**
Estimated Cash	**$**	**3,747,848.96**

Prepared 10.30.2024 ZS

FOREST LAKES

ROADWAY AND DRAINAGE M.S.T.U. ADVISORY COMMITTEE

8300 Radio Road - Naples, FL 34104

MINUTES

NOVEMBER 5, 2024

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A. Woodshire Villas Traffic Calming Options

Mr. Schumacher presented a "Speed Range Report" generated from data collected by a Traffic Logix brand radar speed detection & display sign operating on St Andrews Blvd in the Lely Golf Estates MSTU. He noted the system which monitors speed and issues visual warnings to drivers has not acted as an enforcement mechanism to deter speeders on the roadway.

***Mr. Schumacher** suggested residents in the community may wish to request installation of a rada sign from the Sheriff's Office or Road Maintenance Division, preferably including recorded speeds to assess the extent of speeding.*

XI. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned by the Chair at 11:05 A.M.

FOREST LAKES ROADWAY AND DRAINAGE MSTU ADVISORY COMMITTEE

Greg Pollock

Greg Pollock, Chair

The Minutes were approved by the Committee on Dec 3 ,2024 as presented ____, or as amended ✓.

https://www.collierptne.com/forest-lakes-roadway-drainage-advisory-committee/

NEXT MEETING: **DECEMBER 3, 2024 - 10:00 A.M.**
FOREST LAKES CONDO ASSOCIATION CLUBHOUSE
NAPLES, FL 34105
(239) 261-5497

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

December 11, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Golden Gate Beautification MSTU Advisory Committee
Collier County, Florida

December 17, 2024
4:30 p.m.

Notice is hereby given that the **Golden Gate Beautification Municipal Service Taxing Unit (MSTU) Advisory Committee** will meet on **Tuesday, December 17, 2024,** at **4:30 p.m.** at the Golden Gate Community Center, 4701 Golden Gate Parkway, Naples, Florida.

The agenda will be available on the Collier County Government website at https://www.collierptne.com/mtsu/golden-gate-beautification-advisory-committee/

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Dan Schumacher at (239) 252-5775.

###

GOLDEN GATE BEAUTIFICATION M.S.T.U.

8300 Radio Road
Naples, FL 34104

DECEMBER 17, 2024

I. CALL TO ORDER

II. ATTENDANCE

Advisory Committee	Patricia Spencer – Chair (10/06/2025)
	Paula Rogan – Vice Chair (10/06/2027)
	Florence "Dusty" Holmes (10/06/2025)
	Ron Jefferson (10/06/2026)
	- Committee Vacancy -
Staff	Brian Wells – PTNE Director
	Dan Schumacher – Project Manager
Contractors	Mike McGee – Landscape Architect (McGee & Assoc)
	Armando Ysaguirre – Grounds Maintenance (A&M Property Maint.)
	Wendy Warren – Transcription (Premier)
	Sharon Johnson – Sign Renovation (Lykins-Signtek)

III. PLEDGE OF ALLEGIANCE

IV. APPROVAL OF AGENDA

V. APPROVAL OF MINUTES – NOVEMBER 19, 2024

VI. LANDSCAPE MAINTENANCE REPORT – A&M PROPERTY MAINTENANCE

VII. LANDSCAPE ARCHITECT'S REPORTS – M^CGEE & ASSOCIATES

- **A. SUNSHINE Boulevard**
- **B. CORONADO Parkway & HUNTER Boulevard**
- **C. TROPICANA Boulevard**

VIII. PROJECT MANAGER'S REPORT

- **A. BUDGET REPORT**
- **B. Community Welcome Sign Renovation – Golden Gate Pkwy (west)**
- **C. Holiday Decorations – Pkwy Flagpole & Community Sign**

IX. OLD BUSINESS

X. NEW BUSINESS

- **A. Irrigation Extension - Pkwy Median 2 & New Bridge over Santa Barbara Canal**

XI. PUBLIC COMMENTS

XII. ADJOURNMENT

Next Meeting:

January 21, 2024 – 4:30 PM
Golden Gate Community Center
4701 Golden Gate Parkway
Naples, FL 34116



GOLDEN GATE M.S.T.U. ADVISORY COMMITTEE

8300 Radio Road
Naples, FL 34104
November 19, 2024

MINUTES

I. CALL TO ORDER

The meeting was called to order at 4:30 P.M. by Chair Spencer. Attendance was called and a quorum of three was established.

II. ATTENDANCE

Advisory Committee	Patricia Spencer – Chair
	Paula Rogan – Vice Chair (Excused)
	Florence "Dusty" Holmes
	Ron Jefferson
	- Vacancy -
Staff	Brian Wells – PTNE Director (Excused)
	Dan Schumacher – Project Manager
Landscape	Mike McGee – Landscape Architect, McGee & Associates
	Armando Yzaguirre – Grounds Maintenance, A & M Property Maintenance
Others	Wendy Warren – Transcription, Premier

III. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was recited.

IV. APPROVAL OF AGENDA

Chair Spencer moved to approve the Agenda of the Golden Gate MSTU Advisory Committee as presented. Second by Mr. Jefferson. Carried unanimously 3 - 0.

V. APPROVAL OF MINUTES – October 15, 2024

Chair Spencer moved to approve the minutes of the October 15, 2024, Golden Gate MSTU Advisory Committee meeting as presented. Second by Ms. Holmes. Carried unanimously 3 - 0.

VI. Landscape Maintenance Report – A & M Property Maintenance

Mr. Yzaguirre reported:

- Routine landscape maintenance services have been performed on all MSTU roadways.
- Sunshine Blvd - The handle has sheared-off of an irrigation flow valve adjacent to the pump station. *A photograph of the box/part will be forwarded to Mr. Schumacher.*
- Tropicana Blvd - The irrigation flow valve by the pedestrian shelter near the south end will be turned off, as coverage is no longer needed in the vicinity at this time.
- Quotes have been submitted for numerous median plant replacements identified in the McGee & Assoc reports.

Comments

Mr. Schumacher reported:

Irrigation

Sunshine Boulevard Pump Station

- Mader Electric Motors replaced the control cabinet fan.
- Naples Electric Motor Works (NEMW) performed a diagnostic evaluation of the variable frequency drive needs to be replaced.
- The pump will be removed for a comprehensive analysis. The variable frequency drive will not be replaced if a problem with the pump is identified.
- Consideration will be given to a pump replacement due to age.
- Median plantings on Sunshine Boulevard will be installed on the resolution of the irrigation issues.

Fertilizer

Fertilizer will be ordered from Howard Fertilizer for pickup by A & M Property Maintenance. Application will be within one week of receipt by the vendor.

VII. LANDSCAPE ARCHITECT'S REPORT – McGee & Associates

Mr. McGee summarized the November 5, 2024, observation report.
(*The full report is included in the distributed Agenda meeting packet, which is accessible at the link shown at the end of these Minutes).*

A. Sunshine Boulevard
B. Coronado Parkway & Hunter Boulevard
C. Tropicana Boulevard

Comments

Mr. McGee reported:

- All Duckbill tree-stacking cables should be evaluated every three months for repositioning.
- Plant refurbishment of Coronado Parkway and Hunter and Tropicana Boulevard medians is recommended.
- Fertilizer is recommended for all planting beds, and mulch (County Brown) applied upon completion of plant replacements.
- Irrigation upgrades and water coverage verification should be done in conjunction with new plant installations.
- Multiple Lumec-brand light pole fixtures on roadway medians have corroded metal edges and hazy and/or dirty lenses which reduce light levels. Recommend all light poles be reviewed for cleaning or replacement as needed.

Comments

Mr. Schumacher reported:

- Quotes from A & M Property Management for replacement plants for Coronado Parkway and Hunter & Tropicana Boulevards will be reviewed for approval.
- Median plantings on Sunshine Boulevard will be addressed upon resolution of current irrigation issues.
- Tree Scaping will be notified for Palm & Hardwood pruning on Tropicana Boulevard and then proceed to the other roadways.
- Replacement of the eleven (11) decorative light poles on Tropicana Blvd medains will be evaluated, with quotes to be solicited from manufacturers Lumec and Sternberg.

VIII. PROJECT MANAGERS REPORT

Mr. Schumacher reported:

A. Budget Report

(*The full report is included in the distributed Agenda meeting packet, which is accessible at the link shown at the end of these Minutes).*

Golden Gate MSTU Fund 1621 Budget for November 19, 2024, prepared November 13, 2024.

- Purchase Orders
  1. FPL - electricity.
  2. A & M Property Maintenance – ground maintenance.
     a. Incidentals – landscape plants, materials, and refurbishment.
     b. Maintenance – regular landscape & irrigation maintenance.
  3. Howard Fertilizer – fertilizer.
  4. Lykins-Signtek – parkway "Welcome Sign."
  5. McGee & Associates – landscape architectural services.
  6. Naples Christmas Lighting – holiday decorations.
  7. Naples Electric Motor Works (NEMW) – pump station maintenance.
  8. Premier Staffing – transcription services.
  9. Simmonds Electrical – electrical maintenance and repairs.
  10. SiteOne Landscape Supply – irrigation parts & components.
  11. Southeast Spreading – mulch.
  13. Tree Scaping of Naples – palm & tree pruning and removal.

- Budget Summary
  1. Line 1, Ad Valorem Tax Collections & Interest – Of the $743,200 budgeted, $6,726 has been collected and $736,473 remains to be collected.
  2. Line 2, Carry Forward – Unspent funds accumulated from previous fiscal years and retained within the MSTU, in the amount of $2,006,206.
  3. Line 3, All Revenues – Of the $2,749,406 budgeted, $6,726 has been collected leaving an available balance of $2,742,680 (the sum of lines 1 and 2) minus Expenditures.
  4. Line 21, Operating Expense – Of $384,906 budgeted, $222,674 is committed on MSTU-issued Purchase Orders and $14,614 has been spent, leaving the remainder of $147,617 available within budget for additional operating expenses as needed.

5. Line 25, County Overhead – Of the $87,300 budgeted, $1,496 has been transferred, and a balance of $85,803 remains to be assessed (PTNE Staff & support, Property Appraiser, & Tax Collector).
6. Line 27, Capital Projects – A balance of $2,277,200 remains for improvement projects.
7. Line 27, All Expenses – Of $2,749,406 budgeted, $222,674 is committed to existing Purchase Orders, and $16,111 in total expenditures, leaving a remainder of $2,510,620 available for MSTU expenditures.

- General
  a. MSTU Tax Rate: 0.5000 Mills (0.05%) for beautification, improvements, and maintenance within the taxing district is reviewed annually.
  b. Funds not spent in FY-25 will be carried forward into FY-26.
  c. Tax millage and interest collected by the Golden Gate Beautification MSTU may only be utilized by the MSTU and within the MSTU district boundary.

Mr. Schumacher noted:

- A separate Purchase Order will be issued to NEMW for a variable frequency drive if replacement is required.
- Simmonds Electrical replaced the photocell on a decorative light on Sunshine Boulevard. The pedestal base will be stabilized or replaced.
- The quantity of bags required to mulch the medians will be verified. Southeast Spreading Purchase Order funds are sufficient to cover the cost.
- The proposed irrigation and landscape project on Golden Gate Parkway will be funded from the Capital Projects category.
- The Office of Budget Management (OMB) will be consulted regarding the addition of a note in the FY-26 MSTU budget to identify a $150,000 amount in the Capital Improvements category dedicated to funding expenses incurred for disaster/catastrophic events, perhaps per MSTU-maintained roadway.
- The *Asset Management Plan* report to estimate life expectancies of MSTU assets and corresponding expenditure projections to fund maintenance was updated during the planning process.
- Uncommitted funds available within budget are eligible for transfer to other categories upon approval by the Committee.
- The Ad Valorem taxable value increased 8.94% for fiscal year 2025 over 2024 generating additional revenue of $129,275.

B. Community Welcome Sign Renovation – Golden Gate Parkway (west)

Mr. Schumacher reported:

- The Committee approved the sign design at the October 15, 2024 meeting.
- The sign and landscape light will be installed in January 2025.

C. Holiday Decorations - 2024

Mr. Schumacher reported:

Naples Christmas Lighting, a division of Sight N Sound, will install the holiday lighting in the Right-of-Way (ROW) on Golden Parkway, at the intersection of Santa Barbara Boulevard, prior to November 28th.

IX. OLD BUSINESS

None

X. NEW BUSINESS

A. Irrigation Extension - Pkwy Median 2 & New Bridge over Santa Barabara Canal

Mr. Schumacher reported:

The Road Maintenance Division is considering restoration of the irrigation and landscaping at the intersection of Santa Barbara Blvd. and Golden Gate Parkway, west of the sign.

- The original irrigation lateral pipes were previously severed and capped, and irrigation heads disconnected during a County turn lane project in the area west of the sign and the Road Maintenance Division proposed re-establishment and extension of the irrigation system in the area impacted.
- The irrigation line installation labor segment of the project is planned to go out for bid, with anticipated installation in the first or second quarter of FY-25.
- The County will supply parts for the project.
- Plants will be selected upon project completion for installation in Spring 2025.
- The MSTU has offered to share the cost of the project with the County.
- The Road Maintenance Division will be responsible for maintaining the subject improvements.

***Mr. Schumacher** will meet with Pam Lulich, Landscape Operations Manager, to review the project.*

XI. PUBLIC AND COMMITTEE COMMENTS

Mr. Schumacher responded to inquiries:

- A new "Welcome to Golden Gate" community sign is on order.
- Deficiencies within the community, such as holiday lights year-round, and residences and abandoned buildings in need of maintenance should be addressed to Code Enforcement.
- Issues can be sent to ***https://goldengateisgreat.com*** for submission to Code Enforcement.

XII. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned by the Chair at 5:14 P.M.

GOLDEN GATE MSTU ADVISORY COMMITTEE

_____

Patricia Spencer, Chair

The Minutes were approved by the Committee on _____,2024 as presented _____ or as amended ____.

GoldenGateBeautificationMSTU/CollierPTNE

NEXT MEETING: **DECEMBER 17, 2024 – 4:30 PM**
GOLDEN GATE COMMUNITY CENTER
4701 GOLDEN GATE PARKWAY
NAPLES, FL 34116

McGee & Associates
Landscape Architecture

Project: GOLDEN GATE BEAUTIFICATION, M.S.T.U.
Location: Sunshine Blvd.
Project Manager: Dan Schumacher, Collier County Public Services Department, Public Transportation & Neighborhood Enhancements Division
Consultant: McGee & Associates
Landscape Contractor: A & M Property Management
Observation Date: 12/3/2024

Landscape Architect Report: December 2024
Consultant's Representative: Michael A. McGee, rla, isa
Contractor's Representative: Armando Yzaguirre
Report Date: 12/3/2024
Report No.: 2 (FY-25)

AC - Indicates major items recommended to be discussed by Advisory Committee **S** - Indicates items recommended to be addressed by staff, **C** - Indicates items recommended to be addressed by Contractor

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					MONTHLY ADDRESSED	Yellow - Items recommended to be addressed as soon as possible or renovation recommendations generally based upon vehicular or storm damage.
All locations		X	X		All areas are heavily water stressed due to irrigation system not functioning. All replacement plantings must be put on hold.	
		X	X	2	All Duckbill tree staking system must be reviewed every three months to determine if cables need to be loosened, rubber straps repositioned and make sure the rubber straps are not allowed to be grown over by tree bark in the tree branch joints.	
Median #1		X	X	10	North End: The Blueberry flax lily bed has lost over 50% of the plants. It is recommended at this point to remove the remaining flax lilies and renovate the bed with a different plant. Install (52) 2 gal., Zamia pumila – Coontie on 3 ft. centers 3 ft. off tree trunks, back of curbs and turf edges.	
		X	X	12	North end: Previous replacement Sabal palm has died and needs to be replaced. Match existing. This type of palm will require (2) bubblers and additional hand watering to survive its planting.	
		X	X	13	North end: (13) Juniper parsonii 3 gal. that need to be replanted as replacements.	
		X	X	13	Sand cordgrass bed: The bed has (6) plants are dead or missing and need to be replaced with 3 gal. size Sand cordgrass plants.	
		X	X	13	South end: (9) Juniper replacement plants have declined and/or dead due to sever water stress. Replant with 3 gal. Juniper parsonii.	
		X	X	13	Middle Bed: Yellow African iris plants (4) plant declined and/or dead. Replant with 1 gal. Yellow African iris.	
Median #2		X		7	At address 2224: A previously planted Tabebuia tree in the turf area at some point was removed and not replaced. It is recommended to install a Floss Silk tree. (Ceiba Speciosa 11'-13' Ht., 3.5 Cal., 5'-6' Spr., 36" dia. B&B or 65 Gal. size container.	
		X	X	13	At address 2224 - 2236: Tabebuia tree Duckbill cable support has been cut with what appears to be the pruning device. Repair and/or replace supports.	
		X	X	13	South end: Area of previous auto damaged Juniper need to be renovated. Remove damaged or dead plants and install double row of (26) 3 gal. Juniper parsoni.	
		X	X	13	At address 2248: (10) renovation Yellow African Iris have declined and need to be replaced. Remove volunteer Blueberry Flax plants in Iris.	M&A 5/7/24: Remove volunteer Firangi Pangi tree in Iris bed.
		X	X	13	At address 2184: (1) Tabebuia Ipe has been removed. It is recommended to replant with the same Tabebuia Ipe tree. 11'-13' Ht., 3.5 Cal., 5'-6' Spr., 36" dia. B&B or 65 Gal. size container.	M&A 3/7/23: The tree planted at this location was a Yellow/Silver Trumpet tree and not an Ipe or Purple trumpet tree. Removal & replacement is recommended based upon trunk damage and the inability of this type of tree to become well rooted. In addition, the metal center support poles has

GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Location: Sunshine Blvd.** **Report Date:** 12/3/2024 **Report No.:** 2 (FY25)

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
						not been removed after the installation of the Duckbill staking system. M&A 9/5/23: The tree has been blown over by the recent winds. The north duckbill anchor was installed about 12" not installed to its recommended 24" depth and as a result the tree pulled the anchor up.
		X	X	13	At address 2184: The Bougainvillea silhouettes are off color and are stunted in growth. Additional fertilization is highly recommended. Mulch should be pulled away from being in contact with the plant trunks.	M&A 2/8/23: (6) plants have declined and/or missing and need to be replaced. 3 gal. size. M&A 4/4/23: Plant count is now up to (10) plants and area is dry.
		X	X	13	At address 2160: (1) Tabebuia tree trunk has been girdled by staking straps. The girdling location has healed over but will remain a weak point for the main trunk. At this location an included bark branch union is present so reduce of this branch is recommended to reduce weight of the branch.	
		X	X	13	North End at 2052: Juniper parsoni have large amount of dead and brown foliage which appears to be result of insect (e.g. spider mites) or fungal disease. Contractor should review to treat issue and prune out dead foliage.	M&A 5/3/22: Contractor determined Juniper had a Blight disease and bed has been treated. Approx. 39-40 plants involved. M&A 12/6/22 (14) 3 gal. Juniper parsoni needed to finish replacements.
Median #3 - Pump Station Location- 5 hp, 6" well, VFD		X	X	7	At address 1944: Install (2) Dwarf Bougainvillea 'Helen Johnson' 3 gal. size.	
		X	X	13	At address 1945: South Trumpet tree Duckbill staking cable has been cut. It could be vandalism or be from the hedge trimmer because the cable extended into the adjacent Bougainvillea shrubs. Cable needs to be repaired or replaced.	M&A 3/5/24: The cut Duckbill cable was reconnected, but the adjusting turnbuckle was removed. The turnbuckles are the most important part of the Duckbill bracing systems.
Median #4		X	X		No major issues observed.	
Median #5		X	X	13	(20+/-) renovation Blueberry flax plants have declined and need to be replaced. Issue appears to irrigation coverage. Install (20) 1 gal. Blueberry flax.	M&A 6/4/24: Based upon additional plants dying it is recommended the remaining Blueberry Flax lilies be removed and the area planted with Zamia. Install (25) 2 gal., Zamia pumila – Coontie on 3 ft. centers 3 ft. off tree trunks, back of curbs and turf edges.
Median #6		X	X	2	At address 1740-1730: One Golden Tabebuia tree, flagged with white tape, has sever trunk issues due to unhealed previous pruning cuts and removal and replacement is recommended. Replace with Pink Trumpet tree, Handroanthus impetiginosus 11'-13' Ht., 3.5 Cal., 5'-6' Spr., 36" dia. B&B or 65 Gal. size container.	
		X	X	6	At address 1750 & 1760: ~~Prune back existing Bougainvillea to a 24 inch diameter.~~ Install (8) Dwarf Bougainvillea 'Helen Johnson' 3 gal. size.	
		X	X	12	At address 1720: Water stress has caused the decline of (~~13-15~~ 20) Iris plants that will need to be replaced with 3 gal. Yellow African iris plants.	M&A 6/4/24: Remove volunteer Blueberry Flax lilies.
		X	X	22	At address 1740: The Bougainvillea silhouettes are off color and are stunted in growth. Plants should be reviewed for irrigation coverage and additional fertilization. Mulch should be pulled away from being in contact with the plant trunks.	M&A 4/4/23: (~~26-30~~ 37) Bougainvillea plants have declined and/or dead. Recommended to remove all and replant bed with 3 gal. Bougainvillea 'Silhouettes'
18th Place SW Median	X	X			Recommendation: Remove all surface vegetation (Bougainvillea shrubs) and lower grade 3-inches. Install (7) 3 gal., Aechmea "Raspberry Bromeliad and mulch entire median with Rice Rock mulch to include filter cloth below Rice Rock mulch.	M&A 6/4/24: With rainy season approaching it is recommended preparations begin to renovate median as listed. M&A 11/5/24 with rainy season ending any replanting's will require truck watering at planting and for a period of establishment.
18th Ave. S.W. Median	X	X			Recommendation: Remove all surface vegetation and lower grade 3-inches. Install (8) 3	M&A 6/4/24: With rainy season approaching it is

McGee & Associates
Landscape Architecture

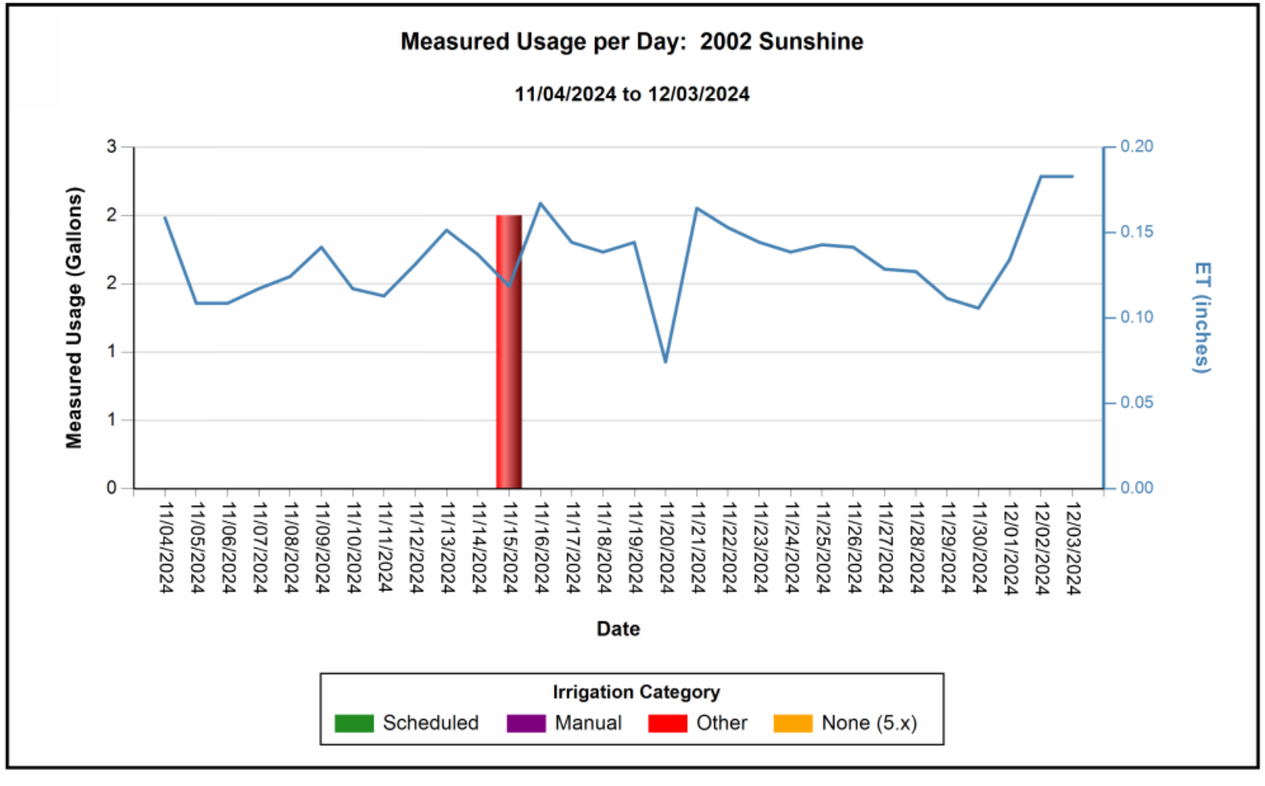
GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Location: Sunshine Blvd.** **Report Date:** 12/3/2024 **Report No.:** 2 (FY25)

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					gal., Aechmea "Raspberry Bromeliad and mulch entire median with Rice Rock mulch to include filter cloth below Rice Rock mulch.	recommended preparations begin to renovate median as listed. M&A 11/5/24 with rainy season ending any replanting's will require truck watering at planting and for a period of establishment.
					QUARTERLY ADDRESSED	
Accent/Street Lighting	X				It is recommended all lights be reviewed for cleaning or replacements if needed. Some fixtures appear to have hazy and/or dirty lenses which reduces light levels.	
Lighting Electric Meters & Irrigation Controller Electric Source Locations					Lighting Electric Meter 2271 Sunshine Blvd., 1 SUN, Alley off 23rd Ave. SW Lighting Electric Meter & Irrigation Controller Electric, 1995 Sunshine Blvd., 2 SUN, Alley off 20th PL. SW Lighting Electric Meter 4642 18th Pl. SW, 3 SUN, North R/W	
Fertilizations:			X		Refer to schedule.	
Irrigation:		X	X		Previous month water use total per WeatherTrak controller estimate 2 gallons. The irrigation system is not functioning. All areas are heavily water stressed.	

Collier County
Site: Golden Gate MTSU
09013515 - 2002 Sunshine

Single Controller
Measured Usage History Report

WeatherTRAK



McGee & Associates
Landscape Architecture

Project: GOLDEN GATE BEAUTIFICATION, M.S.T.U.
Location: Coronado Parkway & Hunter Blvd.
Project Manager: Dan Schumacher, Collier County Public Services Department, Public Transportation & Neighborhood Enhancements Division
Consultant: McGee & Associates
Landscape Contractor: A & M Property Management
Observation Date: 12/3/2024

Landscape Architect Report: December 2024
Consultant's Representative: Michael A. McGee, rla, isa
Contractor's Representative: Armando Yzaguirre
Report Date: 12/3/2024
Report No.: 2 (FY-25)

AC - Indicates major items recommended to be discussed by Advisory Committee **S** - Indicates items recommended to be addressed by staff, **C** - Indicates items recommended to be addressed by Contractor

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					MONTHLY ADDRESSED	Yellow - Items recommended to be addressed as soon as possible or renovation recommendations generally based upon vehicular or storm damage. Red – Items if not immediately addressed will result in multiple plant loss.
Coronado Pkwy. - All locations		X	X		A general observation of the existing perennial peanut plantings reveals that many of the beds are filling back in based upon the current contractor maintenance efforts. Some of the recommended renovation areas over to Liriope may not be necessary. Before replacements begin it is recommended an additional review be performed to determine the replacement amounts needed at this time.	
		X	X		All Alexander palms need to be reviewed to make sure the bubblers are positioned 12-inches off edge of trunks and pinned to the ground with galvanized u-shaped pins.	
		X	X		In all African iris plantings between Alexander palms in narrow width medians the irrigation heads should be reviewed and replaced as follows: Install Rainbird model 1812 16" ht. pop-up spray bodies with 1800-EXT 6" ht. extension and a 15CST nozzle on top of a 12" Sch. 80 riser. Strap sprinkler head to 36" length epoxy coated #5 rebar with stainless steel adjustable banding. Install rebar 12" into ground. After sprinklers have been installed tip prune tops of Iris plants direct adjacent to sprinkler heads to ensure maximum spray pattern.	
		X	X		It is recommended that all Perennial peanut plantings and replacement areas that are to remain shall have an application of 0-0-22-22S-11mg fertilizer and Legume Soil inoculant at 10 oz. per 100 s.f.	
	X	X			Recommended all paver areas be pressure washed and treated with "Wet & Forget" mold treatment spray.	
		X			Recommend reviewing all valve locations for green reflective markers that are missing.	
Median #1- Pavers		X			Pressure cleaning recommended	
Median #2- Pavers		X			Pressure cleaning recommended	
Median #3		X	X	9	Review palm tree braces to make sure they are not deforming the trunks.	
		X	X	8	Middle area needs (37) 1 gal. Perennial peanut "Golden Glory' replacements	
Median #4		X	X	7	(7) Irrigation heads in African iris plants need to be addressed as listed above under all locations.	
		X	X	13	East median end needs (38) 1 gal. Perennial peanut "Golden Glory' replacements	
		X	X	13	West median end needs (30) 1 gal. Perennial peanut "Golden Glory' replacements	
		X	X	13	(1) Iris replacement was installed but it was the wrong type of Iris. This bed is Yellow African Iris and not Yellow Flag Iris	
Median #5		X	X	13	Median needs (35) 1 gal. Perennial peanut "Golden Glory' replacements	M&A 5/7/24: Areas contains weeds.
Median #6		X	X	7	(4) Irrigation heads in African iris plants need to be addressed as listed above under all	

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					locations.	
		X	X	13	(16) Yellow African Iris replacements are recommended, 3 gal. size plants.	M&A 5/7/24: Areas contains weeds.
Median #7		X		6	Remove and herbicide volunteer Strangler Fig vine in Sabal palm trunk.	
Median #8		X			No major issues observed	
Median #9 - Pavers		X			Pressure cleaning recommended	
Median #10		X	X	3	At address 5237 & 5254: Remove volunteer Scheffleras growing in palm trunks.	
		X	X	12	At address 5327 & 5273: (4) Paurotis palm clumps need to be pruned for thinning and removal of dead or declining stems.	
		X	X	12	On the west end areas of Perennial Peanut have declined and are missing plants. Install (105) 1 gal. size 'Golden Glory" Perennial peanuts. Review irrigation coverage.	
		X	X	12	At address 5389 – 5401: Yellow African Iris bed, Review irrigation coverage issue, (20) plants are in decline or missing. Replant with 3 gal. size.	
Median #11 Bridge		X	X	12	East end: Needs (13) 1 gal. Perennial peanut "Golden Glory' replacements	
Median #12		X	X	3	Middle of median: Alexander palm has severe trunk fugus damage due to a previous wound. It is recommended the palm be replaced. Excavate palm and replant with (1) 10 ft. clear trunk Alexander palm.	
		X	X	12	West end: Needs (13) 1 gal. Perennial peanut "Golden Glory' replacements	
Median #13		X	X	12	Median: Needs (45) 1 gal. Society garlic replacements	
Median #14		X	X	12	Repair 12 L.F. of paver border, remove & replace soldier course edge to include compacted base and mortar edging. Base shall extend 12-inches beyond current edge of pavers. Remove all remaining Blueberry flax lilies and mulch. Review irrigation for repairs and proper coverage. Adjust irrigation heads to proper heights to receive a 4-inch layer (10 c.y.+/-) of clean native topsoil. Replant median with a double staggered rows of (92) Liriope 'Big Blue', 18" o.c. in 1 gal. size and re-mulch median with a 3-inch layer of mulch. New plantings are to have offsets as follows: 3-feet of palm trunks, 2-feet from back of curb & 3-feet off paver edges.	
Hunter Blvd. - All locations		X	X	2	A general observation of the existing perennial peanut plantings reveals that many of the beds are filling back in based upon the current contractor maintenance efforts. Some of the recommended renovation areas over to Liriope may not be necessary. Before replacements begin it is recommended an additional review be performed to determine replacement amounts needed at this time.	
		X	X		All locations with perennial peanut planting shall have a Legume Soil Inoculant product applied as soon as possible, as well as an application of 0-0-22-22S-11mg fertilizer.	
		X	X	2	Median #7: In all African iris plantings between Alexander palms in narrow width medians the irrigation heads should be reviewed and replaced as follows: Install Rainbird model 1812 16" ht. pop-up spray bodies with 1800-EXT 6" ht. extension and a 15CST nozzle on top of a 12" Sch. 80 riser. Strap sprinkler head to 36" length epoxy coated #5 rebar with stainless steel adjustable banding. Install rebar 12" into ground. After sprinklers have been installed tip prune tops of Iris plants direct adjacent to sprinkler heads to ensure maximum spray pattern.	
	X	X			Recommended all paver areas be pressure washed and treated with "Wet & Forget" mold treatment spray.	
		X	X	2	Mulch needed for medians 1, 2, 3, 4, 5, 6 & eastern half of median 8.	M&A 10-1-24: Recommended mulch be placed in November following rainy and hurricane season. M&A

McGee & Associates
Landscape Architecture

GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Location:** Coronado Pkwy. & Hunter Blvd. **Report Date:** 12/3/2024 **Report No.:** 2 (FY25)

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
						12/3/24: All areas should be mulched.
Median #1				13	The south end Alexander palm has been hit for the second or third time and it is recommended not to replace. Fill depression and plant (2) 3 gal. Juniper parsonii. Cap bubblers at the location.	
Median #2		**X**	**X**	13	Remove existing Big Rose crown of thorn and finish grade for a uniform profile. Replant Big Rose area as follows with six staggered rows of (92) Liriope 'Big Blue', 18" o.c. in 1 gal. size and re-mulch median with a 3-inch layer of mulch. New plantings are to have offsets as follows: 3-feet of palm trunks, 2-feet from back of curb & 3-feet off paver edges.	
Median #3		**X**	**X**	9	Perennial peanuts have declined except for the very end. Recommend raking up dead stems of perennial peanut. Between palms replant areas with two centerline staggered rows of (27) Liriope 'Big Blue', 18" o.c. in 1 gal. size, Triangular area at north end of palms install 4-5 staggered rows of (115) Liriope 'Big Blue', 18" o.c. in 1 gal. size. Total plant count (142). Re-mulch planning areas with a 3-inch layer of mulch. New plantings are to have offsets as follows: 4-feet of palm trunks, light poles & shrubs, Outside of narrow median areas maintain 3-feet from back of curb.	
		X	**X**	13	Median needs action as follows: Remove volunteer Crape myrtle sprouts. South end: Needs (23) 1 gal. Perennial peanut "Golden Glory' replacements and (25) 3 gal. Bougainvillea Ms Alice shrubs. North end: needs (5) 3 gal. Bougainvillea Silhouette shrubs	
		X	**X**	13	First Alexander palm on south end: Palm is dead and needs to be removed. Excavate palm and replant with (1) 10 ft. clear trunk Alexander palm.	
Median #4		**X**	**X**	3	At address 2288: The 4th Alexander palm from the north end is in severe decline. No Gamoderma fungus conks were observed. Recommended to remove palm and then observe remaining palms before replacement.	
		X	**X**	3	North end: The perennial peanut has dead areas because of Brown spot fungus, snails and insects. It is recommended due to these combined issues that the bed be pruned down to a three-inch height and the built-up leaf debris be removed and then the bed treated for all the above listed issues. Copper-based fungicidal soap, Insecticidal soap and Snail bait.	
		X	**X**	12	South end Golden Glory perennial peanut area: Spray with herbicide to remove remaining peanut plants. Rake area to remove peanut stems and then replant with six ~~eight~~ staggered rows of (~~290~~ 217) Liriope 'Big Blue', 18" o.c. in 1 gal. size and re-mulch median with a 3-inch layer of mulch. New plantings are to have offsets as follows: 3-feet of palm trunks, 3-feet from back of curb & 3-feet off paver edges.	
Median #5 **Pump station –** Median #5, 7.5 hp, 8" well feeds Hunter & Coronado, Hydropoint Controller in median		**X**	**X**	11	South end: Recommend remaining perennial peanut be spray to remove and then plant median end with six staggered rows of (130) Liriope 'Big Blue', 18" o.c. in 1 gal. size and re-mulch median with a 3-inch layer of mulch. New plantings are to have offsets as follows: 4-feet of tree trunk, saw palmetto &irrigation boxes, 3-feet from back of curb & 3-feet off paver edges.	
		X	**X**	13	Median north end: Needs (40) 1 gal. Perennial peanut "Golden Glory' replacements	
Median #6		**X**	**X**	7	At address 2101: Remove volunteer Oyster plants at valve boxes.	
		X	**X**	13	West end at address 2007: Needs (80) 1 gal. Society garlic replacements	
		X	**X**	13	Median: (8) Paurotis palm clumps need to be pruned for thinning and removal of declining	

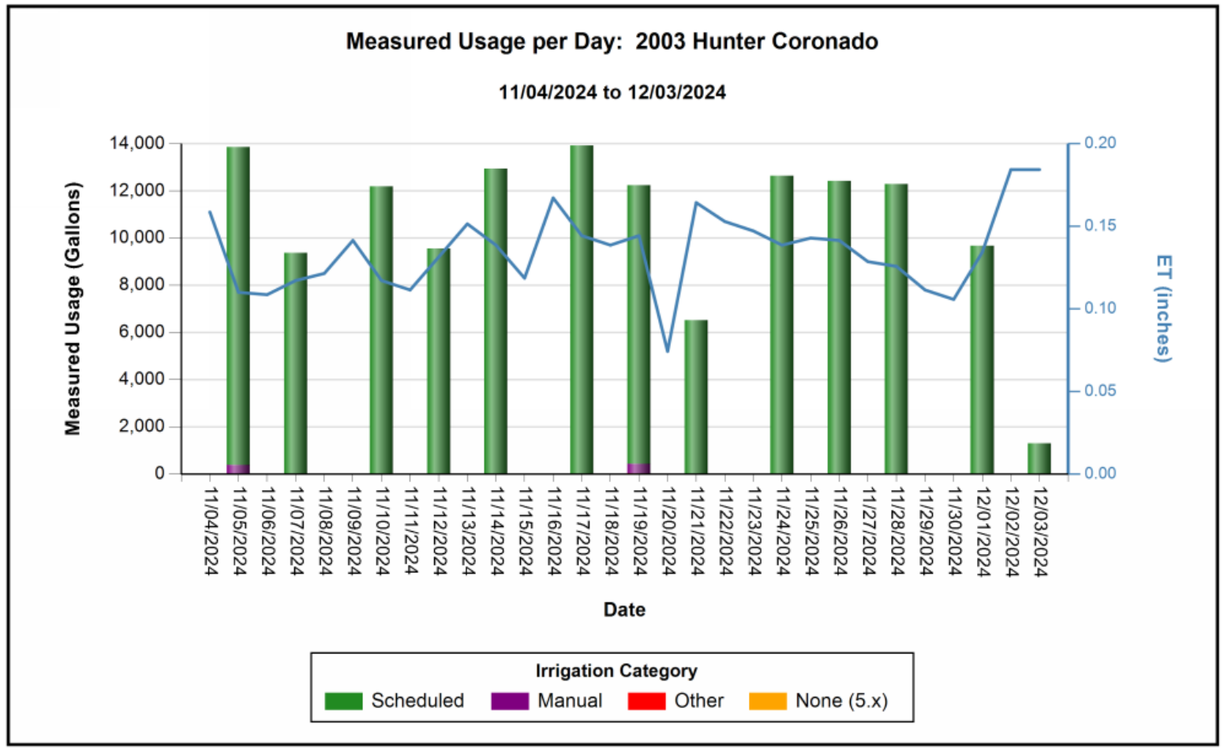
LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					stems.	
		X	X		At address 2018: (1) Jatropha tree is missing. Replant with 6 ft. overall ht. multi-stem plant.	
Median #7		X	X	7	(7) Irrigation heads in African iris plants need to be addressed as listed above under all locations.	
		X	X	12	Median: Needs (9) Yellow African iris 3 gal. replacements	
Median #8		X	X	8	At address 5201: Second Alexander palm from east end has broken head and needs replacement. Excavate palm and replant with (1) 10 ft. clear trunk Alexander palm.	
		X	X	9	At address 5290 & 5300: Paurotis palm clumps need dead fronds and stalks removed, as well as thinning. Review for disease and treat if needed.	
		X	X	13	West end: Remove dead foliage from within Blueberry flax plants.	
		X	X	13	At address 4201-5241: Needs (175) 1 gal. Perennial peanut “Golden Glory’ replacements	
		X	X	13	At address 5412-5433: Remove remaining Blueberry flax and replant area with two double staggered rows of (139) Liriope ‘Big Blue’, 18” o.c. in 1 gal. size, New plantings are to have offsets as follows: 3-feet of palm trunks, 2-feet from back of curb & 3-feet off paver edges.	
		X	X	13	At address 5412-5340: Replant missing Blueberry Flax lilies, (40) 3 gal. size plants. Review irrigation coverage before planting.	
		X	X	13	At address 5360-5390: Needs (12) Yellow African iris 3 gal. replacements.	
Median #9		X	X	13	Median: Needs (30) Yellow African Iris 3 gal. replacements. Review irrigation coverage before replanting.	M&A 12/3/24: The irrigation coverage is not occurring. Iris plants are blocking spray heads. It is recommended that immediately all Iris plants causing coverage blockage be flush cut to grade and 18-inches off the heads. Recommended long term solution is to remove plants causing blockage and move all heads to within one foot off back of curbing and increase zone pressure.
Median #10		X	X	13	Apply Legume Soil Inoculant product as soon as possible, as well as an application of 0-0-22-22S-11mg fertilizer.	.
Median #11		X	X	13	Median: Needs (85) Society garlic plants 1 gal. replacements	
Median #12		X	X	13	Median: Repair 12 L.F. of paver border, remove & replace soldier course edge to include compacted base and mortar edging. Base shall extend 12-inches beyond current edge of pavers. Remove all remaining Blueberry flax lilies and mulch. Review irrigation for repairs and proper coverage. Replant median with a double staggered rows of (87) Liriope ‘Big Blue’, 18” o.c. in 1 gal. size and re-mulch median with a 3-inch layer of mulch. New plantings are to have offsets as follows: 3-feet of palm trunks, 2-feet from back of curb & 3-feet off paver edges.	
					QUARTERLY ADDRESSED	
Fertilization:		X	X		All locations with perennial peanut planting shall have a Legume Soil Inoculant product applied as soon as possible, as well as an application of 0-0-22-22S-11mg fertilizer.	.
		X	X		Refer to FY23-24 recommended schedule.	
General Irrigation:					Previous month water use total per WeatherTrak controller estimate 138,832 gallons.	

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS

Collier County
Site: Golden Gate MTSU
09105378 - 2003 Hunter Coronado

Single Controller
Measured Usage History Report

WeatherTRAK



McGee & Associates

Landscape Architecture

Project: GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Landscape Architect Report:** December 2024
Location: Tropicana Blvd.
Project Manager: Dan Schumacher, Collier County Public Services Department, Public Transportation & Neighborhood Enhancements Division
Consultant: McGee & Associates **Consultant's Representative:** Michael A. McGee, rla, isa
Landscape Contractor: A & M Property Management **Contractor's Representative:** Armando Yzaguirre
Observation Date: 12/3/2024 **Report Date:** 12/3/2024 **Report No.:** 2 (FY-25)

AC - Indicates major items recommended to be discussed by Advisory Committee **S** - Indicates items recommended to be addressed by staff, **C** - Indicates items recommended to be addressed by Contractor.

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					MONTHLY ADDRESSED	Yellow - Items recommended to be addressed as soon as possible or renovation recommendations generally based upon vehicular or storm damage.
All locations:		X			It is recommended all areas be mulched.	
	X	X			Recommended all paver areas be pressure washed and treated with "Wet & Forget" mold treatment spray.	
Median #1	X	X		11	Recommend renovation of Dwarf Jasmine plantings based upon poor performance at this location. Remove all surface vegetation and debris except for existing Bromeliads and replant area with (275) 1 gal. Liriope 'Big Blue'.	
Median #2		X	X	6	South end north of Oak tree irrigation head is leaning.	
		X	X	12	The existing quick coupler valve box is broken and deformed and needs to have the top box and lid removed and new ones installed.	
Pedestrian shelter at 31st Ave. SW		X			Pavers should be cleaned	
Median #3 Bridge		X	X	4	North end: On tip of median 3 Juniper have been runover and removal and replacement is recommended. (3) Juniper parsonii 3 gal. size.	
		X	X	13	South end: (5-8) Yellow African Iris in decline or missing. Replant with 3 gal. size.	
		X	X	12	North end: ~~Remove Blueberry Flax volunteers.~~	M&A 9/6/22: (3) Yellow African Iris in decline or missing. Replant with 3 gal. size. M&A 3/7/23 the number of replacements has increased to a total of (~~9~~ 12).
Median #4		X	X	7	At address 3044: Irrigation head is leaning. Recommend remove and install Rainbird 1812 16" ht. pop-up spray head set flush with grade.	
		X	X	7	At address 2860: Install (2) White African Iris 3 gal. size	
		X	X	7	At address 2672: Install (3) White African Iris 3 gal. size	
		X	X	7	At address 2896: Install (1) White African Iris 3 gal. size	
		X	X	13	At address 2930: Recommend removing two Crape myrtles and replace with (2) Crape Myrtle 'Natchez', White, 30 gal., 2" cal., 8'-10' ht., 5'-6' spr., Multi-stem (4 min.). Will require (1) bubbler location with (2) adjustable flood bubblers per tree.	
Pedestrian Shelter- 28th Ave. SW		X			Pavers should be cleaned	
Median #5		X	X	11	At address 2672: Holly tree has totally defoliated, and main trunk bark is cracking. Decline would contribute to mature age of 16+/- years and past site conditions. Recommendation is to schedule removal by excavation and replant with Ilex x attenuate – East Palatka Holly 10' Ht., 3' spr., 3.5" cal. in 65 gal. container	
		X	X	12	At address 2600-2582: Holly tree has totally defoliated, root system is rotting, main trunk has severe rot due to previous pruning wounds not compartmentalizing and healing over.	

McGee & Associates
Landscape Architecture

GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Location:** Tropicana Blvd. **Report Date:** 12/3/2024 **Report No.:** 2 (FY-25)

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS
					Recommendation is to schedule removal by excavation and replant with Ilex x attenuate – East Palatka Holly 10' Ht., 3' spr., 3.5" cal. in 65 gal. container	
		X	X	12	At address 2654: (3) White African Iris missing, replant with 3 gal. size.	
		X	X	12	At address 2578: (3) White African Iris in decline, replant with 3 gal. size.	
		X	X	12	At address 2520: ~~Remove volunteer Crape myrtles growing in Bougainvillea bed.~~	M&A 11/7/22: it is recommended due to the amount of shade over this planting location that the existing Bougainvillea and Crape myrtle sprouts be removed, and the area planted with Bromeliads. (45) Neoregelia carolinae 'Tricolor', 6" pots, 24" o.c.+/-, first row 4' off back of curb. M&A 9/5/23: It appears carpe myrtle sprouts have been treated with herbicide.
		X		2	At address 2600: Recommend Oak, 18" caliper, 50% damaged in main trunk from broken off large branch be monitored yearly.	M&A 6/6/23: This Oak is adjacent to the declined Holly tree at address 2701 that is being recommended for removal and replacement. It is recommended that this Oak tree be coordinated for removal by excavation and replace with Quercus virginiana 'Cathedral' 11'-13' ht., 3.5 cal., 5' spr. 36" dia. root ball or 65 gal. container.
Median #6 (Pavers only)		X	X		No major issue observed. Recommended pavers be pressure washed and treated with "Wet & Forget" mold treatment spray.	
					QUARTERLY ADDRESSED	
Accent/Street Lighting		X		4	Multiple accent lighting fixtures appear to have corroded metal edges and hazy and/or dirty lenses which reduce light levels. It is recommended all lights be reviewed for cleaning or replacements if needed.	
		X		4	Median #1 south light pole fixture has been turned out of alignment with the median.	
Lighting Disconnect & Sensor Locations					East R/W between 13th Ave. & PL. Lighting Disconnect & Sensor West Alley off 28th Ave. SW Lighting Disconnect & Sensor West R/W in Alley between G.G. Pkwy. & 26th PL. SW, Lighting Disconnect & Sensor West R/W at corner of 30th PL. SW & Tropicana Lighting Disconnect & Sensor	
Fertilizations:		X	X		Refer to schedule to be developed with Contractor.	
Irrigation:		X			Previous month water use total per WeatherTrak controller estimate 374,422 gallons.	

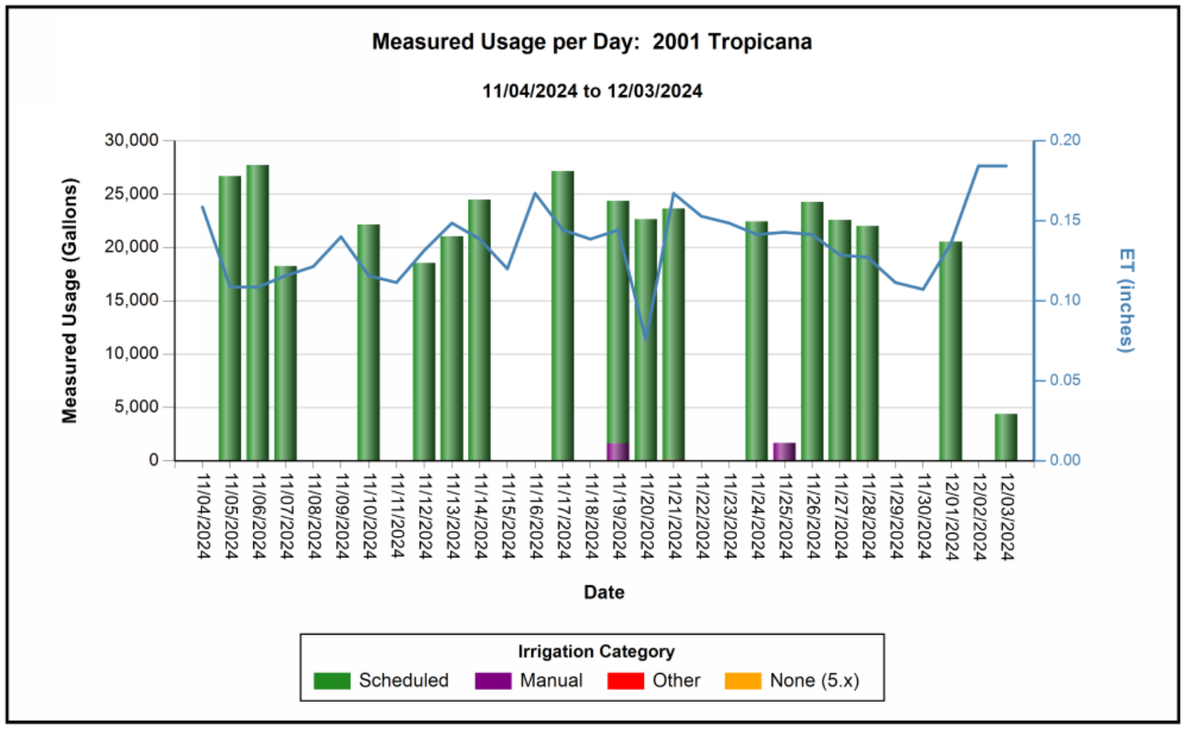
GOLDEN GATE BEAUTIFICATION, M.S.T.U. **Location:** Tropicana Blvd. **Report Date:** 12/3/2024 **Report No.:** 2 (FY-25)

LOCATION/WORK AREA	AC	S	C	R	MAINTENANCE SERVICES OBSERVATIONS & RECOMMENDATIONS	RESPONSE or COMMENTS

Collier County
Site: Golden Gate MTSU
09012040 - 2001 Tropicana

Single Controller
Measured Usage History Report

WeatherTRAK



Golden Gate M.S.T.U.
Fund 1621
December 17, 2024

	FY-25	Vendor	Item	PO#	Budget	Commitments	Expenditures	Available
1	MILLAGE COLLECTED & INTEREST		MSTU Revenues		$ (743,200.00)	$ -	$ (575,971.55)	$ (167,228.45)
2	CARRY FORWARD		Unexpended Prior Year Funds		$ (2,006,206.25)	$ -	$ -	$ (2,006,206.25)
	ALL REVENUES				**$ (2,749,406.25)**	**$ -**	**$ (575,971.55)**	**$ (2,173,434.70)**
		McGee & Associates	Landscape Architect (FY-25)	4500234204		$ 26,080.00	$ -	
		McGee & Associates	Landscape Architect (FY-24)	4500228494		$ 1,634.40	$ 3,123.85	
3	ENG. FEES & OTHERS (631403)				$ 34,758.25	$ 27,714.40	$ 3,123.85	$ 3,920.00
4	INDIRECT COST REIMBURSE (634970)	Collier County	Indirect Cost	Direct Pay	$ 4,700.00	$ 4,700.00	$ -	$ -
						$ -	$ -	
		A&M Property Maintenance		4500233652		$ 35,000.00	$ -	
5	LANDSCAPE INCIDENTALS (634990)				$ 30,000.00	$ 35,000.00	$ -	$ (5,000.00)
						$ -	$ -	
		A&M Property Maintenance		4500233652		$ 69,900.00	$ 45,100.00	
6	OTHER CONTRACTUAL (634999)				$ 222,000.00	$ 69,900.00	$ 45,100.00	$ 107,000.00
						$ -	$ -	
						$ -	$ -	
		Tree Scaping	Tree & Palm Maintenance Removal	10330478		$ 5,000.00	$ -	
		Tree Scaping	Tree & Palm Maintenance Pruning	4500234124		$ 15,000.00	$ -	
		Naples Electric Motor Works	Pump Station Services	4500234617		$ 3,000.00	$ -	
		Lykins Signtek & Development	Welcome Sign	4500232891		$ 6,548.00	$ -	
7	OTHER CONTRACTUAL (639990)				$ 36,548.00	$ 29,548.00	$ -	$ 7,000.00
8	ELECTRICITY (643100)	FPL	Electricity	4700005162	$ 3,500.00	$ 3,005.10	$ 494.90	$ 0.00
9	INSURANCE GENERAL(645100)	Collier County	Insurance	Direct Pay	$ 600.00	$ 600.00	$ -	$ -
12	SPRINKLER SYSTEM(646311)	SiteOne	Irrigation Parts & Pumps	10330453	$ 10,000.00	$ 5,000.00	$ -	$ 5,000.00
13	MULCH(646318)	Southeast Spreading			$ 25,000.00	$ -	$ -	$ 25,000.00
		Simmonds Electrical	Electrical Services	4500234109		$ 5,000.00	$ -	
14	LIGHTING MAINTENANCE(646451)				$ 5,000.00	$ 5,000.00	$ -	$ -
15	LICENSE & PERMITS(649010)				$ 2,000.00	$ -	$ -	$ 2,000.00
						$ -	$ -	
		Premier Staffing	Transcription	4500234229		$ 2,621.50	$ 356.40	
		Naples Christmas Lighting DBA Sight I	Holiday Decorations	4500234277		$ 2,975.00	$ -	
16	OTHER MISCELLANEOUS (649990)				$ 5,000.00	$ 5,596.50	$ 356.40	$ (952.90)
17	OFFICE SUPPLIES (651110)				$ 100.00	$ -	$ -	$ 100.00
18	COPYING CHARGES(651210)	J.M. Todd	Copier CPC	4500234730	$ 200.00	$ 123.63	$ 26.37	$ 50.00
19	FERT HERB CHEM(652310)	Howard Fertilizer		4500234102	$ 5,000.00	$ 2,000.00	$ -	$ 3,000.00
20	OTHER OPERATING (652990)				$ 500.00	$ -	$ -	$ 500.00
21	**OPERATING EXPENSES**				**$ 384,906.25**	**$ 188,187.63**	**$ 49,101.52**	**$ 147,617.10**
22	PTNE STAFF & DIVISION OVERHEAD (911011)				$ 67,400.00	$ -	$ -	$ 67,400.00
23	PROPERTY APPRAISER (930600)				$ 5,400.00	$ -	$ 1,295.15	$ 4,104.85
24	TAX COLLECTOR (930700)				$ 14,500.00	$ -	$ 11,662.12	$ 2,837.88
25	**COUNTY OVERHEAD**				**$ 87,300.00**	**$ -**	**$ 12,957.27**	**$ 74,342.73**
26	IMPROVEMENTS GENERAL (763100)				$ 2,277,200.00	$ -	$ -	$ 2,277,200.00
27	**CAPITAL PROJECTS**				**$ 2,277,200.00**	**$ -**	**$ -**	**$ 2,277,200.00**
27	**ALL EXPENSES**				**$ 2,749,406.25**	**$ 188,187.63**	**$ 62,058.79**	**$ 2,499,159.83**
28	**FY-25 BUDGET GRAND TOTAL**		= ALL REVENUES - ALL EXPENSES		**$ -**	**$ 188,187.63**	**$ (513,912.76)**	**$ 325,725.13**

Golden Gate M.S.T.U.
Fund 1621
December 17, 2024

516,253,177	FY 13 Final Taxable Value	7.8%		
533,888,677	FY 14 Final Taxable Value	3.4%		
575,541,732	FY 15 Final Taxable Value	7.8%		
611,031,317	FY 16 Final Taxable Value	6.2%		
673,743,701	FY 17 Final Taxable Value	10.3%		
749,340,700	FY 18 Final Taxable Value	11.2%		
813,136,298	FY 19 Final Taxable Value	8.5%		
885,583,987	FY 20 Final Taxable Value	8.9%		
987,248,891	FY 21 Final Taxable Value	11.5%		
1,067,233,321	FY 22 Final Taxable Value	8.1%		
1,214,827,173	FY 23 Final Taxable Value	13.8%	+9.1% Average	
1,351,201,209	FY 24 Final Taxable Value	11.2%		
$1,473,376,239	**FY 25 Gross Taxable Value**			
8.94%	**Adjustment FY 24 to FY 25**			
	FY 25 Gross MSTU Revenue	FY 24		
Millage	**0.5000**	0.5000	**0.5 mill cap**	
Tax Dollars	**$736,688**	$675,601	**$129,275**	**Increase**

Total Available Balance	**$ 2,499,159.83**
Plus Commited And Not Spent	**$ 188,187.63**
Estimated Cash	**$ 2,687,347.46**

Prepared 12.10.2024 ZS

A&M Property Maintenance, LLC
4396 OWENS WAY
AVE MARIA, FL 34142 US
+1 2395030303
aandmtotal@yahoo.com

Estimate

ADDRESS
Dan Schumacher
Golden Gate MSTU
3299 Tamiami Trail E Ste700
Naples, FL 34112-5749

SHIP TO
Dan Schumacher
Golden Gate MSTU
Golden Gate MSTU
Naples, FL 34112-5749

ESTIMATE # 1544
DATE 08/14/2024

P.O. NUMBER
4500231470

ACTIVITY	QTY	RATE	AMOUNT
GOLDEN GATE MSTU-HUNTER BLVD			
Median #1 (1) Fill depression and plant 2, 3-gal. Juniper Parsonni (2) Cap Bubblers			
Material Cost: 2, 3-gal Juniper Parson	2	11.00	22.00
Median #11 Bridge (1) Replacement of 85, 1-gal Society Garlic			
Material Cost: 85, 1-gal Society Garlic	85	5.00	425.00
Median #2 (1) Remove the existing Big Rose Crown of Thorns and finish the grade for a uniform profile. (2) Replant area with six staggered rows of 92, 1-gal Liriope "Big Blue" 18"o.c.			
Material Cost: 92, 1-gal Liriope “Big Blue” 18”o.c.	92	5.00	460.00
Median #3 (1) Remove volunteer Crape Myrtle sprouts. (2) North End: (a) Plant 5, 3-gal Bougainvillea Silhouette shrubs. Rake up dead stems of perennial peanut (b) Rake up dead stems from Perennial Peanut (c) Replant area between palms with two centerline staggered rows of 27, -1 gal Liriope “Big Blue” 18” o.c. (3) Triangular Area at North End of Palms: (a) Install 4-5 staggered rows of 115, 1-gal Liriope “Big Blue” 18” o.c. (4) South End: (a) Plant 25, 3-gal Bougainvillea Ms Alice shrubs (2) Plant 23, 1-gal Perennial Peanut “Golden Curry”			
Material Cost: 5, 3-gal Bougainvillea Silhouette	5	11.00	55.00
Material Cost: 142, 1-gal Liriope “Big Blue” 18” o.c.	142	5.00	710.00
Material Cost: 25, 3-gal Bougainvillea Ms Alice	25	11.00	275.00
Material Cost: 23, 1-gal Perenniel Peanut “Golden Glory"	23	5.00	115.00

We appreciate your business

ACTIVITY	QTY	RATE	AMOUNT
Median #4 (1) South End: (a) Spray Perennial Peanut “Golden Curry” with herbicide (b) Rake area to remove peanut stems (c) Replant with 6 staggered rows of 217, 1-gal Liriope “Big Blue” 18 0.c.			
Material Cost: 217, 1-gal Liriope “Big Blue” 18 o.c.	217	5.00	1,085.00
Median #5 (1) North End: (a) Replacement of 40, 1-gal Perennial Peanut “Golden Glory" (2) South End: (a) Spray to remove remaining Perennial Peanut "Golden Glory" (b) Plant median end with six staggered rows of 130, 1-gal Liriope "Big Blue" 18" o.c.			
Material Cost: 40, 1-gal Perennial Peanut “Golden Glory"	40	5.00	200.00
Material Cost: 130, 1-gal Liriope "Big Blue" 18" o.c.	130	5.00	650.00
Median #6 (1) West end at address 2007: Replacement of 80, 1-gal Society Garlic			
Material Cost; 80, 1-gal Society Garlic	80	5.00	400.00
Median #7 (1) Replacement of 9, 3-gal Yellow African Iris (2) Address 7 irrigation heads in African Iris plants			
Material Cost: 9, 3-gal Yellow African Iris	9	11.00	99.00
Median #8 (1) At address 4201-5241 (a) Replacement of 175, 1-gal Perennial Peanut “Golden Glory” (2) At address 5360-5390 (a) Replacement of 12, 3-gal Yellow African Iris (3) At address 5412-5340 (a) Review irrigation coverage before planting (b) Replant 40, 3-gal Blueberry Flax Lilies (4) At address 542-5433 (a) Remove remaining Blueberry Flax Lilies and replant with double staggered rows of 139, 1-gal Liriope “Big Blue” 18” o.c.			
Material Cost: 175, 1-gal Perennial Peanut “Golden Glory"	175	5.00	875.00
Material Cost: 12, 3-gal Yellow African Iris	12	11.00	132.00
Material Cost: 40, 3-gal Blueberry Flax Lilies	40	11.00	440.00
Material Cost: 139, 1-gal Liriope “Big Blue” 18” o.c.	139	5.00	695.00
Median #9 (1) Review irrigation coverage before planting (2) Replacement of 30, 3-gal Yellow African Iris			
Material Cost: 30, 3-gal Yellow African Iris	30	11.00	330.00
Material Mark-Up	6,968	0.15	1,045.20
(46) Landscape Supervisor 1 man, 25 hours	25	82.50	2,062.50
(47) Landscape Laborer 4 men, 25 hours	100	55.00	5,500.00
(48) Irrigation Supervisor 1 man, 9 hours	9	82.50	742.50
(49) Irrigation Technician 1 man, 9 hours	9	55.00	495.00

TOTAL	$16,813.20

Accepted By

Accepted Date

We appreciate your business

A&M Property Maintenance, LLC
4396 OWENS WAY
AVE MARIA, FL 34142 US
+1 2395030303
aandmtotal@yahoo.com

Estimate

ADDRESS
Dan Schumacher
Golden Gate MSTU
3299 Tamiami Trail E Ste700
Naples, FL 34112-5749

SHIP TO
Dan Schumacher
Golden Gate MSTU
Golden Gate MSTU
Naples, FL 34112-5749

ESTIMATE # 1545
DATE 08/14/2024

P.O. NUMBER
4500231470

ACTIVITY	QTY	RATE	AMOUNT
GOLDEN GATE MSTU-TROPICANA BLVD			
Median #1 (1) Remove all surface vegetation and debris except for existing Bromeliads (2) Replant with 275, 1-gal Liriope “Big Blue"			
Material Cost: 275, 1-gal Liriope “Big Blue"	275	5.00	1,375.00
Median #3 Bridge (1) North End (a) Remove current plant material (b) Replant 12, 3-gal Yellow African Iris (2) South End (a) Remove current plant material (b) Replant 8, 3-gal size Yellow African Iris			
Material Cost: 20, 3-gal Yellow African Iris	20	11.00	220.00
Median #4 (1) At address 3044 (a) Remove and install Rainbird 1812 16” ht pop-up spray heads set flush with grade (2) At address 2672 (a) Install 3, 3-gal White African Iris (3) At address 2860 (a) Install 2, 3-gal White African Iris (4) At address 2896 (a) Install 1, 3-gal White African Iris			
Material Cost: 6, 3-gal White African Iris	6	11.00	66.00
Median #5 (1) At address 2578 (a) Remove current plant material (b) Replant 3, 3-gal White African Iris (2) At address 2654 (a) Remove current plant material (b) Replant 3, 3-gal White African Iris			
Material Cost: 6, 3-gal White African Iris	6	11.00	66.00
(46) Landscape Supervisor 1 man, 16 hours	16	82.50	1,320.00

We appreciate your business

ACTIVITY	QTY	RATE	AMOUNT
(47) Landscape Laborer 2 men, 16 hours	32	55.00	1,760.00
(48) Irrigation Supervisor 1 man, 1 hours	1	82.50	82.50

TOTAL **$4,889.50**

Accepted By

Accepted Date



GOLDEN GATE M.S.T.U. ADVISORY COMMITTEE

8300 Radio Road
Naples, FL 34104
November 19, 2024

MINUTES

I. CALL TO ORDER

The meeting was called to order at 4:30 P.M. by Chair Spencer. Attendance was called and a quorum of three was established.

II. ATTENDANCE

Advisory Committee	Patricia Spencer – Chair
	Paula Rogan – Vice Chair (Excused)
	Florence "Dusty" Holmes
	Ron Jefferson
	- Vacancy -
Staff	Brian Wells – PTNE Director (Excused)
	Dan Schumacher – Project Manager
Landscape	Mike McGee – Landscape Architect, McGee & Associates
	Armando Yzaguirre – Grounds Maintenance, A & M Property Maintenance
Others	Wendy Warren – Transcription, Premier

III. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was recited.

IV. APPROVAL OF AGENDA

Chair Spencer moved to approve the Agenda of the Golden Gate MSTU Advisory Committee as presented. Second by Mr. Jefferson. Carried unanimously 3 - 0.

V. APPROVAL OF MINUTES – October 15, 2024

Chair Spencer moved to approve the minutes of the October 15, 2024, Golden Gate MSTU Advisory Committee meeting as presented. Second by Ms. Holmes. Carried unanimously 3 - 0.

VI. Landscape Maintenance Report – A & M Property Maintenance

Mr. Yzaguirre reported:

- Routine landscape maintenance services have been performed on all MSTU roadways.
- Sunshine Blvd - The handle has sheared-off of an irrigation flow valve adjacent to the pump station. *A photograph of the box/part will be forwarded to Mr. Schumacher.*
- Tropicana Blvd - The irrigation flow valve by the pedestrian shelter near the south end will be turned off, as coverage is no longer needed in the vicinity at this time.
- Quotes have been submitted for numerous median plant replacements identified in the McGee & Assoc reports.

Comments

Mr. Schumacher reported:

Irrigation

Sunshine Boulevard Pump Station

- Mader Electric Motors replaced the control cabinet fan.
- Naples Electric Motor Works (NEMW) performed a diagnostic evaluation of the variable frequency drive needs to be replaced.
- The pump will be removed for a comprehensive analysis. The variable frequency drive will not be replaced if a problem with the pump is identified.
- Consideration will be given to a pump replacement due to age.
- Median plantings on Sunshine Boulevard will be installed on the resolution of the irrigation issues.

Fertilizer

Fertilizer will be ordered from Howard Fertilizer for pickup by A & M Property Maintenance. Application will be within one week of receipt by the vendor.

VII. LANDSCAPE ARCHITECT'S REPORT – McGee & Associates

Mr. McGee summarized the November 5, 2024, observation report.
(*The full report is included in the distributed Agenda meeting packet, which is accessible at the link shown at the end of these Minutes).*

A. Sunshine Boulevard
B. Coronado Parkway & Hunter Boulevard
C. Tropicana Boulevard

Comments

Mr. McGee reported:

- All Duckbill tree-stacking cables should be evaluated every three months for repositioning.
- Plant refurbishment of Coronado Parkway and Hunter and Tropicana Boulevard medians is recommended.
- Fertilizer is recommended for all planting beds, and mulch (County Brown) applied upon completion of plant replacements.
- Irrigation upgrades and water coverage verification should be done in conjunction with new plant installations.
- Multiple Lumec-brand light pole fixtures on roadway medians have corroded metal edges and hazy and/or dirty lenses which reduce light levels. Recommend all light poles be reviewed for cleaning or replacement as needed.

Comments

Mr. Schumacher reported:

- Quotes from A & M Property Management for replacement plants for Coronado Parkway and Hunter & Tropicana Boulevards will be reviewed for approval.
- Median plantings on Sunshine Boulevard will be addressed upon resolution of current irrigation issues.
- Tree Scaping will be notified for Palm & Hardwood pruning on Tropicana Boulevard and then proceed to the other roadways.
- Replacement of the eleven (11) decorative light poles on Tropicana Blvd medains will be evaluated, with quotes to be solicited from manufacturers Lumec and Sternberg.

VIII. PROJECT MANAGERS REPORT

Mr. Schumacher reported:

A. Budget Report

(*The full report is included in the distributed Agenda meeting packet, which is accessible at the link shown at the end of these Minutes).*

Golden Gate MSTU Fund 1621 Budget for November 19, 2024, prepared November 13, 2024.

- Purchase Orders
  1. FPL - electricity.
  2. A & M Property Maintenance – ground maintenance.
     a. Incidentals – landscape plants, materials, and refurbishment.
     b. Maintenance – regular landscape & irrigation maintenance.
  3. Howard Fertilizer – fertilizer.
  4. Lykins-Signtek – parkway "Welcome Sign."
  5. McGee & Associates – landscape architectural services.
  6. Naples Christmas Lighting – holiday decorations.
  7. Naples Electric Motor Works (NEMW) – pump station maintenance.
  8. Premier Staffing – transcription services.
  9. Simmonds Electrical – electrical maintenance and repairs.
  10. SiteOne Landscape Supply – irrigation parts & components.
  11. Southeast Spreading – mulch.
  13. Tree Scaping of Naples – palm & tree pruning and removal.

- Budget Summary
  1. Line 1, Ad Valorem Tax Collections & Interest – Of the $743,200 budgeted, $6,726 has been collected and $736,473 remains to be collected.
  2. Line 2, Carry Forward – Unspent funds accumulated from previous fiscal years and retained within the MSTU, in the amount of $2,006,206.
  3. Line 3, All Revenues – Of the $2,749,406 budgeted, $6,726 has been collected leaving an available balance of $2,742,680 (the sum of lines 1 and 2) minus Expenditures.
  4. Line 21, Operating Expense – Of $384,906 budgeted, $222,674 is committed on MSTU-issued Purchase Orders and $14,614 has been spent, leaving the remainder of $147,617 available within budget for additional operating expenses as needed.

5. Line 25, County Overhead – Of the $87,300 budgeted, $1,496 has been transferred, and a balance of $85,803 remains to be assessed (PTNE Staff & support, Property Appraiser, & Tax Collector).
6. Line 27, Capital Projects – A balance of $2,277,200 remains for improvement projects.
7. Line 27, All Expenses – Of $2,749,406 budgeted, $222,674 is committed to existing Purchase Orders, and $16,111 in total expenditures, leaving a remainder of $2,510,620 available for MSTU expenditures.

- General
  a. MSTU Tax Rate: 0.5000 Mills (0.05%) for beautification, improvements, and maintenance within the taxing district is reviewed annually.
  b. Funds not spent in FY-25 will be carried forward into FY-26.
  c. Tax millage and interest collected by the Golden Gate Beautification MSTU may only be utilized by the MSTU and within the MSTU district boundary.

Mr. Schumacher noted:

- A separate Purchase Order will be issued to NEMW for a variable frequency drive if replacement is required.
- Simmonds Electrical replaced the photocell on a decorative light on Sunshine Boulevard. The pedestal base will be stabilized or replaced.
- The quantity of bags required to mulch the medians will be verified. Southeast Spreading Purchase Order funds are sufficient to cover the cost.
- The proposed irrigation and landscape project on Golden Gate Parkway will be funded from the Capital Projects category.
- The Office of Budget Management (OMB) will be consulted regarding the addition of a note in the FY-26 MSTU budget to identify a $150,000 amount in the Capital Improvements category dedicated to funding expenses incurred for disaster/catastrophic events, perhaps per MSTU-maintained roadway.
- The *Asset Management Plan* report to estimate life expectancies of MSTU assets and corresponding expenditure projections to fund maintenance was updated during the planning process.
- Uncommitted funds available within budget are eligible for transfer to other categories upon approval by the Committee.
- The Ad Valorem taxable value increased 8.94% for fiscal year 2025 over 2024 generating additional revenue of $129,275.

B. Community Welcome Sign Renovation – Golden Gate Parkway (west)

Mr. Schumacher reported:

- The Committee approved the sign design at the October 15, 2024 meeting.
- The sign and landscape light will be installed in January 2025.

C. Holiday Decorations - 2024

Mr. Schumacher reported:

Naples Christmas Lighting, a division of Sight N Sound, will install the holiday lighting in the Right-of-Way (ROW) on Golden Parkway, at the intersection of Santa Barbara Boulevard, prior to November 28th.

IX. OLD BUSINESS

None

X. NEW BUSINESS

A. Irrigation Extension - Pkwy Median 2 & New Bridge over Santa Barabara Canal

Mr. Schumacher reported:

The Road Maintenance Division is considering restoration of the irrigation and landscaping at the intersection of Santa Barbara Blvd. and Golden Gate Parkway, west of the sign.

- The original irrigation lateral pipes were previously severed and capped, and irrigation heads disconnected during a County turn lane project in the area west of the sign and the Road Maintenance Division proposed re-establishment and extension of the irrigation system in the area impacted.
- The irrigation line installation labor segment of the project is planned to go out for bid, with anticipated installation in the first or second quarter of FY-25.
- The County will supply parts for the project.
- Plants will be selected upon project completion for installation in Spring 2025.
- The MSTU has offered to share the cost of the project with the County.
- The Road Maintenance Division will be responsible for maintaining the subject improvements.

***Mr. Schumacher** will meet with Pam Lulich, Landscape Operations Manager, to review the project.*

XI. PUBLIC AND COMMITTEE COMMENTS

Mr. Schumacher responded to inquiries:

- A new "Welcome to Golden Gate" community sign is on order.
- Deficiencies within the community, such as holiday lights year-round, and residences and abandoned buildings in need of maintenance should be addressed to Code Enforcement.
- Issues can be sent to ***https://goldengateisgreat.com*** for submission to Code Enforcement.

XII. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned by the Chair at 5:14 P.M.

GOLDEN GATE MSTU ADVISORY COMMITTEE

Patricia Spencer

Patricia Spencer, Chair

The Minutes were approved by the Committee on 12-17-, 2024 as presented ✓ or as amended ____.

GoldenGateBeautificationMSTU/CollierPTNE

NEXT MEETING: **DECEMBER 17, 2024 – 4:30 PM**
GOLDEN GATE COMMUNITY CENTER
4701 GOLDEN GATE PARKWAY
NAPLES, FL 34116

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

colliergov.net
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January 2, 2025

FOR IMMEDIATE RELEASE

Notice of Hybrid Remote Public Meeting
Collier County Community Redevelopment Agency
Immokalee Local Redevelopment Advisory Board
Immokalee Beautification MSTU Advisory Committee
Collier County, Florida

January 15, 2025
8:30 a.m.

Notice is hereby given that the **Immokalee Local Redevelopment Advisory Board** and the **Immokalee Beautification Municipal Service Taxing Unit (MSTU) Advisory Committee** will meet on Wednesday**, January 15th** at **8:30 a.m.** This will be a Hybrid Remote Meeting, and it will be held at the CareerSource SWFL, 750 South 5th Street, Immokalee, Florida. Some of the Board Members and staff may be appearing remotely, with staff present in person. The public may attend either remotely or in person.

Individuals who would like to participate remotely should email Yuridia Zaragoza at Yuridia.Zaragoza@colliercountyfl.gov by January 14th at 4:00 p.m.

The agenda will be posted on the Immokalee CRA's website at https://immokaleecra.com/meetings-information-1.

Remote participation is provided as a courtesy and is at the user's risk. The County is not responsible for technical issues.

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of those boards, councils or agencies.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Yuridia Zaragoza at (239) 867-0025**.**

###

Collier County Community Redevelopment Agency
IMMOKALEE CRA
The Place to Call Home!

CRA Board

Commissioner
William McDaniel Jr.
Co-Chair
District 5

Commissioner
Dan Kowal
Co-Chair
District 4

Commissioner
Burt L. Saunders
District 3

Commissioner
Chris Hall
District 2

Commissioner
Rick LoCastro
District 1

CRA Advisory Board

Mark Lemke
Chairman

Anne Goodnight
Vice-Chair

Mike Facundo
Andrea Halman
Estil Null
Edward "Ski" Olesky
Yvar Pierre
Lupita Vazquez Reyes
Paul Thein

MSTU Advisory Committee

Andrea Halman
Chairman

Bernardo Barnhart
Vice- Chair

Cherryle Thomas
David Turrubiartez Jr.
Jimmy Nieves

CRA Staff

John Dunnuck
Executive Director
Facilities & CRA

Christie Betancourt
CRA Assistant Director

Yvonne Blair
CRA Project Manager

Yuridia Zaragoza
CRA Operations
Support Specialist I

Joint Meeting of the Collier County Community Redevelopment Agency Immokalee Local Redevelopment Advisory Board and the Immokalee Beautification MSTU Advisory Committee.

AGENDA
Hybrid Remote Public Meeting
(*Please see details below)

Immokalee CRA
750 South 5th Street
CareerSource SWFL
Immokalee, FL 34142
239.867.0025

January 15, 2025 – 8:30 A.M.

A. Call to Order
B. Pledge of Allegiance and Prayer
C. Roll Call and Announcement of a Quorum
D. Voting Privileges for Board Members via Zoom *(CRA & MSTU Action Item)*
E. Approval of Agenda *(CRA & MSTU Action Item)*
F. Approval of Consent Agenda *(CRA & MSTU Action Item)*
   1. Minutes
      i. Joint CRA & MSTU Advisory Board Meeting for December 11, 2024 (Enclosure 1)
   2. Budget Reports (Enclosure 2)
   3. Code Enforcement Report (Enclosure 3)
   4. Staff Reports
      i. Assistant Director Report (Enclosure 4)
      ii. Project Manager Report (Enclosure 5)
      iii. Project Manager Field Observation Report (Enclosure 6)
      iv. Community Meetings (Enclosure 7)
G. Announcements
   1. Public Comment speaker slips
   2. Communications Folder
H. Other Agencies
   1. FDOT updates
   2. Other Community Agencies
I. Community Presentations *(CRA Action Item)*
   1. Land Development Code Updates – The Neighborhood Company (Enclosure 8)
J. Old Business
   1. Advisory Board update ((Enclosure 9) *(CRA & MSTU Action Item)*
   2. Nomination for Chair and Vice Chair *(CRA & MSTU Action Item)*
   3. Contactor Maintenance Reports
      i. A&M Property Maintenance Report & Schedule (Enclosure 10)
   4. Brief Staff project update
      i. Immokalee Sidewalk Phase III – Eustis Ave. and W. Delaware Ave. (Enclosure 11)
      ii. First Street Corridor Safety Project update (Enclosure 12)
   5. 2050 Long Range Transportation Plan – Immokalee Roadway Needs (Enclosure 13)

K. New Business
L. Citizen Comments
M. Next Meeting Date
The **CRA Board** will be meeting on ***Wednesday, February 19, 2025,*** at 8:30 A.M. at Careersource SWFL.
The **MSTU Board** will be meeting on ***Wednesday, February 26, 2025,*** at 8:30 A.M. at Careersource SWFL.
N. Adjournment

*** Hybrid Remote Public Meeting**
Some Advisory Board members and staff may be appearing remotely, with staff present in person. The public may attend either virtually or in person.

If you would like to provide public comment, participate, and/or attend the meeting, please contact Yuridia Zaragoza via email at Yuridia.Zaragoza@colliercountyfl.gov by January 14, 2025, at 4:00 P.M.

You may attend the meeting in person on January 15, 2025, at the CareerSource SWFL Conference Room, 750 South 5th Street, Immokalee, FL 34142.

The public is reminded that the CDC and Department of Health recommend social distancing and avoiding public gatherings when possible.

All meetings will be publicly noticed in the W. Harmon Turner Building (Building F), posted at the Immokalee Public Library, and provided to the County Public Information Department for distribution. Please contact Yuridia Zaragoza at 239.867.0025 for additional information. In accordance with the American with Disabilities Act, persons needing assistance to participate in any of these proceedings should contact Christie Betancourt at least 48 hours before the meeting. The public should be advised that members of the CRA/MSTU Advisory Committee are also members of other Boards and Committees, including, but not limited to: the Immokalee Fire Commission. In this regard, matters coming before the Advisory Committee/Board may come before one or more of the referenced Board and Committees from time to time.

MINUTES

Joint Meeting of the Collier County Community Redevelopment Agency Immokalee Local Redevelopment Advisory Board and the Immokalee MSTU Advisory Committee on December 11, 2024. The Advisory Board members, staff, and public appeared virtually and in person.

Hybrid Remote Public Meeting
CareerSource
750 South 5th Street
Immokalee, FL 34142

A. Call to Order.
The meeting was called to order by CRA Chair Mark Lemke at 8:32 A.M.

B. Pledge of Allegiance and Moment of Silence.
Mark Lemke led the Pledge of Allegiance and Mike Facundo led the opening prayer.

C. Roll Call and Announcement of a Quorum.
Christie Betancourt opened roll call. A quorum was announced for the CRA and MSTU Board.
CRA Advisory Board Members Present in Person:
Mark Lemke, Patricia Anne Goodnight, Mike Facundo, Andrea Halman, Edward "Ski" Olesky, Lupita Vazquez Reyes, and Paul Thein.
CRA Advisory Board Members Present via Zoom:
None.
CRA Advisory Board Members Absent/Excused:
Estil Null and Yvar Pierre.
MSTU Advisory Committee Members Present:
Andrea Halman, Bernardo Barnhart, David Turrubiartez Jr., Cherryle Thomas, and Jimmy Nieves (8:38 A.M.).
MSTU Advisory Committee Members Present via Zoom:
None.
MSTU Advisory Committee Members Absent/Excused:
None.
Others Present in Person:
Canon Sandora, Bill Glass, Sylvia Ocanas, Jorge Ocanas, Evelyn Bahena, Mauricio Perez, Maria C. Huapilla, Jacinto Cervantes, Illiana Montez, Armando Yzaguirre, Carlos Garcia, Sarah Harrington, Lucio Quintana, Dusty Hansen, and Commissioner Bill McDaniel.
Others Present via Zoom:
Cristina Perez, Katiria Ocanas, Lorraine Lantz, Melissa Silva, Rosemary Ocanas, Sean Kingston, and Tricia De Cambra, Sonal Dodia and Colleen Ross.

Staff Present in Person: John Dunnuck, Christie Betancourt, Yvonne Blair, and Yuridia Zaragoza.

D. Voting Privileges for Board Members via Zoom
Staff announced no members will present via Zoom. No Action taken.

E. Approval of Agenda.
Staff presented the Agenda to the Boards for approval. Agenda was approved as presented.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the Agenda as presented. Ms. Andrea Halman seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the Agenda as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 4-0.***

F. Approval of Consent Agenda
   1. Minutes
      i. Joint CRA & MSTU Advisory Board Meeting for October 16, 2024 (Enclosure 1)
      ii. MSTU Advisory Committee Meeting for November 13, 2024 (Enclosure 2)
   2. Budget Reports (Enclosure 3)
   3. Code Enforcement Report (Enclosure 4)
   4. Staff Reports
      i. Assistant Director Report (Enclosure 5)
      ii. Project Manager Report (Enclosure 6)
      iii. Project Observation Field Report (Enclosure 7)
      iv. Community Meetings (Enclosure 8)

Staff presented the Consent Agenda to the Boards for approval. Consent Agenda was approved as presented.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the Consent Agenda as presented. Ms. Lupita Vazquez Reyes seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the Consent Agenda as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 4-0.***

G. Announcements.
   1. Public Comments speaker slips
      CRA Staff reiterated on the public 3-minute speaker slip policy for each Topic. The Board will give more time if they feel it necessary.

   2. Communications Folder
      Staff reviewed the communication folder with the board and members of the public. The folder included the public notice for the Joint CRA and MSTU meeting, Collier Area Transit (CAT) survey, the Community Campus attachments provided at the Neighborhood Information Meeting, Notice for the Neighborhood Information Meeting for the Sainvilus Development, Cowboy Christmas and Cherryle Thomas Christmas Around the World Parade and Gala Event flyer.

      A thank you letter by the CRA Staff to all participants and for other county staff who helped was presented as well. CRA Staff thanked everyone for the success of the 11th Annual Christmas Tree Lighting. Staff also thanked Mr. Armando Yzaguirre and his team for decorating the Zocalo Plaza and the Christmas Tree. His staff trimmed the trees, added mulch to the area, and picked up trash. Overall, the area looked very nice.

Mr. Armando Yzaguirre commented that his wife deserves all the credit for the decorating of the Tree and Zocalo Plaza. He hopes this event continues so that they may continue to serve the community in this way. He provided a couple of maintenance updates, the banner arms are up on the poles that have been fixed, A&M staff are waiting on some of the poles. As soon as they are provided, they will put them up as well. Mr. Yzaguirre reiterated that he and his team enjoy serving the community and they hope to continue doing so.

Ms. Christie Betancourt commented that staff have received a complaint that a couple of the angels on the light poles are out. This is due to the transformer. Due to the time now, staff will not be able to fix it this year, however, they will make sure this is fixed for the upcoming year.

Mr. Armando Yzaguirre commented that when he puts the decorations on the poles, he has no power in the daytime due to the timer. Next year, a schedule could be done to solve some of these issues in this matter.

Ms. Andrea Halman commented that this event has been held for 10 years now and the number of cookies has not increased. Many people are coming to this event, and they are enjoying it. She commented that staff cannot get rid of this event. She hopes that more cookies can be purchased as more community members continue to attend this event.

Ms. Patricia Anne Goodnight provided information on what is set to be discussed at the Immokalee Water and Sewer District Meeting. She commented that a group of people would like to discuss with Immokalee Water and Sewer District from eliminating fluoride in their water. She has always worked to protect Immokalee, and in her opinion, eliminating fluoride from the water will affect many. The meeting will be held at 3:30 p.m. on Wednesday, December 20, 2024, at the Immokalee Water and Sewer District office.

3. Public Meeting Calendar (Enclosure 9)
   i. Proposed 2025 Meeting Calendar

   Staff presented the proposed 2025 Meeting Calendar. Both Boards are set to meet jointly on January, June, July, October, November, and December for 2025. The schedule could change depending on what staff brings forward for the merging of the boards. A decision for the Chair and Vice-Chair will be made by the board in January 2025. Staff will provide any further updates.

   Staff also included the 2025 Holiday Schedule that the Board of Collier County Commissioners follow. Boards approved the 2025 Calendar as presented noting that meeting dates will change if board merger is approved.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the 2025 Public Meeting Calendar as presented. Ms. Lupita Vazquez Reyes seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the 2025 Public Meeting Calendar as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 5-0.***

H. Other Agencies

1. FDOT Updates
   No updates.

2. Other Community Agencies
   No updates.

I. Community Presentations

1. Sainvilus Subdivision – Canon Sandora, PE (Enclosure 10)
   Mr. Canon Sandora introduced himself and Mr. Bill Glass. Mr. Canon Sandora is the Civil Engineer for this project and Mr. Bill Glass is the Architect. Mr. Sandora commented that the developer is local, and his name is Mr. James Sainvilus.

   Mr. Canon Sandora provided information on the property. There is an existing house on the property. The property is four and a half acres. The property is located South of Roberts Ave and North of Forrester Ave. The developer is going through a Planned Unit Development (PUD) process with Collier County to allow for the development of 27 units total.

   Mr. Canon Sandora presented the conceptual plan of this development. They are proposing 13 buildings that are 2 single-family with a zero-lot-line attached and one common wall. The buildings will be on their own lot but are attached by one common wall. For lot 27, there will be a single-family home for the developers' parents to live at, the existing home will be taken down. The current use for this property is for a Residential Single Family 3 (RSF-3), which is 3 units per acre. The PUD would allow for 6 units per acre, which is under the Immokalee Future Land Use Plan, where land use for Medium Residential Subdistrict allows a base density of 6 units per acre. The developer is not going for affordable housing, so the developer will be able to choose the lot sizes that work for the site. There are plans to have one road coming down on Forrester Ave with a cul-de-sac at the end, which 24 units would access through Forrester where sidewalks will be put on both sides of the road. The other 3 units will have access through Roberts Ave, that is less of a road but allows them to keep a lot of retention area in case of a flooding. Mr. Sandora commented that the retention plan could vary since they are not at the final stages. He reiterated that this is all conceptual.

   For lots size RSF-3, 10,000 square feet is the minimum lot size, setbacks are 30 feet in the front, 25 feet in the rear, 7 and a half on the sides, the minimum widths are 95 feet, and the corner lot and interior lot are 80 feet minimum width.

   They are proposing a minimum lot size of 3,900 square feet, front setback of 23 feet, rear setback of 15 feet, unattached side setback of 7.5 feet and a side setback to the Right of Way of 15 feet.

Mr. Mike Facundo asked for clarification on where the property is located and asked why lots 25, 26, and 27 are accessible only through Roberts Ave. He also asked if they have reached out to the neighbors in Forrester Ave.

Mr. Canon Sandora commented that while doing the conceptual plan, the layout worked well with Forrester Ave. The traffic studies and the level of service did not change based on the 27 units. They have mailed letters to all neighbors surrounding the area. A neighborhood information will be held at the CareerSource SWFL Conference Room at 4:30 p.m. on December 11, 2024.

Mr. Mark Lemke asked for clarification on the buildings and was confirmed that there's one building on 2 lots.

Mr. Patricia Anne Goodnight commented whether this is affordable housing and if individuals will be able to own or rent the homes.

Mr. Canon Sandora said this development is not for affordable housing and the developer is planning for others to own the homes. The development will be for market rate housing. An Ad Valorem Tax would be paid for this development.

Ms. Lupita Vazquez Reyes commented the idea for this property to increase housing that attracts service professionals such as teachers and firefighters. She hopes this development is an average cost for them.

Mr. Bill Glass commented that Mr. James Sainvilus has been adamant about doing something that out of the ordinary. Mr. Sainvilus wanted to make these units multi-generational. They have designed 2 master bedrooms in the lower level with a master kitchen, living and dining room, and a 2-car garage. The higher level will consist of another master, 2 other bedrooms, and a big living room. He reiterated that this is still in the conceptual stages.

Mr. Glass presented the elevations of the units.

Ms. Christie Betancourt asked if this has been presented to the County. Mr. Canon Sandora commented that they are going through the PUD process, they are close to that point but have not presented anything yet.

Ms. Lupita Vazquez Reyes asked who would be managing the property or if an HOA will be established. Mr. Bill Glass followed up and said that a few discussions have been made with Mr. James Sainvilus and it could be that an HOA is established.

Ms. Cherryle Thomas asked when they anticipate starting this development, if all is approved.

Mr. Bill Glass commented that he is unsure, it all depends on how Mr. James Sainvilus wants to phase this development.

Mr. Mark Lemke asked if they need an approval from the CRA Board.

Mr. Canon Sandora commented that they are just presenting to the CRA Board to receive feedback.

Ms. Andrea Halman commented on the roundabout in the plans presented and asked if they plan to stick with this concept. She mentioned that many people need to be able to get out of the property. She also asked if firetrucks will be able to go in and out of the property.

Mr. Canon Sandora commented that it allows some space for retention area; by not having a complete road to Roberts Ave. He commented on the cul-de-sac, and said it would be helpful to have only the community members of the area go in the property and hopefully help alleviate others from coming in. As for firetrucks, they will be able to get in and out of the property, the County has a standard on this matter.

Mr. Mike Facundo commented on the grid system and asked if it mirrors the existing grid system. Mr. Facundo provided brief information on a location in Gainesville, where the developer connected and tied into the city grid fabric. He asked if they have any consideration or any exploration on this.

Mr. Canon Sandora commented that they have viewed into adding an exit onto Roberts Ave and have a road go all the way through, which will add another stop sign on Roberts Ave. He commented that this could lead into an additional interruption in traffic but by just having traffic go through Forrester, there will not be much interruption.

Ms. Lupita Vazquez Reyes asked if there are any plans to extend Forrester Ave to Main Street.

Ms. Christie Betancourt commented that this may be developed later but it's not something that's in the plan. A previous developer looking to get the area was planning to make an access all the way through.

Mr. Mark Lemke asked on the amount of driveway for additional vehicles since the plans show for a 2-car garage. He provided concerns on having cars parked on the street or over the sidewalk if there's not enough space.

Mr. Mike Facundo further commented on the Arrowhead property in Immokalee and said that this is a good example of a development not having sufficient parking and how cars are piled up all over the yard and driveway. He also provided a few comments on the need of urban planning and gave an example of the TIGER grant and how there could have been more consideration into it. Overall, the goal is to have a development like this fit within the urban planning and create a neighborhood that fits with the community.

Mr. Canon Sandora commented that Mr. James Sainvilus is a local person, and he cares about the community, and how he probably understands the importance of taking in considerations such as landscaping and much more. Mr. Sandora provided information on the driveway and said there will be a 2-car garage and the driveaway will allow for about 4 vehicles to fit comfortably.

Mr. Mike Facundo commented on the fact that Immokalee is a walking community and how we must consider others who will most likely have to walk around if there is no pathway to Roberts Ave. He said urban fabric allows not only for the vehicle to exist but for a person to be able to utilize and move around the area.

Mr. Mark Lemke further commented on Mr. Mike Facundo point and said even though there is no exit road onto Roberts Ave, a sidewalk that comes out Roberts Ave would be nice so that community members can come out and get to Main Street

Ms. Lupita Vazquez Reyes commented on a good example in Estero Park and said there's a neighborhood that that is connected by a small trail to the park. She said this could be suggested to Mr. James Sainvilus and have him consider this as well.

Mr. Bill Glass commented that having some sort of connectivity like a sidewalk or trail is a good idea, however, he doesn't think that having open access for motor vehicles to go through is the best idea. Brief discussion was made that this development would not be a gated community.

Ms. Lupita Vazquez Reyes addressed that the person wanting to invest in the community is local and is wanting to do something with the property that will bring some impact on the tax base and provide middle to higher income homes. Especially culturally, since there are many who want to live with their families. She agreed that there needs to be some way of helping alleviate others from zooming into this community, but she also believes that there should be some type of pedestrians' connectivity since Immokalee is a walking community. She also elaborated on the access of food points.

Mr. Bernardo Barnhart commented that he loves the concept of this development. This will help bring value to the community. Mr. Barnhart commented to Mr. Canon Sandora and Bill Glass that they may need to consider talking to Mr. James Sainvilus on the 2-car garage. Mr. Bernardo Barnhart said that Ave Maria is a good example and said nobody uses 2-car garage. The majority use it for either storage or as an extra room.

Mr. Canon Sandora commented on the idea of the sidewalks and pedestrian connectivity. They will bring this up to Mr. James Sainvilus.

Ms. Sylvia Ocanas commented and said that Immokalee is an agricultural town where many people have huge trucks. She said that they will have a clutter in the area where there is not going to be a pathway.

She does not see why there's not 2 entrances and why they choose Forrester Ave as the access point if Forrester Ave is a dead-end street. She cannot imagine having 2 houses on that acreage and being able to keep it cleaned up and appropriate for the kids to play.

She acknowledged that this would be a good tax money revenue, however, there will be a lot of traffic on a dead-end street. She lives on Forrester Ave., and she commented that she is not satisfied with any kind of housing going on this property. She also commented on the trash and asked where the trash will be going and if there is going to be a trash can for each unit. She also commented that the garages will most likely be used for additional housing and said that people do need housing but, in an area where there is plenty of space for people to move around and where kids can play.

Mr. Canon Sandora commented that the acreage came about on the future land use according to the Immokalee Area Master Plan which allows a Medium Residential Sub District which allows for a base density.

Ms. Sylvia Ocanas further commented on how the property is being used right now and said that there are kids playing around in that empty lot and said there is no supervision out on this property. They will have to encounter more of this with 27 units.

Mr. Jacinto Cervantes lives off of Roberts Ave. He commented on the concept of this development and said the units will all be 2-story buildings and will have windows facing towards the neighbors. He asked what they plan to do to keep others from viewing other neighbors and making sure there is privacy for others.

Mr. Bill Glass commented that the zoning allows the ability of 35 feet, but they are below that. He commented that more landscaping could help with this matter.

Mr. Jacinto Cervantes asked if a privacy wall could be built since landscaping such as trees or bushes could get into others property and maintenance would be needed. Mr. Bill Glass followed up and commented that even with a privacy wall, the second floor still has view of the area surrounding them. Mr. Glass commented that landscaping will probably be the best way to help with others getting that privacy, however, they have not addressed this yet in their plan. Mr. Jacinto Cervantes commented that he is against this, and said it's not a great idea. He further commented on Mr. James Sainvilus other property.

Ms. Eveyln Bahena lives on Forrester Ave. She commented on an incident that occurred during Hurricane Milton. She said Mr. James Sainvilus tree fell on top of her roof; She and her husband went to speak with Mr. James Sainvilus about the incident; however, she was told by Mr. Sainvilus' son that it was not Mr. Sainvilus responsibility to remove the tree. Ms. Bahena husband had to pay to remove the tree. She provided this example to show the responsibility of Mr. Sainvilus and commented on who will take care of this property with all the units. She further commented that these units will be an inconvenience, and it will affect all the residents nearby especially with traffic, privacy, and the children who play in the area.

Mr. Mike Facundo commented that it may be that the developer and all who are working on this development consider making an access point off of Roberts Ave.

Ms. Bernardo Barnhart agreed with Mr. Mike Facundo and also commented on the garages. He has seen where many use the garages as a living space and said it would be helpful to have some type of communication with those who reside in the development on the amount of people who are able to live in the home.

Ms. Lupita Vazquez Reyes commented on the importance of management to occur in developments like this. At the FRA Conference, she and other board and staff members attended this year, she learned that many people who live in urban sprawl areas in Florida are accustomed to having their own space and she understand it a change to the community. She further commented on the concerns of the community with limited housing and empty lots being owned by people who are not doing anything with the property. She elaborated on the importance of having a good relationship with the community members and believes that Mr. James Sainvilus should have been present at this meeting to address the concerns made by the neighbors near this property.

Mr. Jimmy Nieves asked Mr. Canon Sandora and Mr. Bill Glass, if they have an idea as to how much trash will be accumulated or if they will be using a trash compactor. He also asked if a garbage truck will be able to access in and out of this property. Mr. Canon Sandora commented on this and expressed that progress is needed on how the disposal of trash will be. As for the access of a garbage truck, there will be accessibility since they have to follow the Collier County code.

Ms. Andrea Halman said that no one is able to control how this land will be used. She commented that others may view Mr. James Sainvilus differently than his neighbors.

Mr. Mark Lemke commented that Mr. Canon Sandora and Bill Glass should discuss all that was discussed at this meeting and what is set to be discussed at the Neighborhood Information Meeting to Mr. James Sainvilus.

Ms. Andrea Halman reiterated the Mr. James Sainvilus is allowed to do what he likes on his property, and said she takes pride in the fact that he is trying to something really well for the community.

Ms. Sarah Harrington introduced herself to the members of the public. She commented that as long as the property owner follows the Land Development Code and Growth Management Plan, one may do what they wish with their property. She noted that it’s important to take information in meetings like this and relay it to the property owner to incorporate the best development possible in the neighborhood. She commented on the density and the structure that has been presented. She asked both Mr. Canon Sandora and Mr. Bill Glass on the current progress.

Mr. Bill Glass commented that they are in the soft schematics at this point. He further commented that discussions will be done with Mr. James Sainvilus on a connection to Roberts Ave. He also commented that an HOA structure would be beneficial and a trash compactor.

Ms. Patricia Anne Goodnight commented on the development and confirmed on the concept of the single-family home with room for another close family member and having this development be for families to buy.

Mr. Mike Facundo commented that they could have a design session with the community members to see other solutions they can come up with moving forward. He also commented that everyone has to keep an open mind, especially with trying to welcome development because we all need the tax base for the community.

Mr. Canon Sandora commented that a Neighborhood Information Meeting will be held, and this could help them understand those who live around the property and hear their suggestions.

Ms. Sarah Harrington provided information on the occurrence of a Neighborhood Information Meeting.

Ms. Christie Betancourt commented on the Neighborhood Information Meeting for the Sainvilus development.

Mr. Canon Sandora said that Mr. James Sainvilus will try to attend the Neighborhood Information Meeting online.

Mr. Jacinto Cervantes asked if there would be any other meetings for this development. Mr. Canon Sandora followed up and said there will be other public hearings.

Mr. Mark Lemke applauded the public who attended the meeting to voice out their concerns on this development. He commented that the board and staff like to see others show up when there is concern and wishes that others join as well when they have concerns. He asked that they continue to work together so that there is progress for all.

Mr. Canon Sandora commented that there is a Teams link for those who are interested in attending online.

2. 2050 LRTP (Long Range Transportation Plan) Collier Metropolitan Planning Organization (MPO), Anne McLaughlin, Executive Director (Enclosure 11) *(Time Certain 10:00 a.m.)*
   Ms. Dusty Hansen introduced herself. She is a planner with the Collier Metropolitan Planning Organization (MPO), who is presenting on behalf of the Collier MPO Executive Director, who is sick.

Ms. Dusty Hansen thanked the CRA Board for placing them into the Agenda and allowing them to present. The Metropolitan Planning Organization (MPO) is working on the Long Range Transportation Plan, which looks at the anticipated transportation need through 2050. Jacobs Engineering, who is the consultant for the plan, will provide a presentation on the status and overview of the plan.

Ms. Sonal Dodia, who is representing Jacobs Engineering, introduced herself. Ms. Colleen Ross introduced herself as well. She is the with Jabos Engineering and is the Project Manager for the Long-Range Transportation Plan update.

Ms. Sonal Dodia presented the Agenda for the presentation. The LRTP overview, schedule, planning emphasis area and factors, vision and goals, roadway needs, cost feasible plan, Immokalee roadway needs, Immokalee resilience needs, and next steps are discussed.

Ms. Sonal Dodia provided information on the Long Range Transportation Plan (LRTP) and said it is updated every 5 years and it's a master plan for the MPO. The last update was for the 2045 LRTP and it was adopted in December 2020. The LRTP is required to receive federal transportation funds. The LRTP is a guiding document for the future improvements to the County transportation network and it covers a broad range of issues including environmental impacts, economic development, mobility, safety, security and quality of life.

The LRTP Schedule

- March 2024: Project kick off
- 2024: Establish Goals & Objective and Financial Resources
- 2024: System Needs.

MPO staff are currently in this process of developing the needs. They would like to receive input from the boards on this, however, they would like to introduce the vision and goals, all planning emphasis, factors, and sources they used to develop the plan.

One of the major factors that contributed to the development of the LRTP vision and goals was the federal planning emphasis areas that were outline in the Infrastructure Investments and Jobs Act (IIJA). This law provides federal funding for highway safety programs, transit program, and other transportation programs. Under the IIJA, the Federal Transit Administration (FTA) and the Federal Highway Administration (FHA) issued the 2021 planning emphasis areas that are required for long range transportation planning.

The Planning Emphases Areas include transportation resilience, equity and justice 40, meaningful public involvement, infrastructure connectivity, complete streets, data sharing principles, and planning and environment linkages. MPO Staff considered all areas when they developed the vision, goals and objective for the LRTP update. Additionally, FDOT also periodically issue their own planning emphasis areas to encourage transportation planning agencies to give priority to particular issues when developing their planning programs.

The FDOT planning emphasis area include Safety, Equity, Emerging Mobility and Resilience. The FDOT planning emphasis area were also considered for the vision, goals and objectives.

The LRTP is also legally required to consider projects, strategies and services that will address the 10 Federal Planning Factors.

1. Economic Vitality
2. Safety
3. Security
4. Accessibility and Mobility
5. Environmental Quality
6. Multimodal Connectivity
7. System Efficiency
8. System Preservation
9. Resiliency & Reliability
10. Travel and Tourism

Many of the factors overlap with the Federal and State planning emphasis areas and were also considered when the vision, goals, and objectives were developed.

2050 LRTP Vision:
The Collier MPO 2050 Long Range Transportation Plan envisions the development of an integrated, equitable, multimodal transportation system to facilitate the safe and efficient movement of people and goods while addressing current and future transportation demand, environmental sustainability, resilience, and community character."

Ms. Sonal Dodia commented that the LRTP is a multimodal plan that incorporates the needs and cost feasible projects through the MPO's other plans, which are incorporated by reference. The other plans include the Management Process, Bicycle and Pedestrian Master Plan, Safety Action Plan and Transit Development Plan. The LRTP goals and objective were developed to reflect the roadway needs specifically for Collier County.

The large component of the LRTP update is to project the roadway network needs by the year 2050. This involves coordination with FDOT's District One Regional Planning Model. The first step for staff to develop the roadway needs is to understand what changes in the roadway network have taken place since the last LRTP update as well as the projected socioeconomic data distribution by the year 2050. To understand the changes, staff developed the 2028 Existing + Committed Network. This network includes existing projects which are new roadways or widened roadways that were constructed and open to the public by 2019 and the committed projects that will be in construction by 2028. The socioeconomic data for 2050 was developed and included factors such as population housing, employment, and school enrollment. A growth model was used to predict where growth in the County is likely to occur by 2050. FDOT used the MPO's 2028 Existing + Committed Network and 2050 Socioeconomic data from the MPO's and TPO's within the district. The results are referred to as a deficiency analysis.

The deficiency analysis projects where significant congestion problems may occur by the year 2050. The deficiency analysis was used to develop the future roadway needs in Collier County. Ms. Sonal Dodia commented that staff would like to hear from Immokalee community members on the needs that have occurred since the last LRTP update.

FDOT allows each MPO to model five alternative networks to test potential networks that could resolve deficiencies. The first alternative network was to find deficiencies or needs for Collier. Jacbos Engineering staff and Collier MPO staff have received the draft results of the alternative, one from FDOT which are being vetted. Ms. Sonia Dodia commented that they are now preparing alternative 2, which is being coordinated with the Lee County MPO. This alternative will examine the benefits of adding new potential reliever roadways that could improve connectivity between Lee and Collier County. Alternative 3 and 4 will build off the 1st and 2nd alternatives and help determine the future cost feasible plan. These alternatives are financial constraint and include cost associated with design, right of way construction and mitigation of environmental impacts. Jacob Engineering will be coordinating with Collier County Transportation Management, Lee County MPO and other stakeholder like the CRA and MSTU Board. Alternative 5 will be a transit run where staff will be provided an idea of where transit is used and needed and the best use of transit dollars.

Ms. Sonal Dodia presented the 2050 Potential Roadways Needs within the Immokalee CRA and MSTU. A summarized table was presented to show the current status of roadway projects that were identified in the 2045 update. The first two projects on State Road 29 are in the 2020 existing and committed network. The following two projects are funded or partially funded in the 2045 plan. The last State Road 29 project in the potential roadway needs table is a new need that was identified in this update.

The remaining projects are local projects that were identified as either fully funded, partially funded or a need in the 2045 plan. They were also identified as needs for the 2050 update. Staff would like to receive the boards input on this list.

Ms. Sonal Dodia also commented on another important topic that needs to be considered when developing the LRTP and that is resilience. The resilience is a federal planning emphasis area under both the IIJA and FDOT. Newer requirements have emphasized a greater need for resilience in Collier network since Collier County is susceptible to storm surge and flooding as well as other water related hazards.

The next phase of the LRTP includes continuing stakeholder coordination, obtaining input on roadway needs, and developing travel model alternatives to help inform on the cost feasible projects. Ms. Sonal Dodia asked if anyone had any input to what was presented.

Mr. John Dunnuck asked if they had any plans to look at existing cross section to bring them up to the standard that they should be. He commented that coming into Immokalee Road, the community is dealing with some of the improvements on First Street that deal with constrained Right of Way.

He further asked if there are any plans to acquire the necessary Right of Way to bring it up to a full standard for a 4-lane cross section.

Ms. Colleen Ross asked for further clarification on the road. Mr. John Dunnuck further commented that there is a project that staff is working on to do sidewalk improvements, but they are dealing with holes in the middle of the sidewalks due to an expansion of 4 lanes and it was expanded within the existing Right-of-Way.

Ms. Colleen Ross said that this would probably be part of the Bike Pedestrian Master Plan that will then be incorporated into this plan. She further commented that she is unaware if this project is in the plan, but they will find out and add it in the needs list. Ms. Collen Ross provided information on the roadway needs and said the needs are modeled with FDOT District One D1 Regional Planning Model. This model does not get into the specifics and can only really recognize roadway expansion, new relievers, and extensions of a road. Ms. Collen Ross asked if there are just sidewalks on 1st Street or if there are any bike lanes.

Mr. John Dunnuck commented that there are no bike lanes on First Street, just sidewalks. There are light poles in the sidewalk as well.

Ms. Colleen Ross commented that they will have to discuss this and see if this is in as a need and note it as an issue. She noted that the sidewalks on First Street might not be up to standards.

Ms. Dusty Hansen commented that she could provide Mr. Dunnuck comment to the Executive Director, Ms. Anne McLaughlin, and Project Manager for the Bike Master Plan, which is currently underway.

Mr. Mike Facundo commented on the Westclox Street Extension and asked for clarification if this will be a need in 2050. Ms. Collene Ross commented that the extension was identified as a need in the 2050 plan. If it becomes cost feasible, then the cost feasible is broken up into funding periods. Staff are understanding what is cost feasible, how much funding they have, and in what year it could be funded from 2028 to 2050.

Mr. Mike Facundo acknowledged that there is set to be a 4-lane improvement from the roundabout on SR29 down to New Market Road, however, currently when there are accidents on the SR 29 there's no other outlet and how people have to go around. He doesn't understand on how the priorities are done but he would like to know if they had any alternative solution and if there's anything that can be done to move this item further along.

Ms. Colleen Ross commented that she understood what he meant and commented that the Westclox Extension is a priority for the community.

Ms. Christie Betancourt commented that the Little Leaue Rd Extension and Westclox Street Extension have been in the list for a while. She noticed that they both now have the word funded and asked if specifics could be given as to when the design will become funded.

Ms. Colleen Ross clarified that the Little League Road Extension in 2045 update was funded for design and Right of Way. Westclox Street Extension in the 2045 update was funded for design, right of way and construction. She commented that they have less funds this time and that the needs are similar to the previous update. The only new need that was identified is SR29/North Main Street. Ms. Ross reiterated that the input from everyone is important as far as prioritizing the funding and if they are important, then they will note that as well. The needs do not change necessarily bit the funding does. They will continue to work with the County as well on funding and other needs.

Brief discussion was made on the list and how input is received by other boards.

Commissioner McDaniel commented that this is the need analysis. There's a process on the needs, then cost feasibility, and the available amount of funding. He followed up on Mr. Mike Facundo comment and said that an alternative route would be a Little League Extension North up to SR 82. With the acquisition of the Willams Farm, the County should get the road Right of Way necessary to take Little League Road down to Immokalee Road and have an alternative route in case there is blockage on SR 29. He said with the improvements that are coming in with the 4-lane should help alleviate traffic significantly.

Ms. Andrea Halman commented on the other boards such as the Bicycle & Pedestrian Advisory Committee (BPAC), Technical Advisory Committee (TAC), and Citizens Advisory Committee (CAC) and is unaware if any other Immokalee community members are on these board to provide input.

Commissioner McDaniel commented that the BPAC, TAC, and CAC are all Advisory Committees. The presentation presented is for the Immokalee community to make their needs known. The Long Range Transportation Plan is done every 5 years.

Discussion was made on the need to have other representatives from Immokalee be part of Advisory Committee like the BPAC, TAC, and CAC and also provide input on the needs for Immokalee.

Ms. Colleen Ross commented on the number of years for a project to get into the list. She said as long as it's a need, it helps because if there's funding and it fits the requirement then there's a possibility that it could be completed. She reiterated that they have presented on what they identified as a need and would like to know if there are any other needs.

Ms. Dusty Hansen commented that there is an Immokalee representative on the Citizens Advisory Committee. As for the Technical Advisory Committee, all committee members are technical staff, although she is not aware if they reside in Immokalee.

She also provided information on the LTRP and said that that the LRTP does place an emphasis on equity and the Justice 40 initiative and making sure that transportation disadvantaged individuals in areas that need connectivity the most are focused on.

Ms. Lupita Vazquez Reyes asked if any of the input received will be affected by Federal change and Federal administration on how funding occurs.

Commissioner McDaniel commented that administration after administration have emphasized on multimodal transportation.

Ms. Colleen Ross commented that IIJA has a few more years to be in place. As each administration comes up, the administration will come up with their own funding mechanism for transportation.

Ms. Lupita Vazquez Reyes concern included on whether or not rural areas would become deprioritized.

Commissioner McDaniel commented that this will not be happening for rural areas. There are many movements that support economically deprived rural communities. Through his tenure, the priorities listed have remained on the list.

Ms. Christie Betancourt asked if the Little League Extensions Road to Immokalee Road will be added to the list or if it will be tackled separately.

Ms. Colleen Ross commented that it would be added in the needs list. Staff will be coming back to the boards once they know how much funding they have and where they will be able to spend it on and what they can afford to do.

Discussion was made on having an advocate for Immokalee on other boards. Commissioner McDaniel further commented on the blended funding source coming out of Federal, State, and Local dollars. He also commented on the priorities of Coller County and the success of tax savings for the community that has occurred.

Ms. Dusty Hansen commented that there will be opportunities for public workshops for everyone to attend. Residents and Advisory Committee members will be welcomed and are encouraged to attend and provide their input. They can keep the boards updated on this.

Ms. Colleen Ross reiterated that they will be reaching back out and will be getting public input on both the roadway needs and cost feasible. They are looking to start public outreach in January and will most likely post it on social media with maps that show where the needs are at. She also said they are open taking input on intersection improvements.

Mr. Mark Lemke asked on the Little League Extension South from Lake Trafford Rd to Immokalee Road. Commissioner McDaniel commented that the Little League Extension South is from a separate local funding source. He also reiterated that everyone is welcome to provide input on any intersection improvements.

Ms. Colleen Ross said everyone may also email County Staff, Ms. Anne McLaughlin and Ms. Dusty Hansen, if anyone would like to provide any needs.

Commissioner McDaniel commented on how long the community has to provide input before the LRTP is complete. Ms. Colleen Ross said that all who would like to provide comments have about a couple of months, they would like to receive comments by the end of January. Commissioner McDaniel suggested that an Agenda Item be made on the next few months for the CRA and MSTU to provide input on the Immokalee list for the 2050 Potential Roadway Needs.

Ms. Lupita Vazquez Reyes asked if including other suggestion or needs would affect the listing and bump other needs off the list. Ms. Colleen Ross commented that from a need standpoint there will be an adding to the list, no bump offs will occur, and all become documented for when future money is available. She suggested that all needs be provided so that it assists when funding becomes available.

Ms. Lupita Vazquez Reyes asked if it's multi-funding for various different projects and if there is a certain way to know what would move up to a priority. Ms. Colleen Ross commented that some funding has strings attached to it. Ms. Ross reiterated that they will be coming back to the boards to inform other on their funding and what they believe is cost feasible.

Ms. Dusty Hansen commented that the most important thing is to make sure that a need is documented because if a funding source becomes available later in the future or there's a new funding source, it provides the ability to secure the money.

Ms. Colleen Ross provided information on the Resilience Needs. She commented that FDOT have identified a couple of areas in Immokalee. SR29 and South 1st Street are on the map. She commented that if there are significant issues in the area as far as resilience like flooding, they would also like to hear input on that as well so that it's at least documented.

Ms. Christie Betancourt commented that New Market Road should be added in the resilience needs list. She provided information on the specific limits and how the TIGER Grant is addressing some areas of concerns. Ms. Colleen Ross asked if the TIGER grant information could be provided to them, so they have a better understanding on how this is being addressed.

Ms. Andrea Halman commented on whether or not Zoom will ever become available for other Immokalee community members to attend other meeting as well like the BPAC. Ms. Dusty Hansen addressed this matter and said that many have noticed that having the ability to attend by Zoom has affected the in-person quorum requirement for the MPO Advisory Committees. However, there are several public workshops, and public meetings that offer virtual participation related to the plans.

She further commented that there may be a public outreach event in Immokalee, at least one for the Long Range Transportation Plan and also for the Transit Development Plan.

Ms. Christie Betancourt asked on the Alternative 5 – Transit Run, and if there are any comments being taken for public transit connectivity.

Ms. Colleen Ross said through the Transportation Development Plan, they are taking public comments. The alternatives help staff in exploring the different ways with a cost feasible plan in mind.

Ms. Christie Betancourt commented that the transit from Lee County Transit to Collier County Transit would benefit many.

Ms. Colleen Ross commented that the needs are there, but they are working through it.

Ms. Dusty Hansen commented that the analysis will be presented in Immokalee in a public workshop as for the connectivity with Lee and Collier, this is something that staff anticipate being incorporated into the Transit Development Plan overall. The Long Range Transportation Plan is a higher-level view of the transit, and the Transit Development Plan goes more into the details of the needs, recommendations, and services. Ms. Dusty Hansen said she will provide the public workshop information to all so that plenty of time is given to spread the word.

Commissioner McDaniel commented that the expansion of transit with Lee and Collier are being discussed within both MPOs.

CRA Staff thanked County staff and Johnson Engineering staff.

CRA Staff will add the needs list to the agenda in the next meeting and continue to take comments.

J. Old Business.

1. Advisory Board update
   Staff will provide information in the January meeting.
2. Contractor Maintenance Reports
   i. A&M Property Maintenance Report & Schedule (Enclosure 12)
   CRA Staff provided Enclosure 12, which is the maintenance report and the look ahead for January. Staff commented that any pending invoices approved and processed are shown in the footnotes of the reports. Staff approved a 50% payment to A&M Property Maintenance for the tree and decorations at the Zocalo. The rest will be paid when everything is put away.

   Ms. Christie Betancourt commented that she does have an assignment through the County for the maintenance department to provide a listing of the A&M contract, the work FDOT and A&M does, and to also provide the 60% plans of Main Street, even though it's on a stop work notice. Staff noticed in their walk through that the areas that need improvement on Main Street have been marked.

Ms. Lupita Vazquez Reyes asked if there has been a significant increase with A&M Property Maintenance.

Ms. Christie Betancourt commented that there is a very strenuous solicitation process. Staff have a 3-year contract with 2-year renewable every 5 years. This is the third time A&M has won the bid, in the last round staff received 5 bids but A&M won the bid. Maintenance was in the lower ends of $175,000, however staff have included other work for A&M, so the cost is up to $200,000 plus more.

Ms. Lupita Vazquez Reyes asked if Parks and Recreation had any budgeting to help with the Zocalo Maintenance.

Ms. Chrisie Betancourt commented that there is a cost share between the CRA and MSTU for the Zocalo. Parks and Recreation Park Rangers and the Sherrif's Department are still monitoring the area. Parks and Recreation staff have been very helpful with the event and there was a full staff helping CRA Staff during the tree lighting event.

3. Brief Staff Project update
   i. Immokalee Sidewalk Phase III – Eustis Ave. and W. Delaware Ave. (Enclosure 13)
   Staff provided a staff report so that board and members of the public have an update on this project. The solicitation process ended in September, staff had to make sure that the contractors met all the requirements and had all the paperwork. The selected contractor is Marquee Development, Inc. Staff hope to take this award to the Board of Collier County Commissioners in January, this award is still with Procurement. Staff commented that this was under the cost the staff estimated. The grant received by staff was $987,000 but the proposed cost is $1,101,179.50. Staff provided a brief step process once the award is approved.

   Mr. Mark Lemke asked how many linear feet of sidewalks are set to be installed. Staff commented that it's 2,500 linear feet on each side, so overall 5,000 feet.

   Ms. Lupita Vazquez Reyes asked if water and sewer, and drainage are of any concern in this area. Staff commented that they are working on this project to address the concerns.

   Ms. Lupita Vazquez Reyes asked if the Immokalee Water and Sewer have the resources or infrastructure to help address this matter as well. Staff commented that the Immokalee Water and Sewer District have seen the plans and provided comments on most conflicts, however, there are issues at times once work is being done.

   ii. First Street Corridor Safety Project update
   Staff will provide a staff report at the next meeting. Staff are working to phase this project. A Grant Agreement was presented to the Board of Collier County Commissioners and staff will have an Amendment to the second Agreement for the construction. The staff report at the next meeting will give an update on the progress for this project.

iii. Land Development Code (LDC) update
Staff provided an update. A presentation will be given at the next meeting. The CRA and MSTU Board will be meeting jointly to get an update on added language for a Community Facility (CF) mobile food truck vehicles to be allowed on Community Facility zone areas. The Executive Director, Mr. John Dunnuck, asked that this be presented to the boards.

K. New Business.
No new business.

L. Citizen Comments
Ms. Christie Betancourt commented that the CRA, Immokalee Library and the Shelter for Abused Woman and Children will be presenting at the Interagency Meeting, all are invited to attend. The meeting is today at 11:30 a.m. in this room.

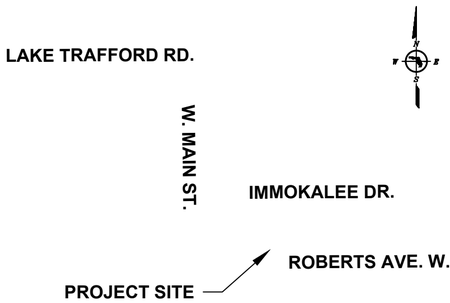
Commissioner McDaniel provided information on the Private Emergency Repair Roads. The Board of Collier County Commissioners approved an amendment to Ordinance 2023-71 to remove roadways that are no longer unpaved, add unpaved private roadways and establish an opt out provision. He commented that in order to do spend taxpayer money on private land, a state of emergency must be declared. He hopes that in the second BCC meeting in January, they will be able to issue the declaration of emergency. Commissioner McDaniel also addressed that when one decides to live on a private road, it their responsibility to fix their own. Since this is the first time something like this is done in Florida, Commissioner McDaniel hopes that this item continues to progress.

M. Next Meeting Date
The CRA Board and MSTU Board will be meeting jointly on Wednesday, **January 15, 2025**, at 8:30 A.M. at CareerSource SWFL.

N. Adjournment
Meeting adjourned at 11:04 A.M.

**** Zoom Meeting chat is attached to the minutes for the record.***

SITE CONCEPTUAL PLAN FOR SAINVILUS SUBDIVISION



LOCATION MAP

SITE DATA TABLE

PROPERTY ADDRESS:	1300 ROBERTS AVE W. 1215 FORRESTER AVE. IMMOKALEE, FL
PARCEL NUMBER:	00121520003 00127565509 00127564005 00127520007
SITE AREA:	4.67 ACRES
UNINCORPORATED AREA:	COLLIER COUNTY
CURRENT ZONING:	RSF-3
FUTURE LAND USE:	MR
EXISTING LAND USE:	SINGLE-FAMILY HOUSE, VACANT
PROPOSED LAND USE:	PUDZ - SINGLE-FAMILY ATTACHED

ADJACENT ZONING / FLU / USE

NORTH: RSF-5 / MR / SINGLE-FAMILY HOMES
SOUTH: MPUD / CMU / SINGLE-FAMILY HOMES
EAST: RSF-3 / MR / SINGLE-FAMILY HOMES
WEST: RSF-3 / CMU / VACANT

LOT BUILDING SETBACKS

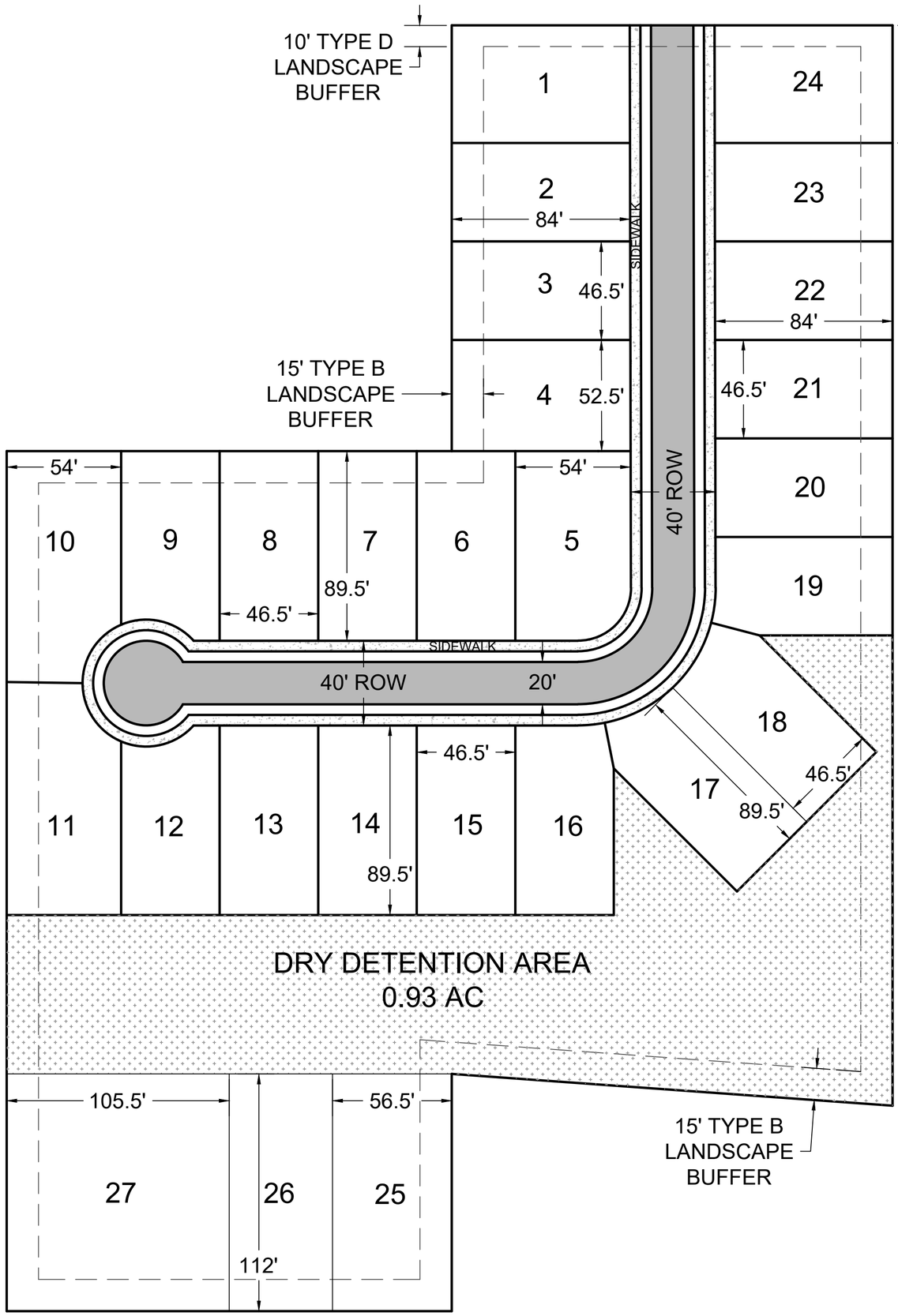
FRONT: 20'
REAR: 15'
UNATTACHED SIDE: 7.5'
SIDES ADJACENT TO ROW: 15'

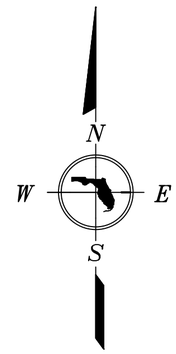
LAND USE CALCULATION

SINGLE-FAMILY HOME LOTS: 3.21 AC
RIGHT-OF-WAY: 0.53 AC
DRY DETENTION: 0.93 AC

LOT CALCULATIONS

MINIMUM LOT DIMENSIONS: 84' X 46.5' = 3,906 SF
MAXIMUM BUILDING FOOTPRINT DIMENSIONS: 44' X 30' = 1,320 SF
DRIVEWAY AND WALKWAY FOOTPRINT = +/-500 SF
MINIMUM OPEN SPACE PROVIDED: 66%





SITE DENSITY

ALLOWABLE BASE DENSITY:
6 UNITS/AC X 4.67 AC = 28 UNITS
PROPOSED UNITS: 28 UNITS

PARKING

REQUIRED SPACES;
27 UNITS X 2 SPACES/UNIT = 54 SPACES
PROPOSED SPACES:
1 CAR GARAGE + 1 CAR DRIVEWAY
27 UNITS X 2 SPACES/UNIT = 54 SPACES

REQUESTED DEVIATION

DEVIATION #1 SEEKING RELIEF FROM LDC SECTION 6.06.01.N STREET SYSTEM REQUIREMENTS, WHICH REQUIRES MINIMUM LOCAL STREET RIGHT-OF-WAY WIDTH OF 60 FEET.

NOTE

THIS PLAN IS CONCEPTUAL IN NATURE AND IS SUBJECT TO MODIFICATION AT THE TIME OF AGENCY PERMITTING, PLAT APPROVAL, OR DEVELOPMENT ORDER. HOWEVER, ANY SUCH MODIFICATIONS SHALL BE IN COMPLIANCE WITH THE APPLICABLE LAND DEVELOPMENT CODE (LDC) DESIGN STANDARDS AND GUIDELINES.

ENGINEER: CANON SANDORA, PE
STATE OF FLORIDA LICENSE # 95303
9201 TANGELO BLVD. FT. MYERS, FL 33967
CANON@CS-CE.COM WWW.CS-CE.COM
(239)-692-6738

CANON SANDORA
CIVIL ENGINEERING, INC.

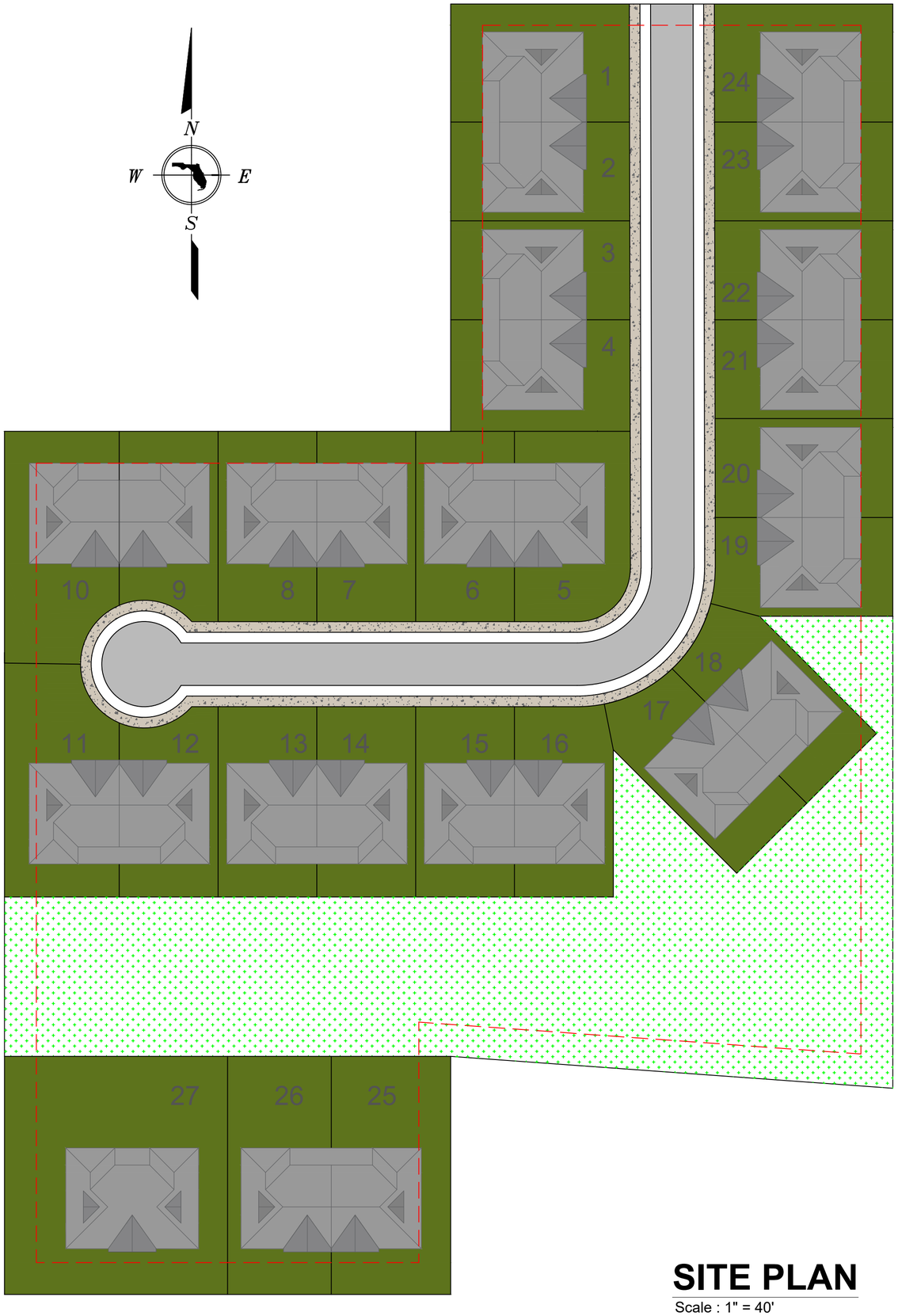
PROPERTY OWNER:
SAINVILUS

NO.	DESCRIPTION	DATE

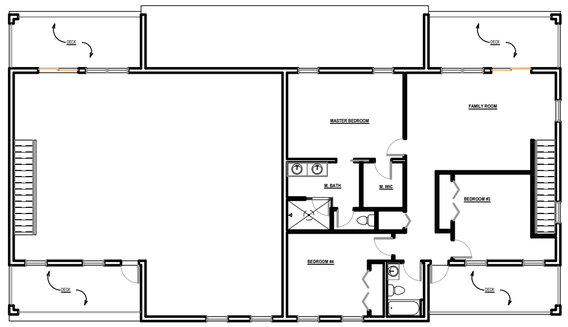
PROJECT:
SAINVILUS
SUBDIVISION

EXHIBIT C
MASTER PLAN

PROJECT NO.
23-022
DATE 4/15/24
BY CGS
SHEET
1 OF 1
SCALE 1"=40'



SITE PLAN
Scale : 1" = 40'



SECOND FLOOR PLAN
Scale : 1/16" = 1' - 0"



FIRST FLOOR PLAN
Scale : 1/16" = 1' - 0"

G2 ARCHITECTURE

3525 BONITA BEACH RD. #110
BONITA SPRINGS, FL 34134
OFFICE: 239-319-0105
CELL: 239-877-2500
WKGLASS@GMAIL.COM

www.g2archinc.com

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260

SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Site Plan -
Floor Plans

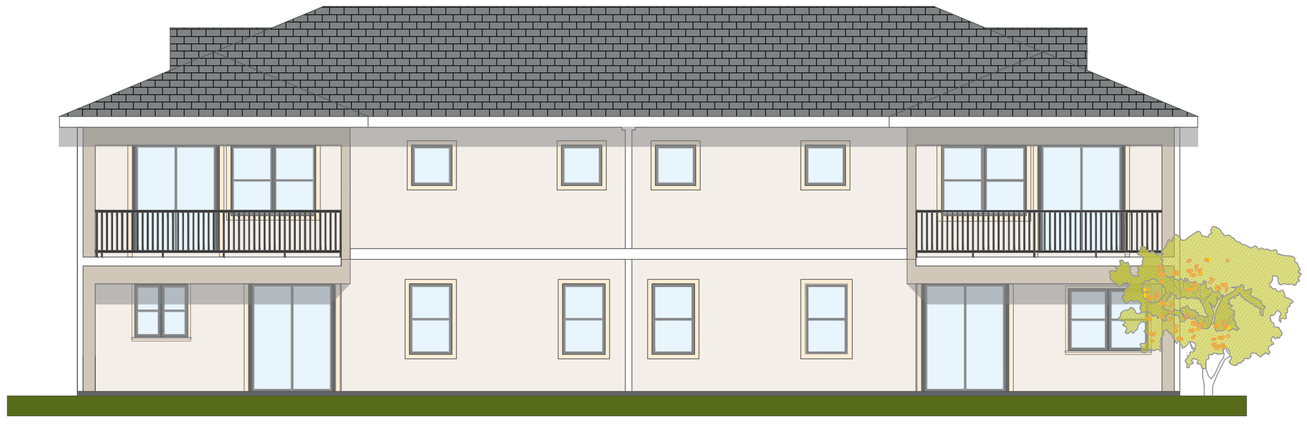
Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A1

Scale	As Indicated



FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION

ARCHITECTURE

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260
SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Elevations

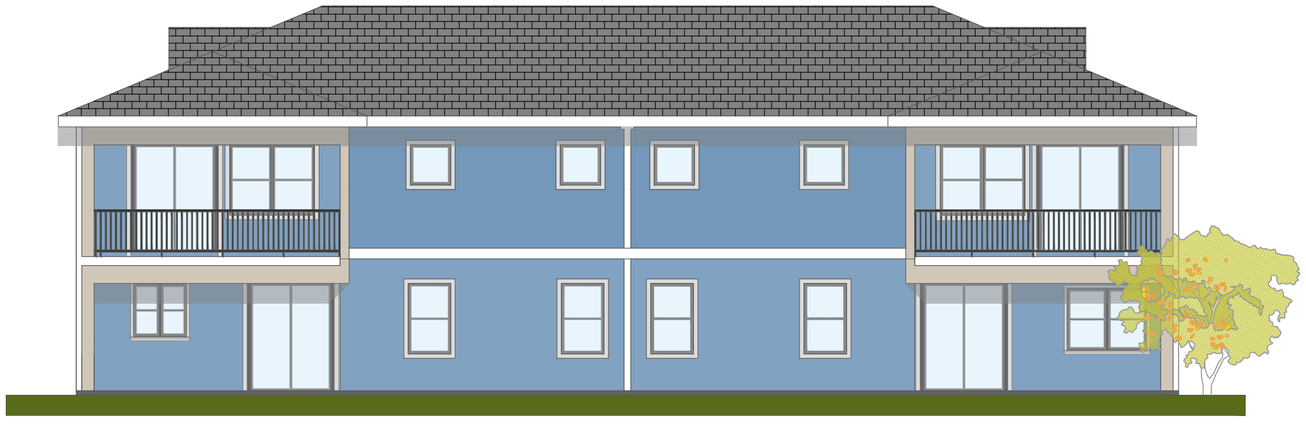
Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A2

Scale 1/8" =1' 0"



FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION

G2 ARCHITECTURE

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260
SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Elevations

Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A2

Scale 1/8" =1' 0"

Zoom Chat
December 11, 2024 Joint CRA & MSTU Hybrid Public Meeting

01:42:55 Lorraine Lantz: I have to leave temporarily but wil be back on

Collier County Community Redevelopment Agency

IMMOKALEE CRA

The Place to Call Home!

Certification of Minutes Approval Form

Prepared by:

Christie Betancourt, CRA Assistant Director
Immokalee Community Redevelopment Area

Approved by:

Andrea Halman, Chairman

The Minutes for the December 11, 2024, 2024 MSTU Advisory Committee Meeting were approved by the MSTU Advisory Committee on January 15, 2025, as presented.

The next meeting will be a MSTU Advisory Committee meeting and will be held on February 26, 19 2025, at 8:30 A.M. at CareerSource SWFL.

All meetings will be publicly noticed in the W. Harmon Turner Building (Building F), posted at the Immokalee Public Library and provided to the County Public Information Department for distribution. Please call Christie Betancourt, at 239-867-0028 for additional information. In accordance with the American with Disabilities Act, persons needing assistance to participate in any of these proceedings should contact Christie Betancourt, CRA Assistant Director, at least 48 hours before the meeting. The public should be advised that members of the CRA Advisory Board are also members of the other Boards and Committees, including, but not limited to: Immokalee MSTU Board, Immokalee Fire Commission, and the Collier County Housing Authority; etc. In this regard, matters coming before the Advisory Board may come before one or more of the referenced Board and Committees from time to time.

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

colliergov.net
twitter.com/CollierPIO
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January 2, 2025

FOR IMMEDIATE RELEASE

Notice of Hybrid Remote Public Meeting
Collier County Community Redevelopment Agency
Immokalee Local Redevelopment Advisory Board
Immokalee Beautification MSTU Advisory Committee
Collier County, Florida

January 15, 2025
8:30 a.m.

Notice is hereby given that the **Immokalee Local Redevelopment Advisory Board** and the **Immokalee Beautification Municipal Service Taxing Unit (MSTU) Advisory Committee** will meet on Wednesday**, January 15th** at **8:30 a.m.** This will be a Hybrid Remote Meeting, and it will be held at the CareerSource SWFL, 750 South 5th Street, Immokalee, Florida. Some of the Board Members and staff may be appearing remotely, with staff present in person. The public may attend either remotely or in person.

Individuals who would like to participate remotely should email Yuridia Zaragoza at Yuridia.Zaragoza@colliercountyfl.gov by January 14th at 4:00 p.m.

The agenda will be posted on the Immokalee CRA's website at https://immokaleecra.com/meetings-information-1.

Remote participation is provided as a courtesy and is at the user's risk. The County is not responsible for technical issues.

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of those boards, councils or agencies.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Yuridia Zaragoza at (239) 867-0025.

###

Collier County Community Redevelopment Agency
IMMOKALEE CRA
The Place to Call Home!

CRA Board

Commissioner
William McDaniel Jr.
Co-Chair
District 5

Commissioner
Dan Kowal
Co-Chair
District 4

Commissioner
Burt L. Saunders
District 3

Commissioner
Chris Hall
District 2

Commissioner
Rick LoCastro
District 1

CRA Advisory Board

Mark Lemke
Chairman

Anne Goodnight
Vice-Chair

Mike Facundo
Andrea Halman
Estil Null
Edward "Ski" Olesky
Yvar Pierre
Lupita Vazquez Reyes
Paul Thein

MSTU Advisory Committee

Andrea Halman
Chairman

Bernardo Barnhart
Vice- Chair

Cherryle Thomas
David Turrubiartez Jr.
Jimmy Nieves

CRA Staff

John Dunnuck
Executive Director
Facilities & CRA

Christie Betancourt
CRA Assistant Director

Yvonne Blair
CRA Project Manager

Yuridia Zaragoza
CRA Operations
Support Specialist I

Joint Meeting of the Collier County Community Redevelopment Agency Immokalee Local Redevelopment Advisory Board and the Immokalee Beautification MSTU Advisory Committee.

AGENDA
Hybrid Remote Public Meeting
(*Please see details below)

Immokalee CRA
750 South 5th Street
CareerSource SWFL
Immokalee, FL 34142
239.867.0025

January 15, 2025 – 8:30 A.M.

A. Call to Order
B. Pledge of Allegiance and Prayer
C. Roll Call and Announcement of a Quorum
D. Voting Privileges for Board Members via Zoom *(CRA & MSTU Action Item)*
E. Approval of Agenda *(CRA & MSTU Action Item)*
F. Approval of Consent Agenda *(CRA & MSTU Action Item)*
   1. Minutes
      i. Joint CRA & MSTU Advisory Board Meeting for December 11, 2024 (Enclosure 1)
   2. Budget Reports (Enclosure 2)
   3. Code Enforcement Report (Enclosure 3)
   4. Staff Reports
      i. Assistant Director Report (Enclosure 4)
      ii. Project Manager Report (Enclosure 5)
      iii. Project Manager Field Observation Report (Enclosure 6)
      iv. Community Meetings (Enclosure 7)
G. Announcements
   1. Public Comment speaker slips
   2. Communications Folder
H. Other Agencies
   1. FDOT updates
   2. Other Community Agencies
I. Community Presentations *(CRA Action Item)*
   1. Land Development Code Updates – The Neighborhood Company (Enclosure 8)
J. Old Business
   1. Advisory Board update ((Enclosure 9) *(CRA & MSTU Action Item)*
   2. Nomination for Chair and Vice Chair *(CRA & MSTU Action Item)*
   3. Contactor Maintenance Reports
      i. A&M Property Maintenance Report & Schedule (Enclosure 10)
   4. Brief Staff project update
      i. Immokalee Sidewalk Phase III – Eustis Ave. and W. Delaware Ave. (Enclosure 11)
      ii. First Street Corridor Safety Project update (Enclosure 12)
   5. 2050 Long Range Transportation Plan – Immokalee Roadway Needs (Enclosure 13)

K. New Business
L. Citizen Comments
M. Next Meeting Date
The **CRA Board** will be meeting on ***Wednesday, February 19, 2025,*** at 8:30 A.M. at Careersource SWFL.
The **MSTU Board** will be meeting on ***Wednesday, February 26, 2025,*** at 8:30 A.M. at Careersource SWFL.
N. Adjournment

*** Hybrid Remote Public Meeting**
Some Advisory Board members and staff may be appearing remotely, with staff present in person. The public may attend either virtually or in person.

If you would like to provide public comment, participate, and/or attend the meeting, please contact Yuridia Zaragoza via email at Yuridia.Zaragoza@colliercountyfl.gov by January 14, 2025, at 4:00 P.M.

You may attend the meeting in person on January 15, 2025, at the CareerSource SWFL Conference Room, 750 South 5th Street, Immokalee, FL 34142.

The public is reminded that the CDC and Department of Health recommend social distancing and avoiding public gatherings when possible.

All meetings will be publicly noticed in the W. Harmon Turner Building (Building F), posted at the Immokalee Public Library, and provided to the County Public Information Department for distribution. Please contact Yuridia Zaragoza at 239.867.0025 for additional information. In accordance with the American with Disabilities Act, persons needing assistance to participate in any of these proceedings should contact Christie Betancourt at least 48 hours before the meeting. The public should be advised that members of the CRA/MSTU Advisory Committee are also members of other Boards and Committees, including, but not limited to: the Immokalee Fire Commission. In this regard, matters coming before the Advisory Committee/Board may come before one or more of the referenced Board and Committees from time to time.

MINUTES

Joint Meeting of the Collier County Community Redevelopment Agency Immokalee Local Redevelopment Advisory Board and the Immokalee MSTU Advisory Committee on December 11, 2024. The Advisory Board members, staff, and public appeared virtually and in person.

Hybrid Remote Public Meeting
CareerSource
750 South 5th Street
Immokalee, FL 34142

A. Call to Order.
The meeting was called to order by CRA Chair Mark Lemke at 8:32 A.M.

B. Pledge of Allegiance and Moment of Silence.
Mark Lemke led the Pledge of Allegiance and Mike Facundo led the opening prayer.

C. Roll Call and Announcement of a Quorum.
Christie Betancourt opened roll call. A quorum was announced for the CRA and MSTU Board.
CRA Advisory Board Members Present in Person:
Mark Lemke, Patricia Anne Goodnight, Mike Facundo, Andrea Halman, Edward "Ski" Olesky, Lupita Vazquez Reyes, and Paul Thein.
CRA Advisory Board Members Present via Zoom:
None.
CRA Advisory Board Members Absent/Excused:
Estil Null and Yvar Pierre.
MSTU Advisory Committee Members Present:
Andrea Halman, Bernardo Barnhart, David Turrubiartez Jr., Cherryle Thomas, and Jimmy Nieves (8:38 A.M.).
MSTU Advisory Committee Members Present via Zoom:
None.
MSTU Advisory Committee Members Absent/Excused:
None.
Others Present in Person:
Canon Sandora, Bill Glass, Sylvia Ocanas, Jorge Ocanas, Evelyn Bahena, Mauricio Perez, Maria C. Huapilla, Jacinto Cervantes, Illiana Montez, Armando Yzaguirre, Carlos Garcia, Sarah Harrington, Lucio Quintana, Dusty Hansen, and Commissioner Bill McDaniel.
Others Present via Zoom:
Cristina Perez, Katiria Ocanas, Lorraine Lantz, Melissa Silva, Rosemary Ocanas, Sean Kingston, and Tricia De Cambra, Sonal Dodia and Colleen Ross.

Staff Present in Person: John Dunnuck, Christie Betancourt, Yvonne Blair, and Yuridia Zaragoza.

D. Voting Privileges for Board Members via Zoom
Staff announced no members will present via Zoom. No Action taken.

E. Approval of Agenda.
Staff presented the Agenda to the Boards for approval. Agenda was approved as presented.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the Agenda as presented. Ms. Andrea Halman seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the Agenda as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 4-0.***

F. Approval of Consent Agenda
   1. Minutes
      i. Joint CRA & MSTU Advisory Board Meeting for October 16, 2024 (Enclosure 1)
      ii. MSTU Advisory Committee Meeting for November 13, 2024 (Enclosure 2)
   2. Budget Reports (Enclosure 3)
   3. Code Enforcement Report (Enclosure 4)
   4. Staff Reports
      i. Assistant Director Report (Enclosure 5)
      ii. Project Manager Report (Enclosure 6)
      iii. Project Observation Field Report (Enclosure 7)
      iv. Community Meetings (Enclosure 8)

Staff presented the Consent Agenda to the Boards for approval. Consent Agenda was approved as presented.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the Consent Agenda as presented. Ms. Lupita Vazquez Reyes seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the Consent Agenda as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 4-0.***

G. Announcements.
   1. Public Comments speaker slips
      CRA Staff reiterated on the public 3-minute speaker slip policy for each Topic. The Board will give more time if they feel it necessary.

   2. Communications Folder
      Staff reviewed the communication folder with the board and members of the public. The folder included the public notice for the Joint CRA and MSTU meeting, Collier Area Transit (CAT) survey, the Community Campus attachments provided at the Neighborhood Information Meeting, Notice for the Neighborhood Information Meeting for the Sainvilus Development, Cowboy Christmas and Cherryle Thomas Christmas Around the World Parade and Gala Event flyer.

      A thank you letter by the CRA Staff to all participants and for other county staff who helped was presented as well. CRA Staff thanked everyone for the success of the 11th Annual Christmas Tree Lighting. Staff also thanked Mr. Armando Yzaguirre and his team for decorating the Zocalo Plaza and the Christmas Tree. His staff trimmed the trees, added mulch to the area, and picked up trash. Overall, the area looked very nice.

Mr. Armando Yzaguirre commented that his wife deserves all the credit for the decorating of the Tree and Zocalo Plaza. He hopes this event continues so that they may continue to serve the community in this way. He provided a couple of maintenance updates, the banner arms are up on the poles that have been fixed, A&M staff are waiting on some of the poles. As soon as they are provided, they will put them up as well. Mr. Yzaguirre reiterated that he and his team enjoy serving the community and they hope to continue doing so.

Ms. Christie Betancourt commented that staff have received a complaint that a couple of the angels on the light poles are out. This is due to the transformer. Due to the time now, staff will not be able to fix it this year, however, they will make sure this is fixed for the upcoming year.

Mr. Armando Yzaguirre commented that when he puts the decorations on the poles, he has no power in the daytime due to the timer. Next year, a schedule could be done to solve some of these issues in this matter.

Ms. Andrea Halman commented that this event has been held for 10 years now and the number of cookies has not increased. Many people are coming to this event, and they are enjoying it. She commented that staff cannot get rid of this event. She hopes that more cookies can be purchased as more community members continue to attend this event.

Ms. Patricia Anne Goodnight provided information on what is set to be discussed at the Immokalee Water and Sewer District Meeting. She commented that a group of people would like to discuss with Immokalee Water and Sewer District from eliminating fluoride in their water. She has always worked to protect Immokalee, and in her opinion, eliminating fluoride from the water will affect many. The meeting will be held at 3:30 p.m. on Wednesday, December 20, 2024, at the Immokalee Water and Sewer District office.

3. Public Meeting Calendar (Enclosure 9)
   i. Proposed 2025 Meeting Calendar

   Staff presented the proposed 2025 Meeting Calendar. Both Boards are set to meet jointly on January, June, July, October, November, and December for 2025. The schedule could change depending on what staff brings forward for the merging of the boards. A decision for the Chair and Vice-Chair will be made by the board in January 2025. Staff will provide any further updates.

   Staff also included the 2025 Holiday Schedule that the Board of Collier County Commissioners follow. Boards approved the 2025 Calendar as presented noting that meeting dates will change if board merger is approved.

CRA Action: ***Ms. Patricia Anne Goodnight made a motion to approve the 2025 Public Meeting Calendar as presented. Ms. Lupita Vazquez Reyes seconded the motion, and it passed by unanimous vote. 7-0.***

MSTU Action: ***Mr. David Turrubiartez Jr. made a motion to approve the 2025 Public Meeting Calendar as presented. Ms. Cherryle Thomas seconded the motion, and it passed by unanimous vote. 5-0.***

H. Other Agencies

1. FDOT Updates
   No updates.

2. Other Community Agencies
   No updates.

I. Community Presentations

1. Sainvilus Subdivision – Canon Sandora, PE (Enclosure 10)
   Mr. Canon Sandora introduced himself and Mr. Bill Glass. Mr. Canon Sandora is the Civil Engineer for this project and Mr. Bill Glass is the Architect. Mr. Sandora commented that the developer is local, and his name is Mr. James Sainvilus.

   Mr. Canon Sandora provided information on the property. There is an existing house on the property. The property is four and a half acres. The property is located South of Roberts Ave and North of Forrester Ave. The developer is going through a Planned Unit Development (PUD) process with Collier County to allow for the development of 27 units total.

   Mr. Canon Sandora presented the conceptual plan of this development. They are proposing 13 buildings that are 2 single-family with a zero-lot-line attached and one common wall. The buildings will be on their own lot but are attached by one common wall. For lot 27, there will be a single-family home for the developers' parents to live at, the existing home will be taken down. The current use for this property is for a Residential Single Family 3 (RSF-3), which is 3 units per acre. The PUD would allow for 6 units per acre, which is under the Immokalee Future Land Use Plan, where land use for Medium Residential Subdistrict allows a base density of 6 units per acre. The developer is not going for affordable housing, so the developer will be able to choose the lot sizes that work for the site. There are plans to have one road coming down on Forrester Ave with a cul-de-sac at the end, which 24 units would access through Forrester where sidewalks will be put on both sides of the road. The other 3 units will have access through Roberts Ave, that is less of a road but allows them to keep a lot of retention area in case of a flooding. Mr. Sandora commented that the retention plan could vary since they are not at the final stages. He reiterated that this is all conceptual.

   For lots size RSF-3, 10,000 square feet is the minimum lot size, setbacks are 30 feet in the front, 25 feet in the rear, 7 and a half on the sides, the minimum widths are 95 feet, and the corner lot and interior lot are 80 feet minimum width.

   They are proposing a minimum lot size of 3,900 square feet, front setback of 23 feet, rear setback of 15 feet, unattached side setback of 7.5 feet and a side setback to the Right of Way of 15 feet.

Mr. Mike Facundo asked for clarification on where the property is located and asked why lots 25, 26, and 27 are accessible only through Roberts Ave. He also asked if they have reached out to the neighbors in Forrester Ave.

Mr. Canon Sandora commented that while doing the conceptual plan, the layout worked well with Forrester Ave. The traffic studies and the level of service did not change based on the 27 units. They have mailed letters to all neighbors surrounding the area. A neighborhood information will be held at the CareerSource SWFL Conference Room at 4:30 p.m. on December 11, 2024.

Mr. Mark Lemke asked for clarification on the buildings and was confirmed that there's one building on 2 lots.

Mr. Patricia Anne Goodnight commented whether this is affordable housing and if individuals will be able to own or rent the homes.

Mr. Canon Sandora said this development is not for affordable housing and the developer is planning for others to own the homes. The development will be for market rate housing. An Ad Valorem Tax would be paid for this development.

Ms. Lupita Vazquez Reyes commented the idea for this property to increase housing that attracts service professionals such as teachers and firefighters. She hopes this development is an average cost for them.

Mr. Bill Glass commented that Mr. James Sainvilus has been adamant about doing something that out of the ordinary. Mr. Sainvilus wanted to make these units multi-generational. They have designed 2 master bedrooms in the lower level with a master kitchen, living and dining room, and a 2-car garage. The higher level will consist of another master, 2 other bedrooms, and a big living room. He reiterated that this is still in the conceptual stages.

Mr. Glass presented the elevations of the units.

Ms. Christie Betancourt asked if this has been presented to the County. Mr. Canon Sandora commented that they are going through the PUD process, they are close to that point but have not presented anything yet.

Ms. Lupita Vazquez Reyes asked who would be managing the property or if an HOA will be established. Mr. Bill Glass followed up and said that a few discussions have been made with Mr. James Sainvilus and it could be that an HOA is established.

Ms. Cherryle Thomas asked when they anticipate starting this development, if all is approved.

Mr. Bill Glass commented that he is unsure, it all depends on how Mr. James Sainvilus wants to phase this development.

Mr. Mark Lemke asked if they need an approval from the CRA Board.

Mr. Canon Sandora commented that they are just presenting to the CRA Board to receive feedback.

Ms. Andrea Halman commented on the roundabout in the plans presented and asked if they plan to stick with this concept. She mentioned that many people need to be able to get out of the property. She also asked if firetrucks will be able to go in and out of the property.

Mr. Canon Sandora commented that it allows some space for retention area; by not having a complete road to Roberts Ave. He commented on the cul-de-sac, and said it would be helpful to have only the community members of the area go in the property and hopefully help alleviate others from coming in. As for firetrucks, they will be able to get in and out of the property, the County has a standard on this matter.

Mr. Mike Facundo commented on the grid system and asked if it mirrors the existing grid system. Mr. Facundo provided brief information on a location in Gainesville, where the developer connected and tied into the city grid fabric. He asked if they have any consideration or any exploration on this.

Mr. Canon Sandora commented that they have viewed into adding an exit onto Roberts Ave and have a road go all the way through, which will add another stop sign on Roberts Ave. He commented that this could lead into an additional interruption in traffic but by just having traffic go through Forrester, there will not be much interruption.

Ms. Lupita Vazquez Reyes asked if there are any plans to extend Forrester Ave to Main Street.

Ms. Christie Betancourt commented that this may be developed later but it's not something that's in the plan. A previous developer looking to get the area was planning to make an access all the way through.

Mr. Mark Lemke asked on the amount of driveway for additional vehicles since the plans show for a 2-car garage. He provided concerns on having cars parked on the street or over the sidewalk if there's not enough space.

Mr. Mike Facundo further commented on the Arrowhead property in Immokalee and said that this is a good example of a development not having sufficient parking and how cars are piled up all over the yard and driveway. He also provided a few comments on the need of urban planning and gave an example of the TIGER grant and how there could have been more consideration into it. Overall, the goal is to have a development like this fit within the urban planning and create a neighborhood that fits with the community.

Mr. Canon Sandora commented that Mr. James Sainvilus is a local person, and he cares about the community, and how he probably understands the importance of taking in considerations such as landscaping and much more. Mr. Sandora provided information on the driveway and said there will be a 2-car garage and the driveaway will allow for about 4 vehicles to fit comfortably.

Mr. Mike Facundo commented on the fact that Immokalee is a walking community and how we must consider others who will most likely have to walk around if there is no pathway to Roberts Ave. He said urban fabric allows not only for the vehicle to exist but for a person to be able to utilize and move around the area.

Mr. Mark Lemke further commented on Mr. Mike Facundo point and said even though there is no exit road onto Roberts Ave, a sidewalk that comes out Roberts Ave would be nice so that community members can come out and get to Main Street

Ms. Lupita Vazquez Reyes commented on a good example in Estero Park and said there's a neighborhood that that is connected by a small trail to the park. She said this could be suggested to Mr. James Sainvilus and have him consider this as well.

Mr. Bill Glass commented that having some sort of connectivity like a sidewalk or trail is a good idea, however, he doesn't think that having open access for motor vehicles to go through is the best idea. Brief discussion was made that this development would not be a gated community.

Ms. Lupita Vazquez Reyes addressed that the person wanting to invest in the community is local and is wanting to do something with the property that will bring some impact on the tax base and provide middle to higher income homes. Especially culturally, since there are many who want to live with their families. She agreed that there needs to be some way of helping alleviate others from zooming into this community, but she also believes that there should be some type of pedestrians' connectivity since Immokalee is a walking community. She also elaborated on the access of food points.

Mr. Bernardo Barnhart commented that he loves the concept of this development. This will help bring value to the community. Mr. Barnhart commented to Mr. Canon Sandora and Bill Glass that they may need to consider talking to Mr. James Sainvilus on the 2-car garage. Mr. Bernardo Barnhart said that Ave Maria is a good example and said nobody uses 2-car garage. The majority use it for either storage or as an extra room.

Mr. Canon Sandora commented on the idea of the sidewalks and pedestrian connectivity. They will bring this up to Mr. James Sainvilus.

Ms. Sylvia Ocanas commented and said that Immokalee is an agricultural town where many people have huge trucks. She said that they will have a clutter in the area where there is not going to be a pathway.

She does not see why there's not 2 entrances and why they choose Forrester Ave as the access point if Forrester Ave is a dead-end street. She cannot imagine having 2 houses on that acreage and being able to keep it cleaned up and appropriate for the kids to play.

She acknowledged that this would be a good tax money revenue, however, there will be a lot of traffic on a dead-end street. She lives on Forrester Ave., and she commented that she is not satisfied with any kind of housing going on this property. She also commented on the trash and asked where the trash will be going and if there is going to be a trash can for each unit. She also commented that the garages will most likely be used for additional housing and said that people do need housing but, in an area where there is plenty of space for people to move around and where kids can play.

Mr. Canon Sandora commented that the acreage came about on the future land use according to the Immokalee Area Master Plan which allows a Medium Residential Sub District which allows for a base density.

Ms. Sylvia Ocanas further commented on how the property is being used right now and said that there are kids playing around in that empty lot and said there is no supervision out on this property. They will have to encounter more of this with 27 units.

Mr. Jacinto Cervantes lives off of Roberts Ave. He commented on the concept of this development and said the units will all be 2-story buildings and will have windows facing towards the neighbors. He asked what they plan to do to keep others from viewing other neighbors and making sure there is privacy for others.

Mr. Bill Glass commented that the zoning allows the ability of 35 feet, but they are below that. He commented that more landscaping could help with this matter.

Mr. Jacinto Cervantes asked if a privacy wall could be built since landscaping such as trees or bushes could get into others property and maintenance would be needed. Mr. Bill Glass followed up and commented that even with a privacy wall, the second floor still has view of the area surrounding them. Mr. Glass commented that landscaping will probably be the best way to help with others getting that privacy, however, they have not addressed this yet in their plan. Mr. Jacinto Cervantes commented that he is against this, and said it's not a great idea. He further commented on Mr. James Sainvilus other property.

Ms. Eveyln Bahena lives on Forrester Ave. She commented on an incident that occurred during Hurricane Milton. She said Mr. James Sainvilus tree fell on top of her roof; She and her husband went to speak with Mr. James Sainvilus about the incident; however, she was told by Mr. Sainvilus' son that it was not Mr. Sainvilus responsibility to remove the tree. Ms. Bahena husband had to pay to remove the tree. She provided this example to show the responsibility of Mr. Sainvilus and commented on who will take care of this property with all the units. She further commented that these units will be an inconvenience, and it will affect all the residents nearby especially with traffic, privacy, and the children who play in the area.

Mr. Mike Facundo commented that it may be that the developer and all who are working on this development consider making an access point off of Roberts Ave.

Ms. Bernardo Barnhart agreed with Mr. Mike Facundo and also commented on the garages. He has seen where many use the garages as a living space and said it would be helpful to have some type of communication with those who reside in the development on the amount of people who are able to live in the home.

Ms. Lupita Vazquez Reyes commented on the importance of management to occur in developments like this. At the FRA Conference, she and other board and staff members attended this year, she learned that many people who live in urban sprawl areas in Florida are accustomed to having their own space and she understand it a change to the community. She further commented on the concerns of the community with limited housing and empty lots being owned by people who are not doing anything with the property. She elaborated on the importance of having a good relationship with the community members and believes that Mr. James Sainvilus should have been present at this meeting to address the concerns made by the neighbors near this property.

Mr. Jimmy Nieves asked Mr. Canon Sandora and Mr. Bill Glass, if they have an idea as to how much trash will be accumulated or if they will be using a trash compactor. He also asked if a garbage truck will be able to access in and out of this property. Mr. Canon Sandora commented on this and expressed that progress is needed on how the disposal of trash will be. As for the access of a garbage truck, there will be accessibility since they have to follow the Collier County code.

Ms. Andrea Halman said that no one is able to control how this land will be used. She commented that others may view Mr. James Sainvilus differently than his neighbors.

Mr. Mark Lemke commented that Mr. Canon Sandora and Bill Glass should discuss all that was discussed at this meeting and what is set to be discussed at the Neighborhood Information Meeting to Mr. James Sainvilus.

Ms. Andrea Halman reiterated the Mr. James Sainvilus is allowed to do what he likes on his property, and said she takes pride in the fact that he is trying to something really well for the community.

Ms. Sarah Harrington introduced herself to the members of the public. She commented that as long as the property owner follows the Land Development Code and Growth Management Plan, one may do what they wish with their property. She noted that it's important to take information in meetings like this and relay it to the property owner to incorporate the best development possible in the neighborhood. She commented on the density and the structure that has been presented. She asked both Mr. Canon Sandora and Mr. Bill Glass on the current progress.

Mr. Bill Glass commented that they are in the soft schematics at this point. He further commented that discussions will be done with Mr. James Sainvilus on a connection to Roberts Ave. He also commented that an HOA structure would be beneficial and a trash compactor.

Ms. Patricia Anne Goodnight commented on the development and confirmed on the concept of the single-family home with room for another close family member and having this development be for families to buy.

Mr. Mike Facundo commented that they could have a design session with the community members to see other solutions they can come up with moving forward. He also commented that everyone has to keep an open mind, especially with trying to welcome development because we all need the tax base for the community.

Mr. Canon Sandora commented that a Neighborhood Information Meeting will be held, and this could help them understand those who live around the property and hear their suggestions.

Ms. Sarah Harrington provided information on the occurrence of a Neighborhood Information Meeting.

Ms. Christie Betancourt commented on the Neighborhood Information Meeting for the Sainvilus development.

Mr. Canon Sandora said that Mr. James Sainvilus will try to attend the Neighborhood Information Meeting online.

Mr. Jacinto Cervantes asked if there would be any other meetings for this development. Mr. Canon Sandora followed up and said there will be other public hearings.

Mr. Mark Lemke applauded the public who attended the meeting to voice out their concerns on this development. He commented that the board and staff like to see others show up when there is concern and wishes that others join as well when they have concerns. He asked that they continue to work together so that there is progress for all.

Mr. Canon Sandora commented that there is a Teams link for those who are interested in attending online.

2. 2050 LRTP (Long Range Transportation Plan) Collier Metropolitan Planning Organization (MPO), Anne McLaughlin, Executive Director (Enclosure 11) *(Time Certain 10:00 a.m.)*
   Ms. Dusty Hansen introduced herself. She is a planner with the Collier Metropolitan Planning Organization (MPO), who is presenting on behalf of the Collier MPO Executive Director, who is sick.

Ms. Dusty Hansen thanked the CRA Board for placing them into the Agenda and allowing them to present. The Metropolitan Planning Organization (MPO) is working on the Long Range Transportation Plan, which looks at the anticipated transportation need through 2050. Jacobs Engineering, who is the consultant for the plan, will provide a presentation on the status and overview of the plan.

Ms. Sonal Dodia, who is representing Jacobs Engineering, introduced herself. Ms. Colleen Ross introduced herself as well. She is the with Jabos Engineering and is the Project Manager for the Long-Range Transportation Plan update.

Ms. Sonal Dodia presented the Agenda for the presentation. The LRTP overview, schedule, planning emphasis area and factors, vision and goals, roadway needs, cost feasible plan, Immokalee roadway needs, Immokalee resilience needs, and next steps are discussed.

Ms. Sonal Dodia provided information on the Long Range Transportation Plan (LRTP) and said it is updated every 5 years and it's a master plan for the MPO. The last update was for the 2045 LRTP and it was adopted in December 2020. The LRTP is required to receive federal transportation funds. The LRTP is a guiding document for the future improvements to the County transportation network and it covers a broad range of issues including environmental impacts, economic development, mobility, safety, security and quality of life.

The LRTP Schedule

- March 2024: Project kick off
- 2024: Establish Goals & Objective and Financial Resources
- 2024: System Needs.

MPO staff are currently in this process of developing the needs. They would like to receive input from the boards on this, however, they would like to introduce the vision and goals, all planning emphasis, factors, and sources they used to develop the plan.

One of the major factors that contributed to the development of the LRTP vision and goals was the federal planning emphasis areas that were outline in the Infrastructure Investments and Jobs Act (IIJA). This law provides federal funding for highway safety programs, transit program, and other transportation programs. Under the IIJA, the Federal Transit Administration (FTA) and the Federal Highway Administration (FHA) issued the 2021 planning emphasis areas that are required for long range transportation planning.

The Planning Emphases Areas include transportation resilience, equity and justice 40, meaningful public involvement, infrastructure connectivity, complete streets, data sharing principles, and planning and environment linkages. MPO Staff considered all areas when they developed the vision, goals and objective for the LRTP update. Additionally, FDOT also periodically issue their own planning emphasis areas to encourage transportation planning agencies to give priority to particular issues when developing their planning programs.

The FDOT planning emphasis area include Safety, Equity, Emerging Mobility and Resilience. The FDOT planning emphasis area were also considered for the vision, goals and objectives.

The LRTP is also legally required to consider projects, strategies and services that will address the 10 Federal Planning Factors.

1. Economic Vitality
2. Safety
3. Security
4. Accessibility and Mobility
5. Environmental Quality
6. Multimodal Connectivity
7. System Efficiency
8. System Preservation
9. Resiliency & Reliability
10. Travel and Tourism

Many of the factors overlap with the Federal and State planning emphasis areas and were also considered when the vision, goals, and objectives were developed.

2050 LRTP Vision:
The Collier MPO 2050 Long Range Transportation Plan envisions the development of an integrated, equitable, multimodal transportation system to facilitate the safe and efficient movement of people and goods while addressing current and future transportation demand, environmental sustainability, resilience, and community character."

Ms. Sonal Dodia commented that the LRTP is a multimodal plan that incorporates the needs and cost feasible projects through the MPO's other plans, which are incorporated by reference. The other plans include the Management Process, Bicycle and Pedestrian Master Plan, Safety Action Plan and Transit Development Plan. The LRTP goals and objective were developed to reflect the roadway needs specifically for Collier County.

The large component of the LRTP update is to project the roadway network needs by the year 2050. This involves coordination with FDOT's District One Regional Planning Model. The first step for staff to develop the roadway needs is to understand what changes in the roadway network have taken place since the last LRTP update as well as the projected socioeconomic data distribution by the year 2050. To understand the changes, staff developed the 2028 Existing + Committed Network. This network includes existing projects which are new roadways or widened roadways that were constructed and open to the public by 2019 and the committed projects that will be in construction by 2028. The socioeconomic data for 2050 was developed and included factors such as population housing, employment, and school enrollment. A growth model was used to predict where growth in the County is likely to occur by 2050. FDOT used the MPO's 2028 Existing + Committed Network and 2050 Socioeconomic data from the MPO's and TPO's within the district. The results are referred to as a deficiency analysis.

The deficiency analysis projects where significant congestion problems may occur by the year 2050. The deficiency analysis was used to develop the future roadway needs in Collier County. Ms. Sonal Dodia commented that staff would like to hear from Immokalee community members on the needs that have occurred since the last LRTP update.

FDOT allows each MPO to model five alternative networks to test potential networks that could resolve deficiencies. The first alternative network was to find deficiencies or needs for Collier. Jacbos Engineering staff and Collier MPO staff have received the draft results of the alternative, one from FDOT which are being vetted. Ms. Sonia Dodia commented that they are now preparing alternative 2, which is being coordinated with the Lee County MPO. This alternative will examine the benefits of adding new potential reliever roadways that could improve connectivity between Lee and Collier County. Alternative 3 and 4 will build off the 1st and 2nd alternatives and help determine the future cost feasible plan. These alternatives are financial constraint and include cost associated with design, right of way construction and mitigation of environmental impacts. Jacob Engineering will be coordinating with Collier County Transportation Management, Lee County MPO and other stakeholder like the CRA and MSTU Board. Alternative 5 will be a transit run where staff will be provided an idea of where transit is used and needed and the best use of transit dollars.

Ms. Sonal Dodia presented the 2050 Potential Roadways Needs within the Immokalee CRA and MSTU. A summarized table was presented to show the current status of roadway projects that were identified in the 2045 update. The first two projects on State Road 29 are in the 2020 existing and committed network. The following two projects are funded or partially funded in the 2045 plan. The last State Road 29 project in the potential roadway needs table is a new need that was identified in this update.

The remaining projects are local projects that were identified as either fully funded, partially funded or a need in the 2045 plan. They were also identified as needs for the 2050 update. Staff would like to receive the boards input on this list.

Ms. Sonal Dodia also commented on another important topic that needs to be considered when developing the LRTP and that is resilience. The resilience is a federal planning emphasis area under both the IIJA and FDOT. Newer requirements have emphasized a greater need for resilience in Collier network since Collier County is susceptible to storm surge and flooding as well as other water related hazards.

The next phase of the LRTP includes continuing stakeholder coordination, obtaining input on roadway needs, and developing travel model alternatives to help inform on the cost feasible projects. Ms. Sonal Dodia asked if anyone had any input to what was presented.

Mr. John Dunnuck asked if they had any plans to look at existing cross section to bring them up to the standard that they should be. He commented that coming into Immokalee Road, the community is dealing with some of the improvements on First Street that deal with constrained Right of Way.

He further asked if there are any plans to acquire the necessary Right of Way to bring it up to a full standard for a 4-lane cross section.

Ms. Colleen Ross asked for further clarification on the road. Mr. John Dunnuck further commented that there is a project that staff is working on to do sidewalk improvements, but they are dealing with holes in the middle of the sidewalks due to an expansion of 4 lanes and it was expanded within the existing Right-of-Way.

Ms. Colleen Ross said that this would probably be part of the Bike Pedestrian Master Plan that will then be incorporated into this plan. She further commented that she is unaware if this project is in the plan, but they will find out and add it in the needs list. Ms. Collen Ross provided information on the roadway needs and said the needs are modeled with FDOT District One D1 Regional Planning Model. This model does not get into the specifics and can only really recognize roadway expansion, new relievers, and extensions of a road. Ms. Collen Ross asked if there are just sidewalks on 1st Street or if there are any bike lanes.

Mr. John Dunnuck commented that there are no bike lanes on First Street, just sidewalks. There are light poles in the sidewalk as well.

Ms. Colleen Ross commented that they will have to discuss this and see if this is in as a need and note it as an issue. She noted that the sidewalks on First Street might not be up to standards.

Ms. Dusty Hansen commented that she could provide Mr. Dunnuck comment to the Executive Director, Ms. Anne McLaughlin, and Project Manager for the Bike Master Plan, which is currently underway.

Mr. Mike Facundo commented on the Westclox Street Extension and asked for clarification if this will be a need in 2050. Ms. Collene Ross commented that the extension was identified as a need in the 2050 plan. If it becomes cost feasible, then the cost feasible is broken up into funding periods. Staff are understanding what is cost feasible, how much funding they have, and in what year it could be funded from 2028 to 2050.

Mr. Mike Facundo acknowledged that there is set to be a 4-lane improvement from the roundabout on SR29 down to New Market Road, however, currently when there are accidents on the SR 29 there's no other outlet and how people have to go around. He doesn't understand on how the priorities are done but he would like to know if they had any alternative solution and if there's anything that can be done to move this item further along.

Ms. Colleen Ross commented that she understood what he meant and commented that the Westclox Extension is a priority for the community.

Ms. Christie Betancourt commented that the Little Leaue Rd Extension and Westclox Street Extension have been in the list for a while. She noticed that they both now have the word funded and asked if specifics could be given as to when the design will become funded.

Ms. Colleen Ross clarified that the Little League Road Extension in 2045 update was funded for design and Right of Way. Westclox Street Extension in the 2045 update was funded for design, right of way and construction. She commented that they have less funds this time and that the needs are similar to the previous update. The only new need that was identified is SR29/North Main Street. Ms. Ross reiterated that the input from everyone is important as far as prioritizing the funding and if they are important, then they will note that as well. The needs do not change necessarily bit the funding does. They will continue to work with the County as well on funding and other needs.

Brief discussion was made on the list and how input is received by other boards.

Commissioner McDaniel commented that this is the need analysis. There's a process on the needs, then cost feasibility, and the available amount of funding. He followed up on Mr. Mike Facundo comment and said that an alternative route would be a Little League Extension North up to SR 82. With the acquisition of the Willams Farm, the County should get the road Right of Way necessary to take Little League Road down to Immokalee Road and have an alternative route in case there is blockage on SR 29. He said with the improvements that are coming in with the 4-lane should help alleviate traffic significantly.

Ms. Andrea Halman commented on the other boards such as the Bicycle & Pedestrian Advisory Committee (BPAC), Technical Advisory Committee (TAC), and Citizens Advisory Committee (CAC) and is unaware if any other Immokalee community members are on these board to provide input.

Commissioner McDaniel commented that the BPAC, TAC, and CAC are all Advisory Committees. The presentation presented is for the Immokalee community to make their needs known. The Long Range Transportation Plan is done every 5 years.

Discussion was made on the need to have other representatives from Immokalee be part of Advisory Committee like the BPAC, TAC, and CAC and also provide input on the needs for Immokalee.

Ms. Colleen Ross commented on the number of years for a project to get into the list. She said as long as it's a need, it helps because if there's funding and it fits the requirement then there's a possibility that it could be completed. She reiterated that they have presented on what they identified as a need and would like to know if there are any other needs.

Ms. Dusty Hansen commented that there is an Immokalee representative on the Citizens Advisory Committee. As for the Technical Advisory Committee, all committee members are technical staff, although she is not aware if they reside in Immokalee.

She also provided information on the LTRP and said that that the LRTP does place an emphasis on equity and the Justice 40 initiative and making sure that transportation disadvantaged individuals in areas that need connectivity the most are focused on.

Ms. Lupita Vazquez Reyes asked if any of the input received will be affected by Federal change and Federal administration on how funding occurs.

Commissioner McDaniel commented that administration after administration have emphasized on multimodal transportation.

Ms. Colleen Ross commented that IIJA has a few more years to be in place. As each administration comes up, the administration will come up with their own funding mechanism for transportation.

Ms. Lupita Vazquez Reyes concern included on whether or not rural areas would become deprioritized.

Commissioner McDaniel commented that this will not be happening for rural areas. There are many movements that support economically deprived rural communities. Through his tenure, the priorities listed have remained on the list.

Ms. Christie Betancourt asked if the Little League Extensions Road to Immokalee Road will be added to the list or if it will be tackled separately.

Ms. Colleen Ross commented that it would be added in the needs list. Staff will be coming back to the boards once they know how much funding they have and where they will be able to spend it on and what they can afford to do.

Discussion was made on having an advocate for Immokalee on other boards. Commissioner McDaniel further commented on the blended funding source coming out of Federal, State, and Local dollars. He also commented on the priorities of Coller County and the success of tax savings for the community that has occurred.

Ms. Dusty Hansen commented that there will be opportunities for public workshops for everyone to attend. Residents and Advisory Committee members will be welcomed and are encouraged to attend and provide their input. They can keep the boards updated on this.

Ms. Colleen Ross reiterated that they will be reaching back out and will be getting public input on both the roadway needs and cost feasible. They are looking to start public outreach in January and will most likely post it on social media with maps that show where the needs are at. She also said they are open taking input on intersection improvements.

Mr. Mark Lemke asked on the Little League Extension South from Lake Trafford Rd to Immokalee Road. Commissioner McDaniel commented that the Little League Extension South is from a separate local funding source. He also reiterated that everyone is welcome to provide input on any intersection improvements.

Ms. Colleen Ross said everyone may also email County Staff, Ms. Anne McLaughlin and Ms. Dusty Hansen, if anyone would like to provide any needs.

Commissioner McDaniel commented on how long the community has to provide input before the LRTP is complete. Ms. Colleen Ross said that all who would like to provide comments have about a couple of months, they would like to receive comments by the end of January. Commissioner McDaniel suggested that an Agenda Item be made on the next few months for the CRA and MSTU to provide input on the Immokalee list for the 2050 Potential Roadway Needs.

Ms. Lupita Vazquez Reyes asked if including other suggestion or needs would affect the listing and bump other needs off the list. Ms. Colleen Ross commented that from a need standpoint there will be an adding to the list, no bump offs will occur, and all become documented for when future money is available. She suggested that all needs be provided so that it assists when funding becomes available.

Ms. Lupita Vazquez Reyes asked if it's multi-funding for various different projects and if there is a certain way to know what would move up to a priority. Ms. Colleen Ross commented that some funding has strings attached to it. Ms. Ross reiterated that they will be coming back to the boards to inform other on their funding and what they believe is cost feasible.

Ms. Dusty Hansen commented that the most important thing is to make sure that a need is documented because if a funding source becomes available later in the future or there's a new funding source, it provides the ability to secure the money.

Ms. Colleen Ross provided information on the Resilience Needs. She commented that FDOT have identified a couple of areas in Immokalee. SR29 and South 1st Street are on the map. She commented that if there are significant issues in the area as far as resilience like flooding, they would also like to hear input on that as well so that it's at least documented.

Ms. Christie Betancourt commented that New Market Road should be added in the resilience needs list. She provided information on the specific limits and how the TIGER Grant is addressing some areas of concerns. Ms. Colleen Ross asked if the TIGER grant information could be provided to them, so they have a better understanding on how this is being addressed.

Ms. Andrea Halman commented on whether or not Zoom will ever become available for other Immokalee community members to attend other meeting as well like the BPAC. Ms. Dusty Hansen addressed this matter and said that many have noticed that having the ability to attend by Zoom has affected the in-person quorum requirement for the MPO Advisory Committees. However, there are several public workshops, and public meetings that offer virtual participation related to the plans.

She further commented that there may be a public outreach event in Immokalee, at least one for the Long Range Transportation Plan and also for the Transit Development Plan.

Ms. Christie Betancourt asked on the Alternative 5 – Transit Run, and if there are any comments being taken for public transit connectivity.

Ms. Colleen Ross said through the Transportation Development Plan, they are taking public comments. The alternatives help staff in exploring the different ways with a cost feasible plan in mind.

Ms. Christie Betancourt commented that the transit from Lee County Transit to Collier County Transit would benefit many.

Ms. Colleen Ross commented that the needs are there, but they are working through it.

Ms. Dusty Hansen commented that the analysis will be presented in Immokalee in a public workshop as for the connectivity with Lee and Collier, this is something that staff anticipate being incorporated into the Transit Development Plan overall. The Long Range Transportation Plan is a higher-level view of the transit, and the Transit Development Plan goes more into the details of the needs, recommendations, and services. Ms. Dusty Hansen said she will provide the public workshop information to all so that plenty of time is given to spread the word.

Commissioner McDaniel commented that the expansion of transit with Lee and Collier are being discussed within both MPOs.

CRA Staff thanked County staff and Johnson Engineering staff.

CRA Staff will add the needs list to the agenda in the next meeting and continue to take comments.

J. Old Business.

1. Advisory Board update
   Staff will provide information in the January meeting.
2. Contractor Maintenance Reports
   i. A&M Property Maintenance Report & Schedule (Enclosure 12)
   CRA Staff provided Enclosure 12, which is the maintenance report and the look ahead for January. Staff commented that any pending invoices approved and processed are shown in the footnotes of the reports. Staff approved a 50% payment to A&M Property Maintenance for the tree and decorations at the Zocalo. The rest will be paid when everything is put away.

   Ms. Christie Betancourt commented that she does have an assignment through the County for the maintenance department to provide a listing of the A&M contract, the work FDOT and A&M does, and to also provide the 60% plans of Main Street, even though it's on a stop work notice. Staff noticed in their walk through that the areas that need improvement on Main Street have been marked.

Ms. Lupita Vazquez Reyes asked if there has been a significant increase with A&M Property Maintenance.

Ms. Christie Betancourt commented that there is a very strenuous solicitation process. Staff have a 3-year contract with 2-year renewable every 5 years. This is the third time A&M has won the bid, in the last round staff received 5 bids but A&M won the bid. Maintenance was in the lower ends of $175,000, however staff have included other work for A&M, so the cost is up to $200,000 plus more.

Ms. Lupita Vazquez Reyes asked if Parks and Recreation had any budgeting to help with the Zocalo Maintenance.

Ms. Chrisie Betancourt commented that there is a cost share between the CRA and MSTU for the Zocalo. Parks and Recreation Park Rangers and the Sherrif's Department are still monitoring the area. Parks and Recreation staff have been very helpful with the event and there was a full staff helping CRA Staff during the tree lighting event.

3. Brief Staff Project update
   i. Immokalee Sidewalk Phase III – Eustis Ave. and W. Delaware Ave. (Enclosure 13)
   Staff provided a staff report so that board and members of the public have an update on this project. The solicitation process ended in September, staff had to make sure that the contractors met all the requirements and had all the paperwork. The selected contractor is Marquee Development, Inc. Staff hope to take this award to the Board of Collier County Commissioners in January, this award is still with Procurement. Staff commented that this was under the cost the staff estimated. The grant received by staff was $987,000 but the proposed cost is $1,101,179.50. Staff provided a brief step process once the award is approved.

   Mr. Mark Lemke asked how many linear feet of sidewalks are set to be installed. Staff commented that it's 2,500 linear feet on each side, so overall 5,000 feet.

   Ms. Lupita Vazquez Reyes asked if water and sewer, and drainage are of any concern in this area. Staff commented that they are working on this project to address the concerns.

   Ms. Lupita Vazquez Reyes asked if the Immokalee Water and Sewer have the resources or infrastructure to help address this matter as well. Staff commented that the Immokalee Water and Sewer District have seen the plans and provided comments on most conflicts, however, there are issues at times once work is being done.

   ii. First Street Corridor Safety Project update
   Staff will provide a staff report at the next meeting. Staff are working to phase this project. A Grant Agreement was presented to the Board of Collier County Commissioners and staff will have an Amendment to the second Agreement for the construction. The staff report at the next meeting will give an update on the progress for this project.

iii. Land Development Code (LDC) update
Staff provided an update. A presentation will be given at the next meeting. The CRA and MSTU Board will be meeting jointly to get an update on added language for a Community Facility (CF) mobile food truck vehicles to be allowed on Community Facility zone areas. The Executive Director, Mr. John Dunnuck, asked that this be presented to the boards.

K. New Business.
No new business.

L. Citizen Comments
Ms. Christie Betancourt commented that the CRA, Immokalee Library and the Shelter for Abused Woman and Children will be presenting at the Interagency Meeting, all are invited to attend. The meeting is today at 11:30 a.m. in this room.

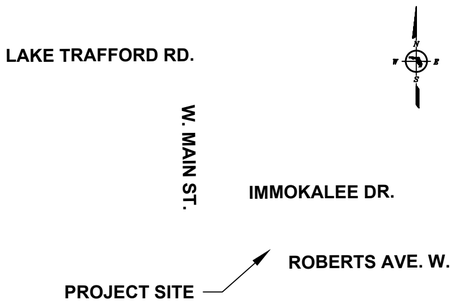
Commissioner McDaniel provided information on the Private Emergency Repair Roads. The Board of Collier County Commissioners approved an amendment to Ordinance 2023-71 to remove roadways that are no longer unpaved, add unpaved private roadways and establish an opt out provision. He commented that in order to do spend taxpayer money on private land, a state of emergency must be declared. He hopes that in the second BCC meeting in January, they will be able to issue the declaration of emergency. Commissioner McDaniel also addressed that when one decides to live on a private road, it their responsibility to fix their own. Since this is the first time something like this is done in Florida, Commissioner McDaniel hopes that this item continues to progress.

M. Next Meeting Date
The CRA Board and MSTU Board will be meeting jointly on Wednesday, **January 15, 2025**, at 8:30 A.M. at CareerSource SWFL.

N. Adjournment
Meeting adjourned at 11:04 A.M.

**** Zoom Meeting chat is attached to the minutes for the record.***

SITE CONCEPTUAL PLAN FOR SAINVILUS SUBDIVISION



LOCATION MAP

SITE DATA TABLE

PROPERTY ADDRESS:	1300 ROBERTS AVE W. 1215 FORRESTER AVE. IMMOKALEE, FL
PARCEL NUMBER:	00121520003 00127565509 00127564005 00127520007
SITE AREA:	4.67 ACRES
UNINCORPORATED AREA:	COLLIER COUNTY
CURRENT ZONING:	RSF-3
FUTURE LAND USE:	MR
EXISTING LAND USE:	SINGLE-FAMILY HOUSE, VACANT
PROPOSED LAND USE:	PUDZ - SINGLE-FAMILY ATTACHED

ADJACENT ZONING / FLU / USE

NORTH: RSF-5 / MR / SINGLE-FAMILY HOMES
SOUTH: MPUD / CMU / SINGLE-FAMILY HOMES
EAST: RSF-3 / MR / SINGLE-FAMILY HOMES
WEST: RSF-3 / CMU / VACANT

LOT BUILDING SETBACKS

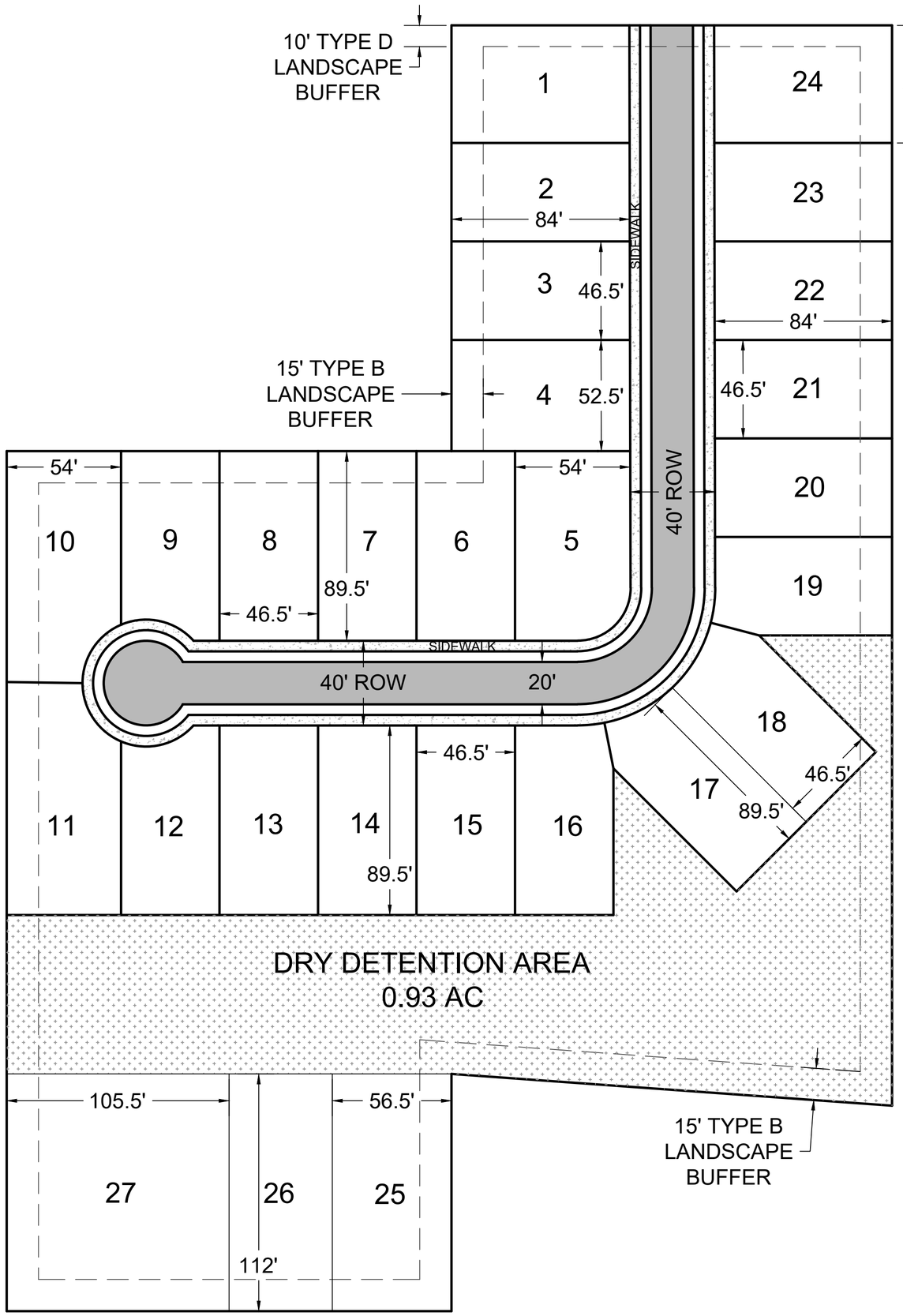
FRONT: 20'
REAR: 15'
UNATTACHED SIDE: 7.5'
SIDES ADJACENT TO ROW: 15'

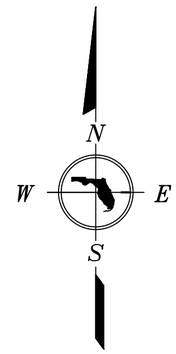
LAND USE CALCULATION

SINGLE-FAMILY HOME LOTS: 3.21 AC
RIGHT-OF-WAY: 0.53 AC
DRY DETENTION: 0.93 AC

LOT CALCULATIONS

MINIMUM LOT DIMENSIONS: 84' X 46.5' = 3,906 SF
MAXIMUM BUILDING FOOTPRINT DIMENSIONS: 44' X 30' = 1,320 SF
DRIVEWAY AND WALKWAY FOOTPRINT = +/-500 SF
MINIMUM OPEN SPACE PROVIDED: 66%





SITE DENSITY

ALLOWABLE BASE DENSITY:
6 UNITS/AC X 4.67 AC = 28 UNITS
PROPOSED UNITS: 28 UNITS

PARKING

REQUIRED SPACES;
27 UNITS X 2 SPACES/UNIT = 54 SPACES
PROPOSED SPACES:
1 CAR GARAGE + 1 CAR DRIVEWAY
27 UNITS X 2 SPACES/UNIT = 54 SPACES

REQUESTED DEVIATION

DEVIATION #1 SEEKING RELIEF FROM LDC SECTION 6.06.01.N STREET SYSTEM REQUIREMENTS, WHICH REQUIRES MINIMUM LOCAL STREET RIGHT-OF-WAY WIDTH OF 60 FEET.

NOTE

THIS PLAN IS CONCEPTUAL IN NATURE AND IS SUBJECT TO MODIFICATION AT THE TIME OF AGENCY PERMITTING, PLAT APPROVAL, OR DEVELOPMENT ORDER. HOWEVER, ANY SUCH MODIFICATIONS SHALL BE IN COMPLIANCE WITH THE APPLICABLE LAND DEVELOPMENT CODE (LDC) DESIGN STANDARDS AND GUIDELINES.

ENGINEER: CANON SANDORA, PE
STATE OF FLORIDA LICENSE # 95303
9201 TANGELO BLVD. FT. MYERS, FL 33967
CANON@CS-CE.COM WWW.CS-CE.COM
(239)-692-6738

CANON SANDORA
CIVIL ENGINEERING, INC.

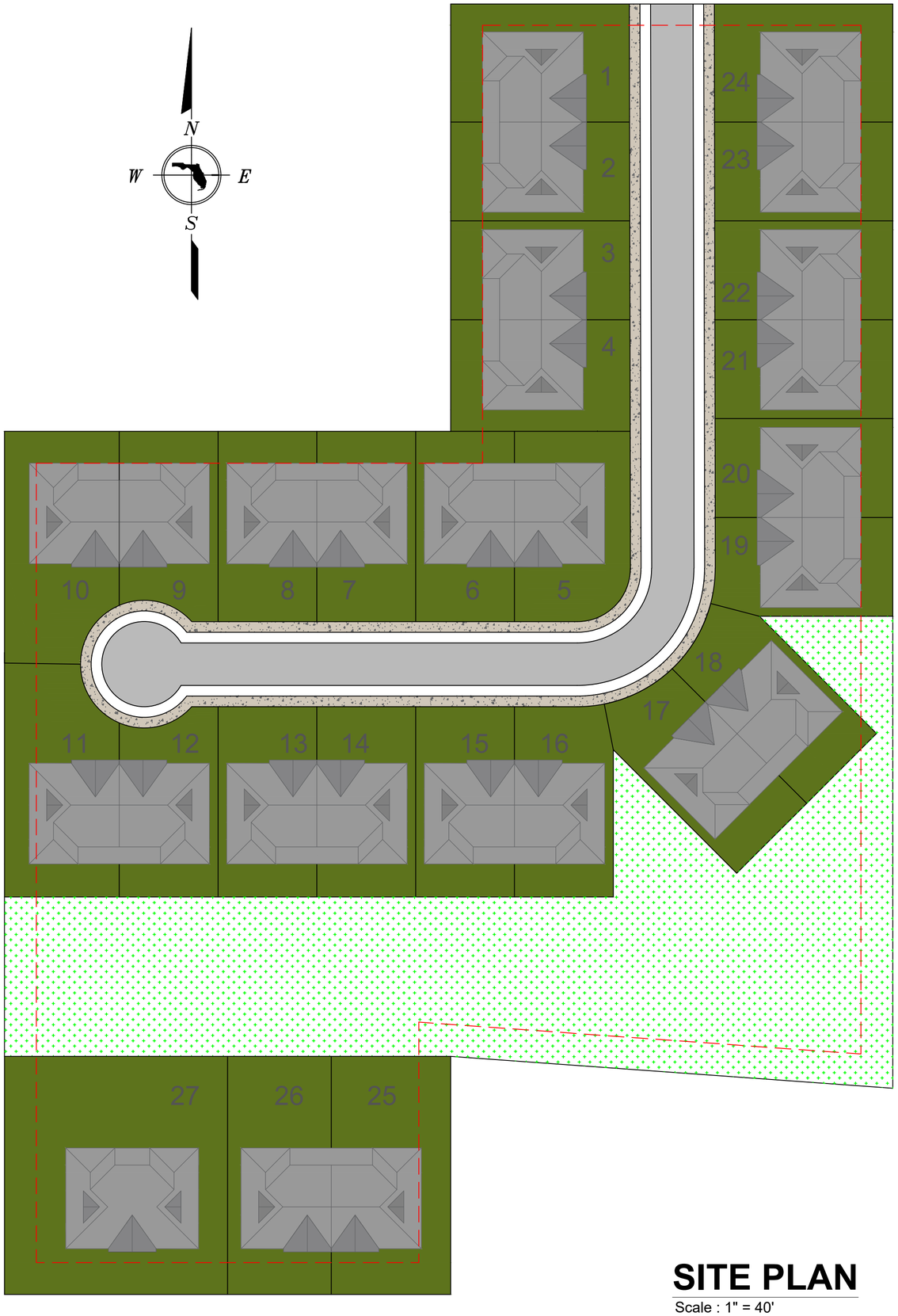
PROPERTY OWNER:
SAINVILUS

NO.	DESCRIPTION	DATE

PROJECT:
SAINVILUS
SUBDIVISION

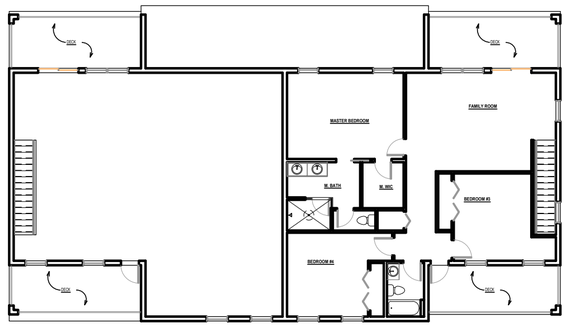
EXHIBIT C
MASTER PLAN

PROJECT NO.
23-022
DATE 4/15/24
BY CGS
SHEET
1 OF 1
SCALE 1"=40'



SITE PLAN

Scale : 1" = 40'



SECOND FLOOR PLAN

Scale : 1/16" = 1' - 0"



FIRST FLOOR PLAN

Scale : 1/16" = 1' - 0"

G2 ARCHITECTURE

3525 BONITA BEACH RD. #110
BONITA SPRINGS, FL 34134
OFFICE: 239-319-0105
CELL: 239-877-2500
WKGLASS@GMAIL.COM

www.g2archinc.com

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260

SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Site Plan -
Floor Plans

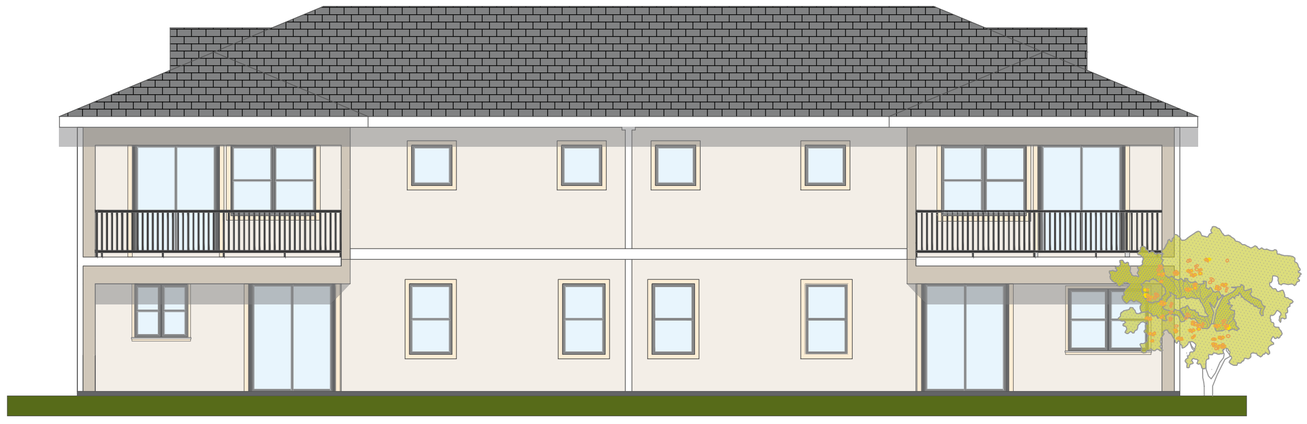
Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A1

Scale	As Indicated



FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION

ARCHITECTURE

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260
SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Elevations

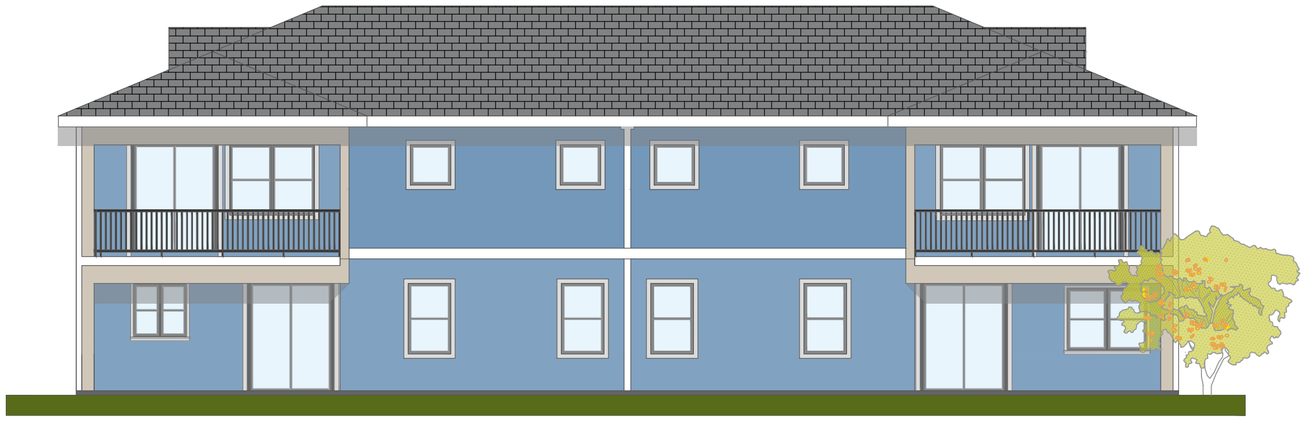
Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A2

Scale 1/8" =1' 0"



FRONT ELEVATION



REAR ELEVATION



SIDE ELEVATION

G2 ARCHITECTURE

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No.	Description	Date

WILLIAM K . GLASS
#AR 929260
SEAL:

STATE OF FLORIDA
WILLIAM K GLASS
AR92960
REGISTERED ARCHITECT

Project:
Sainvilus Subdivision

Elevations

Project number	-
Date	12-11-2024
Drawn by	MBR
Checked by	WG

A2

Scale 1/8" =1' 0"

Zoom Chat
December 11, 2024 Joint CRA & MSTU Hybrid Public Meeting

01:42:55 Lorraine Lantz: I have to leave temporarily but wil be back on

Collier County Community Redevelopment Agency

IMMOKALEE CRA

The Place to Call Home

Certification of Minutes Approval Form

Prepared by:

Christie Betancourt

Christie Betancourt, CRA Assistant Director
Immokalee Community Redevelopment Area

Approved by:

Patricia Anne Goodnight, Vice-Chairman

The Minutes for the December 11, 2024, CRA Advisory Board were approved by the CRA Advisory Board on January 15, 2025, as presented.

The next meeting will be a CRA Advisory Board meeting and will be held on February 19, 2025, at 8:30 A.M. at CareerSource SWFL.

All meetings will be publicly noticed in the W. Harmon Turner Building (Building F), posted at the Immokalee Public Library and provided to the County Public Information Department for distribution. Please call Christie Betancourt, at 239-867-0028 for additional information. In accordance with the American with Disabilities Act, persons needing assistance to participate in any of these proceedings should contact Christie Betancourt, CRA Assistant Director, at least 48 hours before the meeting. The public should be advised that members of the CRA Advisory Board are also members of the other Boards and Committees, including, but not limited to: Immokalee MSTU Board, Immokalee Fire Commission, and the Collier County Housing Authority; etc. In this regard, matters coming before the Advisory Board may come before one or more of the referenced Board and Committees from time to time.

COLLIER COUNTY
INFRASTRUCTURE SURTAX CITIZEN OVERSIGHT COMMITTEE

Agenda

September 12, 2024
8:30 AM

Board of County Commission Chambers
Collier County Government Center
3299 Tamiami Trail East, 3rd Floor
Naples, FL. 34112

Scott J. Lepore – At Large – Chair
Kevin Johnson – District 1
Ronald A. Kezeske – District 2
Katherine Basso – District 3
Vacant – District 4
Mike Petscher – District 5
James W. DeLony – At Large
Kerry Geroy – Alternate
Scott L. Spitzer – Alternate

All interested parties are invited to attend and to register to speak and to submit their objections, if any, in writing, to the Committee prior to the meeting if applicable. If you are a person with a disability who needs any accommodation in order to participate in this proceeding, you are entitled, at no cost to you, to the provision of certain assistance. For more information, please contact the Collier County Facilities Management Department located at 3335 Tamiami Trail East, Suite 101, Naples, FL 34112-5356, (239) 252-8380. Public comments will be limited to 3 minutes unless the Chairman grants permission for additional time. Collier County Ordinance No. 99-22 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners before the Board of County Commissioners and its advisory boards, register with the Clerk to the Board at the Board Minutes and Records Department.

1. **CALL TO ORDER**

2. **PLEDGE OF ALLEGIANCE**

3. **ROLL CALL BY LIAISON**

4. **APPROVAL OF THE AGENDA**

5. **APPROVAL OF MINUTES FROM PREVIOUS MEETING**

    1. **Meeting Minutes March 14, 2024**

6. **PUBLIC COMMENT**

7. **NEW BUSINESS**

    1. **Infrastructure Surtax Citizen Oversight Committee (ISCOC) Appointment Review**

    2. **To validate the expenditure of $5,950,000.00 for land acquisition for a portion of the property located at Williams Reserve at Lake Trafford, located in Immokalee, FL for the purpose of constructing a workforce housing residential development; to ensure that this project meets the requirements of F.S. 212.055, conforms to the definition of Infrastructure, and is an eligible project in line with County Ordinance 2018-21 and the ballot language within; to make a finding that the project expenditures are a valid use of Infrastructure Sales Surtax Funding.**

    3. **To validate an additional $35,213,832.81 for a total of $68,213,832.81 for the Forensic and Evidence Facility toward the construction contract award for Collier County Sheriff's Office (Project No. 70167).**

8. **PROJECTS**

    A. **TRANSPORTATION**

    B. **FACILITIES & CAPITAL REPLACEMENTS**

    C. **COMMUNITY PRIORITIES**

9. **OLD BUSINESS**

    A. **Financial Report as of July 31, 2024**

    B. **Validated Project Updates**

    C. **Annual Infrastructure Surtax Citizen Oversight Committee Update Report**

10. ANNOUNCEMENTS

11. COMMITTEE MEMBER DISCUSSION

12. NEXT MEETING DATE

A. Next Meeting Date January 9, 2025

13. ADJOURNMENT

COLLIER COUNTY
Infrastructure Surtax Citizen Oversight Committee

AGENDA

Board of County Commission Chambers
Collier County Government Center
3299 Tamiami Trail East, 3rd Floor
Naples, FL 34112

November 14, 2024
8:30 AM

Scott J. Lepore – At Large – Chair
Kevin Johnson – District 1
Ronald A. Kezeske – District 2
Katherine Basso – District 3
Lloyd Wirshba – District 4
Mike Petscher – District 5
James W. DeLony – At Large
Kerry Geroy – Alternate
Scott L. Spitzer – Alternate

All interested parties are invited to attend and to register to speak and to submit their objections, if any, in writing, to the Committee prior to the meeting if applicable. If you are a person with a disability who needs any accommodation in order to participate in this proceeding, you are entitled, at no cost to you, to the provision of certain assistance. For more information, please contact the Collier County Facilities Management Department located at 3335 Tamiami Trail East, Suite 101, Naples, FL 34112-5356, (239) 252-8380. Public comments will be limited to 3 minutes unless the Chairman grants permission for additional time. Collier County Ordinance No. 99-22 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners before the Board of County Commissioners and its advisory boards, register with the Clerk to the Board at the Board Minutes and Records Department.

1. **Call to Order**

2. **Pledge of Allegiance**

3. **Roll Call**

4. **Approval of Agenda**

5. **Approval of Minutes**

6. **Public Comments**

7. **New Business**

   7.A. To validate an additional expenditure of $31,100,000 for a total of $56,100,000 for the construction of the Collier County Behavioral Health Center - formerly Collier County Mental Health Facility. (Project No.50239) *(2024-1923)*

   7.B. To validate $1,186,000 for the construction of the Medical Examiner Office Expansion. To ensure that this project meets the requirements of F.S. 212.055, conforms to the definition of Infrastructure, and is an eligible project in line with County Ordinance 2018-21 and the ballot language within; to make a finding that the project expenditures are a valid use of Infrastructure Sales Surtax Funding. *(2024-1958)*

8. **Projects**

   8.A. Transportation

   8.B. Facilities & Capital Replacements

   8.C. Community Priorities

9. **Old Business**

10. **Announcements**

11. **Committee Member Discussion**

12. **Next Meeting Date**

13. **Adjourn**

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

colliercountyfl.gov
twitter.com/CollierPIO
facebook.com/CollierGov
youtube.com/CollierGov

August 26, 2024

Notice of Public Meeting
Infrastructure Surtax Citizen Oversight Committee
Collier County, Florida

Thursday, September 12, 2024
8:30 a.m.

Notice is hereby given that the **Collier County Infrastructure Surtax Citizen Oversight Committee** will meet on **Thursday, September 12** at **8:30 a.m.** in the Board of County Commissioners Chambers, third floor, Collier County Government Center, 3299 Tamiami Trail E., Naples, Florida. The meeting will be broadcast live with closed captioning on Collier Television channel 97/98 and via live streaming at colliercountyfl.gov/ctv.

The seven-member committee was formed for the purpose of providing citizen review of the county's expenditure of the proceeds from the Collier County and Municipal Infrastructure One-cent Sales Surtax approved by voters in the general election in November 2018.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of that board.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication or other reasonable accommodations to participate in this proceeding should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodation will be provided at no cost to the individual.

For more information, contact Bendisa Miller at (239) 252-8440.

###

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

colliercountyfl.gov
twitter.com/CollierPIO
facebook.com/CollierGov
youtube.com/CollierGov

November 1, 2024

Notice of Public Meeting
Infrastructure Surtax Citizen Oversight Committee
Collier County, Florida

Thursday, November 14, 2024
8:30 a.m.

Notice is hereby given that the **Collier County Infrastructure Surtax Citizen Oversight Committee** will meet on **Thursday, November 14** at **8:30 a.m.** in the Board of County Commissioners Chambers, third floor, Collier County Government Center, 3299 Tamiami Trail E., Naples, Florida. The meeting will be broadcast live with closed captioning on Collier Television channel 97/98 and via live streaming at colliercountyfl.gov/ctv.

The seven-member committee was formed for the purpose of providing citizen review of the county's expenditure of the proceeds from the Collier County and Municipal Infrastructure One-cent Sales Surtax approved by voters in the general election in November 2018.

About the public meeting:

Two or more members of the Board of County Commissioners may be present and participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of that board.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication or other reasonable accommodations to participate in this proceeding should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodation will be provided at no cost to the individual.

For more information, contact Bendisa Miller at (239) 252-8440.

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MINUTES OF THE REGULAR MEETING OF THE COLLIER COUNTY
Infrastructure Surtax Citizen Oversight Committee
September 12, 2024
Naples, Florida

LET IT BE REMEMBERED that the Collier County Infrastructure Surtax Citizen Oversight Committee met on this date at 8:30 A.M. at 3299 Tamiami Trail East, Building F, 3rd Floor, Board of County Commission Chambers, Naples, Florida, with the following Members Present:

Infrastructure Surtax Citizen Oversight Committee

Present: Scott Lepore
James DeLony
Kevin Johnson
Katherine Basso
Ronald Kezeske
Mike Petscher
Kerry Geroy

Absent: Scott Spitzer

Also, Present: Bendisa Miller – Management Analyst II, Facilities Management, Division
Colleen Greene – Assistant County Attorney, County Attorney's Office
John McCormick – Director, Facilities Management

1. **Call to Order & Pledge of Allegiance**

   The Chairman calls the meeting to order at 8:30 AM.

2. **Pledge of Allegiance**

   Kevin Johnson led the Pledge of Allegiance.

3. **Roll Call – Liaison**

   Seven Infrastructure Surtax Citizen Oversight Committee members are present, representing a quorum.

4. **Approval of The Agenda**

   The Chairman makes a motion to approve the agenda. James DeLony seconds the motion. The motion passes unanimously.

5. **Approval of Minutes from Previous Meeting**

   Meeting Minutes – March 14, 2024.
   The minutes are distributed to all present. The Chairman makes a motion to approve the meeting minutes for the March 14, 2024, meeting, and James DeLony seconds the motion. The motion passes unanimously.

6. Public Comment

No public comments.

7. New Business

1. Infrastructure Surtax Citizen Oversight Committee (ISCOC) Appointment Review.

   The Chairman makes a motion to recommend both applications to the BCC. James DeLony seconds the motion. The motion passes unanimously.

2. To validate the expenditure of $5,950,000.00 for land acquisition for a portion of the property located at Williams Reserve at Lake Trafford, located in Immokalee, FL for the purpose of constructing a workforce housing residential development; to ensure that this project meets the requirements of F.S. 212.055, conforms to the definition of Infrastructure, and is an eligible project in line with County Ordinance 2018-21 and the ballot language within; to make a finding that the project expenditures are a valid use of Infrastructure Sales Surtax Funding.

   Cormac Giblin, Director of Economic Development from Growth Management, presented before the Committee and requested that the expenditure be validated. The committee discussed the item and directed several questions to staff. The Chairman made a motion to approve the item. James DeLony seconds the motion. Six Surtax Committee members approve the motion, and Ronald Kezeske opposes the motion. The motion passes six to one.

3. To validate an additional $35,213,832.81 for a total of $68,213,832.81 for the Forensic and Evidence Facility toward the construction contract award for Collier County Sheriff's Office (Project No. 70167).

   Olivier Sureau, Project Manager III, Facilities Management Division, presented before the Committee and requested that the expenditure be validated. The committee discussed the item and directed several questions to the staff. Representatives from the Sherriff's Office also addressed the Surtax Board Members. The Chairman makes a motion to approve the item. James DeLony seconds the motion. The motion passes unanimously.

8. Projects

A. Transportation

B. Facilities & Capital Replacements

C. Community Priorities

9. Old Business

A. Financial Report as of July 31, 2024

B. Validated Project Updates

The Chairman asked about the status of the EMS stations.

Brian DeLony, Project Management Supervisor, addressed the Surtax members regarding the status of the EMS stations. Surtax Committee members requested representatives from the EMS stations to speak at the next Surtax Meeting.

Ronald Kezeske inquired about the Collier County Career and Tech Center. Brian DeLony, Project Management Supervisor, also addressed the Surtax members by stating that the his understanding was the project was put on hold based on the School Board's decision to want the property further north.

The Committee members requested that staff present a project priority list in the next regularly scheduled meeting.

C. Annual Infrastructure Citizen Oversight Committee Update Report

10. Announcements

Colleen Green stated that the Committee will sunset after two months of the final expenditure or further Board action.

11. Committee Member Discussion

12. Next Meeting Date

The next Infrastructure Surtax Citizen Oversight Committee meeting will occur on January 9, 2025, at 8:30 AM in the BCC Boardroom at 3299 Tamiami Trail E, Naples, FL 34112, on the third floor.

13. Adjournment

The Chairman makes a motion for this meeting to be adjourned. Ronald Kezeske seconds the motion. The motion passes unanimously.

The meeting was adjourned at 9:57 AM with no further discussion.

Collier County Infrastructure Surtax Citizen Oversight Committee

Scott Lepore – Chairman

The preceding Minutes were approved by the Committee Chair on January 9, 2025, "as submitted" [ ] or "as amended" [ ]

MINUTES OF THE REGULAR MEETING OF THE COLLIER COUNTY
Infrastructure Surtax Citizen Oversight Committee
November 14, 2024
Naples, Florida

LET IT BE REMEMBERED that the Collier County Infrastructure Surtax Citizen Oversight Committee met on this date at 8:30 A.M. at 3299 Tamiami Trail East, Building F, 3rd Floor, Board of County Commission Chambers, Naples, Florida, with the following Members Present:

Infrastructure Surtax Citizen Oversight Committee

Present: Scott Lepore
Kevin Johnson
Ronald Kezeske
Lloyd Wirshba
Mike Petscher
James DeLony
Scott Spitzer

Absent: Katherine Basso
Kerry Geroy

Also, Present: Bendisa Miller – Management Analyst II, Facilities Management, Division
Colleen Greene – Assistant County Attorney, County Attorney's Office
John Dunnuck – Director, Facilities Management and CRA

1. **Call to Order & Pledge of Allegiance**

   The Chairman calls the meeting to order at 8:30 AM.

2. **Pledge of Allegiance**

   James DeLony led the Pledge of Allegiance.

3. **Roll Call – Liaison**

   Seven Infrastructure Surtax Citizen Oversight Committee members are present, representing a quorum.

   The Chair of the Infrastructure Surtax Citizen Oversight Committee "Committee" welcomed Mr. Lloyd Wirshba to the Committee.

4. **Approval of The Agenda**

5. **Approval of Minutes from Previous Meeting**

6. **Public Comment**

   No public comments.

7. New Business

7. A. To validate an additional expenditure of $31,100,000 for a total of $56,100,000 for the construction of the Collier County Behavioral Health Center - formerly Collier County Mental Health Facility. (Project No.50239)

Claudia Roncoroni, Project Manager II, Facilities Management Division, presented before the Committee and requested that the expenditure be validated. The committee discussed the item and directed several questions to staff. The Chairman made a motion to approve the item. James DeLony seconds the motion. The motion passes unanimously.

7. B. To validate $1,186,000 for the construction of the Medical Examiner Office Expansion. To ensure That this project meets the requirements of F.S. 212.055, conforms to the definition of Infrastructure, and is an eligible project in line with County Ordinance 2018-21 and the ballot language within; to make a finding that the project expenditures are a valid use of Infrastructure Sales Surtax Funding.

Tony Barone, Project Manager Supervisor, Facilities Management Division, presented before the Committee and requested that the expenditure be validated. The committee discussed the item and directed several questions to staff. Mr. James Delony made a motion to continue the item until the Committee has a strategy or spending plan for allocating the remaining Surtax funds, including the interest earned. Mr. Ronald Kezenske seconds the motion. The motion failed four to three. The Committee denied the motion to validate $1,186,000 for the Medical Examiner Office Expansion construction. The Medical Examiner Office Expansion is a new project that has not been presented to the committee before, and the committee is looking for an overarching spending plan for the remaining surtax funding balance before deciding on validating new projects. After further discussions, the Chairman made a motion to deny the item. Mike Petscher seconds the motion. Motion passes five to two.

8. Projects

A. Transportation

B. Facilities & Capital Replacements

C. Community Priorities

9. Old Business

10. Announcements

Mr. John Dunnuck introduced himself as the Executive Director of Facilities and CRA, and Mr. Brian DeLony as the interim director of the Facilities Division. The Committee welcomed Mr. John Dunnuck and Mr. Brian DeLony.

11. Committee Member Discussion

12. Next Meeting Date

The next Infrastructure Surtax Citizen Oversight Committee meeting will occur on January 9, 2025, at 8:30 AM in the BCC Boardroom at 3299 Tamiami Trail E, Naples, FL 34112, on the third floor.

13. Adjournment

The Chairman makes a motion for this meeting to be adjourned. Lloyd Wirshba seconds the motion. The motion passes unanimously.

The meeting was adjourned at 10:03 AM with no further discussion.

Collier County Infrastructure Surtax Citizen Oversight Committee

Scott Lepore – Chairman

The preceding Minutes were approved by the Committee Chair on January 9, 2025, "as submitted" [ ] or "as amended" [ ]

AGENDA
CONSERVATION COLLIER
LAND ACQUISITION ADVISORY COMMITTEE

January 8, 2025, 9:00 A.M.
Growth Management Community Development
Conference Room 609/610

All interested parties are invited to attend, and to register to speak. Individuals who would like to participate in person must complete and submit a speaker form. Members of the public who would like to participate remotely should register HERE to complete the online speaker registration form. Remote participation is provided as a courtesy and is at the user's risk. The County is not responsible for technical issues. Individuals who register online will receive an email in advance of the public hearing detailing how they can participate remotely in this meeting. For additional information about the meeting, please call 239-252-2961 or email conservationcollier@colliercountyfl.gov

1. **Roll Call**
   - A. **Approval of CCLAAC members attending the meeting remotely**
2. **Approval of Agenda**
3. **Approval of December 4, 2024, Meeting Minutes**
4. **Old Business**
   - A. **Acquisition Updates**
     Current Acquisition Status report is updated monthly in advance of CCLAAC meeting and provided as part of the meeting packet. The report is posted online under Acquisition News at: www.conservationcollier.com
   - B. Initial Criteria Screening Reports (ICSRs) and Rankings
     1. Karlsson – Gordon River Greenway TPMA
   - C. Gore Nature Center updates presentation
5. **New Business**
   - A. **Committee Member Applications**
   - B. **Initial Criteria Screening Reports (ICSRs) and Rankings**
     1. I-75 and Everglades Blvd. TPMA
        - a. Berman – Parcel 1
        - b. Berman Parcel 2
        - c. Echavarria
        - d. Family Onyxx LLC
        - e. Morales
     2. Edwards Trust and Golden Land Partners – near Picayune
6. **Subcommittee Reports**
   - A. **Lands Evaluation & Management –** Chair, Ron Clark – last meeting June 5, 2024
   - B. **Outreach –** Chair, John Courtright - last meeting June 13, 2024
   - C. **Ordinance, Policy and Rules –** Chair, Michele Lenhard - last meeting December 18, 2023

7. **Coordinator Communications**
    A. **Miscellaneous**
    B. **Vote for Chair and Vice Chair in February (after members voted on by BCC)**
    C. **BCC Items Related to Conservation Collier**
        1. **Previously Heard**
            a. 12/10/2024
            Railhead Scrub Final Land Management Plan 10-Yr Update; Extension to the Memorandum of Understanding with the Florida Wildlife Corridor Foundation (FWCF)
        2. **Upcoming**
            a. 1/14/2025
            Purchase Agreements – JOL Property Ventures (Panther Walk) & Fernandez (Winchester Head); Cypress Cove Conservancy (Gore Nature Center); 2024 Active Acquisition List
            b. 1/28/2025
            Purchase Agreements – Hendrix House (I-75 TPMA); Descoteau (Gore), Fish (Panther Walk); Barfield Burrows naming
            c. 2/11/2025
            Purchase Agreements – HK Investment, Van Cleef (both Marco Island)
8. **Chair and Committee Member Comments**
9. **Public Comments**
10. **Staff Comments**
11. **Next Meeting February 5, 2025**
12. **Adjourn**

Committee Members: Please notify Summer Araque at 239-252-2979 no later than noon Monday, January 6, 2025, if you cannot attend this meeting or if you have a conflict and will abstain from voting on an agenda topic.

Property/Project Area Name	Size (ac)	Estimated Value	Estimated Value per acre	CCLAAC Recommended Ranking	CCLAAC Ranking Date	Board Ranking	Board Ranking Date
Williams Farms	**1,410.00**	**$11,980,000**	**$8,496**	A	4/3/2024	A	5/14/2024
Santamaria	**61.10**	N/A	N/A	A	4/3/2024	**Property withdrawn**	
North Belle Meade	**16.25**	**$138,000**	**$8,492**				
D & J Investors	5.00	$44,000	$8,800	A	9/11/2024	A	10/22/2024
Golden Land Partners	6.25	$50,000	$8,000	A	9/11/2024	A	10/22/2024
Wilson	5.00	$44,000	$8,800	A	11/6/2024	TBD	1/14/2025
A-LIST TOTAL	**1,426.25**	**$12,118,000**	**8,496.41**				
Dively Trust	10.00	$120,000	$12,000	B	5/1/2024	B	6/25/2024
Parang Trust	2.73	$87,360	$32,000	B	10/2/2024	TBD	1/14/2025
B-LIST TOTAL	**12.73**	**$207,360**	**$16,289**				
B & G Landholdings	21.68	$9,900	$457	C	7/3/2024	C	10/22/2024
Bacon	0.86	$2,500,000	$2,906,977	C	9/11/2024	C	10/22/2024
Durr/Roemer	2.50	$260,000	$104,000	C	9/11/2024	C	10/22/2024
1063 Shadowlawn	1.89	$2,200,000	$1,164,021	C	12/4/2024	TBD	1/14/2025
C-LIST TOTAL	**26.93**	**$4,969,900**	**$184,549**				

SUMMARY PAGE

ACQUISITION SUMMARY OF ALL CYCLE 10, 11A, 11B, and 12A PROPERTIES				
	Total Acres	Appraised or Estimate Value*	Purchase Price or Estimated Value*	Total number of properties
ACQUIRED PROPERTIES (CYCLE 10, 11A, 11B, and 12A)	**703.87**	**$15,968,055**	**$15,537,669**	**103**
PROPERTIES PENDING ACQUISITION* (CYCLE 11B, 12A, 12B, and 2024)	**2,332.95**	**$26,240,680**	**$26,086,130**	**20**

*Estimated Value used in calculations until Purchase Agreement is signed by Seller and scheduled for Collier County Board of County Commissioners meeting

ACQUIRED PROPERTIES (February 2022 - Present)						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Closing Amount	Acquisition Status
Varney, Gail	Red Maple Swamp Preserve	10	1.14	$14,250	$14,250	Closed 2/14/22
Caberera, Mercedes	Red Maple Swamp Preserve	10	9.16	$114,500	$114,500	Closed 3/21/22
McLaughlin Trust, Geraldine	Red Maple Swamp Preserve	10	4.61	$57,625	$57,625	Closed 3/21/22
Setser, Carrie, Larry, and Ruby	Red Maple Swamp Preserve	10	5.00	$62,500	$62,500	Closed 3/21/22
Dessing, Carol A.	Winchester Head Preserve	10	1.14	$18,810	$18,810	Closed 3/28/22
Gonzalez, Isabel	Panther Walk Preserve	10	1.14	$50,000	$50,000	Closed 6/16/22
Rudnick, Carol - *Donation*	Dr. Robert H. Gore III Preserve	10	1.59	N/A	N/A	Closed 6/30/22
Gorman, Herman and Alice	Winchester Head Preserve	10	1.14	$18,810	$18,810	Closed 9/26/22
Popp, Joe	Rivers Road Preserve	10	19.40	$630,000	$630,000	Closed 9/26/22
Selvig, Maribeth - *Donation*	Panther Walk Preserve	10	1.14	N/A	N/A	Closed 9/26/22
Hussey Trust	North Belle Meade Preserve	10	256.00	$2,072,500	$2,072,500	Closed 11/14/22
Burns, Sandra	Panther Walk Preserve	10	1.14	$30,000	$30,000	Closed 1/30/23
Johnson, Tim R	Panther Walk Preserve	10	1.14	$30,000	$30,000	Closed 1/30/23
Meyer Trust	Panther Walk Preserve	10	1.59	$72,000	$72,000	Closed 1/30/23
Sanchez, PS & NE	Panther Walk Preserve	10	2.73	$63,000	$63,000	Closed 1/30/23
Thommen, William F	Panther Walk Preserve	10	5.00	$100,000	$100,000	Closed 1/30/23
Wright, David	Panther Walk Preserve	10	1.14	$30,000	$30,000	Closed 1/30/23
Zhuang, Joseph	Panther Walk Preserve	10	2.73	$63,000	$63,000	Closed 1/30/23
Aguilar, Jorge	Panther Walk Preserve	10	1.14	$40,000	$40,000	Closed 2/13/23
Pena, John	Panther Walk Preserve	10	2.27	$52,000	$52,000	Closed 2/13/23
Hofmann, Adelaida	Dr. Robert H. Gore III Preserve	10	1.59	$36,000	$36,000	Closed 2/27/23
D & J Investors	Panther Walk Preserve	10	1.14	$40,000	$40,000	Closed 6/9/23
Joyce, David	Panther Walk Preserve	10	2.27	$52,000	$52,000	Closed 6/9/23
Arnay, Henrietta	Panther Walk Preserve	10	1.14	$30,000	$30,000	Closed 6/16/23
Behnke, Lois	Panther Walk Preserve	10	1.14	$57,000	$57,000	Closed 6/16/23
Grossman, Barry	Panther Walk Preserve	10	2.73	$63,000	$63,000	Closed 6/16/23
Charles, Paulette	Dr. Robert H. Gore III Preserve	10	1.14	$25,100	$22,500	Closed 6/30/23
Toro, Michael	Winchester Head Preserve	10	1.59	$39,800	$35,820	Closed 6/30/23
Blocker, Brian	Pepper Ranch Preserve	10	24.50	$220,000	$220,000	Closed 7/7/23

ACQUIRED PROPERTIES (February 2022 - Present), cont'd						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Closing Amount	Acquisition Status
Guerra, Sigrid	Red Maple Swamp Preserve	10	1.14	$20,500	$20,500	Closed 7/7/23
Ruben Trust	Winchester Head Preserve	10	1.59	$39,800	$39,800	Closed 7/7/23
Zani, Paul	Dr. Robert H. Gore III Preserve	10	2.27	$49,900	$49,900	Closed 7/7/23
Castillo, Jose	Red Maple Swamp Preserve	10	5.41	$89,300	$84,835	Closed 7/14/23
Quevedo, Odalys	Dr. Robert H. Gore III Preserve	10	1.14	$28,000	$26,600	Closed 7/14/23
Sparkman Tamara Gibson	Panther Walk Preserve	10	1.14	$33,000	$33,000	Closed 7/14/23
Joyce, Martin and Elizabeth	Panther Walk Preserve	10	2.27	$61,300	$55,170	Closed 8/17/23
Martinez, Abel Chavez	Red Maple Swamp Preserve	10	2.27	$40,900	$36,000	Closed 8/17/23
Rodriguez (f.k.a. Lopez), Terri	Panther Walk Preserve	10	1.59	$42,900	$38,610	Closed 8/17/23
Salgado, Julio	Panther Walk Preserve	10	2.73	$73,700	$70,110	Closed 8/17/23
Fesser, Ivan	Winchester Head Preserve	10	2.27	$56,800	$53,960	Closed 9/1/23
Trofatter, Frederick	Winchester Head Preserve	10	1.14	$28,000	$25,650	Closed 9/7/23
Berman Trust, R F	Dr. Robert H. Gore III Preserve	11A	1.14	$30,000	$28,500	Closed 9/15/23
Craparo, Stephen	Dr. Robert H. Gore III Preserve	10	1.64	$44,000	$39,600	Closed 9/15/23
Fleming, Albert	Dr. Robert H. Gore III Preserve	10	1.64	$39,000	$37,500	Closed 9/15/23
Repola, Andrea	Panther Walk Preserve	11A	1.14	$45,000	$42,800	Closed 9/15/23
Vaz, Maurice J	Panther Walk Preserve	11A	1.59	$57,500	$57,000	Closed 9/15/23
Bailey, Charles E	Dr. Robert H. Gore III Preserve	10	1.14	$25,000	$25,000	Closed 9/20/23
Arias, Eladio	Dr. Robert H. Gore III Preserve	10	3.16	$63,000	$52,900	Closed 9/22/23
Arias, Eladio	Dr. Robert H. Gore III Preserve	10	3.78	$66,000	$63,200	Closed 9/22/23
Moody Crawford, Jim H	Pepper Ranch Preserve	10	59.79	$505,000	$505,000	Closed 9/22/23
McGinnis, Patricia	Panther Walk Preserve	11A	1.14	$45,000	$42,800	Closed 11/17/23
Scalley, William J and Martha	Panther Walk Preserve	11A	1.14	$45,000	$42,800	Closed 11/17/23
Trigoura, Delsina	Dr. Robert H. Gore III Preserve	11A	1.14	$30,000	$30,000	Closed 11/17/23
Perona, Barbara	Winchester Head Preserve	11A	1.59	$39,800	$39,800	Closed 12/1/23
Scotti, Mary	North Belle Meade Preserve	11A	8.74	$135,500	$128,700	Closed 12/1/23
Fontela, Maricel Aleu	Dr. Robert H. Gore III Preserve	11A	1.14	$25,700	$25,700	Closed 12/8/23
Sponseller, Robert	North Belle Meade Preserve	11A	5.00	$90,000	$90,000	Closed 12/8/23
VanCleave, Matthew	Rivers Road Preserve	11A	0.50	$52,500	$52,500	Closed 12/8/23
Weir Trust, Celine	Dr. Robert H. Gore III Preserve	11B	2.27	$39,500	$37,500	Closed 12/8/23

ACQUIRED PROPERTIES (February 2022 - Present), cont'd						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Closing Amount	Acquisition Status
Wilson Trust	Winchester Head Preserve	11B	1.59	$39,800	$39,800	Closed 12/8/23
Brewer, Richard	N/A	11B	14.78	$451,000	$405,900	Closed 12/15/23
Dibala Wood Trust	Dr. Robert H. Gore III Preserve	11B	18.28	$275,000	$261,300	Closed 12/15/23
Hackmann, Charles	Panther Walk Preserve	10	2.73	$70,000	$63,000	Closed 12/15/23
Annecy Marco LLC / Barfield	Marco Island	11A	2.13	$3,140,000	$3,140,000	Closed 1/5/24
Perez Castro, Pedro	Dr. Robert H. Gore III Preserve	11A	1.17	$29,000	$27,600	Closed 1/5/24
South Terra Corp	Marco Island	11A	0.56	$1,720,000	$1,620,000	Closed 1/5/24
Geren, Jonathan	North Belle Meade Preserve	11A	7.84	$129,500	$129,500	Closed 1/12/24
Gutierrez, Michael	North Belle Meade Preserve	11A	4.88	$85,400	$81,100	Closed 1/12/24
Bailey, Scott and Christopher	Winchester Head Preserve	11B	1.59	$39,800	$38,500	Closed 1/19/24
Dredge Management Assoc LLC	Shell Island Preserve	11B	18.73	$1,592,500	$1,512,875	Closed 1/19/24
English Trust	Pepper Ranch Preserve	11B	59.01	$515,000	$463,500	Closed 1/19/24
Williams	Nancy Payton Preserve	11B	0.50	$60,000	$60,000	Closed 1/19/24
Mooney/Hankins-Colon	Winchester Head Preserve	11B	1.59	$39,800	$39,800	Closed 2/16/24
A & T Kleinberger Rev Trust	Dr. Robert H. Gore III Preserve	12A	5.00	$110,000	$104,500	Closed 3/15/24
Rodriguez, Mario & Gisela	Panther Walk Preserve	12A	5.46	$158,400	$158,400	Closed 7/12/24
Murawski Trust	North Belle Meade Preserve	12A	4.87	$45,000	$42,750	Closed 7/24/24
Land Genie LLC	Dr. Robert H. Gore III Preserve	12A	2.73	$62,790	$62,790	Closed 8/9/24
Taylor, Ernesto & Ana	Dr. Robert H. Gore III Preserve	12A	5.00	$103,750	$98,650	Closed 8/9/24
Whittingham Corporation	Panther Walk Preserve	12A	1.59	$46,110	$45,990	Closed 8/16/24
Walsh, Nancy	Red Maple Swamp Preserve	12A	1.14	$20,520	$19,494	Closed 8/21/24
Arnold Trust	Dr. Robert H. Gore III Preserve	12A	7.16	$148,570	$141,140	Closed 8/23/24
Beckert, Marc & Elizabeth	Dr. Robert H. Gore III Preserve	12A	1.14	$26,220	$24,910	Closed 8/23/24
Granados, Nelson	Dr. Robert H. Gore III Preserve	12A	5.15	$106,860	$106,860	Closed 8/23/24
JA Moulton Trust	Dr. Robert H. Gore III Preserve	12A	7.17	$148,780	$141,340	Closed 8/23/24
Woodworth, Richard	Dr. Robert H. Gore III Preserve	12A	2.27	$52,210	$49,600	Closed 8/23/24
CDL Naples Investment LLC	Dr. Robert H. Gore III Preserve	12A	2.73	$62,790	$59,650	Closed 8/30/24
Langell Trust	Dr. Robert H. Gore III Preserve	12A	2.81	$61,120	$58,060	Closed 9/6/24
Hughes, Jeffrey & Melissa	Panther Walk Preserve	12A	1.59	$46,110	$46,110	Closed 9/11/24

ACQUIRED PROPERTIES (February 2022 - Present), cont'd						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Closing Amount	Acquisition Status
Sardinas, Martha	Dr. Robert H. Gore III Preserve	12A	2.34	$53,820	$53,820	Closed 9/13/24
Volpe Trust	North Belle Meade Preserve	12A	8.50	$109,000	$103,550	Closed 9/13/24
Wilson, Kyle & Lisa Mason	Panther Walk Preserve	12A	1.59	$46,110	$46,110	Closed 9/20/24
Aristizabal	McIlvane Marsh Preserve	12A	5.00	$20,000	$20,000	Closed 10/25/24
Arndt, Linda	Winchester Head Preserve	12A	1.14	$31,920	$30,320	Closed 11/1/24
Ayra, Anacely	Dr. Robert H. Gore III Preserve	12A	3.18	$69,170	$65,710	Closed 11/1/24
Erickson, Gerald	Dr. Robert H. Gore III Preserve	12B	1.14	$26,220	$24,910	Closed 11/7/24
Ebanks, Marvin	Winchester Head Preserve	12A	1.14	$31,920	$31,920	Closed 11/8/24
Cassity, Cina Lu	Panther Walk Preserve	12A	1.59	$46,110	$46,110	Closed 12/6/24
Catania, James	Winchester Head Preserve	12A	1.14	$31,920	$30,320	Closed 12/6/24
SD Orange Blossom - *Donation*	Dr. Robert H. Gore III Preserve	12A	1.14	N/A	N/A	Closed 12/16/24
SD Orange Blossom - *Donation*	Winchester Head Preserve	12A	1.14	N/A	N/A	Closed 12/16/24
James F. Dinwiddie Rev Trust	Panther Walk Preserve	12A	1.14	$33,060	$33,060	Closed 12/19/24
Radel, Mark	Panther Walk Preserve	12A	1.14	$33,060	$33,060	Closed 12/19/24
Seepersad, Kausil	Dr. Robert H. Gore III Preserve	12B	1.14	$26,220	$24,910	Closed 12/19/24
TOTAL ACQUIRED PROPERTIES			**703.87**	**$15,968,055**	**$15,537,669**	**Total number of properties = 103**

PROPERTIES PENDING ACQUISITION						
Property Name	Preserve	Cycle	Size (ac)	Appraised/Estimated Value	Purchase Price/Estimated	Acquisition Status
Dennison, Robert	Dr. Robert H. Gore III Preserve	12A	2.73	$62,790	$62,790	Purchase Agreement approved on 10/22/2024; Closing scheduled for 1/17/2025
Ngo/Huynh/Lieu	Panther Walk Preserve	12B	2.73	$87,360	$87,360	Purchase Agreement approved on 11/12/24; Closing scheduled for 1/17/2025
Stone Trust	Panther Walk Preserve	12B	5.00	$141,250	$141,250	Purchase Agreement approved on 11/12/24; Closing scheduled for 1/17/2025
Vikon Corporation	Panther Walk Preserve	12B	1.59	$50,880	$50,880	Purchase Agreement approved on 11/12/24; Closing scheduled for 1/23/2025
Symphony Properties	N/A	12A	150.00	$4,015,000	$4,015,000	Purchase Agreement approved on 10/22/2024; Closing scheduled for 6/18/2025
Williams Farms	N/A	2024	1,410.00	$11,980,000	$11,980,000	Purchase Agreement approved by BCC 5/28/24; Closing pending
Subtotal - Properties with Board Approved Purchase Agreements			1,572.05	$16,337,280	$16,337,280	Subtotal number of properties = 6
Cypress Cove Conservancy	Dr. Robert H. Gore III Preserve	12B	10.00	$721,000	$648,900	Offer accepted; Purchase Agreement scheduled for 1/14/2025 BCC
Fernandez, Erik	Winchester Head Preserve	12A	1.59	$44,520	$44,520	Offer accepted; Purchase Agreement scheduled for 1/14/25 BCC
JOL Property Ventures	Panther Walk Preserve	12B	1.14	$36,480	$36,480	Offer accepted; Purchase Agreement scheduled for 1/14/2025 BCC
Martinez, Abel Chavez	Panther Walk Preserve	12B	1.14	$36,480	$36,480	Offer accepted; Purchase Agreement scheduled for 1/14/2025 BCC
Descoteau, Donn & Donna	Dr. Robert H. Gore III Preserve	11B	1.14	$25,100	$25,100	Offer accepted; Purchase Agreement scheduled for 1/28/2025 BCC
Hendrix House	N/A	12B	17.66	$502,500	$502,500	Offer accepted; Purchase Agreement scheduled for 1/28/2025 BCC
Fish, Monica	Panther Walk Preserve	12B	1.14	$36,480	$36,480	Offer accepted; Purchase Agreement scheduled for 1/28/2025 BCC
HK Investment	Marco Island	12B	0.37	$646,500	$646,500	Offer accepted; Purchase Agreement scheduled for 2/11/25 BCC
Van Cleef	Marco Island	12B	0.43	$824,500	$742,050	Offer accepted; Purchase Agreement scheduled for 2/11/20254 BCC
Lautz, Cameron	Panther Walk Preserve	12B	2.27	$72,640	$72,640	Offer accepted; Purchase Agreement pending
Wildcat Acres*	N/A	12B	73.60	$1,357,800	$1,357,800	Offer accepted; Purchase Agreement pending
Golden Land Partners	North Belle Meade Preserve	2024	6.25	$33,000	$33,000	Offer accepted; Purchase Agreement pending
Wildflowerz Ranch*	N/A	12B	639.17	$5,522,400	$5,522,400	Offer made; In negotiation
D & J Investors*	North Belle Meade Preserve	2024	5.00	$44,000	$44,000	Offer made; awaiting Seller response
Subtotal - Properties with Board Approval of Purchase Agreements Pending			760.90	$9,903,400	$9,748,850	Subtotal number of properties = 14
TOTAL PROPERTIES PENDING ACQUISITION			**2,332.95**	**$26,240,680**	**$26,086,130**	**Total number of properties = 20**

A-LIST PROPERTIES THAT WILL NOT BE ACQUIRED AT THIS TIME						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Final Offer Amount	Acquisition Status
Amaranth Trust, Forrest G	N/A	10	71.16	N/A	N/A	Property withdrawn
Anderson, Charles	Panther Walk Preserve	10	2.27	$64,000	$64,000	Offer not accepted
Anderson, Charles	Panther Walk Preserve	10	1.14	N/A	N/A	Sold to another
Argay, Lorraine D	Dr. Robert H. Gore III Preserve	10	7.05	$81,000	$81,000	Offer not accepted
Arnold, Emily	Pepper Ranch Preserve	10	5.00	N/A	N/A	Property withdrawn
Arnold, Vanette	Panther Walk Preserve	10	1.14	$30,000	$30,000	Offer not accepted
Big Hammock - Area I (Barron Collier Partnership)	Pepper Ranch Preserve	10	257.3	$900,000	$900,000	Offer not accepted
Casasierra Realty LLC	Winchester Head Preserve	10	1.14	$25,650	$25,650	Property withdrawn
Cedeno, Kenneth	Dr. Robert H. Gore III Preserve	10	2.81	$56,000	$56,000	Offer not accepted
Dahche, Ahmand	Panther Walk Preserve	10	5.00	$130,000	$130,000	Offer not accepted
D'Angelo, Eugene	Dr. Robert H. Gore III Preserve	10	5.00	$100,000	$100,000	Offer not accepted
Erjavec, Eugene	Rivers Road Preserve	10	4.92	$200,000	$200,000	Offer not accepted
Eschuk, Shari	Rivers Road Preserve	10	4.78	$180,000	$180,000	Offer not accepted
Fischer Trust, Addison	Marco Island	10	0.63	N/A	N/A	Property withdrawn
Haughton, Veronica	Panther Walk Preserve	10	2.73	N/A	N/A	Sold to another
Higdon Trust, Garey D	Winchester Head Preserve	10	1.59	$39,800	$35,820	Selling to another
Macrina, Kathleen	Panther Walk Preserve	10	1.14	N/A	N/A	Sold to another
Moylan, Paul E	Panther Walk Preserve	10	2.73	$63,000	$63,000	Offer not accepted
Ortega, Berardo	Panther Walk Preserve	10	1.14	$30,000	$30,000	Property withdrawn
Three Brothers	Panther Walk Preserve	10	2.73	$63,000	$63,000	Offer not accepted
WISC Investment - Inlet Dr	Marco Island	10	0.39	$429,000	$429,000	Purchase Agreement not approved by BCC
Agua Colina	Marco Island	11A	0.63	$1,120,000	$1,120,000	Purchase Agreement not approved by Board
Berman Rev Trust, R F	Panther Walk Preserve	11A	1.17	$46,000	$43,700	No longer interested in selling
Chestnut, Diane	Marco Island	11A	0.53	$627,500	$627,500	Offer not accepted
Colon, Donna & Patricia Mack	Dr. Robert H. Gore III Preserve	11A	2.27	$39,500	$39,500	Selling to another
S & B Properties of Marco LLC	Marco Island	11A	0.50	$570,000	$570,000	Offer not accepted
Starnes, Hugh	Caracara Prairie Preserve	11A	4.54	$250,000	$250,000	Offer not accepted
Buckley Enterprises	Nancy Payton Preserve	11B	80.00	$780,000	$780,000	Offer not accepted
Khoury	Otter Mound Preserve	11B	0.43	N/A	N/A	Sold to another
Lie, Run He	Nancy Payton Preserve	11B	0.50	$80,000	$80,000	Offer not accepted

A-LIST PROPERTIES THAT WILL NOT BE ACQUIRED AT THIS TIME, cont'd						
Property Name	Preserve	Cycle	Size (ac)	Appraised Value	Final Offer Amount	Acquisition Status
Owl Hammock	N/A	11B	7,378.00	TBD	TBD	On-hold pending State of Florida acquisition
Relevant Radio, Inc.	McIlvane Marsh Preserve	11B	10.46	$126,350	$126,350	Offer not accepted
Sit/Chew	Nancy Payton Preserve	11B	3.00	$390,000	$390,000	Offer not accepted
Smith & Montgomery	Dr. Robert H. Gore III Preserve	11B	2.73	N/A	N/A	Property withdrawn
Bleka, Joseph & Christina	Dr. Robert H. Gore III Preserve	12A	2.34	$53,820	$53,820	On-hold until title is clear
Veneziano, Steve	Panther Walk Preserve	12A	1.14	$33,060	$33,060	Offer not accepted
Wilson, Rebecca	Winchester Head Preserve	12A	1.14	$29,000	$29,000	Offer not accepted
Eid	Dr. Robert H. Gore III Preserve	12B	2.27	$52,210	$49,600	Offer not accepted
Lynch	Winchester Head Preserve	12B	1.14	$31,920	$30,320	Offer not accepted
Parraga	Dr. Robert H. Gore III Preserve	12B	2.81	$61,120	$58,060	Offer not accepted
Pritchard	Dr. Robert H. Gore III Preserve	12B	2.27	$52,210	$49,600	Offer not accepted
Sunny Florida Investments, Inc	Dr. Robert H. Gore III Preserve	12B	1.14	$26,220	$24,910	Offer not accepted
Santamaria	Caracara Prairie Preserve	2024	61.10	N/A	N/A	Property withdrawn
TOTAL PROPERTIES THAT WILL NOT BE ACQUIRED AT THIS TIME			**7,941.90**	**$6,760,360**	**$6,742,890**	**Total number of properties = 43**

Conservation Collier Initial Criteria Screening Report
Karlsson Trust



Owner Name: Peter U Karlsson Rev Trust
Size: 0.33 acres
Folio Number: 00268410005
Staff Report Date: December 4, 2024 (revised 12/9/2024)

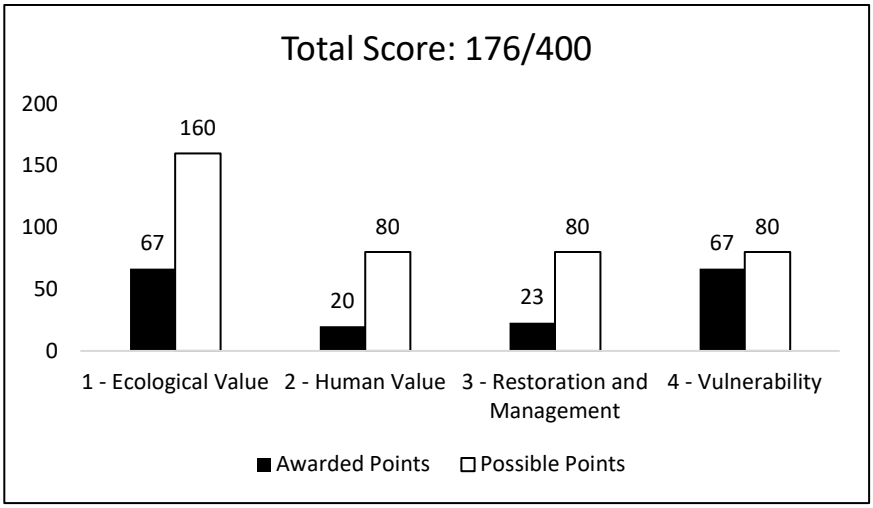


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1. Introduction

The Conservation Collier Program (Program) is an environmentally sensitive land acquisition and management program approved by the Collier County Board of County Commissioners (Board) in 2002 and by Collier County Voters in 2002 and 2006. The Program was active in acquisition between 2003 and 2011, under the terms of the referendum. Between 2011 and 2016, the Program was in management mode. In 2017, the Collier County Board reauthorized Conservation Collier to seek additional lands (2/14/17, Agenda Item 11B). On November 3, 2020, the Collier County electors approved the Conservation Collier Re-establishment referendum with a 76.5% majority.

This Initial Criteria Screening Report (ICSR) has been prepared for the Conservation Collier Program to meet requirements specified in the Conservation Collier Implementation Ordinance, 2002-63, as amended, and for purposes of the Conservation Collier Program. The sole purpose of this report is to provide objective data to demonstrate how properties meet the criteria defined by the ordinance.

The following sections characterize the property location and assessed value, elaborate on the initial and secondary screening criteria scoring, and describe potential funding sources, appropriate use, site improvements, and estimated management costs.

2. Summary of Property

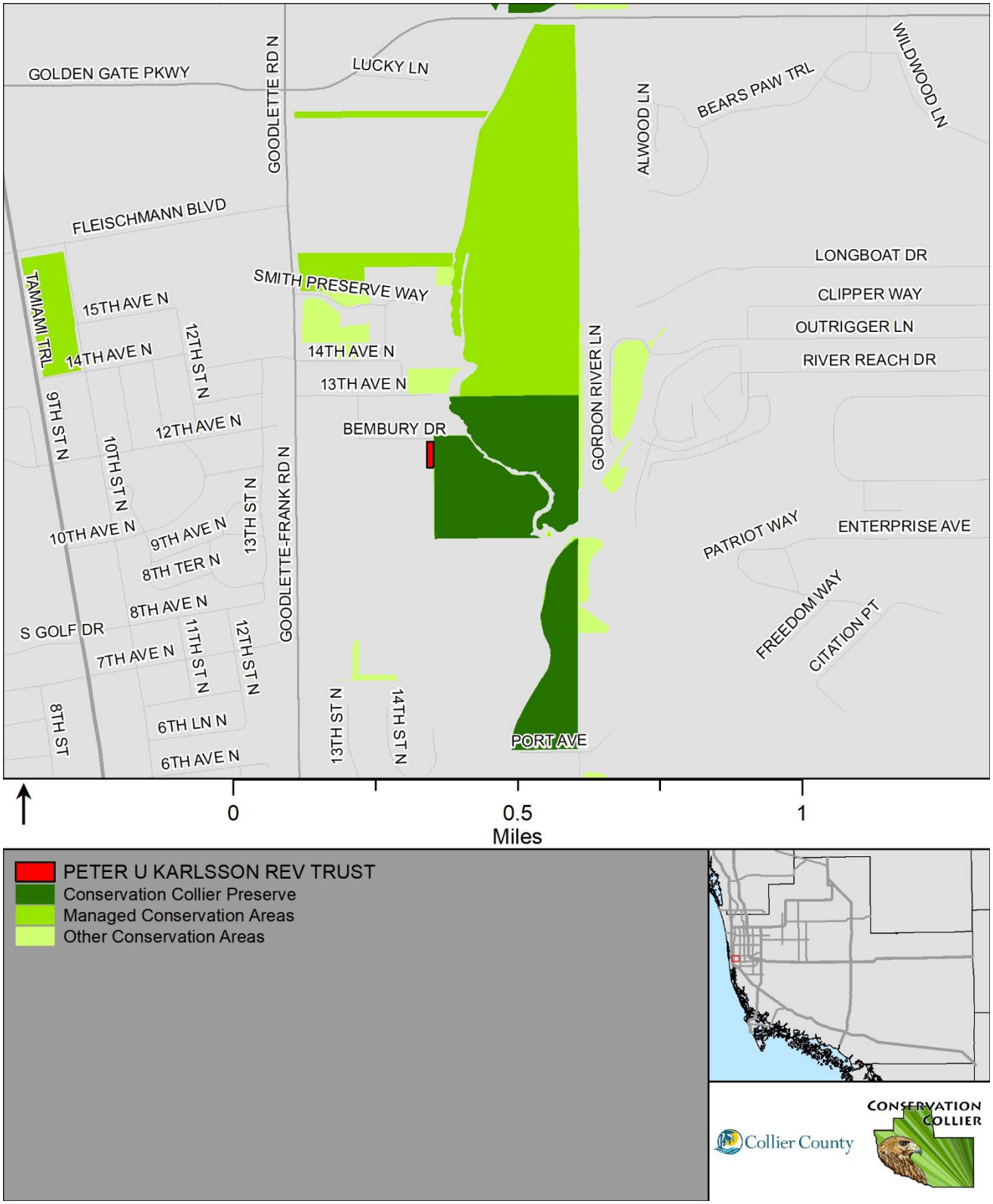


Figure 1 - Parcel Location Overview

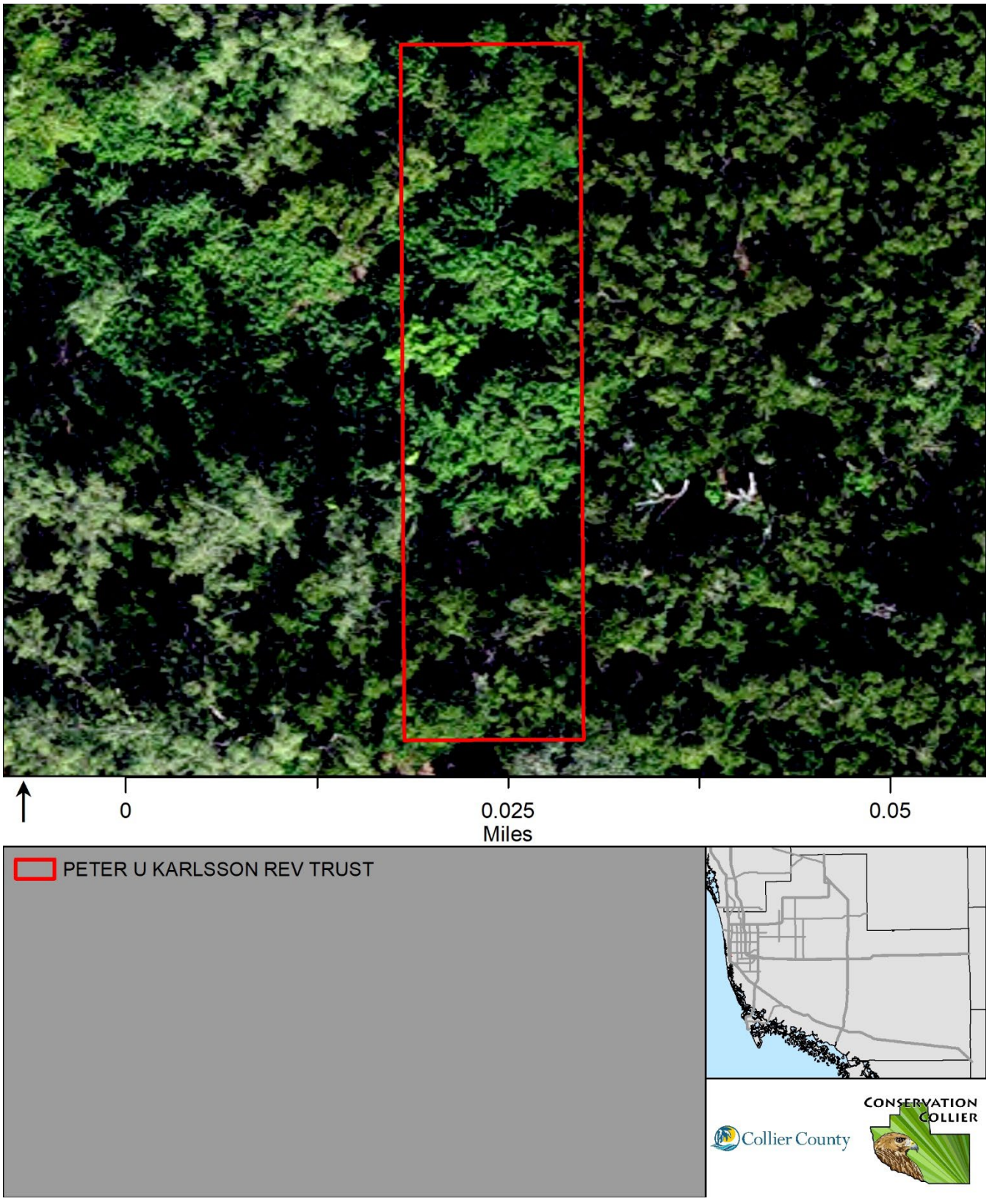


Figure 2 - Parcel Close-up

2.1 Summary of Property Information

Table 1 – Summary of Property Information

Characteristic	Value	Comments
Name	Karlsson Trust	Peter U Karlsson Rev Trust
Folio Number	00268410005	
Target Protection Area	Urban	Within the Gordon River Greenway Target Protection Mailing Area
Size	0.33 acres	
Section, Township, and Range	S34, Twn 49, R25	
Zoning Category/TDRs	RMF-6	Maximum density is 6 units per acre
FEMA Flood Map Category	AE	High-risk flood zone with a 1% annual chance of flooding
Existing structures	None	
Adjoining properties and their Uses	Conservation, undeveloped RMF-6, developed RMF-16, and developed RSF-4	Gordon River Greenway to the east; Goodlette Arms apartment complex to the south, undeveloped RMF-6 parcels to the west, developed single family homes to the north
Development Plans Submitted	ACOE permit	ACOE permit application approved
Known Property Irregularities	Debris	Approximately half the property contains what appears to be old construction debris – large concrete slabs with rebar and some asphalt
Other County Dept Interest	None known	

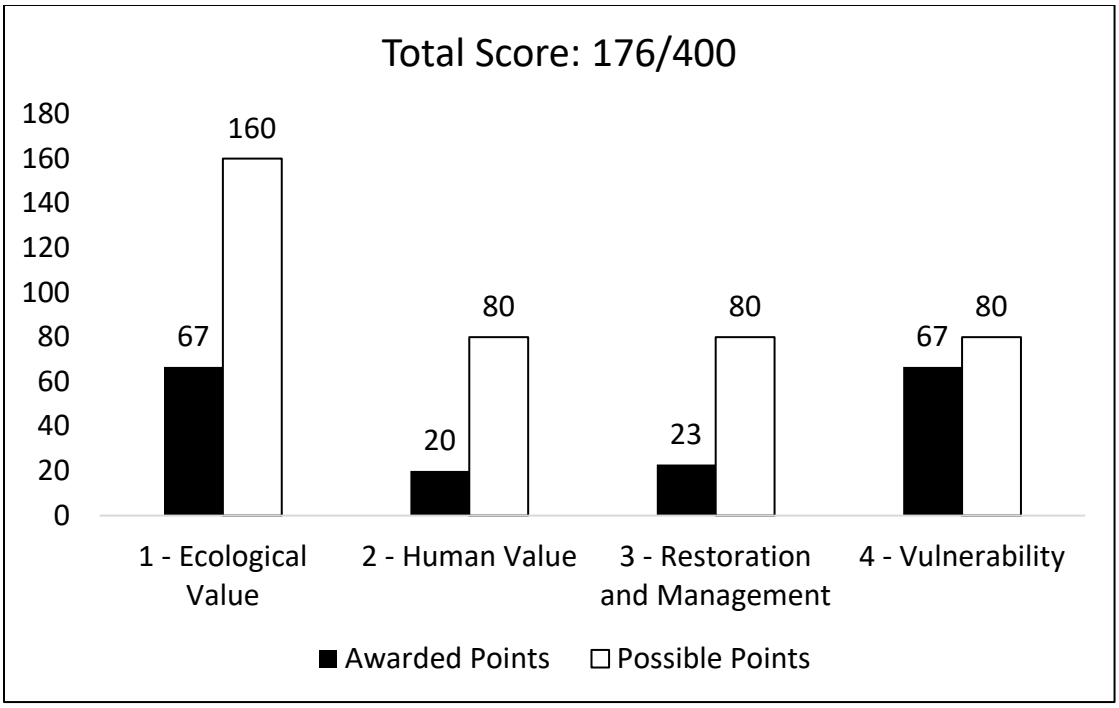


Figure 3 - Secondary Criteria Score

Table 2 - Secondary Criteria Score Summary

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**67**	**160**	**42%**
1.1 - Vegetative Communities	15	53	28%
1.2 - Wildlife Communities	16	27	60%
1.3 - Water Resources	23	27	85%
1.4 - Ecosystem Connectivity	13	53	25%
2 - Human Values	**20**	**80**	**25%**
2.1 - Recreation	0	34	0%
2.2 - Accessibility	17	34	50%
2.3 - Aesthetics/Cultural Enhancement	3	11	25%
3 - Restoration and Management	**23**	**80**	**29%**
3.1 - Vegetation Management	21	55	38%
3.2 - Remediation and Site Security	2	23	10%
3.3 - Assistance	0	2	0%
4 - Vulnerability	**67**	**80**	**83%**
4.1 - Zoning and Land Use	58	58	100%
4.2 - Development Plans	9	22	40%
Total	**176**	**400**	**44%**

2.2 Summary of Assessed Value and Property Cost Estimates

The interest being appraised is fee simple "as is" for the purchase of the site. A value of the parcel was estimated using only one of the three traditional approaches to value, the sales comparison approach. It is based on the principal of substitution that an informed purchaser would pay no more for the rights in acquiring a particular real property than the cost of acquiring, without undue delay, an equally desirable one. Three properties were selected for comparison, each with similar site characteristics, utility availability, zoning classification and road access. No inspection was made of the property or comparables used in this report and the Real Estate Services Department staff relied upon information solely provided by program staff. The valuation conclusion is limited only by the reported assumptions and conditions that no other known or unknown adverse conditions exist.

If the Board of County Commissioners choose to acquire this property, appraisals by separate independent Real Estate Appraiser will be obtained at that time. Pursuant to the Conservation Collier Purchase Policy, two appraisals are required for the Karlsson parcel, which has an initial estimated valuation over $500,000; 2 independent Real Estate Appraisers will value the subject property and the average of those two appraisal reports will be used to determine the offer made to the seller.

Table 3. Assessed & Estimated Value

Property owner	Address	Acreage	Assessed Value*	Estimated Value**
Peter U Karlsson Rev Trust	1552 Bembury Dr, Naples, FL 34102	0.33	$409,208	TBD

* Assessed Value is obtained from the Property Appraiser's Website.
**The Estimated Value for the parcel will be obtained from the Collier County Real Estate Services Department prior to BCC ranking.

2.2.1 Zoning, Growth Management and Conservation Overlays

Zoning, growth management and conservation overlays will affect the value of a parcel. This parcel is zoned Residential Multi Family – 6 (RMF-6). Maximum density is 6 units per acre.

2.3 Summary of Initial Screening Criteria Satisfaction (Ord. 2002-63, as amended, Sec. 12)

Criteria 1: CLIP Priority 1 Natural Community

Does the property contain Upland Hardwood Forest, Scrub, Coastal Upland, Dry Prairie, or Upland Pine? **NO**

Criteria 2: CLIP Priority 2 Natural Community

Does the property contain Pine Flatwoods or Coastal Wetlands? **NO**

Criteria 3: Other Native, Natural Communities

Does the property contain other native, natural communities? **YES**

Parcel contains disturbed mangrove swamp.

Criteria 4: Human Social Values

Does the property offer cultural values, appropriate access for natural resource-based recreation, and the enhancement of the aesthetic setting of Collier County? **NO**

The property is visible from Bembury Dr., but is inaccessible for natural resource-based recreation.

Criteria 5: Water Resources

Does the property offer opportunities for protection of water resource values, including aquifer recharge, water quality enhancement, protection of wetland dependent species habitat, wildfire risk reduction, storm surge protection, and flood control? **YES**

Yes, contains wetlands and would provide storm surge protection. Also within a 20-year well protection zone.

Criteria 6: Biological and Ecological Value

Does the property offer significant biological values, including biodiversity and listed species habitat? **NO**

The parcel provides little to no habitat for wildlife.

Criteria 7: Enhancement of Current Conservation Lands

Does the property enhance and/or protect the environmental value of current conservation lands through function as a buffer, ecological link, or habitat corridor? **YES**

Parcel is adjacent to the Gordon River Greenway.

Criteria 8: Target Area

Is the property within a Board-approved target protection mailing area? **YES**

The parcel is within the Gordon River Greenway Target Protection Mailing Area

The Karlsson Trust parcel met 4 out of the 8 Initial Screening Criteria.

3. Initial Screening Criteria

3.1 Ecological Values

3.1.1 Vegetative Communities

Disturbed mangrove swamp exists within the southern section of the parcel and accounts for approximately one-third of the property. The remaining two-thirds of the parcel contains exotic vegetation, primarily Brazilian pepper.

The disturbed mangrove swamp contains red mangrove (*Laguncularia racemosa*) and white mangrove (*Laguncularia racemosa*) in the canopy with a few giant leatherfern (*Acrostichum danaeifolium*) in the understory. Australian pine and Brazilian pepper are also present, but not dominant.

Non-native, invasive plants observed include Brazilian pepper (*Schinus terebinthifolia*), lead tree (*Leucaena leucocephala*), carrotwood (*Cupaniopsis anacardioides*), Australian pine (*Casuarina* sp), air-potato (*Dioscorea bulbifera*), and fivefingers (*Syngonium angustatum*).

No listed plant species were observed on the parcel.

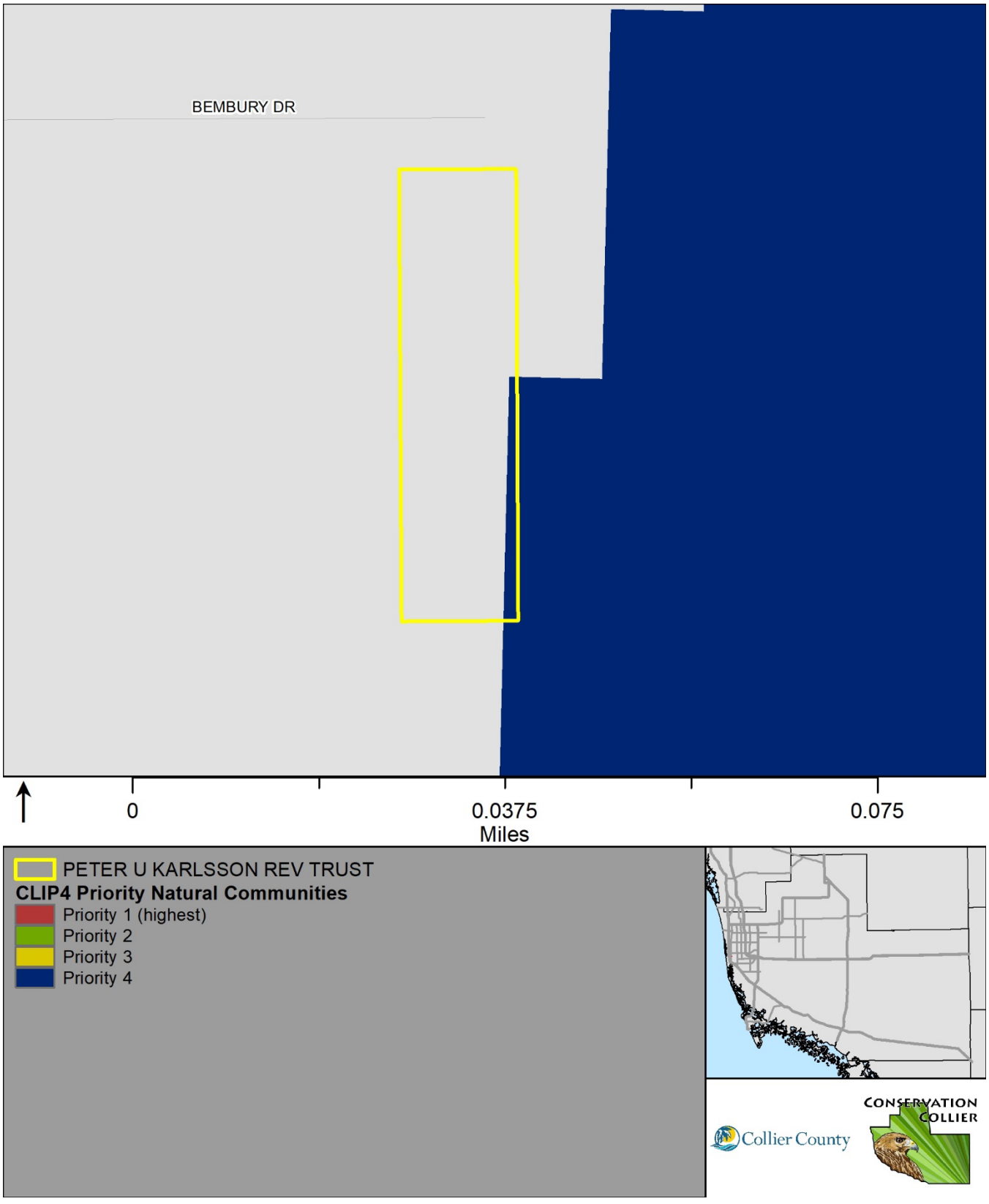


Figure 4 - CLIP4 Priority Natural Communities

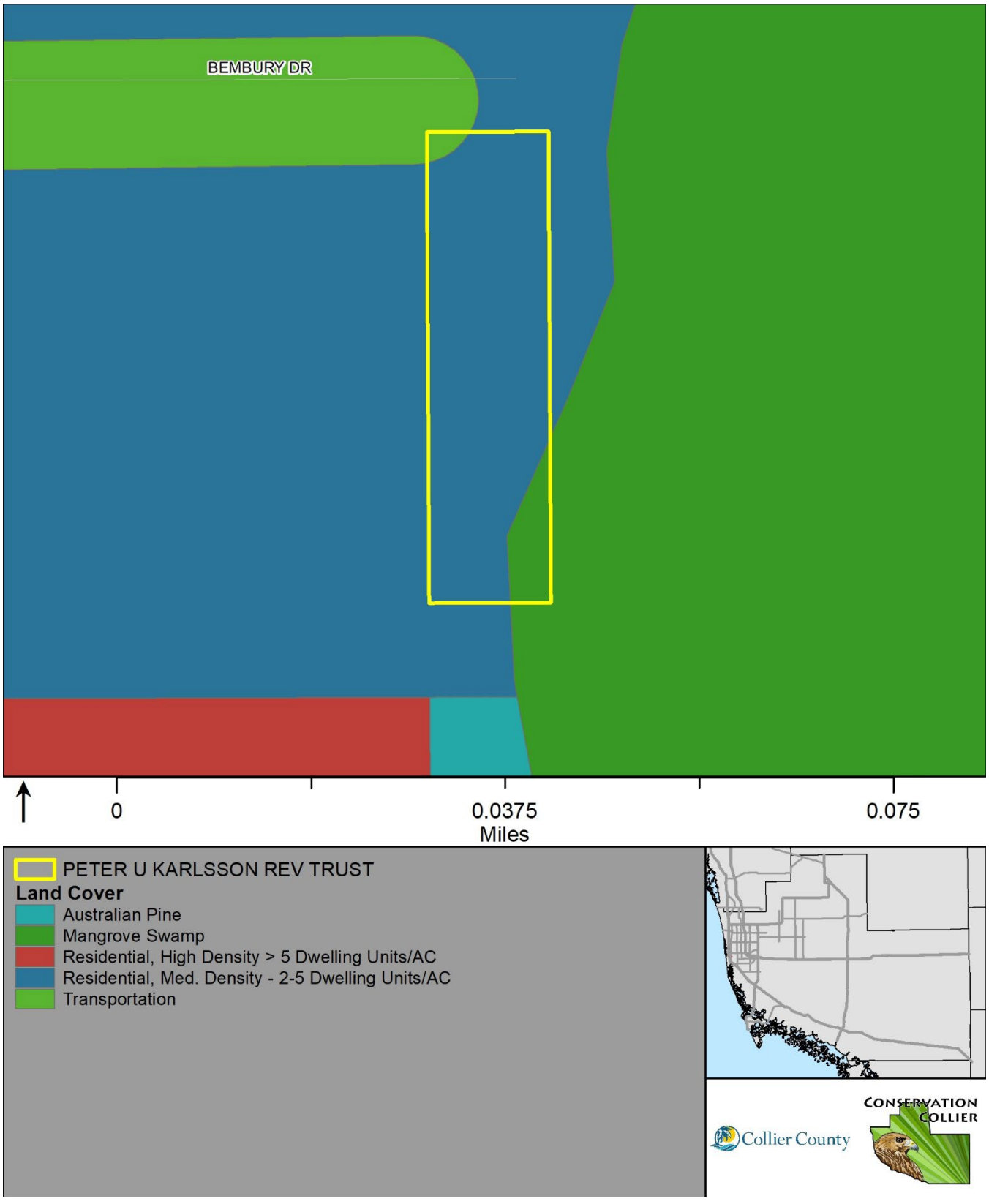


Figure 5 - Florida Cooperative Land Cover Classification System



Figure 6 – Brazilian pepper inside parcel

3.1.2 Wildlife Communities

The parcel could provide limited foraging habitat for listed wading birds.

No listed wildlife was observed or previously noted on the property.

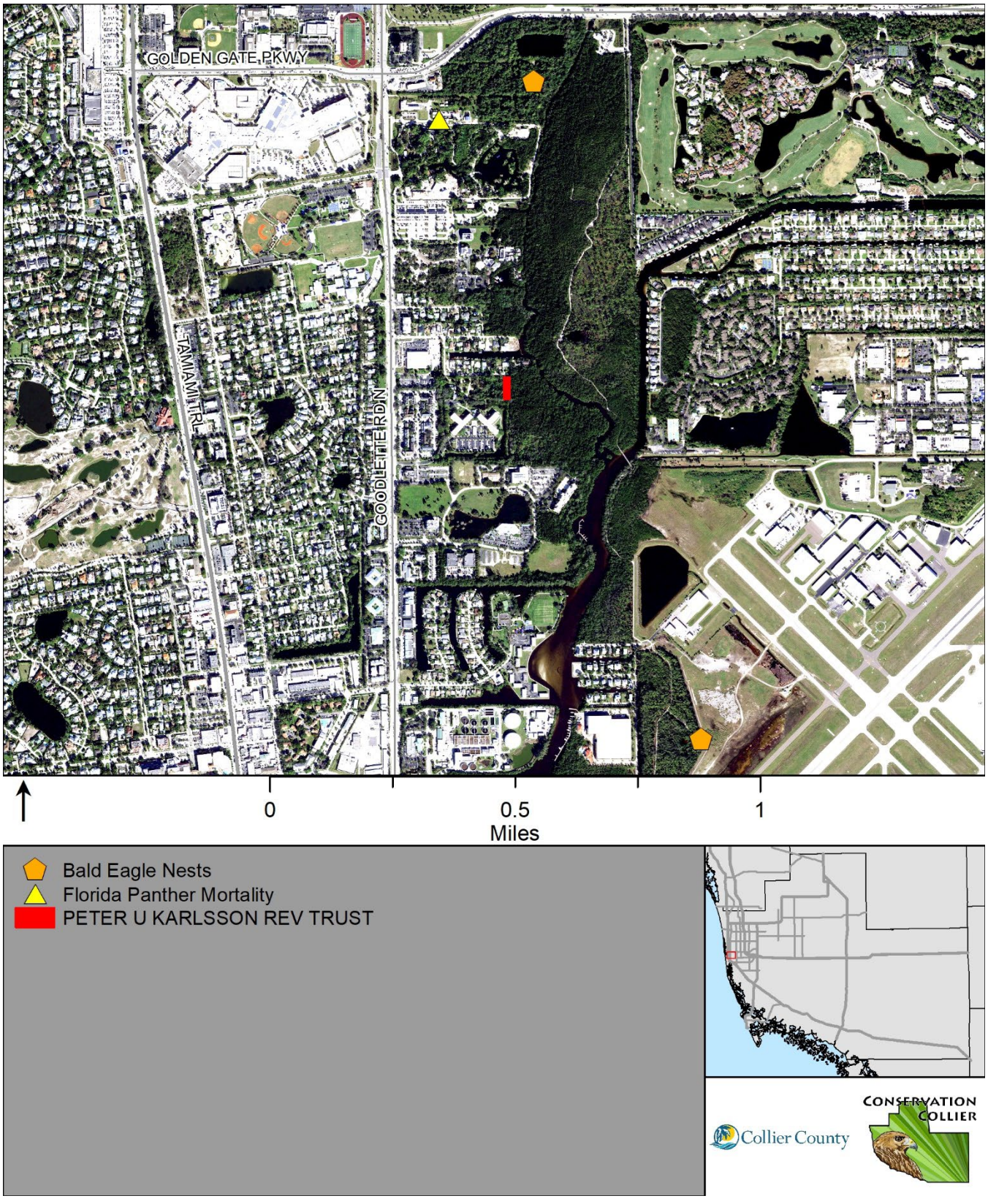


Figure 7 - Wildlife Spatial Data (i.e., telemetry, roosts, etc)

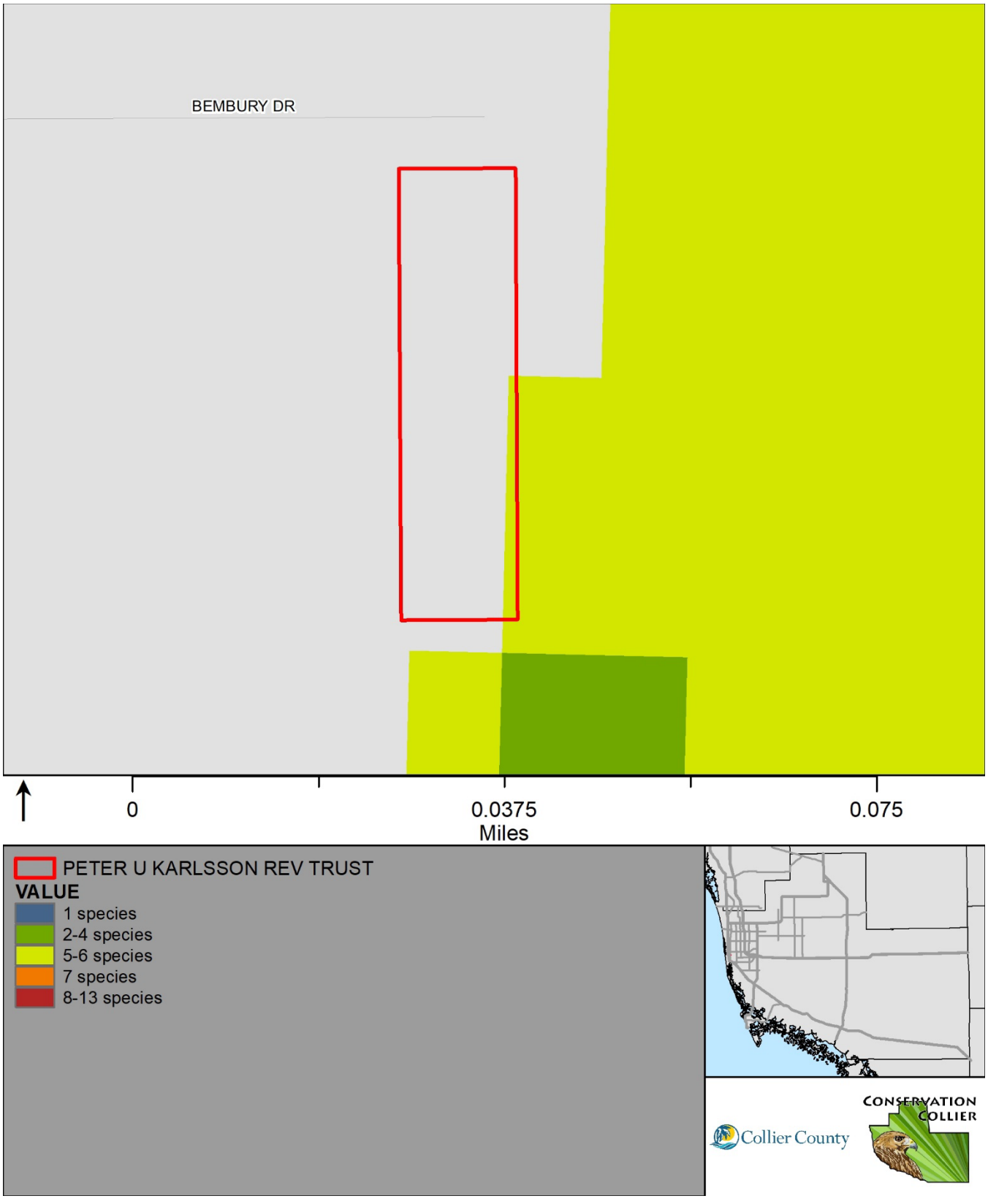


Figure 8 - CLIP4 Potential Habitat Richness

3.1.3 Water Resources

The parcel holds water year-round and is tidally influenced. It is within a 20-year wellfield protection zone, provides moderate aquifer recharge capacity, and provides storm surge protection. Although soils within the entire parcel are mapped as hydric “Durbin and Wulfurt Mucks, Frequently Flooded”, about half the property has been filled.

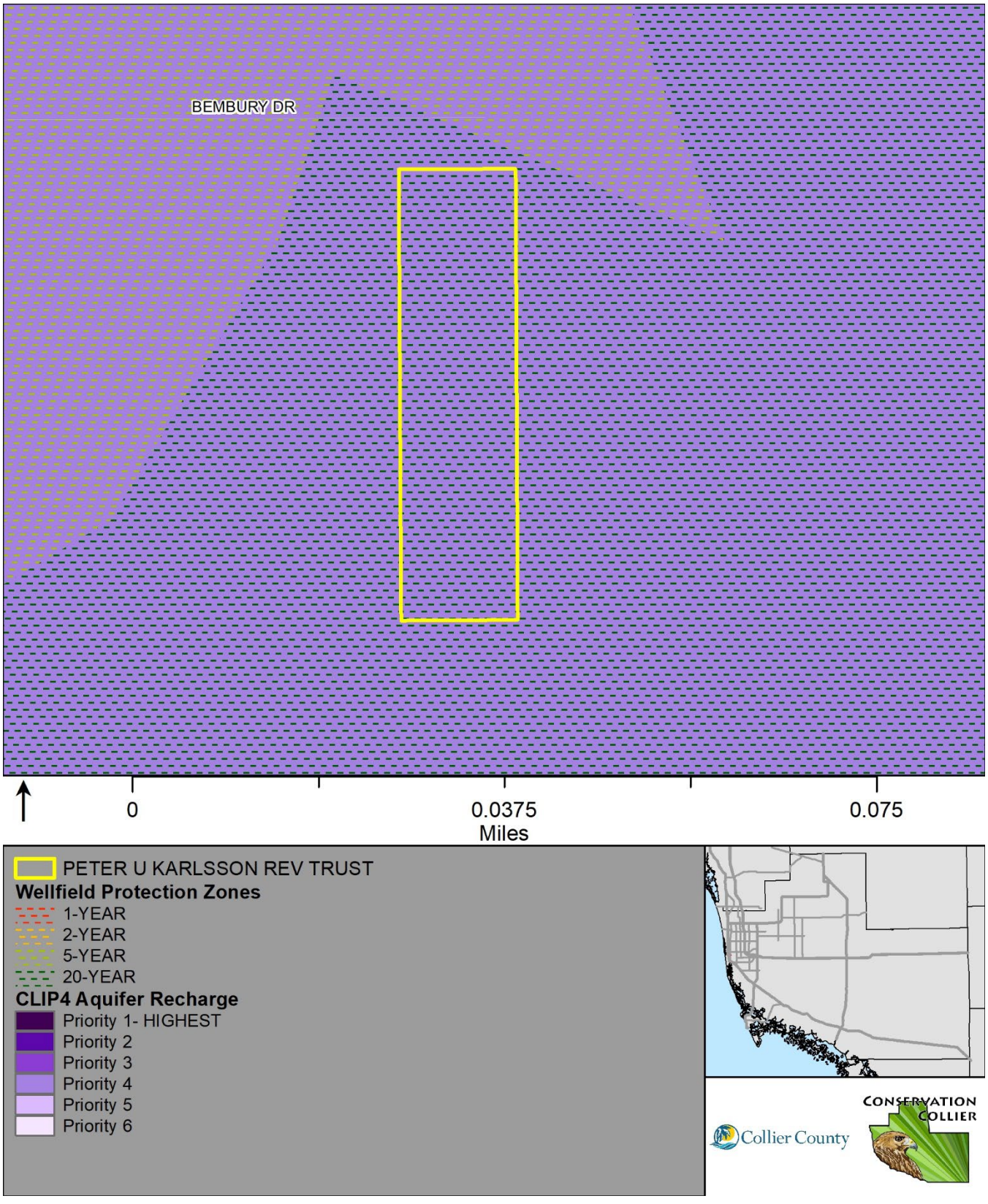


Figure 9 - CLIP Aquifer Recharge Priority and Wellfield Protection Zones

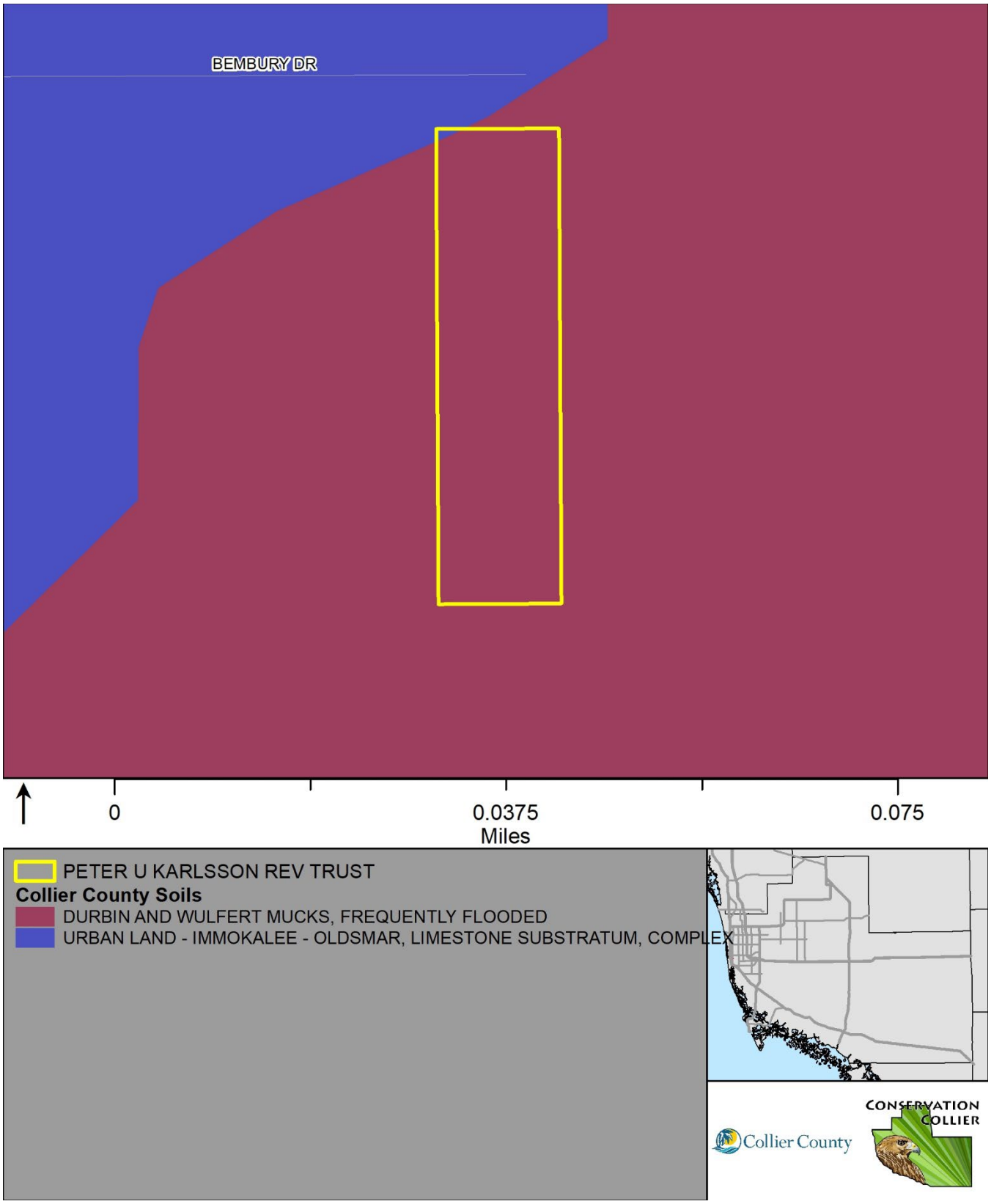


Figure 10 - Collier County Soil Survey

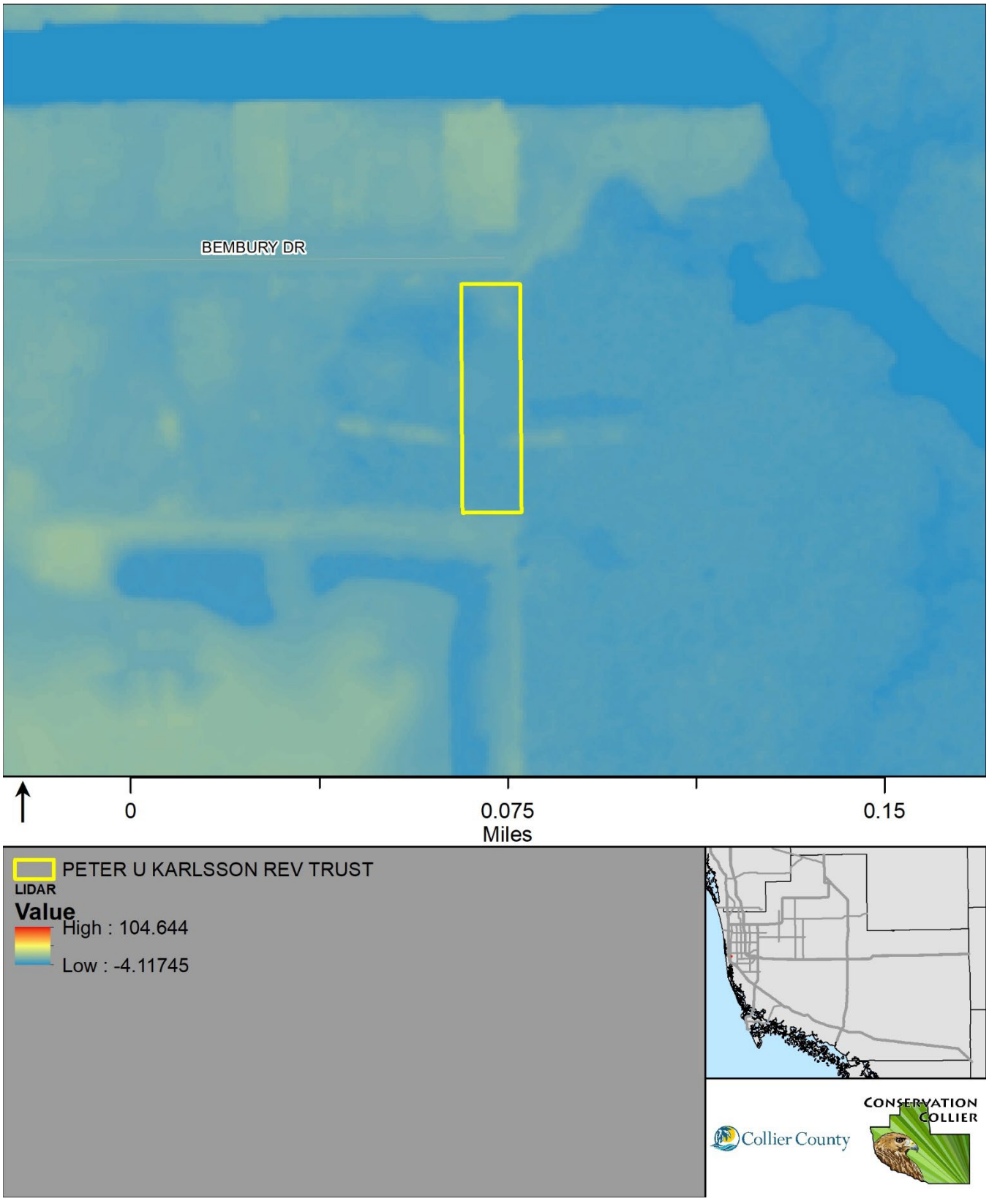


Figure 11 LIDAR Elevation Map

3.1.4 Ecosystem Connectivity

This parcel is adjacent to the Gordon River Greenway along its eastern boundary.

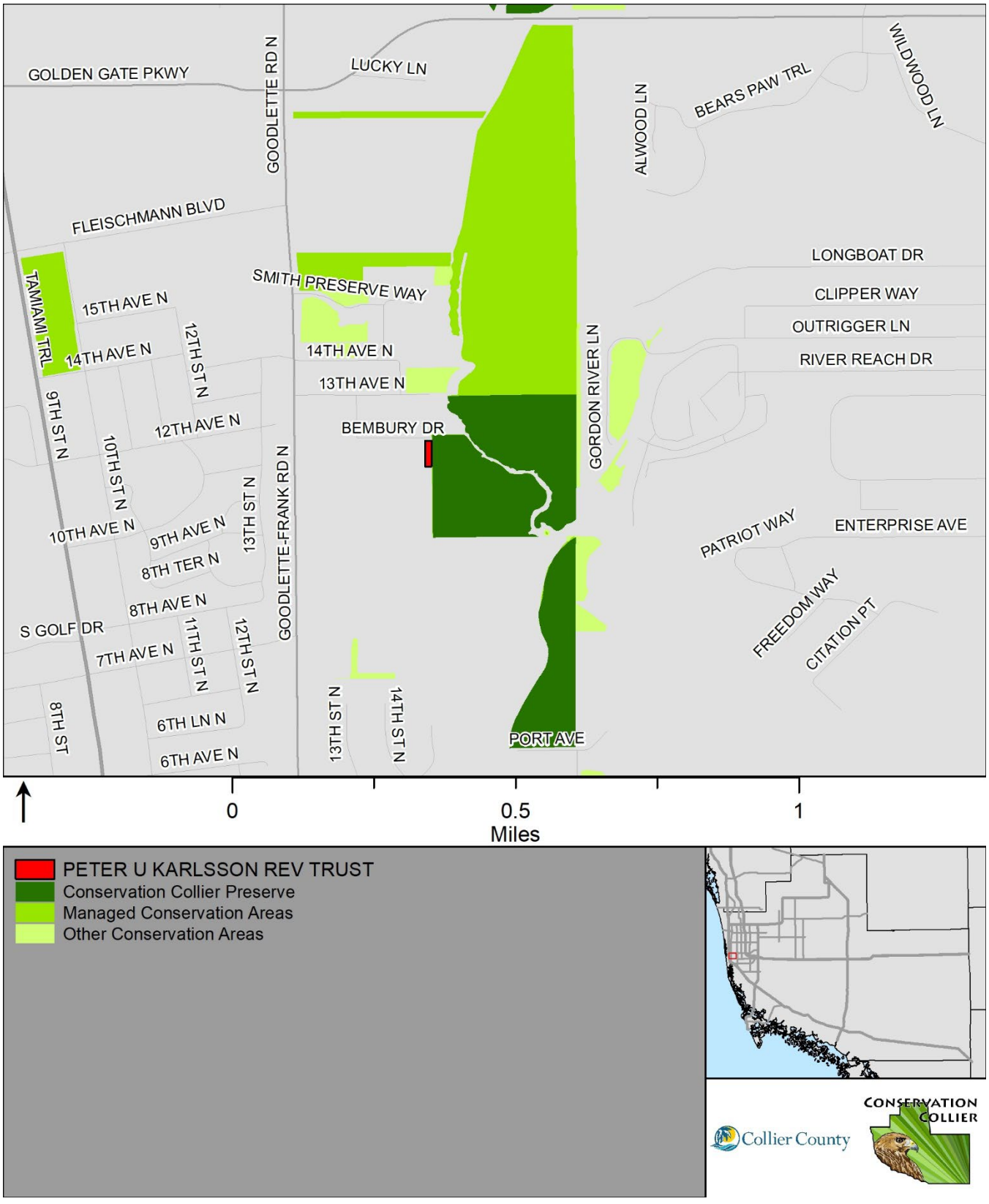


Figure 12 - Conservation Lands

3.2 Human Values

3.2.1 Recreation

Although this parcel is visible from Bembury Dr., it would not be accessible due to its wetland nature. Trails within the adjacent Gordon River Greenway Park provide public access to the same habitat.

3.2.2 Accessibility

The site is directly accessible from Bembury Dr.; however, public access and on-site parking would be discouraged at this location.

3.2.3 Aesthetic/Cultural Enhancement

This parcel provides no outstanding Aesthetic/Cultural Enhancement.

3.3 Restoration and Management

3.3.1 Vegetation Management

3.3.1.1 Invasive Vegetation

Invasive vegetation infestation rates appear to be over 75% on this parcel. The entire northern two-thirds of the parcel is covered in mature Brazilian pepper. Lead trees and a few Australian pines are also present. The southern one-third of the parcel contains scattered Brazilian pepper and Australian pine. The exotic vegetation should be completely removed from site where it is a monoculture in order to allow for planting of natives.

3.3.1.2 Prescribed Fire

This parcel does not contain fire-maintained plant communities.

3.3.2 Remediation and Site Security

The parcel requires exotic plant removal and re-planting of natives. Removal of historic construction debris that has been on the property for decades may be a potential restoration project which would most likely require wetland permitting.

3.3.3 Assistance

No management assistance is anticipated with this parcel.

3.4 Vulnerability

3.4.1 Zoning and Land Use

This parcel is zoned RMF-6, which allows 6 units per acre.

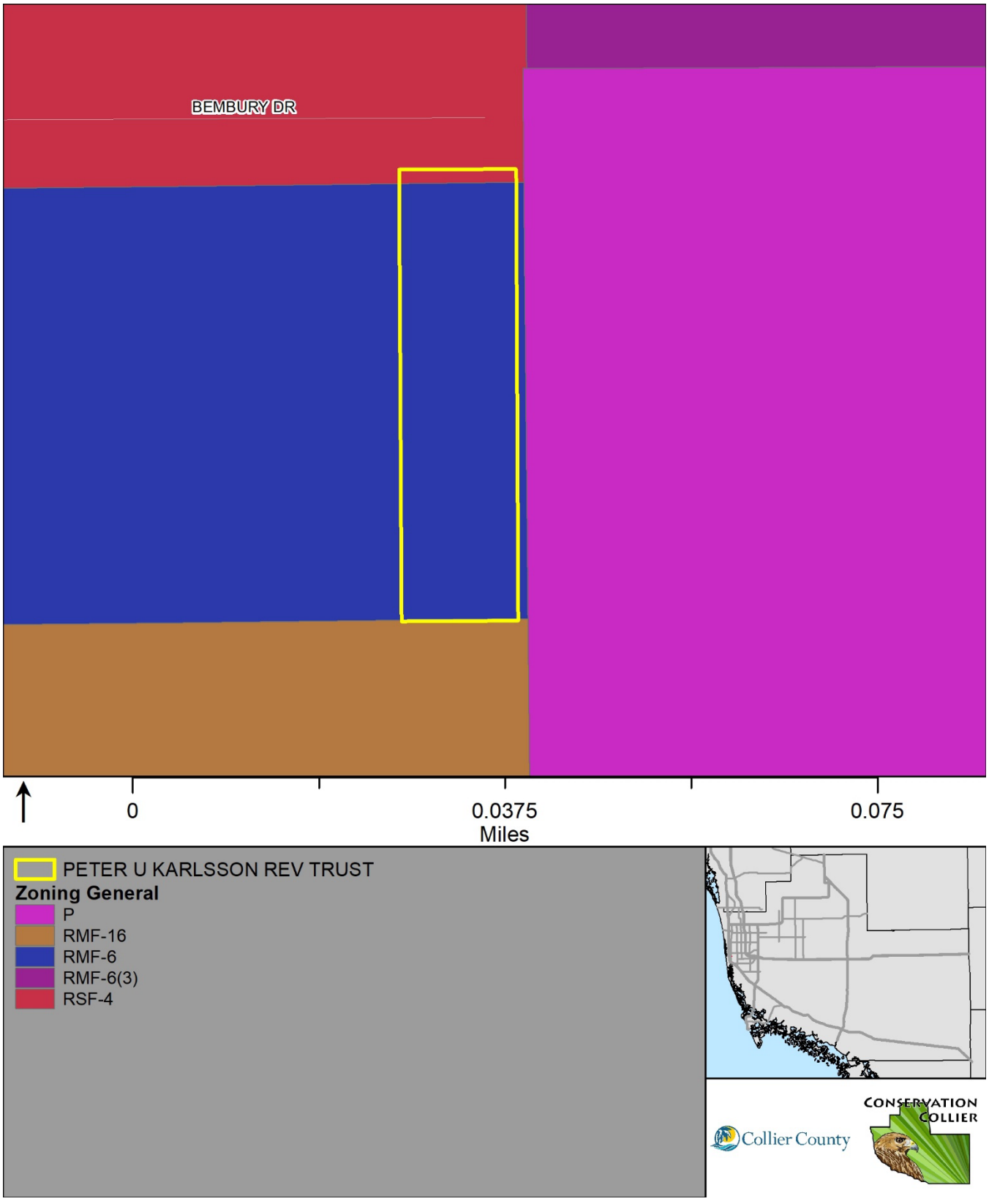


Figure 13 - Zoning

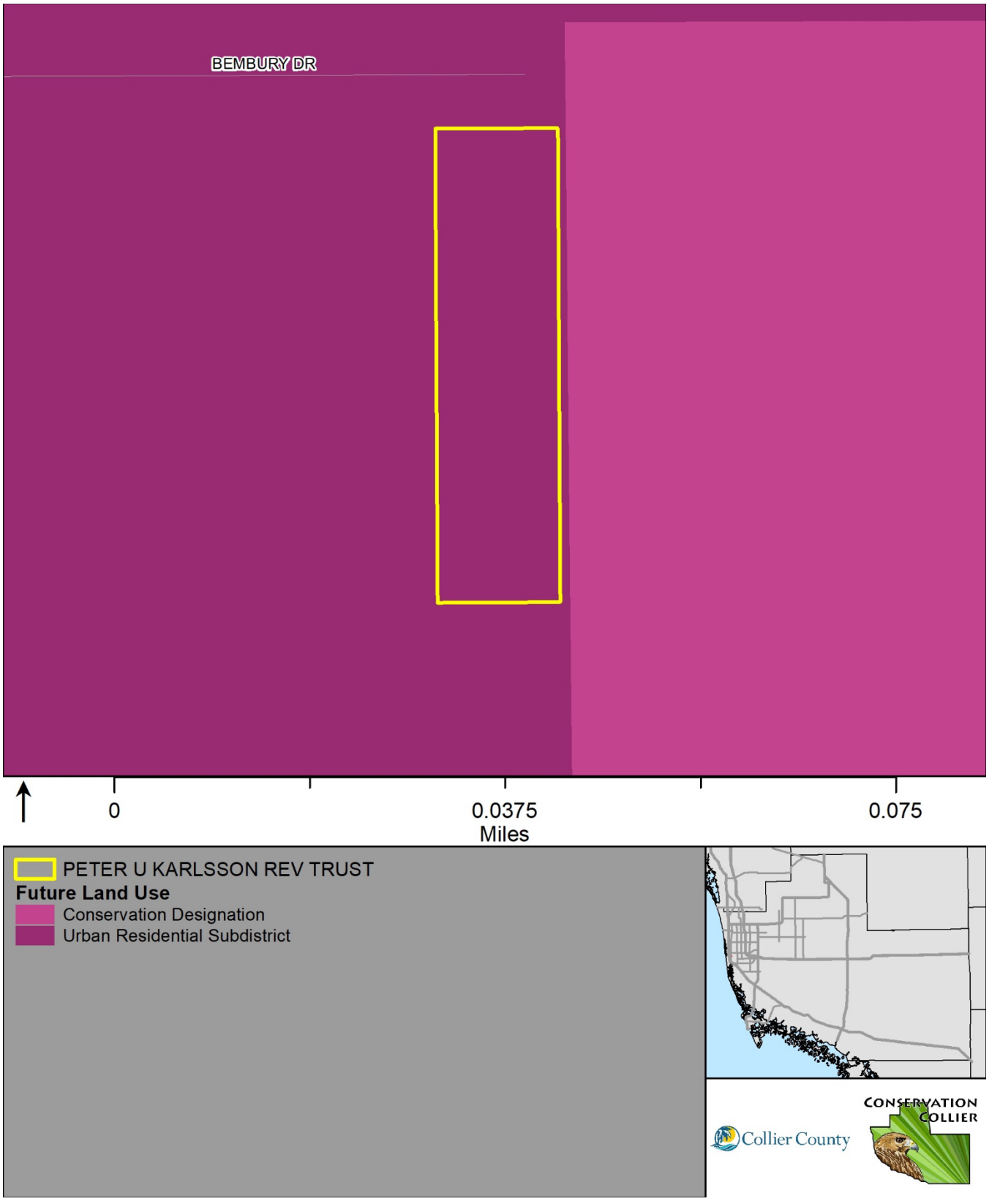


Figure 14 – Future Land Use

3.4.2 Development Plans

The seller has received permit authorization from the U.S. Army Corps of Engineers to fill 0.07 acres of wetlands and from the FL Department of Environmental Protection to fill 0.21 acres of wetlands in order to construct a single-family residence within the parcel. The Seller has paid the required mitigation to Little Pine Island Mitigation Bank in the amount of $65,000. A building permit application has been submitted to Collier County, however, the Seller indicated that he will not be moving forward with the builder that applied for the permit.

4. Acquisition Considerations

Staff would like to bring the following items to the attention of the Advisory Committee during the review of this property. The following does not affect the scoring. The following are items that will be addressed in the Executive Summary to the Board of County Commissioners if this property moves forward for ranking.

The Seller will not remove the historic debris from the parcel but will discount the parcel to a sale price of $1,000,000 should the parcel appraise over $1,000,000.

5. Management Needs and Costs

Table 4 - Estimated Costs of Site Remediation, Improvements, and Management

Management Element	Initial Cost	Annual Recurring Cost	Comments
Invasive Vegetation Removal	$25,000	$300	Initial removal assumes cutting and removing from site.
Debris removal	$50,000	N/A	
Native Planting	$2,000	N/A	
Signage	$200	N/A	
Total	**$77,200**	**$300**	

6. Potential for Matching Funds

There are no known matching funds or partnership opportunities for acquisition in this area.

7. Secondary Criteria Scoring Form

Property Name: Karlsson Trust			
Target Protection Mailing Area: Gordon River Greenway			
Folio(s): 00268410005			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**67**	**42**
2 - Human Value	**80**	**20**	**25**
3 - Restoration and Management	**80**	**23**	**29**
4 - Vulnerability	**80**	**67**	**83**
TOTAL SCORE	**400**	**176**	**44**

1 - ECOLOGICAL VALUES (40% of total)	**Possible Points**	**Awarded Points**	**Comments**
1.1 VEGETATIVE COMMUNITIES	**200**	**55**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60		
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25	25	
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10	10	
d. Parcel has 0 CLC listed plant species	0		

1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30		
d. 50 - 75% infestation	20		
e. ≥75% infestation	10	10	
1.2 - WILDLIFE COMMUNITIES	**100**	**60**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80		
b. Listed wildlife species documented on adjacent property	60	60	
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20		
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0	0	
1.3 - WATER RESOURCES	**100**	**85**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40	40	
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0		
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15	15	
d. Wetlands exist on site	10		
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	
c. Parcel provides storm surge buffering	10	10	
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**50**	

1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0	0	
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50	50	
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25		
c. Parcel is isolated from conservation land	0		
ECOLOGICAL VALUES TOTAL POINTS	**600**	**250**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**67**	

2 - HUMAN VALUES (20%)	Possible Points	Awarded Points	Comments
2.1 - RECREATION	**120**	**0**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20		
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20		
e. Equestrian	20		
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20		
g. Parcel is incompatible with nature-based recreation	0	0	
2.2 - ACCESSIBILITY	**120**	**60**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20		
b. Parcel accessible for land-based recreation seasonally	10		
c. Parcel is inaccessible for land-based recreation	0	0	
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50	50	
b. Public access via unpaved road	30		
c. Public access via private road	20		
d. No public access	0		
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		

b. Public parking available nearby or on adjacent preserve	20		
c. Street parking available	10		
d. No public parking available	0	0	
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10	10	
b. Parcel is not easily accessible to pedestrians	0		
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**10**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5		
c. Frontage enhances aesthetics of public thoroughfare	10	10	
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**70**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**20**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**45**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75		
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25	25	
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0		
3.2 - REMEDIATION AND SITE SECURITY	**50**	**5**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50		

b. Moderate site remediation or human conflict issues predicted (Please describe)	20		
c. Major site remediation or human conflict issues predicted (Please describe)	5	5	Large amount of old construction debris
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**0**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5		
b. Management assistance by other entity unlikely	0	0	
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**50**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**23**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**130**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100	100	
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0		
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30	30	
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25		
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5		
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**20**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15	15	
c. Parcel has no current development plans	0		
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5		

d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5	5	
VULNERABILITY TOTAL SCORE	**180**	**150**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**67**	

8. Additional Site Photos



View of parcel looking south off Bembury Dr.



View of parcel looking south along eastern boundary – mangroves on left are on County parcel



View of southern interior



Pile of large concrete slabs



Berm



Edge of berm looking west



Large Brazlian pepper interior of property



Cement debris berm



Cement Debris berm



Looking west on top of berm



Australian pine behind Brazilian pepper



Brazilian pepper on interior of property



View looking south from south end of berm

APPENDIX 1 – Critical Lands and Water Identification Maps (CLIP) Definitions

This report makes use of data layers from the Florida Natural Areas Inventory and University of Florida Critical Lands and Waters Identification Project (CLIP4). CLIP4 is a collection of spatial data that identify statewide priorities for a broad range of natural resources in Florida. It was developed through a collaborative effort between the Florida Areas Natural Inventory (FNAI), the University of Florida GeoPlan Center and Center for Landscape Conservation Planning, and the Florida Fish and Wildlife Conservation Commission (FWC). It is used in the Florida Forever Program to evaluate properties for acquisition. CLIP4 is organized into a set of core natural resource data layers which are representative of 5 resource categories: biodiversity, landscapes, surface water, groundwater and marine. The first 3 categories have also been combined into the Aggregated layer, which identifies 5 priority levels for natural resource conservation.

Below is a description of each of the three CLIP4 data layers used in this report.

Figure 4 - CLIP4 Priority Natural Communities

Consists of 12 priority natural community types: upland glades, pine rocklands, seepage slopes, scrub, sandhill, sandhill upland lakes, rockland hammock, coastal uplands, imperiled coastal lakes, dry prairie, upland pine, pine flatwoods, upland hardwood forest, or coastal wetlands. These natural communities are prioritized by a combination of their heritage global status rank (G-rank) and landscape context, based on the Land Use Intensity Index (subset of CLIP Landscape Integrity Index) and FNAI Potential Natural Areas. Priority 1 includes G1-G3 communities with Very High or High landscape context. Priority 2 includes G1-G3 Medium and G4 Very High/High. Priority 3 includes G4 Medium and G5 Very High/High. Priority 5 is G5 Medium.

This data layer was created by FNAI originally to inform the Florida Forever environmental land acquisition program. The natural communities were mapped primarily based on the FNAI/FWC Cooperative Land Cover (CLC) data layer, which is a compilation of best-available land cover data for the entire state. The CLC is based on both remote-sensed (from aerial photography, primarily from water management district FLUCCS data) and ground-truthed (from field surveys on many conservation lands) data.

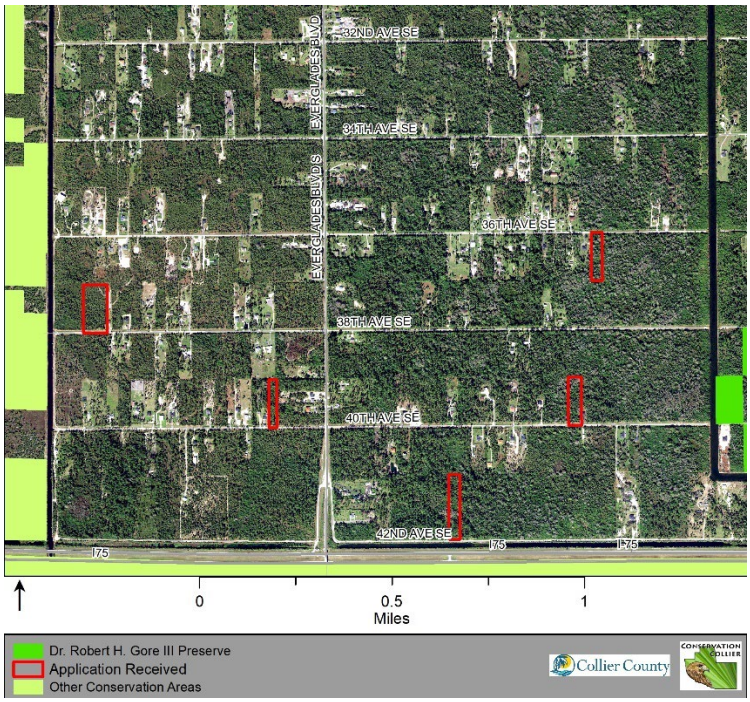
Figure 8 - CLIP4 Potential Habitat Richness

This CLIP version 4.0 data layer is unchanged from CLIP v3.0. FWC Potential Habitat Richness. Because Strategic Habitat Conservation Areas (SHCA)s do not address species richness, FWC also developed the potential habitat richness layer to identify areas of overlapping vertebrate species habitat. FWC created a statewide potential habitat model for each species included in their analysis. In some cases, only a portion of the potential habitat was ultimately designated as SHCA for each species. The Potential Habitat Richness layer includes the entire potential habitat model for each species and provides a count of the number of species habitat models occurring at each location. The highest number of focal species co-occurring at any location in the model is 13.

Figure 9 - CLIP4 Aquifer Recharge Priority and Wellfield Protection Zones

High priorities indicate high potential for recharge to an underlying aquifer system (typically the Floridan aquifer but could be intermediate or surficial aquifers in some portions of the state). The highest priorities indicate high potential for recharge to springs or public water supplies. This figure also includes Wellfield Protection Zones. Collier County Wellfield Protection Zones are referenced in the Land Development Code and updated in 2010 by Pollution Control and Prevention Department Staff. The public water supply wellfields, identified in section 3.06.06 and permitted by the SFWMD for potable water to withdraw a minimum of 100,000 average gallons per day (GPD), are identified as protected wellfields, around which specific land use and activity (regulated development) shall be regulated under this section.

Conservation Collier
Initial Criteria Screening Report
I-75 and Everglades Blvd. Parcels



Owner Names: RF Berman Trust; Andres Echavarria & Lianet Garcia; Family Onyxx, LLC; Miguel Diaz Morales

Folio Numbers: 41710760000, 41715560001, 41660040003, 41613880003, 41614280000

Size: 5 parcels totaling 14.64 acres

Staff Report Date: January 8, 2025

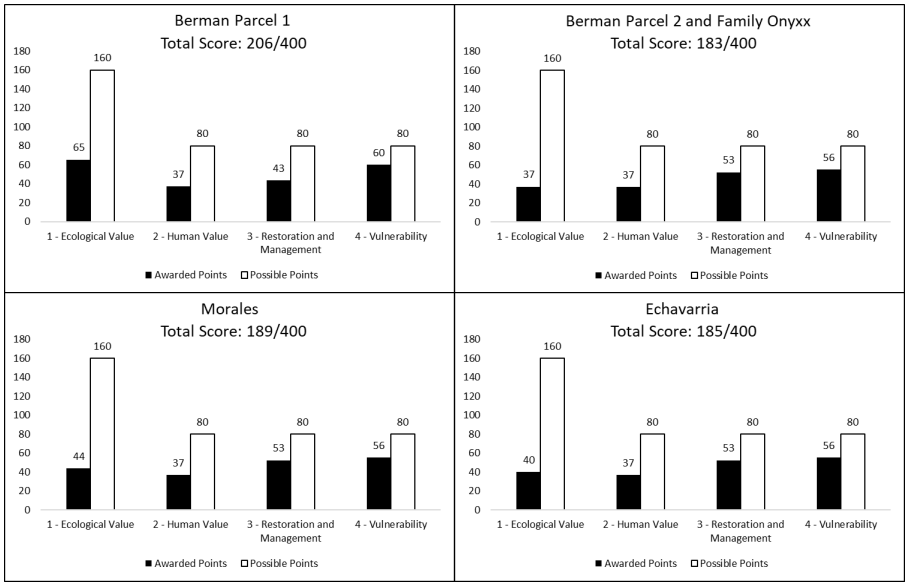


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1. Introduction

The Conservation Collier Program (Program) is an environmentally sensitive land acquisition and management program approved by the Collier County Board of County Commissioners (Board) in 2002 and by Collier County Voters in 2002 and 2006. The Program was active in acquisition between 2003 and 2011, under the terms of the referendum. Between 2011 and 2016, the Program was in management mode. In 2017, the Collier County Board reauthorized Conservation Collier to seek additional lands (2/14/17, Agenda Item 11B). On November 3, 2020, the Collier County electors approved the Conservation Collier Re-establishment referendum with a 76.5% majority.

This Initial Criteria Screening Report (ICSR) has been prepared for the Conservation Collier Program to meet requirements specified in the Conservation Collier Implementation Ordinance, 2002-63, as amended, and for purposes of the Conservation Collier Program. The sole purpose of this report is to provide objective data to demonstrate how properties meet the criteria defined by the ordinance.

The following sections characterize the property location and assessed value, elaborate on the initial and secondary screening criteria scoring, and describe potential funding sources, appropriate use, site improvements, and estimated management costs.

2. Summary of Property

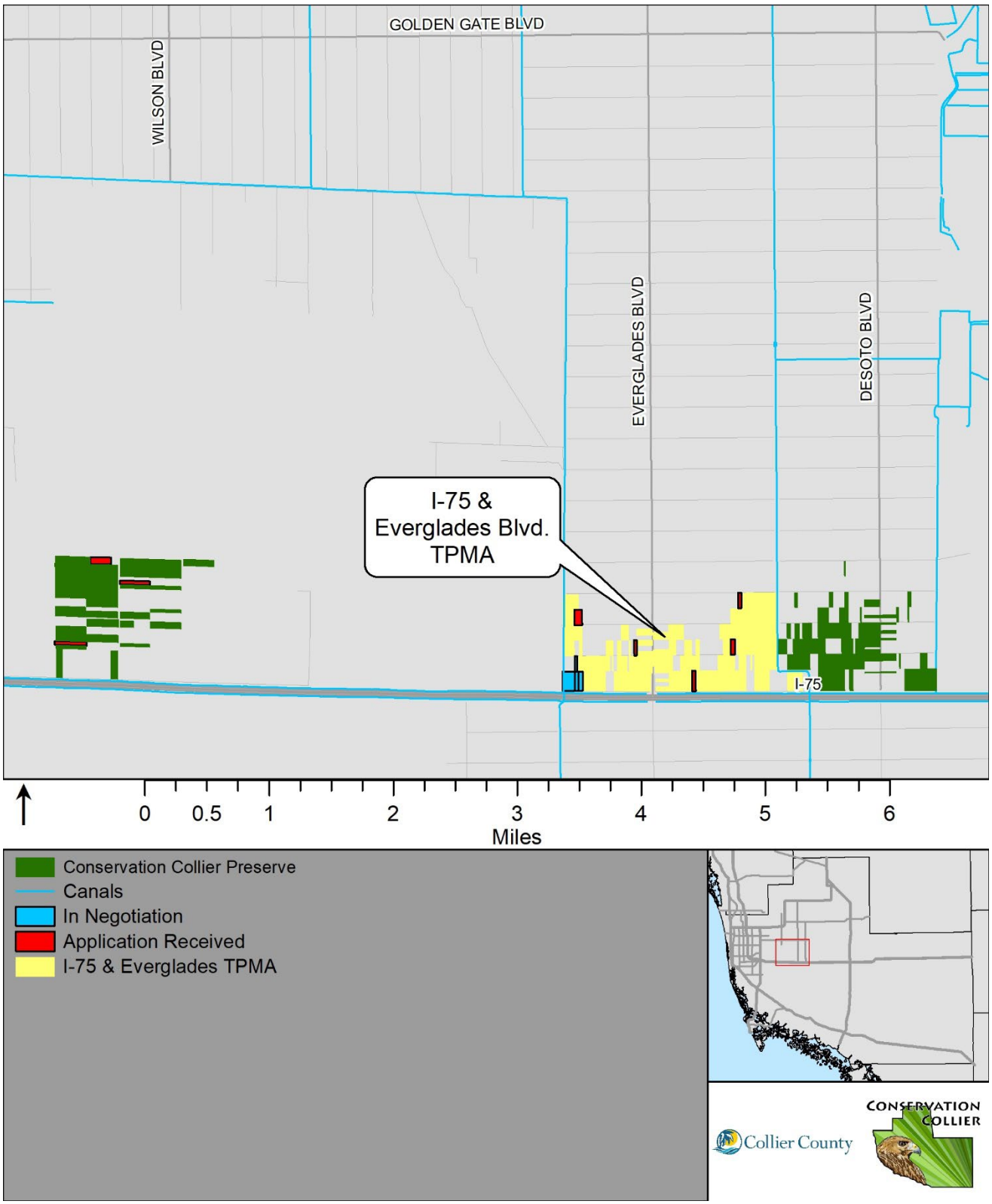


Figure 1 - Parcel Location Overview

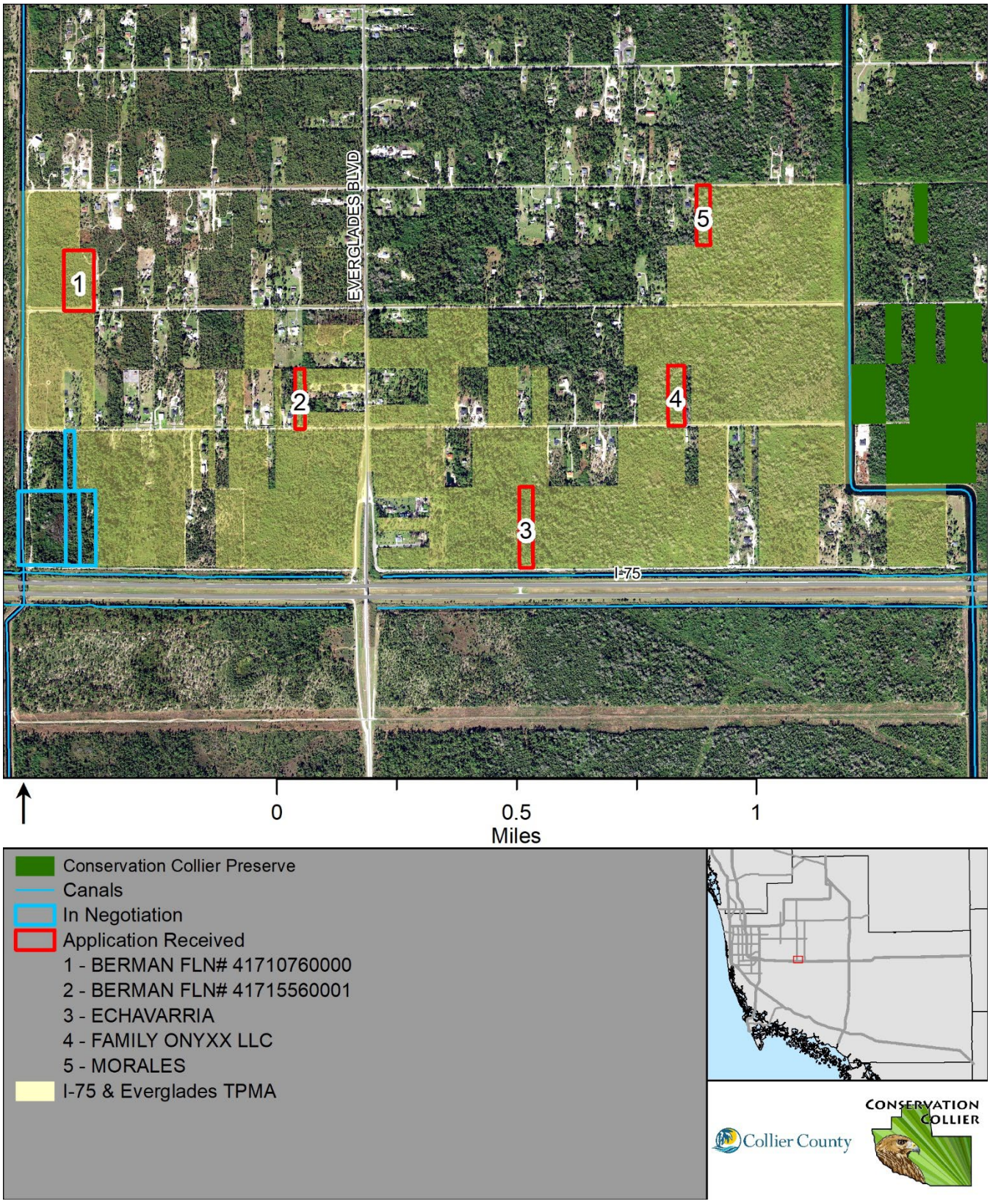


Figure 2 - Parcel Close-up

2.1 Summary of Property Information

Table 1 – Summary of Property Information

Characteristic	Value	Comments
Name	Berman; Echavarria; Family Onyxx; Morales	RF Berman Trust; Andres Echavarria & Lianet Garcia; Family Onyxx, LLC; Miguel Diaz Morales
Folio Numbers	Multiple	Berman - 41710760000, Berman - 41715560001, Echavarria - 41660040003, Family Onyxx - 41613880003, Morales - 41614280000
Target Protection Area	NGGE	I-75 and Everglades Blvd. Target Protection Mailing Area
Size	14.64 acres total	Berman - 5.00 acres Berman - 1.59 acres Echavarria - 3.05 Family Onyxx - 2.73 Morales - 2.27
Section, Township, and Range	S31 and 32, Twn 49, R28	
Zoning Category/TDRs	Estates	1 unit per 2.25 acres
FEMA Flood Map Category	AH	1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage.
Existing structures	None	
Adjoining properties and their Uses	Undeveloped; Developed, rural single family homes	All parcels except for the Echavarria parcel are bordered on at least one side by a single family residence.
Development Plans Submitted	None	
Known Property Irregularities	None	
Other County Dept Interest	Transportation	Parcels are in the study area for the I-75 interchange between Everglades and Desoto Blvds.

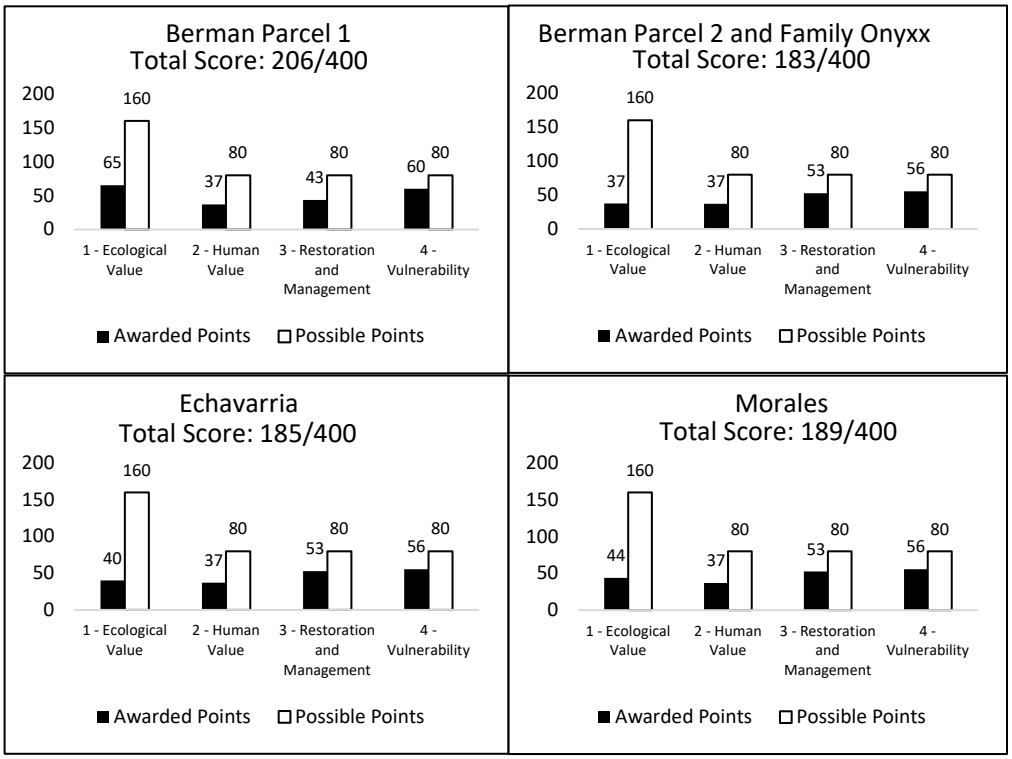


Figure 3 - Secondary Criteria Score

Table 2 - Secondary Criteria Score Summary

Berman Parcel 1:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**65**	**160**	**41%**
1.1 - Vegetative Communities	32	53	60%
1.2 - Wildlife Communities	24	27	90%
1.3 - Water Resources	3	27	10%
1.4 - Ecosystem Connectivity	7	53	13%
2 - Human Values	**37**	**80**	**46%**
2.1 - Recreation	11	34	33%
2.2 - Accessibility	23	34	67%
2.3 - Aesthetics/Cultural Enhancement	3	11	25%
3 - Restoration and Management	**43**	**80**	**54%**
3.1 - Vegetation Management	34	55	63%
3.2 - Remediation and Site Security	9	23	40%
3.3 - Assistance	0	2	0%
4 - Vulnerability	**60**	**80**	**75%**
4.1 - Zoning and Land Use	56	58	96%
4.2 - Development Plans	4	22	20%
Total	**206**	**400**	**51%**

Berman Parcel 2 and Family Onyxx:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**37**	**160**	**23%**
1.1 - Vegetative Communities	13	53	25%
1.2 - Wildlife Communities	16	27	60%
1.3 - Water Resources	8	27	30%
1.4 - Ecosystem Connectivity	0	53	0%
2 - Human Values	**37**	**80**	**46%**
2.1 - Recreation	11	34	33%
2.2 - Accessibility	23	34	67%
2.3 - Aesthetics/Cultural Enhancement	3	11	25%
3 - Restoration and Management	**53**	**80**	**66%**
3.1 - Vegetation Management	43	55	79%
3.2 - Remediation and Site Security	9	23	40%
3.3 - Assistance	0	2	0%
4 - Vulnerability	**56**	**80**	**69%**
4.1 - Zoning and Land Use	56	58	96%
4.2 - Development Plans	0	22	0%
Total	**183**	**400**	**46%**

Echavarria:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**40**	**160**	**25%**
1.1 - Vegetative Communities	13	53	25%
1.2 - Wildlife Communities	16	27	60%
1.3 - Water Resources	11	27	40%
1.4 - Ecosystem Connectivity	0	53	0%
2 - Human Values	**37**	**80**	**46%**
2.1 - Recreation	11	34	33%
2.2 - Accessibility	23	34	67%
2.3 - Aesthetics/Cultural Enhancement	3	11	25%
3 - Restoration and Management	**53**	**80**	**66%**
3.1 - Vegetation Management	43	55	79%
3.2 - Remediation and Site Security	9	23	40%
3.3 - Assistance	0	2	0%
4 - Vulnerability	**56**	**80**	**69%**
4.1 - Zoning and Land Use	56	58	96%
4.2 - Development Plans	0	22	0%
Total	**185**	**400**	**46%**

Morales:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**44**	**160**	**28%**
1.1 - Vegetative Communities	13	53	25%
1.2 - Wildlife Communities	16	27	60%
1.3 - Water Resources	8	27	30%
1.4 - Ecosystem Connectivity	7	53	13%
2 - Human Values	**37**	**80**	**46%**
2.1 - Recreation	11	34	33%
2.2 - Accessibility	23	34	67%
2.3 - Aesthetics/Cultural Enhancement	3	11	25%
3 - Restoration and Management	**53**	**80**	**66%**
3.1 - Vegetation Management	43	55	79%
3.2 - Remediation and Site Security	9	23	40%
3.3 - Assistance	0	2	0%
4 - Vulnerability	**56**	**80**	**69%**
4.1 - Zoning and Land Use	56	58	96%
4.2 - Development Plans	0	22	0%
Total	**189**	**400**	**47%**

2.2 Summary of Assessed Value and Property Cost Estimates

The interest being appraised is fee simple “as is” for the purchase of the site. A value of the parcel was estimated using only one of the three traditional approaches to value, the sales comparison approach. It is based on the principal of substitution that an informed purchaser would pay no more for the rights in acquiring a particular real property than the cost of acquiring, without undue delay, an equally desirable one. Three properties were selected for comparison, each with similar site characteristics, utility availability, zoning classification and road access. No inspection was made of the property or comparables used in this report and the Real Estate Services Department staff relies upon information solely provided by program staff. The valuation conclusion is limited only by the reported assumptions and conditions that no other known or unknown adverse conditions exist. Possible access concerns or limits to uses within the property unknown at the time of estimation will be taken into consideration at time of appraisal.

If the Board of County Commissioners chooses to acquire these properties, appraisals by independent Real Estate Appraisers will be obtained at that time. Pursuant to the Conservation Collier Purchase Policy, one appraisal is required for each of these parcels, which each have an initial valuation less than $500,000; 1 independent Real Estate Appraiser will value the subject property and that appraisal report will determine the actual value of the subject property.

Table 3. Assessed & Estimated Value

Property owners	Folio #	Acreage	Assessed Value*	Estimated Value**
Parcel 1 - RF Berman Trust	41710760000	5.00	$187,500	TBD
Parcel 2 - RF Berman Trust	41715560001	1.59	$59,625	TBD
Parcel 3 - Andres Echavarria & Lianet Garcia	41660040003	3.05	$80,825	TBD
Parcel 4 - Family Onyxx, LLC	41613880003	2.73	$87,019	TBD
Parcel 5 - Miguel Diaz Morales	41614280000	2.27	$85,125	TBD
	TOTAL	**14.64**	**$500,094**	**TBD**

* Assessed Value is obtained from the Property Appraiser's Website. The Assessed Value is based off the current use of the property.
**The Estimated Market Value for the I-75 and Everglades Blvd. properties will be obtained from the Collier County Real Estate Services Department prior to Board of County Commissioners ranking.

2.2.1 Zoning, Growth Management and Conservation Overlays

Zoning, growth management and conservation overlays will affect the value of a parcel. The parcels are zoned Estates and have an allowable density of 1 unit per 2.25 acres.

2.3 Initial Screening Criteria Satisfaction (Ord. 2002-63, as amended, Sec. 12)

Criteria 1: CLIP Priority 1 Natural Community

Does the property contain Upland Hardwood Forest, Scrub, Coastal Upland, Dry Prairie, or Upland Pine? **NO**

Criteria 2: CLIP Priority 2 Natural Community

Does the property contain Pine Flatwoods or Coastal Wetlands? **YES**

Berman Parcel 1 contains Mesic Flatwoods.

Criteria 3: Other Native, Natural Communities

Does the property contain other native, natural communities? **N/A**

The parcels also contain Mixed Wetland Hardwoods, but already contain CLIP Priority 2 Natural Communities.

Criteria 4: Human Social Values

Does the property offer cultural values, appropriate access for natural resource-based recreation, and the enhancement of the aesthetic setting of Collier County? **YES**

The parcels visible and readily accessible from a public roadway and can be accessed year-round.

Criteria 5: Water Resources

Does the property offer opportunities for protection of water resource values, including aquifer recharge, water quality enhancement, protection of wetland dependent species habitat, wildfire risk reduction, storm surge protection, and flood control? **YES**

Hydric soils exist on the majority of the parcels and, except for Berman Parcel 1, wetland plant communities are found throughout the parcels.

Criteria 6: Biological and Ecological Value

Does the property offer significant biological values, including biodiversity and listed species habitat? **NO**

Because of their small size, each parcel individually does not offer significant biological values.

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Criteria 7: Enhancement of Current Conservation Lands

Does the property enhance and/or protect the environmental value of current conservation lands through function as a buffer, ecological link or habitat corridor? **NO**

These parcels are not adjacent to any conservation lands.

Criteria 8: Target Area

Is the property within a Board-approved target protection mailing area? **YES**

I-75 and Everglades Blvd. TPMA

The Berman Parcel 2, Echavarria, Family Onyxx, and Morales parcels met 4 out of the 8 Initial Screening Criteria.

The Berman Parcel 1 met 3 out of the 8 Initial Screening Criteria.

3. Initial Screening Criteria

3.1 Ecological Values

3.1.1 Vegetative Communities

The parcels are mapped as Cabbage Palm, Mesic Flatwoods, Mixed Wetland Hardwoods, and Hydric Pine Flatwoods; however, staff observed Mesic Flatwoods on Berman Parcel 1 and Mixed Wetland Hardwoods on the Berman Parcel 2, Echavarria, Family Onyxx, and Morales parcels. Cabbage palms are also present in high densities within all the parcels. The Mesic Flatwoods consist of cabbage palm (*Sabal Palmetto*) and sparse slash pine (*Pinus elliottii*) in the canopy; saw palmetto (*Serenoa repens*), galberry (*Ilex glabra*), rusty lyonia (*Lyonia fruticosa*), winged-sumac (*Rhus copallinum*) and American beautyberry (*Callicarpa americana*) in the midstory; wild pennyroyal (*Piloblephis rigida*), shiny blueberry (*Vaccinium myrsinites*) and wiregrass (*Aristida stricta*) are in the groundcover.

The Mixed Wetland Hardwoods consist of cypress (*Taxodium distichum*) and laurel oak (*Quercus laurifolia*) in the canopy with myrsine (*Myrsine cubana*), wild coffee (*Psychotria nervosa*), cabbage palm, and occasional firebush (*Hamelia patens*) in the midstory and primarily swamp fern

Exotic plants are present at a total estimated density of 10% on Berman Parcel 1 and between 25%-50% - at varying densities throughout the other parcels. The Berman Parcel 2 and Family Onyxx parcels are more heavily infested than the other 3 parcels. The primary invasive plant observed was Brazilian pepper (*Schinus terebinthifolia*). Other exotics observed were earleaf acacia (*Acacia auriculiformis*), torpedograss (*Panicum repens*), cogongrass (*Imperata cylindrica*), Caesarweed (*Urena lobata*), and shrubby false buttonweed (*Spermacoce verticillata*)

Cardinal airplant (*Tillandsia fasciculata*) was observed during the site visit on all the parcels except the Berman Parcel 1.

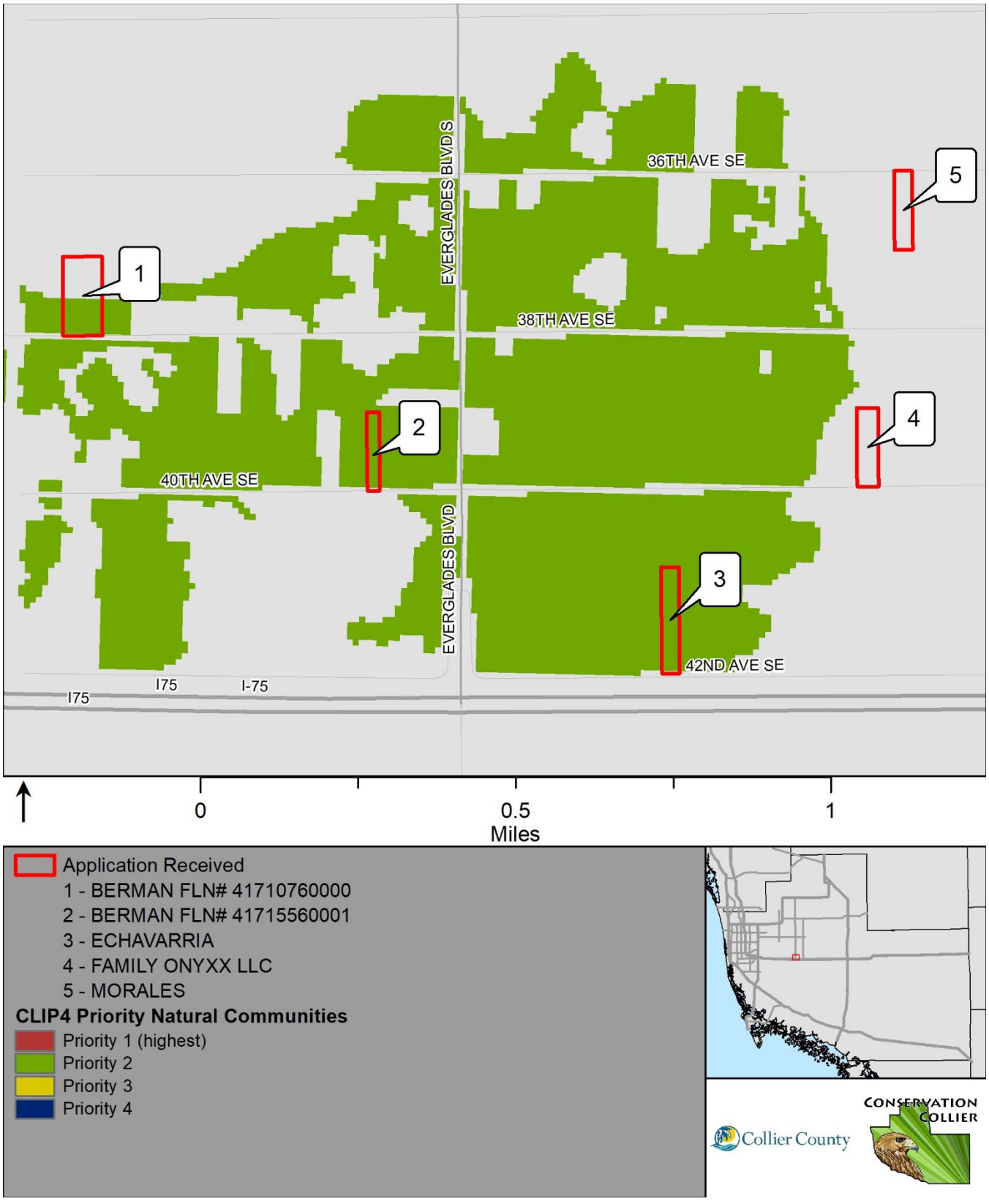


Figure 4 - CLIP4 Priority Natural Communities

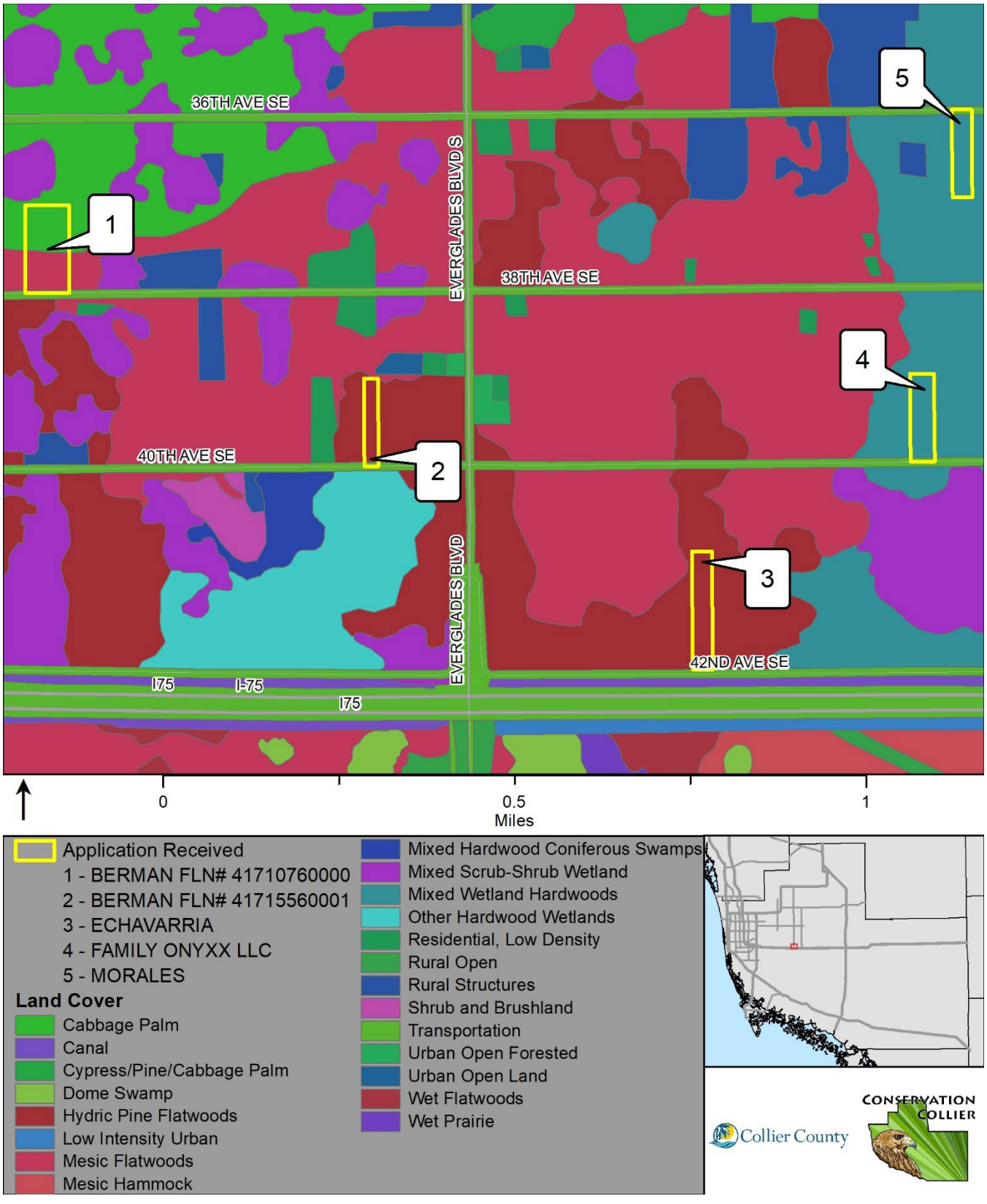


Figure 5 - Florida Cooperative Land Cover Classification System



Figure 6 – Mixed Wetland Hardwoods



Figure 7 –Mesic flatwood

3.1.2 Wildlife Communities

Multiple Florida panther (*Puma concolor coryi*) and Florida black bear (*Ursus americanus floridanus*) telemetry points have been noted around the parcels.

Table 3 – Listed Wildlife Detected

Common Name	Scientific Name	State Status	Federal Status	Mode of Detection
Gopher tortoise	*Gopherus polyphemus*	Threatened	N/A	Active burrow observed



Figure 8 –Gopher tortoise burrow on Berman Parcel 1

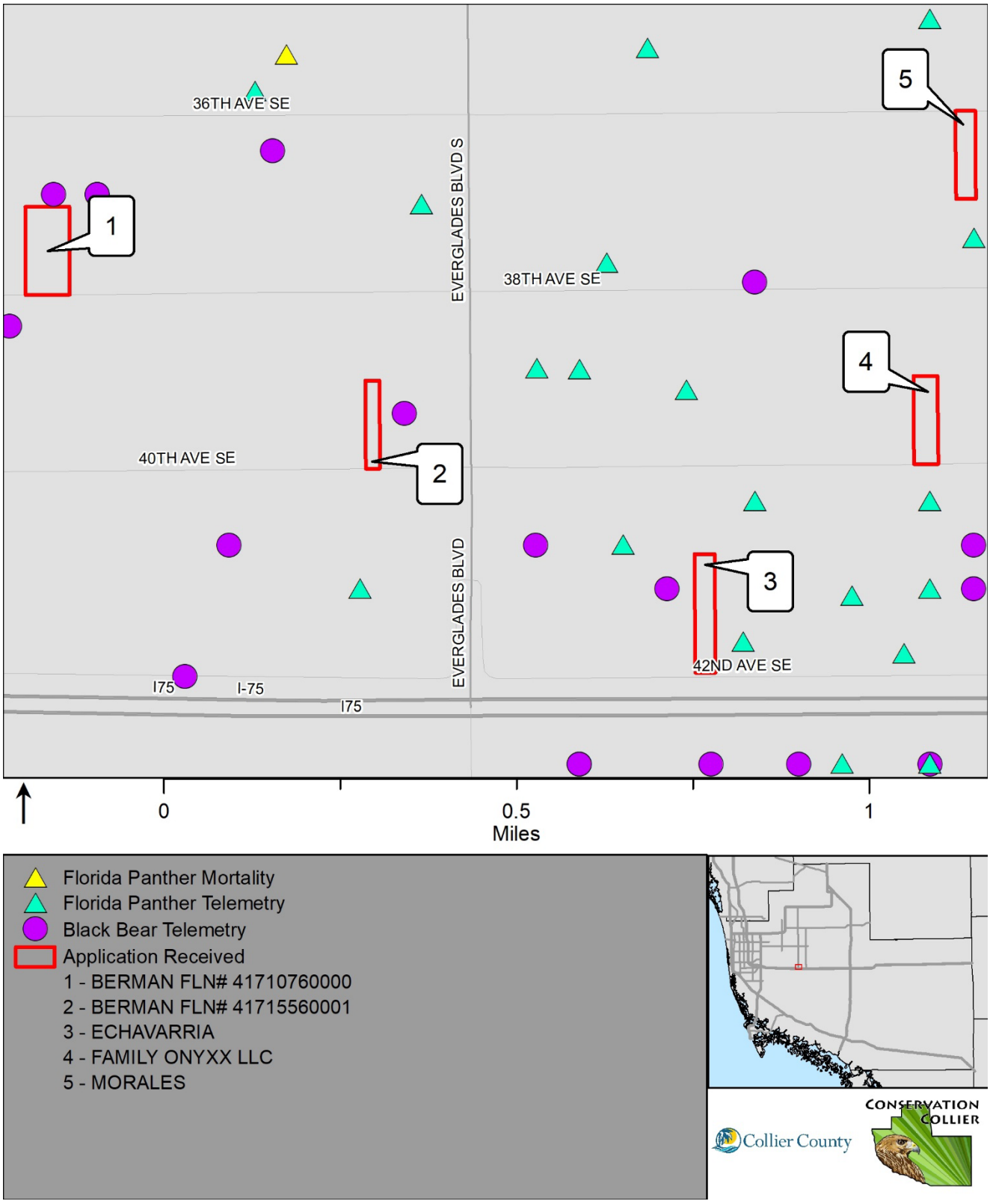


Figure 9 - Wildlife Spatial Data (i.e., telemetry, roosts, etc)

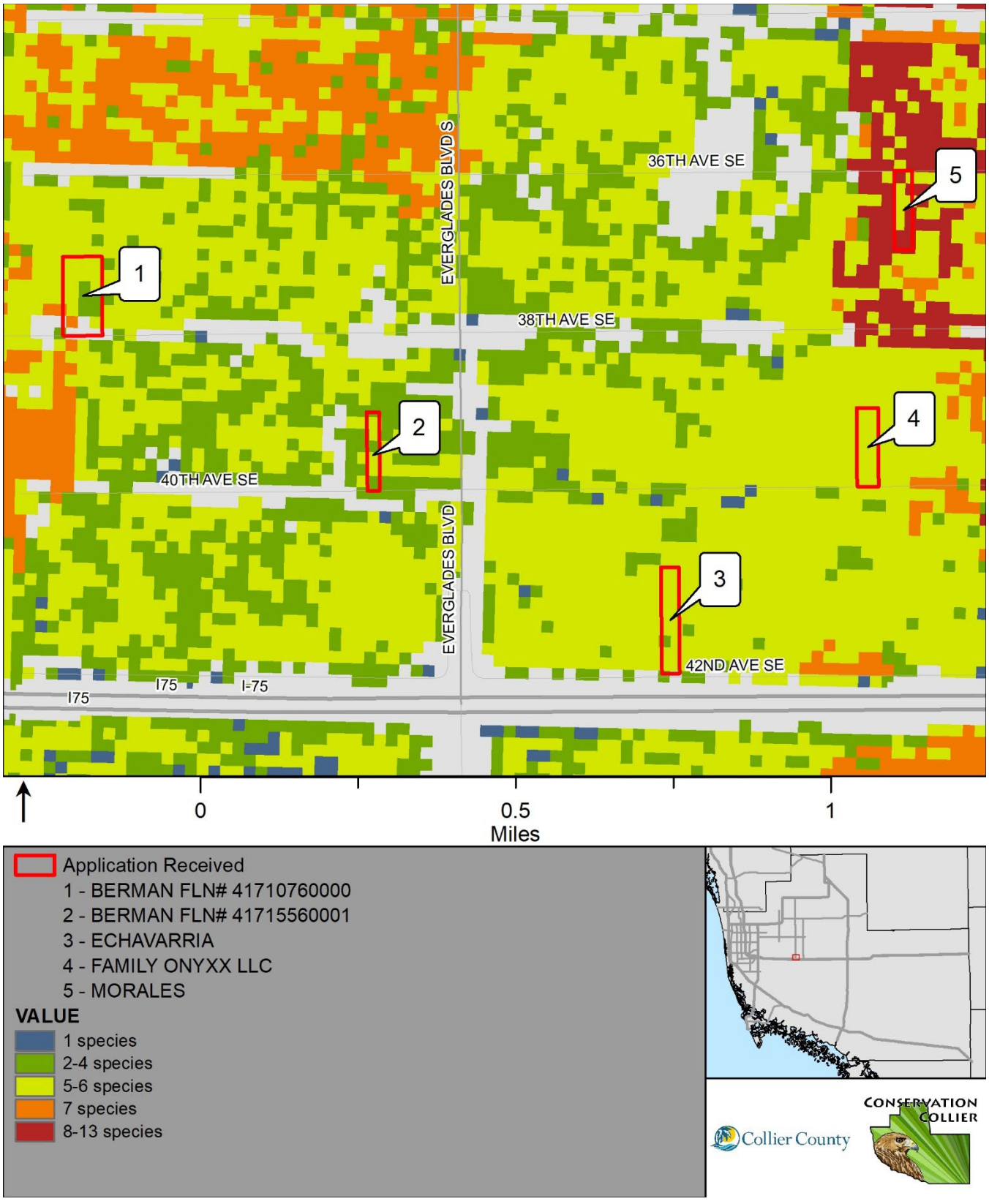


Figure 10 - CLIP4 Potential Habitat Richness

3.1.3 Water Resources

Four of the parcels significantly protect water resources. They are comprised of a majority of wetland plant communities, contain Karst topography, hold significant amounts of water during the rainy season, and provide important habitat for many wetland dependent species. Berman Parcel 1 is mapped as containing hydric soils but does not contain wetlands.

Soils data is based on the Soil Survey of Collier County Area, Florida (USDA/NRCS, 1990). Soils mapped on this parcel primarily hydric. Mapped hydric soils include “Hallandale and Boca Fine Sands” (nearly level, poorly drained soils in sloughs and poorly defined drainageways) and “Boca, Riviera, Limestone Substratum and Copeland FS, Depressional” (level, very poorly drained soils in depressions, cypress swamps, and marshes). Non-hydric soils include “Boca Fine Sand” and “Hallandale Fine Sand”. Both these soils are nearly level, poorly drained soils associated with flatwoods.

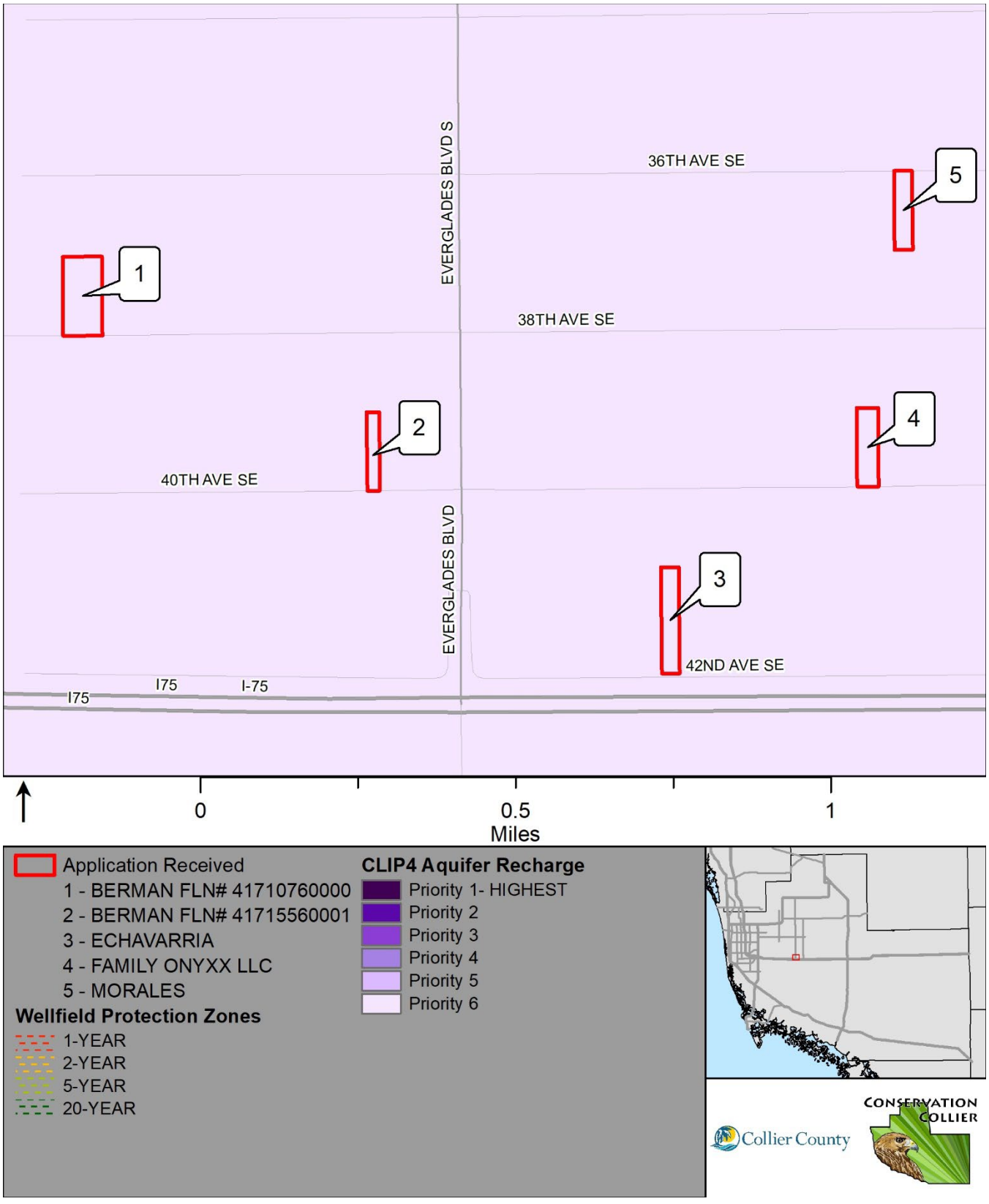


Figure 11 - CLIP Aquifer Recharge Priority and Wellfield Protection Zones

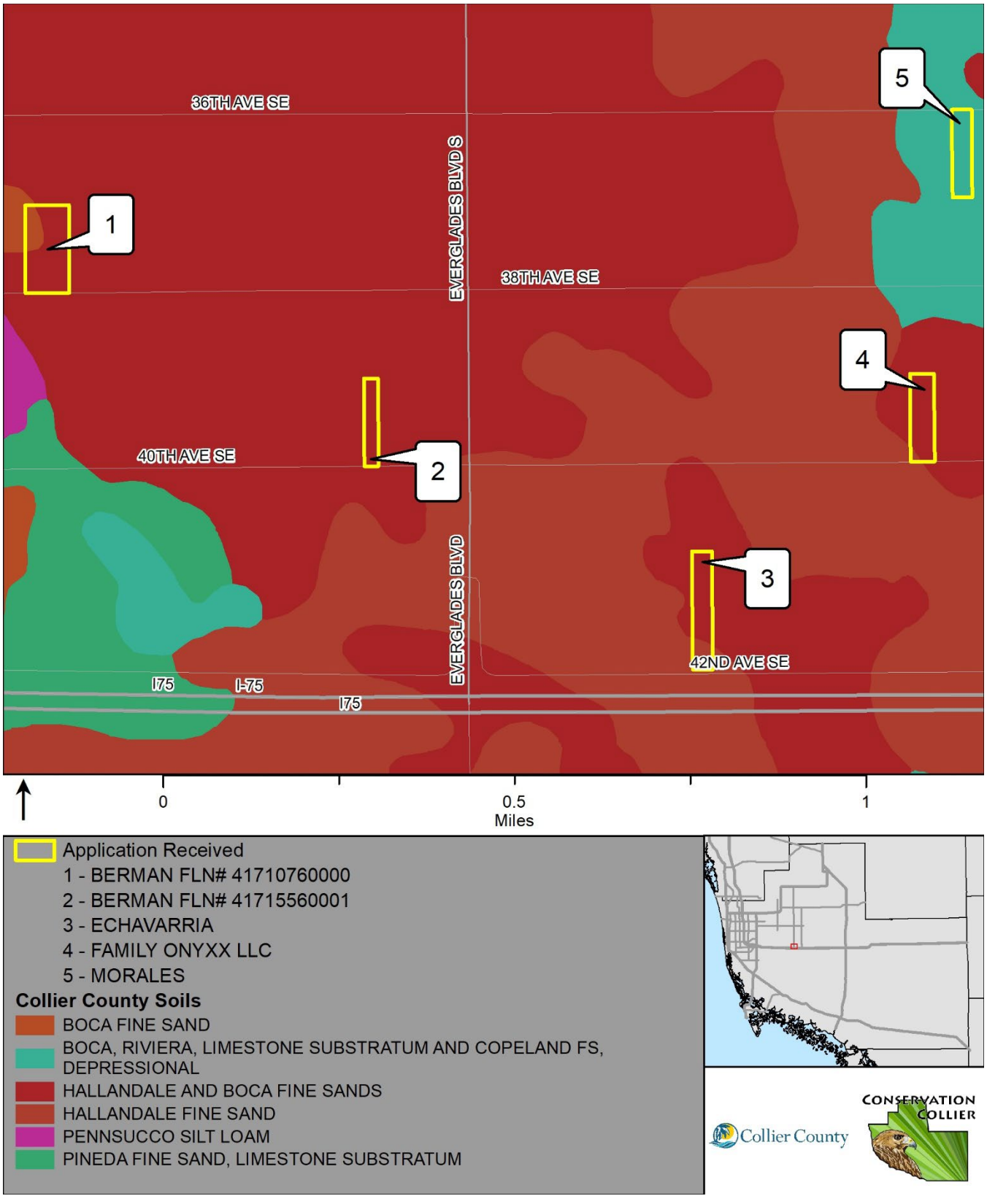


Figure 12 - Collier County Soil Survey

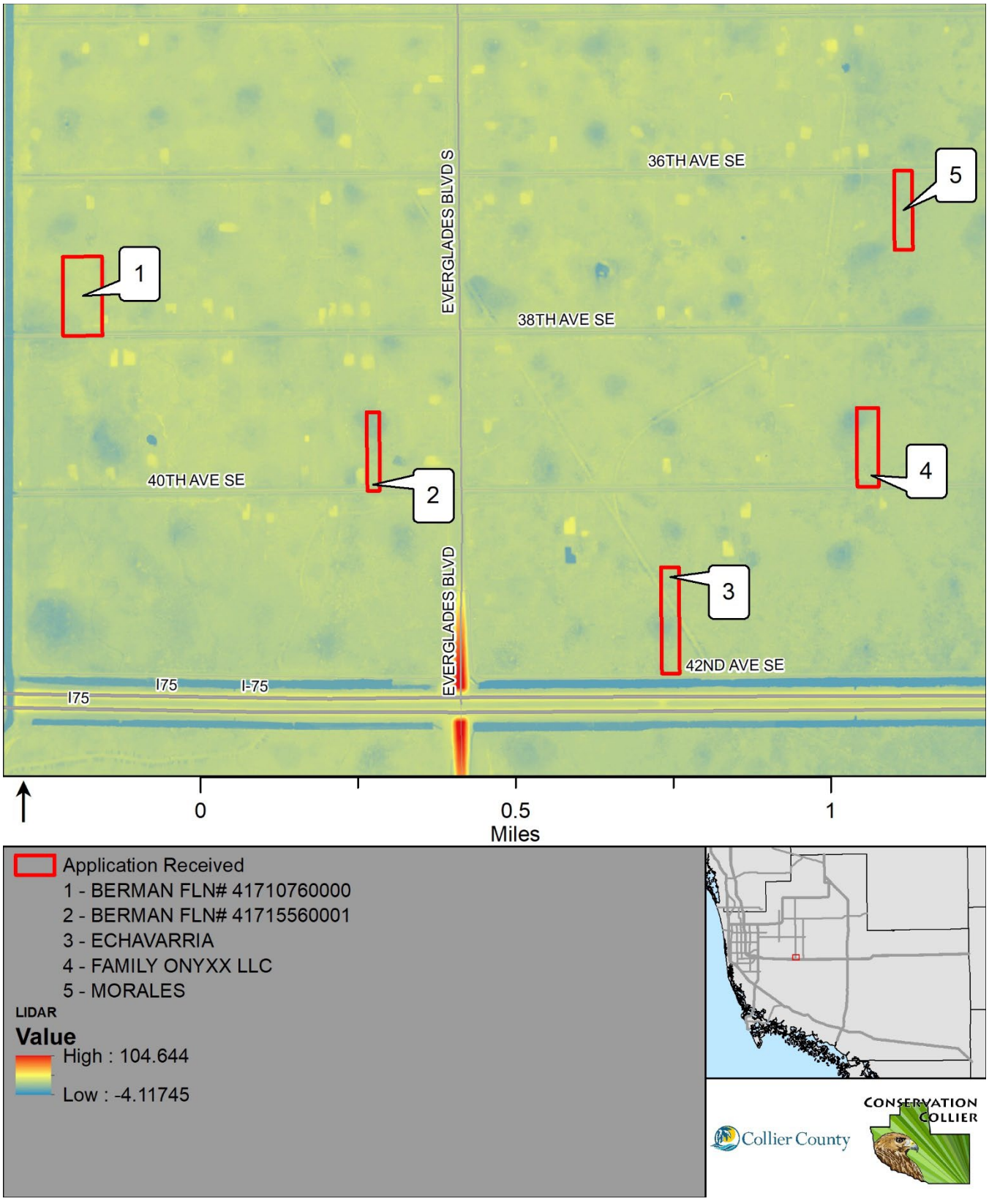


Figure 13 LIDAR Elevation Map

3.1.4 Ecosystem Connectivity

These parcels are not directly adjacent to conservation lands; however, undeveloped or rural developed lands exist between these parcels and private conservation lands to the west and between these parcels and the Dr. Robert H. Gore III Preserve to the east. Picayune Strand State Forest is to the south across I-75 with an wildlife underpass west of these parcels, along the eastern side of the Miller Canal.

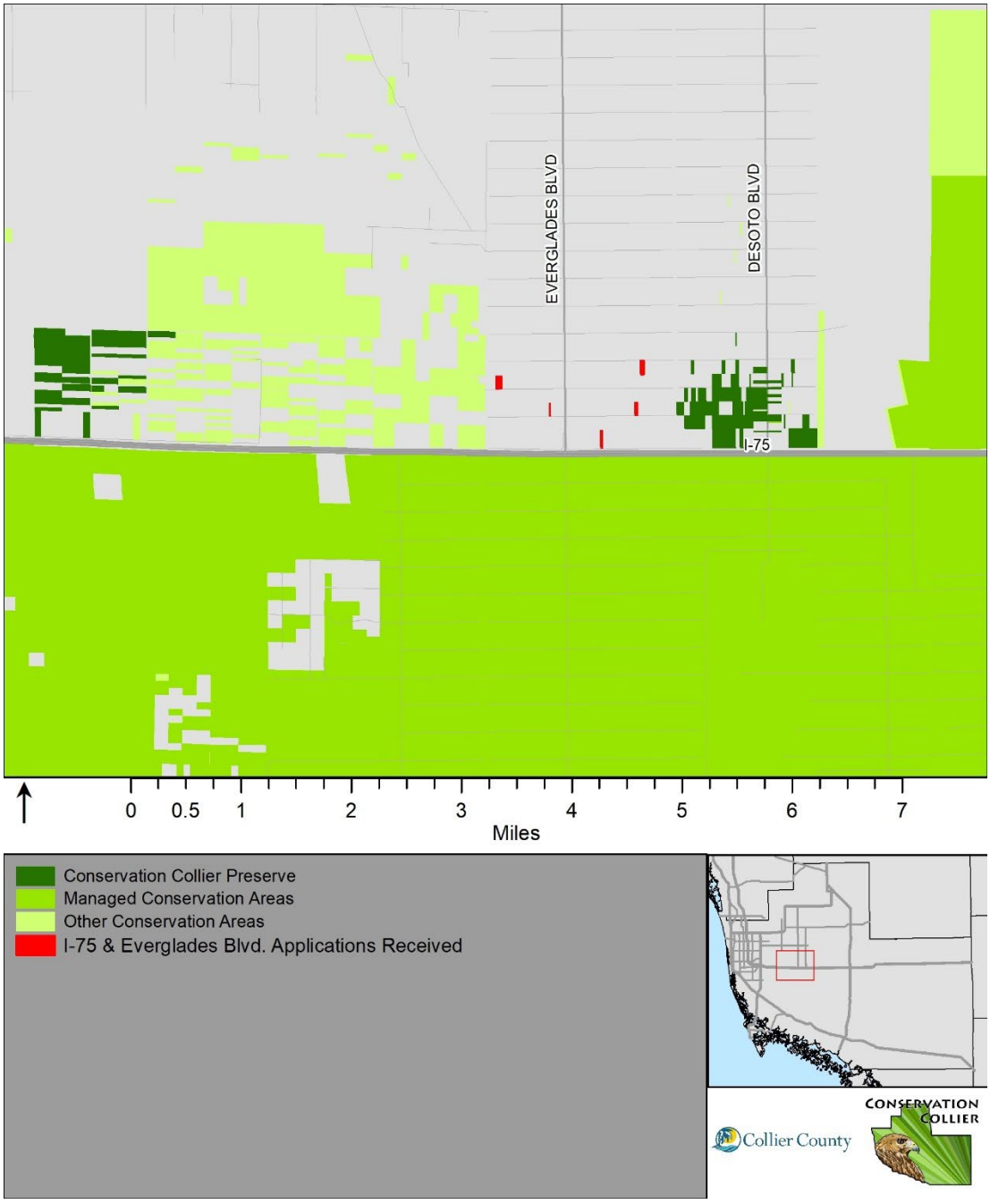


Figure 14 - Conservation Lands

3.2 Human Values

3.2.1 Recreation

These parcels could provide year-round access for passive, recreational activities including equestrian, and hiking.

3.2.2 Accessibility

The parcels are all accessible via paved roads. Parking is available along the street.

3.2.3 Aesthetic/Cultural Enhancement

The parcels are visible from a public road.

3.3 Restoration and Management

3.3.1 Vegetation Management

3.3.1.1 Invasive Vegetation

Exotic plants are present at a total estimated density of 10% on Berman Parcel 1 and between 25%-50% - at varying densities throughout the other parcels. The Berman Parcel 2 and Family Onyxx parcels are more heavily infested than the other 3 parcels. The primary invasive plant observed was Brazilian pepper. Other exotics observed were earleaf acacia, torpedograss, cogongrass, Caesarweed, and shrubby false buttonweed.

3.3.1.2 Prescribed Fire

The mesic flatwoods within Berman Parcel 1 would benefit from fire; however, due to its small size and location, prescribed fire is not likely. The other parcels that contain Mixed Wetland Hardwoods do not contain plant communities that burn on a regular basis.

3.3.2 Remediation and Site Security

No site security issues appear to exist within the parcel.

3.3.3 Assistance

No management assistance is anticipated.

3.4 Vulnerability

3.4.1 Zoning and Land Use

The parcels are zoned Estates and have an allowable density of 1 unit per 2.25 acres.

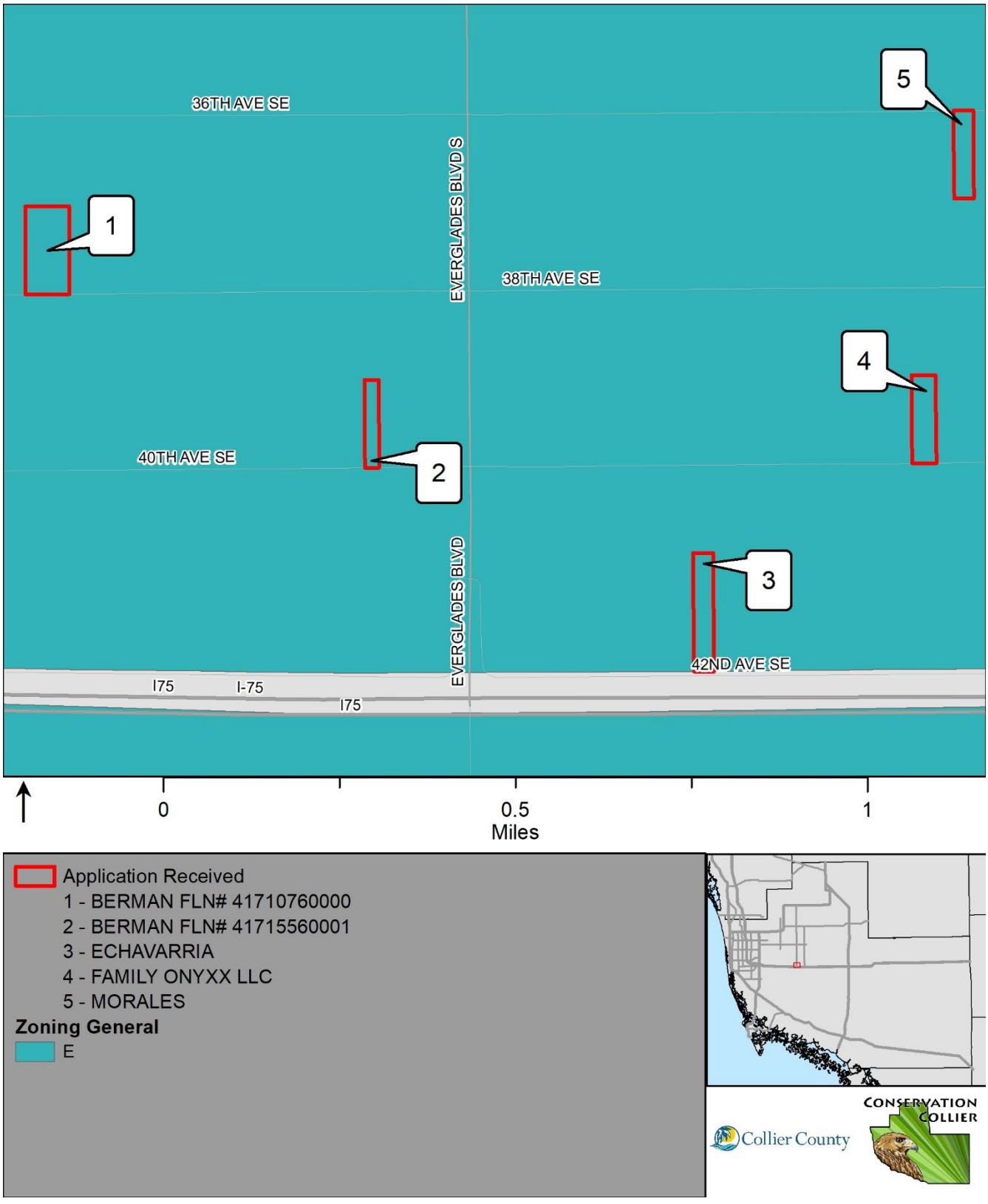


Figure 15 – Zoning

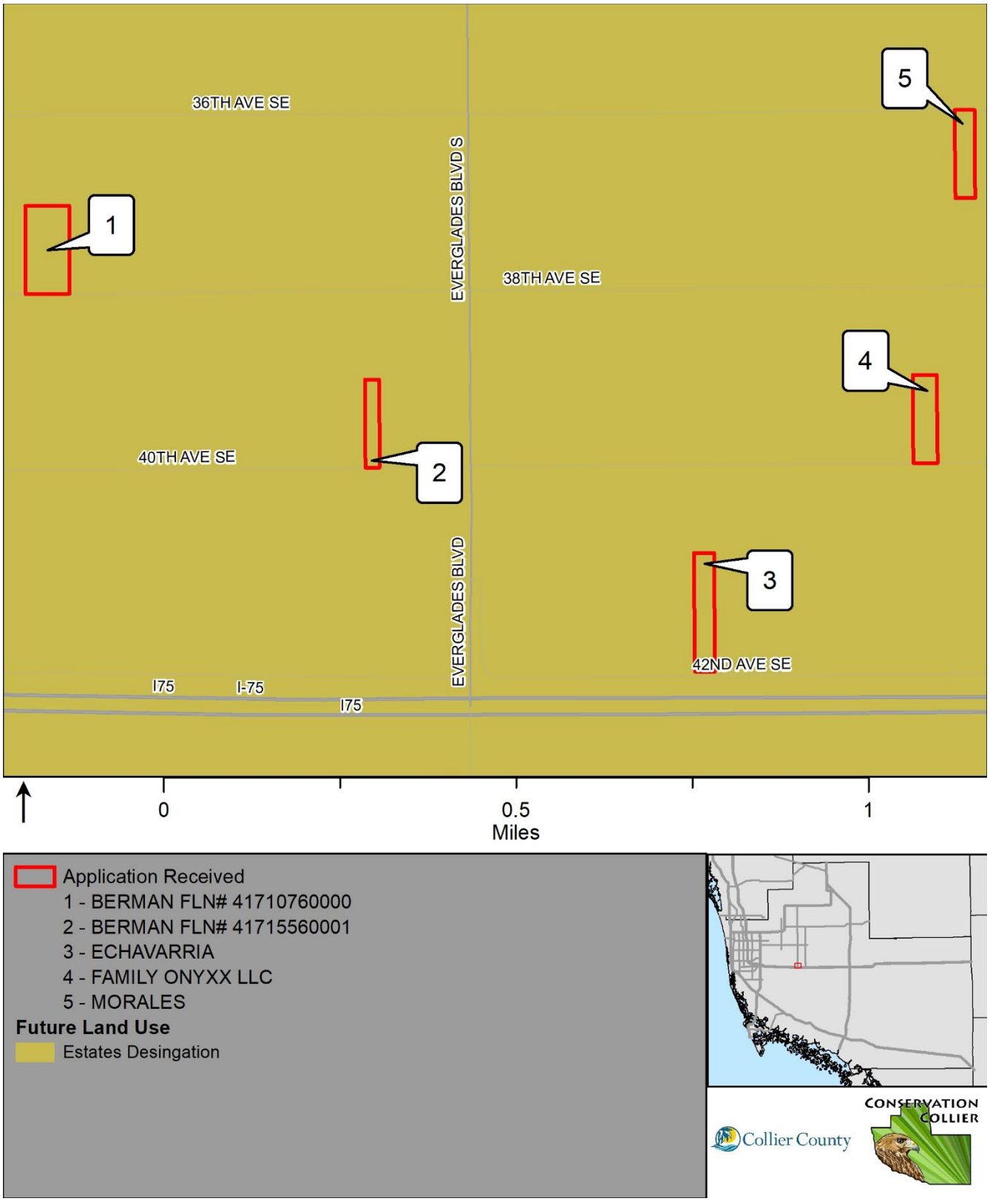


Figure 16 – Future Land Use

3.4.2 Development Plans

None of the parcels are currently planned for development.

4. Acquisition Considerations

Staff would like to bring the following items to the attention of the Advisory Committee during the review of this property. The following items may not have significantly affected the scoring but are worth noting.

These parcels are within the study area for the I-75 interchange. The properties in this location could be impacted by future right-of-way needs or for stormwater ponds to support the right-of-way. If these properties are approved for the A-List, staff will take this information into consideration when planning amenities and public access on the site. Additionally, when applicable, language will be memorialized in the Purchase Agreements and related closing documents to ensure Collier County Transportation will be able to purchase a portion of the properties from Conservation Collier for future right-of-way, if and when needed, at the original per-acre acquisition cost.

Several large tires were observed within the Echavarria parcel. These tires should be removed prior to Conservation Collier acquisition.

5. Management Needs and Costs

Table 4 - Estimated Costs of Site Remediation, Improvements, and Management

Management Element	Initial Cost	Annual Recurring Cost	Comments
Invasive Vegetation Removal	$12,500	$2,200	Initial assumes $850/acre; recurring assumes $150/acre
Cabbage Palm Treatment	$5,900	n/a	Assumes $400/acre
TOTAL	**$18,400**	**$2,200**	

6. Potential for Matching Funds

The primary partnering agencies for conservation acquisitions, and those identified in the ordinance are the Florida Communities Trust (FCT) and The Florida Forever Program. The following highlights potential for partnering funds, as communicated by agency staff.

Florida Communities Trust - Parks and Open Space Florida Forever grant program: The FCT Parks and Open Space Florida Forever grant program provides grant funds to local governments and nonprofit organizations to acquire conservation lands, urban open spaces, parks and greenways. Application for this program is typically made for pre-acquired sites up to two years from the time of acquisition. The Parks and Open Space Florida Forever grant program assists the Department of Environmental Protection in helping communities meet the challenges of growth, supporting viable community development and protecting natural resources and open space. The program receives 21 percent Florida Forever appropriation.

Florida Forever Program: This parcel is within the Belle Meade Florida Forever Project Area boundary, and state Real Estate Services staff has expressed interest in pursuing the property, depending on owner expectations of process and price. Additionally, the Conservation Collier Program has not been successful in partnering with the Florida Forever Program due to conflicting acquisition policies and issues regarding joint title between the programs.

Additional Funding Sources: There are no additional funding sources known at this time.

7. Secondary Criteria Scoring Form

BERMAN PARCEL 1

Property Name: Berman Parcel 1			
Target Protection Mailing Area: I-75 and Everglades Blvd.			
Folio(s): 41710760000			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**65**	**41**
2 - Human Value	**80**	**37**	**46**
3 - Restoration and Management	**80**	**43**	**54**
4 - Vulnerability	**80**	**60**	**75**
TOTAL SCORE	**400**	**206**	**51**

1 - ECOLOGICAL VALUES (40% of total)	**Possible Points**	**Awarded Points**	**Comments**
1.1 VEGETATIVE COMMUNITIES	**200**	**120**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60	60	Mesic Flatwoods
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10		
d. Parcel has 0 CLC listed plant species	0	0	
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50	50	
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30		

d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**90**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80	80	gopher tortoise
b. Listed wildlife species documented on adjacent property	60		
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20		
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10	10	adjacent to undeveloped land that is adjacent to North Belle Meade west of Miller Canal
c. Parcel does not enhance significant wildlife habitat	0		
1.3 - WATER RESOURCES	**100**	**10**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15		
d. Wetlands exist on site	10		
e. Parcel does not provide opportunities for surface water quality enhancement	0	0	
1.3.3 - Floodplain Management (Select all that apply)			

a. Parcel has depressional or slough soils	10	10	80% hydric soils
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10		
c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**25**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0	0	
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50		
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25	25	
c. Parcel is isolated from conservation land	0		
ECOLOGICAL VALUES TOTAL POINTS	**600**	**245**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**65**	

2 - HUMAN VALUES (20%)	**Possible Points**	**Awarded Points**	**Comments**
2.1 - RECREATION	**120**	**40**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20		
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20		
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		
2.2 - ACCESSIBILITY	**120**	**80**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20	20	
b. Parcel accessible for land-based recreation seasonally	10		
c. Parcel is inaccessible for land-based recreation	0		
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50	50	
b. Public access via unpaved road	30		

c. Public access via private road	20		
d. No public access	0		
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20		
c. Street parking available	10	10	
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**10**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5		
c. Frontage enhances aesthetics of public thoroughfare	10	10	
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**130**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**37**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**75**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Cabbage Palm reduction
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			

a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20		
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0	0	small acreage and location would make prescribed fire difficult
3.2 - REMEDIATION AND SITE SECURITY	**50**	**20**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50		
b. Moderate site remediation or human conflict issues predicted (Please describe)	20	20	Potential ATV trespass
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**0**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5		
b. Management assistance by other entity unlikely	0	0	
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**95**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**43**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**125**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100	100	
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0		
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25	25	

c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5		
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**10**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10	10	
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5		
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**135**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**60**	

BERMAN PARCEL 2 AND FAMILY ONYNXX

Property Name: Berman Parcel 2 and Family Onynxx			
Target Protection Mailing Area: I-75 and Everglades Blvd.			
Folio(s): 41715560001 and 41613880003			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**37**	**23**
2 - Human Value	**80**	**37**	**46**
3 - Restoration and Management	**80**	**53**	**66**
4 - Vulnerability	**80**	**56**	**69**
TOTAL SCORE	**400**	**183**	**46**

1 - ECOLOGICAL VALUES (40% of total)	Possible Points	Awarded Points	Comments
1.1 VEGETATIVE COMMUNITIES	**200**	**50**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60		

c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10	10	
d. Parcel has 0 CLC listed plant species	0		
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30	30	
d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**60**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80		
b. Listed wildlife species documented on adjacent property	60	60	FL panther
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20		
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0	0	
1.3 - WATER RESOURCES	**100**	**30**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		

b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15		
d. Wetlands exist on site	10	10	
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	majority hydric soils
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	
c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**0**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0	0	
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50		
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25		
c. Parcel is isolated from conservation land	0	0	
ECOLOGICAL VALUES TOTAL POINTS	**600**	**140**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**37**	

2 - HUMAN VALUES (20%)	**Possible Points**	**Awarded Points**	**Comments**
2.1 - RECREATION	**120**	**40**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20		
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20		
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		

2.2 - ACCESSIBILITY	120	80	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20	20	
b. Parcel accessible for land-based recreation seasonally	10		
c. Parcel is inaccessible for land-based recreation	0		
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50	50	
b. Public access via unpaved road	30		
c. Public access via private road	20		
d. No public access	0		
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20		
c. Street parking available	10	10	
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**10**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5		
c. Frontage enhances aesthetics of public thoroughfare	10	10	
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**130**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**37**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**95**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		

b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Exotics and Cabbage Palm reduction
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	Not fire dependent
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0	0	
3.2 - REMEDIATION AND SITE SECURITY	**50**	**20**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50		
b. Moderate site remediation or human conflict issues predicted (Please describe)	20	20	Potential ATV trespass
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**0**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5		
b. Management assistance by other entity unlikely	0	0	
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**115**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**53**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**125**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100	100	
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0		

4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25	25	
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5		
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**0**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5		
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**125**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**56**	

ECHAVRRIA

Property Name: Echavarria			
Target Protection Mailing Area: I-75 and Everglades Blvd.			
Folio(s): 41660040003			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**40**	**25**
2 - Human Value	**80**	**37**	**46**
3 - Restoration and Management	**80**	**53**	**66**
4 - Vulnerability	**80**	**56**	**69**
TOTAL SCORE	**400**	**185**	**46**

1 - ECOLOGICAL VALUES (40% of total)	Possible Points	Awarded Points	Comments
1.1 VEGETATIVE COMMUNITIES	**200**	**50**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm,	100		

1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)			
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60		
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10	10	
d. Parcel has 0 CLC listed plant species	0		
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30	30	
d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**60**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80		
b. Listed wildlife species documented on adjacent property	60	60	FL panther
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20		
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0	0	
1.3 - WATER RESOURCES	**100**	**40**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		

c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20	20	
c. Parcel is contiguous with and provides buffering for an identified flowway	15		
d. Wetlands exist on site	10		
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	majority hydric soils
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	
c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**0**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0	0	
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50		
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25		
c. Parcel is isolated from conservation land	0	0	
ECOLOGICAL VALUES TOTAL POINTS	**600**	**150**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**40**	

2 - HUMAN VALUES (20%)	**Possible Points**	**Awarded Points**	**Comments**
2.1 - RECREATION	**120**	**40**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20		
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		

d. Biking	20		
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		
2.2 - ACCESSIBILITY	**120**	**80**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20	20	
b. Parcel accessible for land-based recreation seasonally	10		
c. Parcel is inaccessible for land-based recreation	0		
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50	50	
b. Public access via unpaved road	30		
c. Public access via private road	20		
d. No public access	0		
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20		
c. Street parking available	10	10	
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**10**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5		
c. Frontage enhances aesthetics of public thoroughfare	10	10	
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**130**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**37**	

3 - RESTORATION AND MANAGEMENT (20%)	**Possible Points**	**Awarded Points**	**Comments**
3.1 - VEGETATION MANAGEMENT	**120**	**95**	
3.1.1 - Invasive plant management needs (Select the highest score)			

a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Exotics and Cabbage Palm reduction
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	Not fire dependent
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0	0	
3.2 - REMEDIATION AND SITE SECURITY	**50**	**20**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50		
b. Moderate site remediation or human conflict issues predicted (Please describe)	20	20	Potential ATV trespass
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**0**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5		
b. Management assistance by other entity unlikely	0	0	
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**115**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**53**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**125**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100	100	
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		

c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0		
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25	25	
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5		
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**0**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5		
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**125**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**56**	

MORALES

Property Name: Morales			
Target Protection Mailing Area: I-75 and Everglades Blvd.			
Folio(s): 41614280000			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**44**	**28**
2 - Human Value	**80**	**37**	**46**
3 - Restoration and Management	**80**	**53**	**66**
4 - Vulnerability	**80**	**56**	**69**
TOTAL SCORE	**400**	**189**	**47**

1 - ECOLOGICAL VALUES (40% of total)	**Possible Points**	**Awarded Points**	**Comments**
1.1 VEGETATIVE COMMUNITIES	**200**	**50**	
1.1.1 - Priority natural communities (Select highest score)			

a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60		
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10	10	
d. Parcel has 0 CLC listed plant species	0		
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30	30	
d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**60**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80		
b. Listed wildlife species documented on adjacent property	60	60	FL panther
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20		
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0	0	
1.3 - WATER RESOURCES	**100**	**30**	
1.3.1 - Aquifer recharge (Select the highest score)			

a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15		
d. Wetlands exist on site	10	10	
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	majority hydric soils
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	
c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**25**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0	0	
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50		
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25	25	
c. Parcel is isolated from conservation land	0		
ECOLOGICAL VALUES TOTAL POINTS	**600**	**165**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**44**	

2 - HUMAN VALUES (20%)	**Possible Points**	**Awarded Points**	**Comments**
2.1 - RECREATION	**120**	**40**	
2.1.1 - Compatible recreation activities (Select all that apply)			

a. Hunting	20		
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20		
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		
2.2 - ACCESSIBILITY	**120**	**80**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20	20	
b. Parcel accessible for land-based recreation seasonally	10		
c. Parcel is inaccessible for land-based recreation	0		
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50	50	
b. Public access via unpaved road	30		
c. Public access via private road	20		
d. No public access	0		
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20		
c. Street parking available	10	10	
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**10**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5		
c. Frontage enhances aesthetics of public thoroughfare	10	10	
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**130**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**37**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**95**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Exotics and Cabbage Palm reduction
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	Not fire dependent
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0	0	
3.2 - REMEDIATION AND SITE SECURITY	**50**	**20**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50		
b. Moderate site remediation or human conflict issues predicted (Please describe)	20	20	Potential ATV trespass
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**0**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5		
b. Management assistance by other entity unlikely	0	0	
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**115**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**53**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**125**	

4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100	100	
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0		
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25	25	
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5		
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**0**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5		
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**125**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**56**	

8. Additional Site Photos



Berman Parcel 1 – View from roadway



Berman Parcel 1



Berman Parcel 1



Berman Parcel 2 view from roadway



Berman Parcel 2



Echavarria parcel view from roadway



Echavarria parcel



Echavarria parcel



View of Family Onyxx from roadway



Family Onyxx parcel



View of Morales parcel from roadway



Morales parcel



Morales parcel

APPENDIX 1 – Critical Lands and Water Identification Maps (CLIP) Definitions

This report makes use of data layers from the Florida Natural Areas Inventory and University of Florida Critical Lands and Waters Identification Project (CLIP4). CLIP4 is a collection of spatial data that identify statewide priorities for a broad range of natural resources in Florida. It was developed through a collaborative effort between the Florida Areas Natural Inventory (FNAI), the University of Florida GeoPlan Center and Center for Landscape Conservation Planning, and the Florida Fish and Wildlife Conservation Commission (FWC). It is used in the Florida Forever Program to evaluate properties for acquisition. CLIP4 is organized into a set of core natural resource data layers which are representative of 5 resource categories: biodiversity, landscapes, surface water, groundwater and marine. The first 3 categories have also been combined into the Aggregated layer, which identifies 5 priority levels for natural resource conservation.

Below is a description of each of the three CLIP4 data layers used in this report.

Figure 4 - CLIP4 Priority Natural Communities

Consists of 12 priority natural community types: upland glades, pine rocklands, seepage slopes, scrub, sandhill, sandhill upland lakes, rockland hammock, coastal uplands, imperiled coastal lakes, dry prairie, upland pine, pine flatwoods, upland hardwood forest, or coastal wetlands. These natural communities are prioritized by a combination of their heritage global status rank (G-rank) and landscape context, based on the Land Use Intensity Index (subset of CLIP Landscape Integrity Index) and FNAI Potential Natural Areas. Priority 1 includes G1-G3 communities with Very High or High landscape context. Priority 2 includes G1-G3 Medium and G4 Very High/High. Priority 3 includes G4 Medium and G5 Very High/High. Priority 5 is G5 Medium.

This data layer was created by FNAI originally to inform the Florida Forever environmental land acquisition program. The natural communities were mapped primarily based on the FNAI/FWC Cooperative Land Cover (CLC) data layer, which is a compilation of best-available land cover data for the entire state. The CLC is based on both remote-sensed (from aerial photography, primarily from water management district FLUCCS data) and ground-truthed (from field surveys on many conservation lands) data.

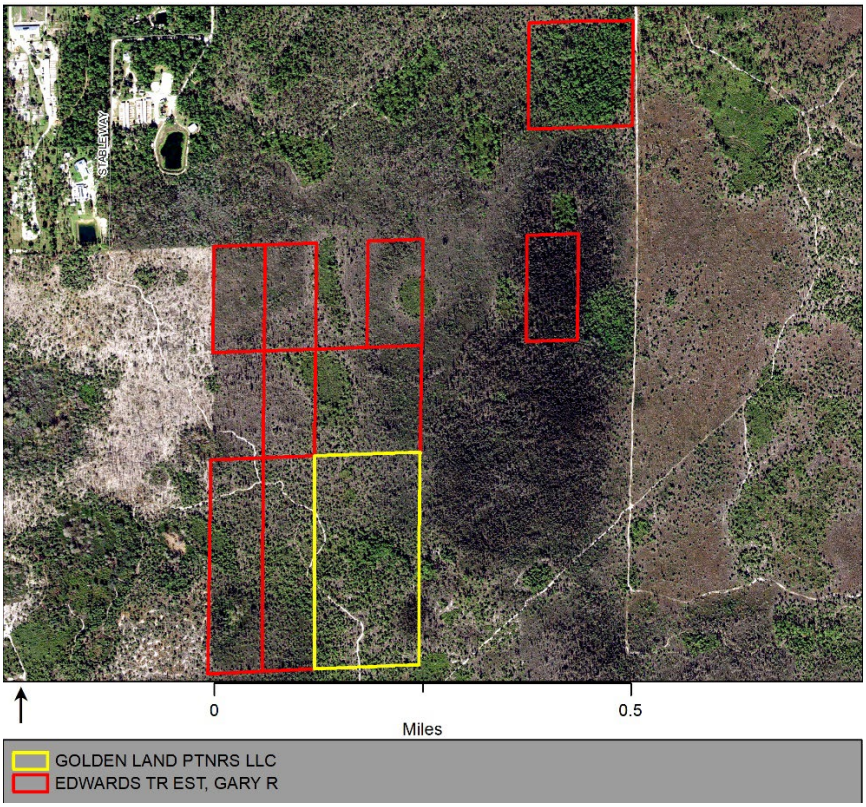
Figure 10 - Potential Habitat Richness CLIP4 Map

This CLIP version 4.0 data layer is unchanged from CLIP v3.0. FWC Potential Habitat Richness. Because SHCAs do not address species richness, FWC also developed the potential habitat richness layer to identify areas of overlapping vertebrate species habitat. FWC created a statewide potential habitat model for each species included in their analysis. In some cases, only a portion of the potential habitat was ultimately designated as SHCA for each species. The Potential Habitat Richness layer includes the entire potential habitat model for each species and provides a count of the number of species habitat models occurring at each location. The highest number of focal species co-occurring at any location in the model is 13.

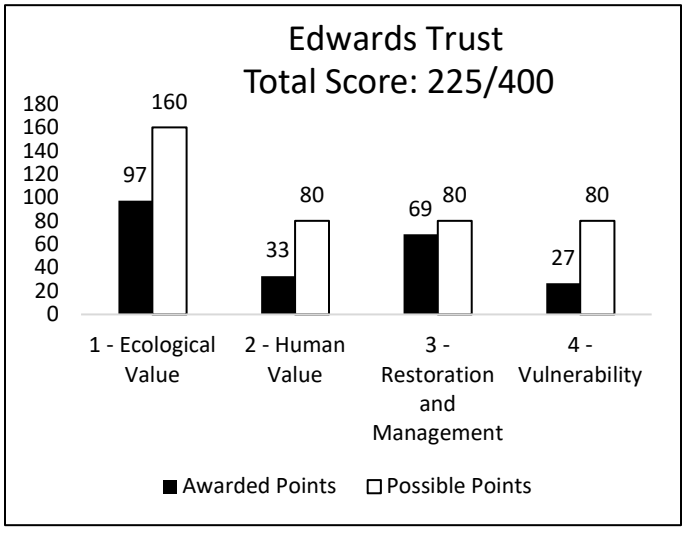
Figure 11 - CLIP4 Aquifer Recharge Priority and Wellfield Protection Zones

High priorities indicate high potential for recharge to an underlying aquifer system (typically the Floridan aquifer but could be intermediate or surficial aquifers in some portions of the state). The highest priorities indicate high potential for recharge to springs or public water supplies. This figure also includes Wellfield Protection Zones. Collier County Wellfield Protection Zones are referenced in the Land Development Code and updated in 2010 by Pollution Control and Prevention Department Staff. The public water supply wellfields, identified in section 3.06.06 and permitted by the SFWMD for potable water to withdraw a minimum of 100,000 average gallons per day (GPD), are identified as protected wellfields, around which specific land use and activity (regulated development) shall be regulated under this section.

Conservation Collier
Initial Criteria Screening Report
Edwards Trust and Golden Land Partners



Owner Names: Gary R. Edwards Tr/Section Land Tr/Section 12-A Tr/Section 12-F Land/Section 12-G Land Tru/Section 12-J Land Tr/Triangle Land Tr /Circle Land Tr and Golden Land Partners, LLC
Folio Numbers: 00411840008, 00412040001, 00412160004, 00412360008, 00412400007, 00413040000, 00413200002, 00413520009, 00413600000, and 00412200003
Size: 85 acres
Staff Report Date: January 8, 2025



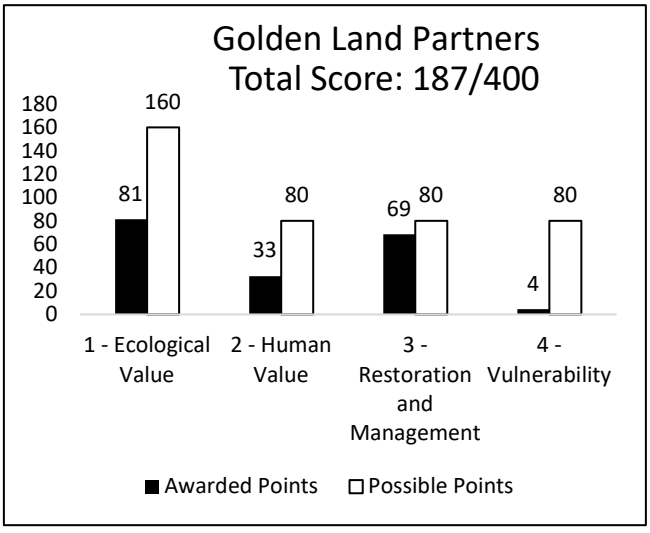


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1. Introduction

The Conservation Collier Program (Program) is an environmentally sensitive land acquisition and management program approved by the Collier County Board of County Commissioners (Board) in 2002 and by Collier County Voters in 2002 and 2006. The Program was active in acquisition between 2003 and 2011, under the terms of the referendum. Between 2011 and 2016, the Program was in management mode. In 2017, the Collier County Board reauthorized Conservation Collier to seek additional lands (2/14/17, Agenda Item 11B). On November 3, 2020, the Collier County electors approved the Conservation Collier Re-establishment referendum with a 76.5% majority.

This Initial Criteria Screening Report (ICSR) has been prepared for the Conservation Collier Program to meet requirements specified in the Conservation Collier Implementation Ordinance, 2002-63, as amended, and for purposes of the Conservation Collier Program. The sole purpose of this report is to provide objective data to demonstrate how properties meet the criteria defined by the ordinance.

The following sections characterize the property location and assessed value, elaborate on the initial and secondary screening criteria scoring, and describe potential funding sources, appropriate use, site improvements, and estimated management costs.

2. Summary of Property

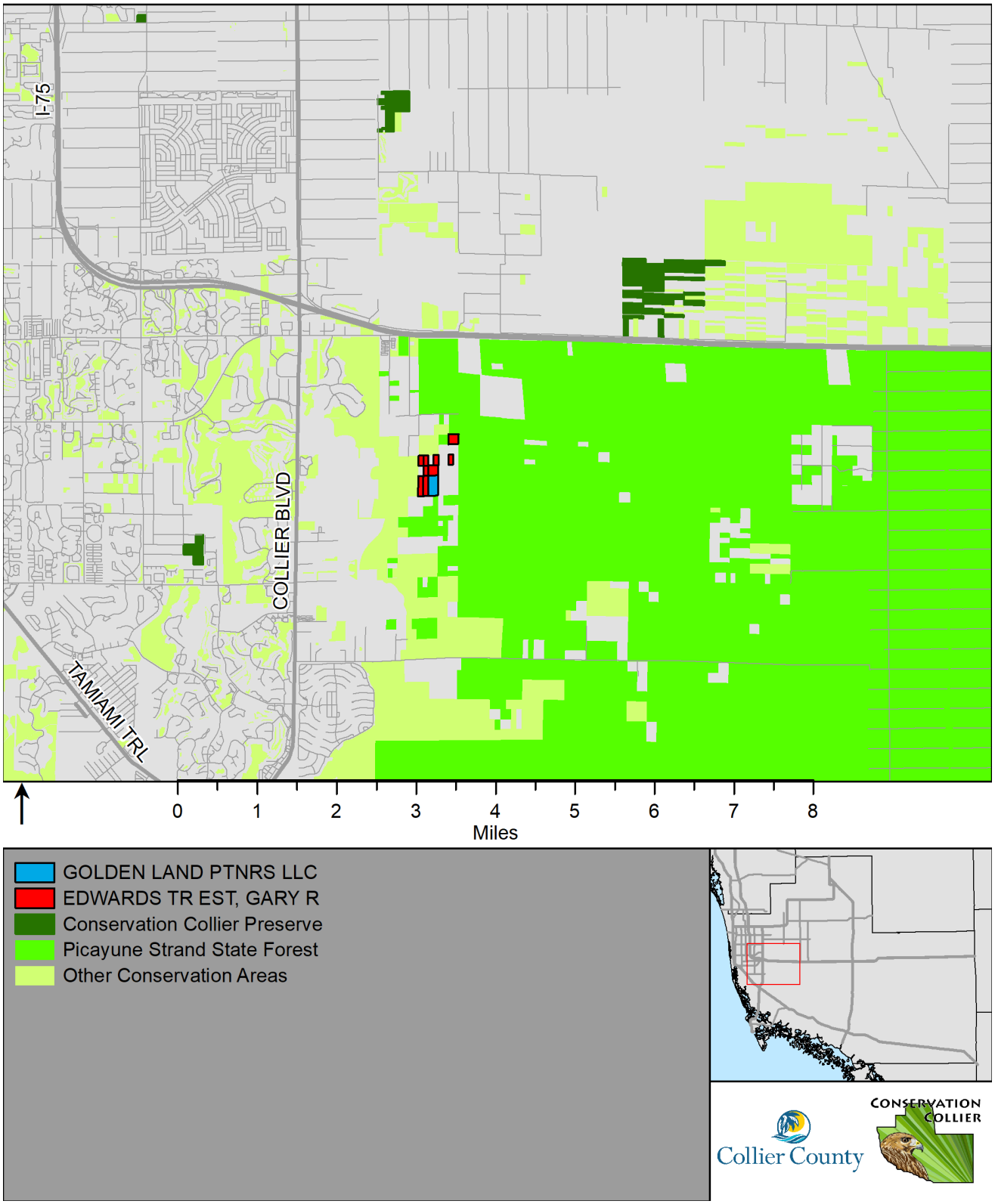


Figure 1 - Parcel Location Overview

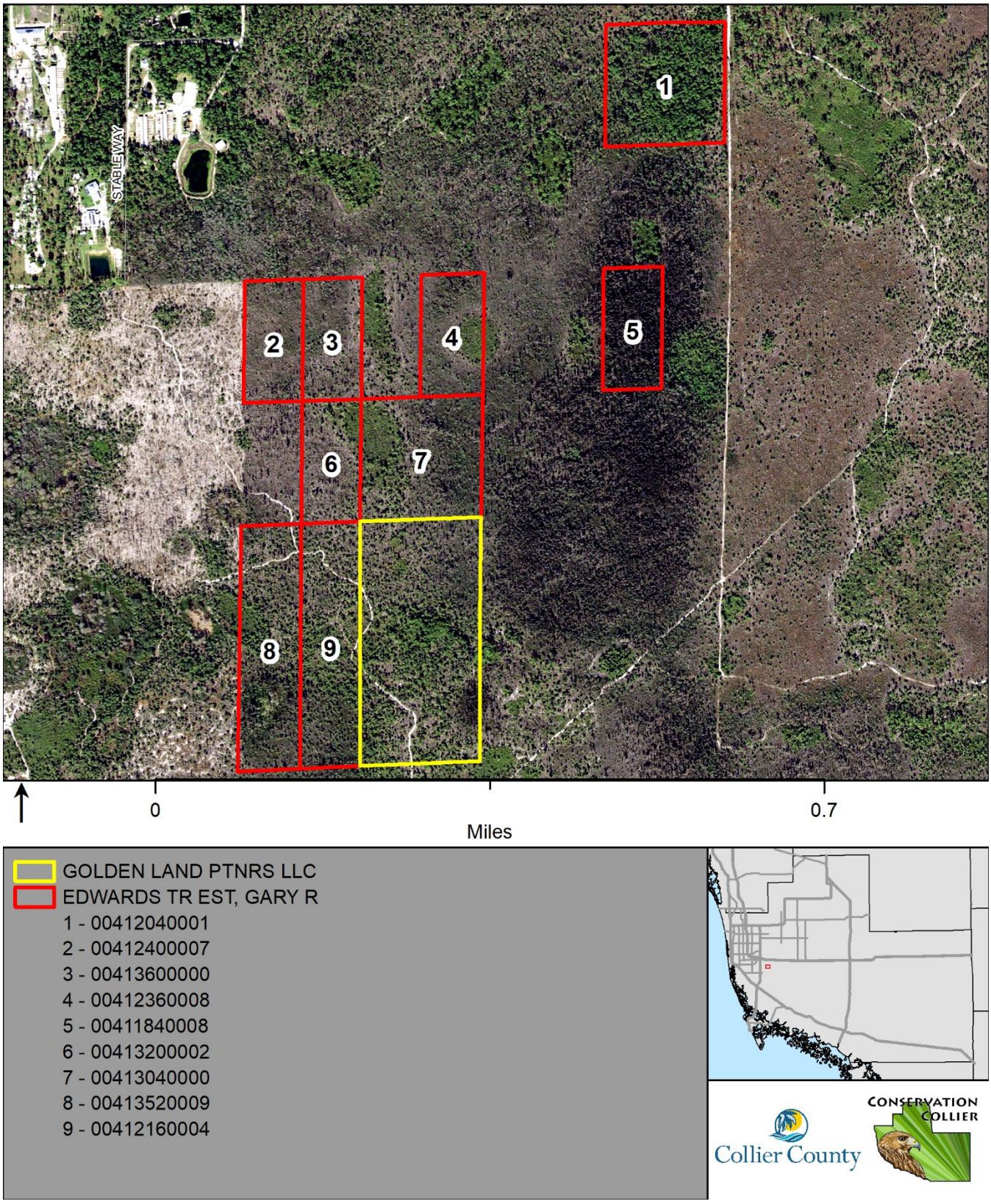


Figure 2 - Parcel Close-up

2.1 Summary of Property Information

Table 1 – Summary of Property Information

Characteristic	Value	Comments
Name	Edwards Trust and Golden Land Partners	Edwards Trust - Gary R. Edwards Trust and Section 12-J Land Trust Golden Land Partners – Golden Land Partners LLC
Folio Numbers	Multiple	Edwards Trust - 00411840008, 00412040001, 00412160004, 00412360008, 00412400007, 00413040000, 00413200002, 00413520009, 00413600000 Golden Land Partners – 00412200003
Target Protection Area	RFMUD	Not within a Target Protection Mailing Area
Size	85 acres	70 contiguous acres – 50 Edwards Trust acres and 20 Golden Land Partners acres; 10-acre and 5-acre Edwards Trust stand-alone parcels
Section, Township, and Range	S12, Twn 50, R26	
Zoning Category/TDRs	A-RFMUD-NRPA - Sending	Agricultural - Rural Fringe Mixed Use District – Natural Resource Protection Area – Sending Lands; Zoning allows 1 unit per 40 acres; 90% native vegetation preservation requirement; Golden Land Partners has first 2 TDRs stripped from their 20-acre parcel
FEMA Flood Map Category	AH	1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage.
Existing structures	None	
Adjoining properties and their Uses	Conservation; undeveloped	The parcels are adjacent to private conservation easements, Picayune Strand State Forest, and undeveloped Sending Lands
Development Plans Submitted	None	
Known Property Irregularities	None	
Other County Dept Interest	Transportation	Parcels are in the proposed Benfield Road Extension area which is included in the LRTP as a need from The Lords Way to City Gate Blvd. N. These properties in this location could be impacted by future right-of-way needs or for stormwater ponds to support the right-of-way.

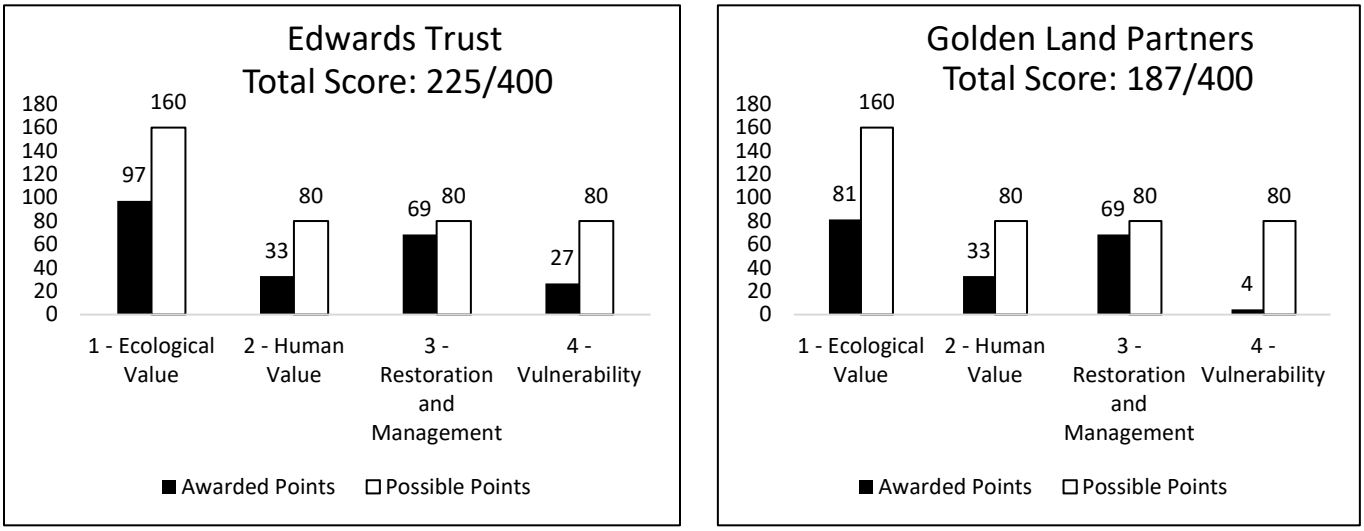


Figure 3 - Secondary Criteria Score

Table 2 - Secondary Criteria Score Summary

Edwards Trust:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**97**	**160**	**61%**
1.1 - Vegetative Communities	29	53	55%
1.2 - Wildlife Communities	27	27	100%
1.3 - Water Resources	8	27	30%
1.4 - Ecosystem Connectivity	33	53	63%
2 - Human Values	**33**	**80**	**41%**
2.1 - Recreation	23	34	67%
2.2 - Accessibility	9	34	25%
2.3 - Aesthetics/Cultural Enhancement	1	11	13%
3 - Restoration and Management	**69**	**80**	**86%**
3.1 - Vegetation Management	43	55	79%
3.2 - Remediation and Site Security	23	23	100%
3.3 - Assistance	2	2	100%
4 - Vulnerability	**27**	**80**	**33%**
4.1 - Zoning and Land Use	24	58	42%
4.2 - Development Plans	2	22	10%
Total	**225**	**400**	**56%**

Golden Land Partners:

Criteria	Awarded Weighted Points	Possible Weighted Points	Awarded/Possible Points
1 - Ecological Value	**81**	**160**	**51%**
1.1 - Vegetative Communities	29	53	55%
1.2 - Wildlife Communities	27	27	100%
1.3 - Water Resources	8	27	30%
1.4 - Ecosystem Connectivity	17	53	33%
2 - Human Values	**33**	**80**	**41%**
2.1 - Recreation	23	34	67%
2.2 - Accessibility	9	34	25%
2.3 - Aesthetics/Cultural Enhancement	1	11	13%
3 - Restoration and Management	**69**	**80**	**86%**
3.1 - Vegetation Management	43	55	79%
3.2 - Remediation and Site Security	23	23	100%
3.3 - Assistance	2	2	100%
4 - Vulnerability	**4**	**80**	**6%**
4.1 - Zoning and Land Use	2	58	4%
4.2 - Development Plans	2	22	10%
Total	**187**	**400**	**47%**

2.2 Summary of Assessed Value and Property Cost Estimates

The interest being appraised is fee simple “as is” for the purchase of the site. A value of the parcel was estimated using only one of the three traditional approaches to value, the sales comparison approach. It is based on the principal of substitution that an informed purchaser would pay no more for the rights in acquiring a particular real property than the cost of acquiring, without undue delay, an equally desirable one. Three properties were selected for comparison, each with similar site characteristics, utility availability, zoning classification and road access. No inspection was made of the property or comparables used in this report and the Real Estate Services Department staff relies upon information solely provided by program staff. The valuation conclusion is limited only by the reported assumptions and conditions that no other known or unknown adverse conditions exist. Possible access concerns or limits to uses within the property unknown at the time of estimation will be taken into consideration at time of appraisal.

If the Board of County Commissioners chooses to acquire these properties, appraisals by independent Real Estate Appraisers will be obtained at that time. Pursuant to the Conservation Collier Purchase Policy, two appraisals are required for the Edwards Trust property, which has an initial valuation greater than $500,000; 2 independent Real Estate Appraisers will value the subject property and the average of the two appraisal reports will determine the actual value of the subject property.

Table 3. Assessed & Estimated Value

Property owners	Folio #	Acreage	Assessed Value*	Estimated Value**
Gary R. Edwards Trust/Triangle Land Trust	00411840008	5.00	$27,000	TBD
Gary R. Edwards Trust/Section Land Trust	00412040001	10.00	$54,000	TBD
Gary R. Edwards Trust/Section 12-G Land Trust	00412160004	10.00	$54,000	TBD
Gary R. Edwards Trust/Section 12-F Land Trust	00412360008	5.00	$27,000	TBD
Gary R. Edwards Trust/Section 12-J Land Trust	00412400007	5.00	$27,000	TBD
Gary R. Edwards Trust/Section 12-F Land Trust	00413040000	10.00	$54,000	TBD
Gary R. Edwards Trust/Circle Land Trust	00413200002	5.00	$27,000	TBD
Gary R. Edwards Trust/Section 12-G Land Trust	00413520009	10.00	$54,000	TBD
Gary R. Edwards Trust/Section 12-A Trust	00413600000	5.00	$27,000	TBD
	Edwards Tr. TOTAL	**65.00**	**$351,000**	**TBD**
Golden Land Partners, LLC	00412200003	20.00	$2,000	TBD

* Assessed Value is obtained from the Property Appraiser's Website. The Assessed Value is based off the current use of the property.
**The Estimated Market Value for the Edwards Trust and Golden Land Partners properties will be obtained from the Collier County Real Estate Services Department prior to Board of County Commissioners ranking.

2.2.1 Zoning, Growth Management and Conservation Overlays

Zoning, growth management and conservation overlays will affect the value of a parcel. The parcels are zoned Agricultural but in Sending Lands within the Rural Fringe Mixed Use District (RFMUD) with a Natural Resource Protection Area Overlay. All the parcels, except for the Golden Land Partners parcel, have an allowable density of 1 unit per 40 acres with a 90% native preservation requirement. The Golden Land Partners parcel has had the first 2 TDRs / 5 acres stripped. Therefore, development within the parcel is not an allowable use.

2.3 Initial Screening Criteria Satisfaction (Ord. 2002-63, as amended, Sec. 12)

Criteria 1: CLIP Priority 1 Natural Community

Does the property contain Upland Hardwood Forest, Scrub, Coastal Upland, Dry Prairie, or Upland Pine? **NO**

Criteria 2: CLIP Priority 2 Natural Community

Does the property contain Pine Flatwoods or Coastal Wetlands? **YES**

Both properties contain Hydric pine flatwoods and Mesic pine flatwoods.

Criteria 3: Other Native, Natural Communities

Does the property contain other native, natural communities? **N/A**

The parcels also contain other native natural communities, but already contain CLIP Priority 2 Natural Communities.

Criteria 4: Human Social Values

Does the property offer cultural values, appropriate access for natural resource-based recreation, and the enhancement of the aesthetic setting of Collier County? **NO**

The parcels are not visible or readily accessible from a public roadway. They are accessible via a rough trail that traverses other private parcels.

Criteria 5: Water Resources

Does the property offer opportunities for protection of water resource values, including aquifer recharge, water quality enhancement, protection of wetland dependent species habitat, wildfire risk reduction, storm surge protection, and flood control? **YES**

Hydric soils exist on the majority of the parcels and wetland plant communities are found throughout the parcels.

Criteria 6: Biological and Ecological Value

Does the property offer significant biological values, including biodiversity and listed species habitat? **YES**

FWC Species Richness Maps show potential for 2-6 species to utilize the properties including federally endangered Florida panther, red-cockaded woodpecker, Florida bonneted bat, and state-threatened Florida gopher tortoise and Big Cypress fox squirrel. Panther telemetry (from 1986-2020) shows consistent utilization of the site by radio-collared individuals. The property is

included within known historic nesting/foraging habitat for the endangered red-cockaded woodpecker.

Criteria 7: Enhancement of Current Conservation Lands

Does the property enhance and/or protect the environmental value of current conservation lands through function as a buffer, ecological link or habitat corridor? **YES**

These parcels are adjacent Picayune Strand State Forest and private conservation lands.

Criteria 8: Target Area

Is the property within a Board-approved target protection mailing area? **NO**

The Edwards Trust and Golden Land Partners parcels met 4 out of the 8 Initial Screening Criteria.

3. Initial Screening Criteria

3.1 Ecological Values

3.1.1 Vegetative Communities

The parcels are mapped as Wet Flatwoods, Mesic Flatwoods, and Mixed Hardwood Coniferous Swamps; however, staff observed Wet Flatwoods, Mesic Flatwoods, Mesic Hammock, Cypress/Pine/Cabbage Palm, and Melaleuca Forest. Due to 2017 Lee-Williams Fire, a significant thermal thinning of the slash pine (*Pinus elliotti var. densa*) canopy exists throughout all the parcels. Areas within the Melaleuca Forest, Wet Flatwoods, Mesic Flatwoods, and Cypress/Pine/Cabbage Palm where the Florida slash pine canopy was removed by fire are dominated by a cabbage palm (*Sabal palmetto*) midstory.

Exotic plants are present at a total estimated density of 25% - at varying densities throughout. The melaleuca forest, wet flatwoods, and cypress/pine/cabbage palm communities are more heavily infested than other areas of the properties. Primary invasive plants observed were melaleuca (*Melaleuca quinquenervia*), earleaf acacia (*Acacia auriculiformis*), and downy rosemyrtle (*Rhodomyrtus tomentosa*). Other exotic plants present include Brazilian pepper (*Schinus terebinthifolia*), torpedograss (*Panicum repens*), cogongrass (*Imperata cylindrica*), Caesarweed (*Urena lobata*), and shrubby false buttonweed (*Spermacoce verticillata*)

No listed plant species were observed during the site visit.

Table 4 – Mapped Native Vegetative Communities

Community	Location	Description
Cypress/Pine/Cabbage Palm	Edwards Trust - Parcel 1	Cypress (*Taxodium distichum*), Cabbage Palm (*Sabal palmetto*), and very sparse slash pine (*Pinus elliottii*) in canopy; primarily earleaf acacia in midstory with some myrsine (*Myrsine cubana*), American beauty berry (*Callicarpa americana*), and cabbage palm; saw palmetto (*Serenoa repens*), wire grass (*Aristida stricta*), bracken fern (*Pteridium aquilinum*) in groundcover
Melaleuca Forest	Edwards Trust – Parcel 5	Melalueca canopy, cabbage palm midstory, swamp fern (*Telmatoblechnum serrulatum*) groundcover

Wet Flatwoods	Golden Land Partners and Edwards Trust – Parcels 2-9	Very sparse slash pine canopy; cabbage palm and melaleuca understory with some earleaf acacia, downy rosemyrtle, wax myrtle (*Morella cerifera*) and saw palmetto; wire grass, maidencane (*Amphicarpum muehlenbergianum*) yellow-eyed grasses (*Xyris* spp.), broom-sedge (*Andropogon* sp.), cogongrass, and torpedo grass in ground cover
Mesic Flatwoods	Golden Land Partners and Edwards Trust – Parcels 4,6,7,8, and 9	Very sparse slash pine canopy; saw palmetto, galberry (*Ilex glabra*), rusty lyonia (*Lyonia fruticosa*), winged-sumac (*Rhus copallinum*) American beautyberry and occasional earleaf acacia in mid-story; wild pennyroyal (*Piloblephis rigida*) and in wiregrass groundcover
Mesic Hammock	Edwards Trust – Parcels 8 and 9	Occasional cabbage palm in canopy; myrsine, white indigoberry (*Randia aculeata*), wax myrtle, firebush (*Hamelia patens*), Florida bully (*Sideroxylon tenax*), red bay (*Persea borbonia*) in midstory; snowberry (*Chiococca alba*), bracken fern, wiregrass, sawgrass (*Cladium jamaicense*), sand cordgrass (*Spartina bakeri*), golden rod (*Solidago* sp.) in ground cover

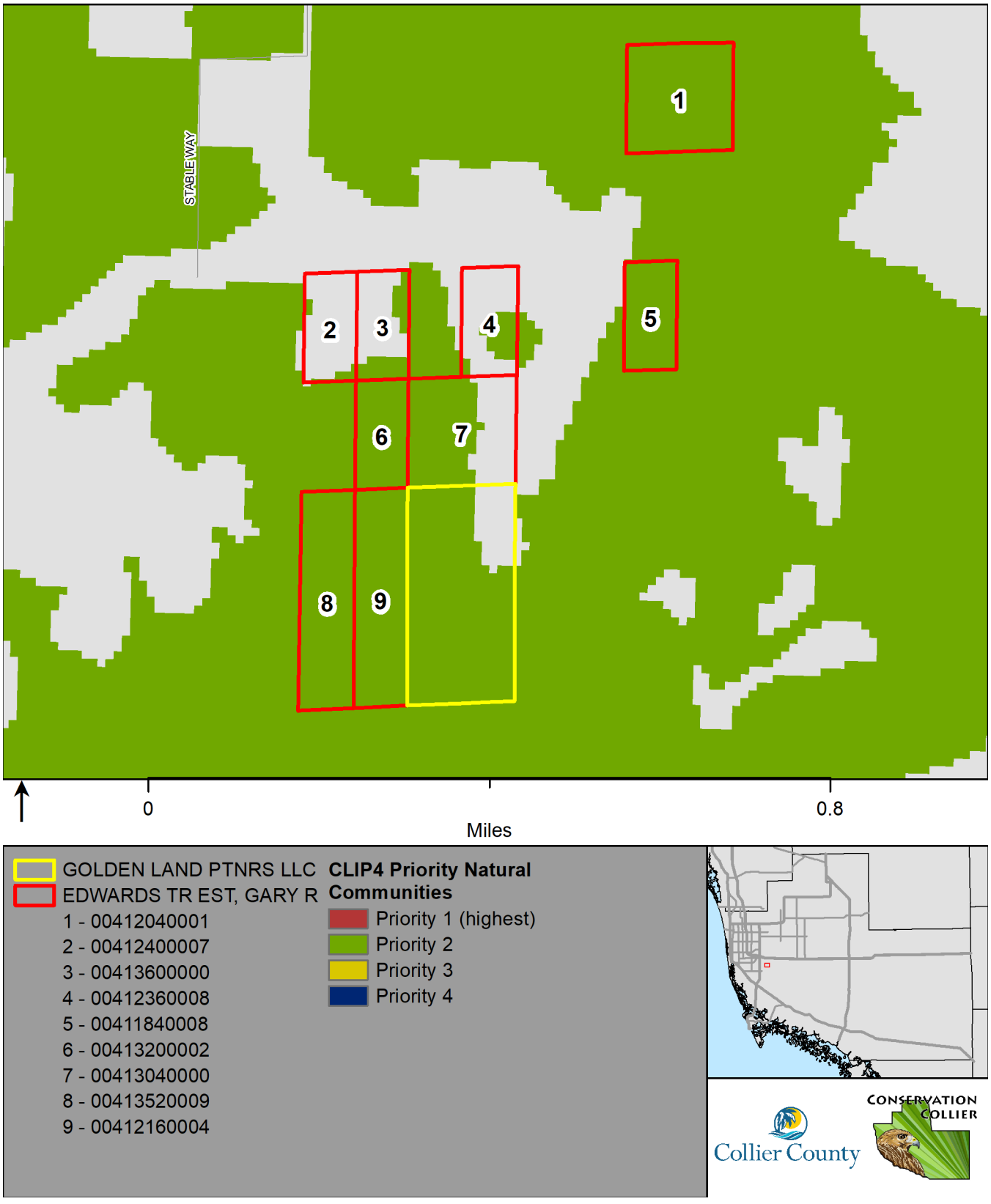


Figure 4 - CLIP4 Priority Natural Communities

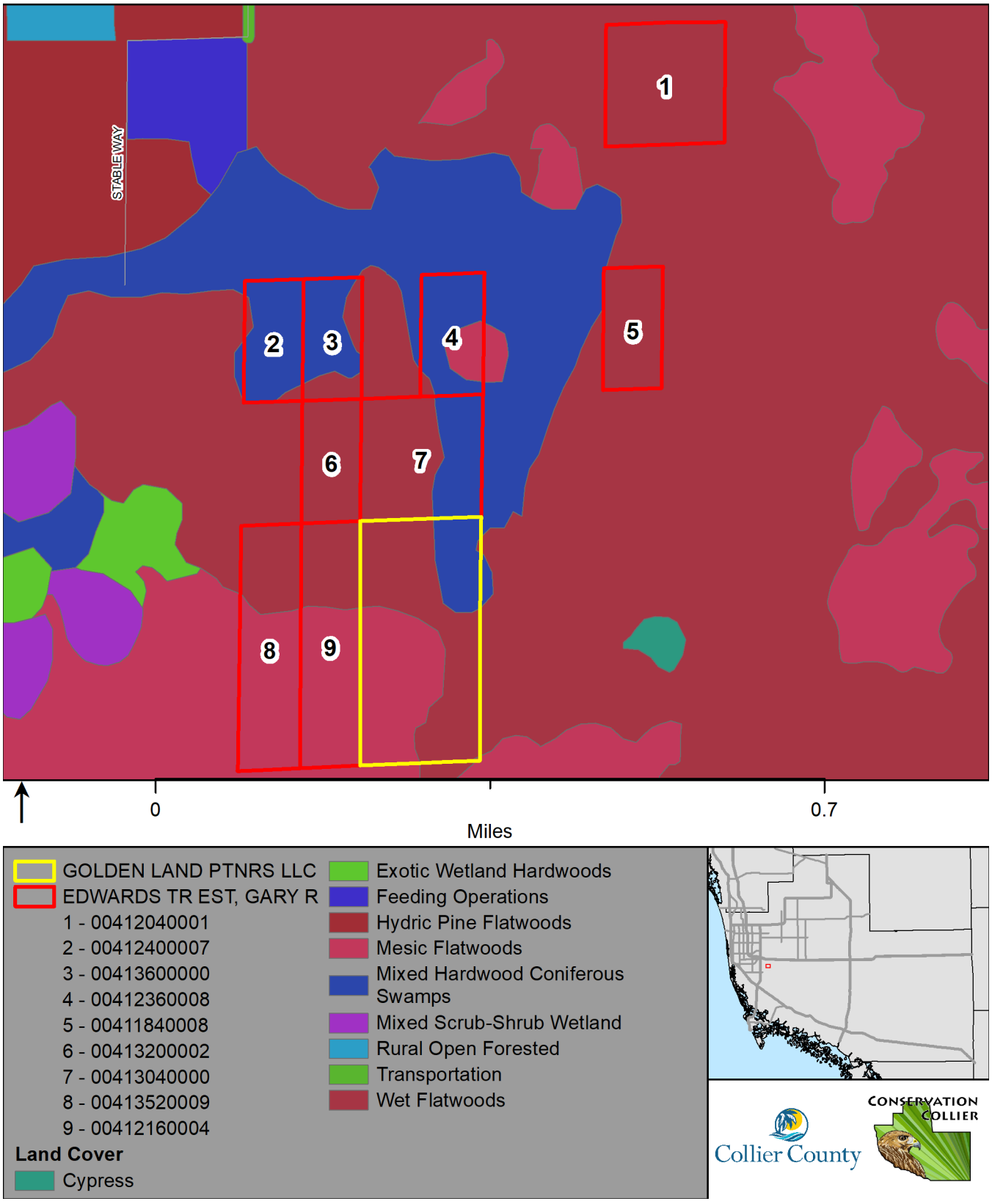


Figure 5 - Florida Cooperative Land Cover Classification System



Figure 6 – Wet Flatwoods



Figure 7 –Mesic flatwood

3.1.2 Wildlife Communities

The parcel is just outside the western edge of Picayune Strand State Forest. Multiple Florida panther (*Puma concolor coryi*) telemetry points have been noted in and around the parcels. The parcels are also within known historic nesting/foraging habitat for the endangered red-cockaded woodpecker.

Table 5 – Listed Wildlife Detected

Common Name	Scientific Name	State Status	Federal Status	Mode of Detection
Florida panther	*Puma concolor coryi*	Endangered	Endangered	Telemetry points

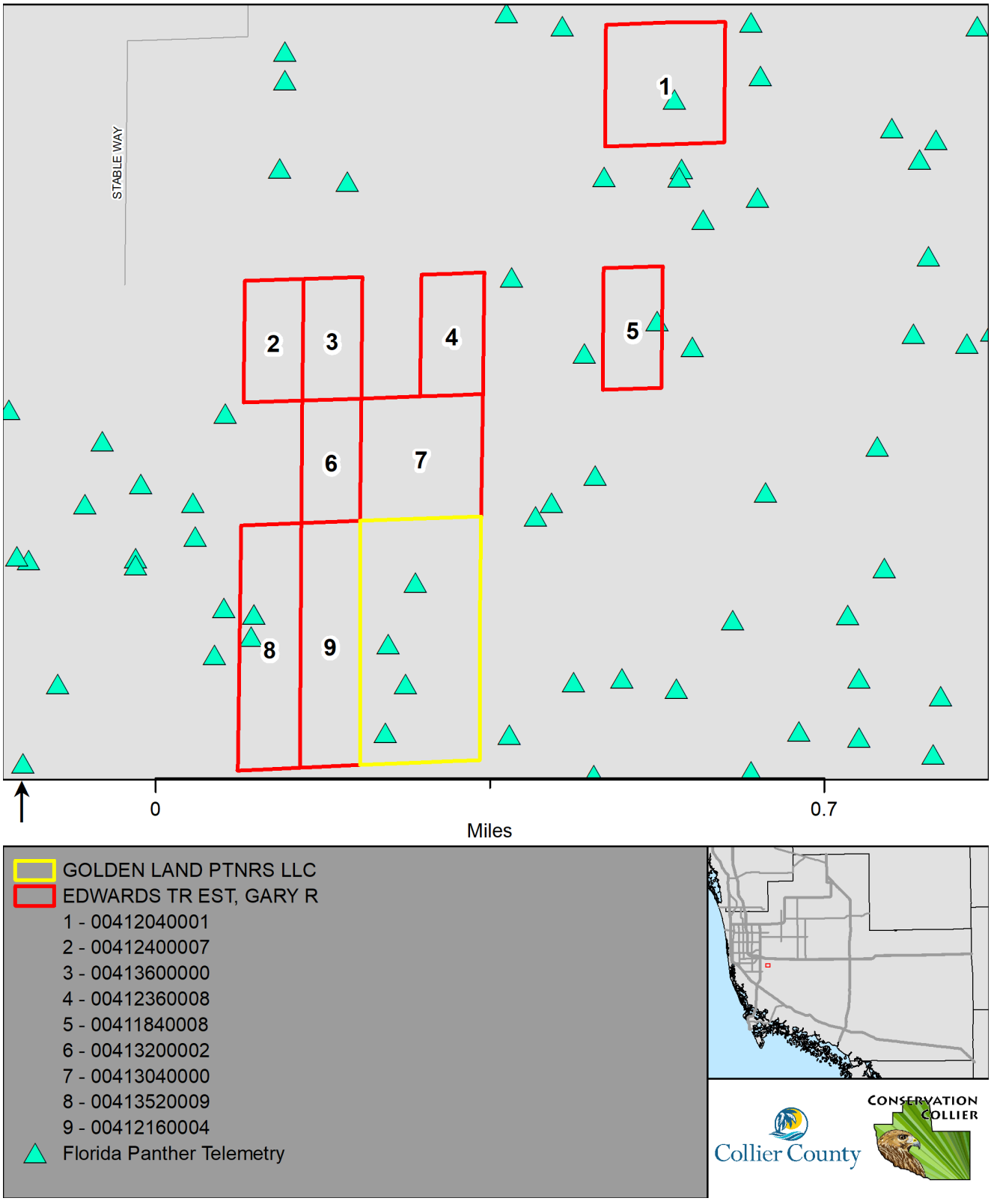


Figure 8 - Wildlife Spatial Data (i.e., telemetry, roosts, etc)

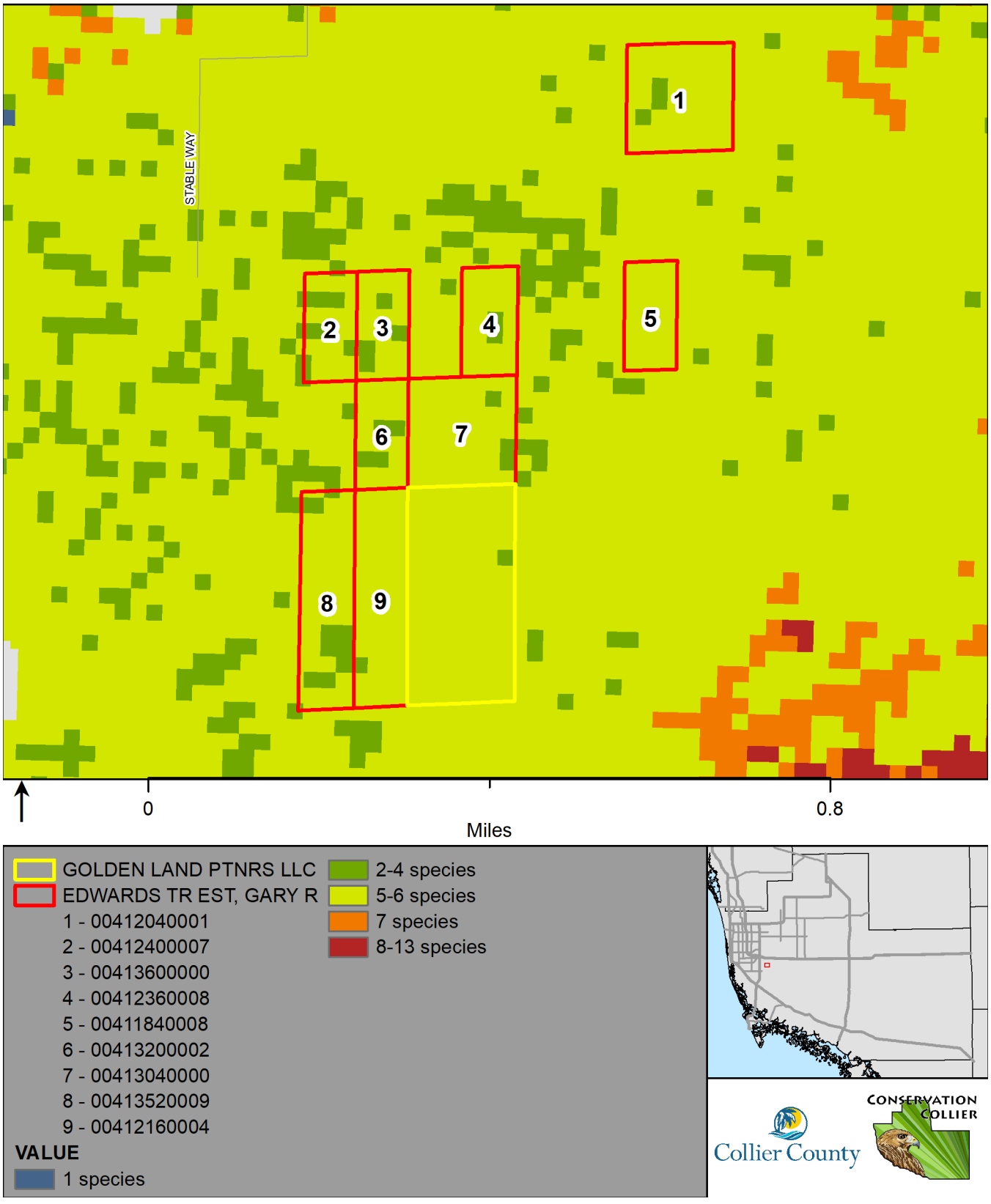


Figure 9 - CLIP4 Potential Habitat Richness

3.1.3 Water Resources

The parcels significantly protect water resources. They are comprised of a majority of wetland plant communities, holds significant amounts of water during the rainy season, and provides important habitat for many wetland dependent species.

Soils data is based on the Soil Survey of Collier County Area, Florida (USDA/NRCS, 1990). Soils mapped on this parcel primarily hydric. Mapped hydric soils include “Pineda Fine Sand, Limestone Substratum” (a poorly drained soil associated with sloughs and poorly defined drainageways). Non-hydric soils include “Boca Fine Sand” and “Oldsmar Fine Sand, Limestone Substratum”. Both these soils are nearly level, poorly drained soils associated with flatwoods.

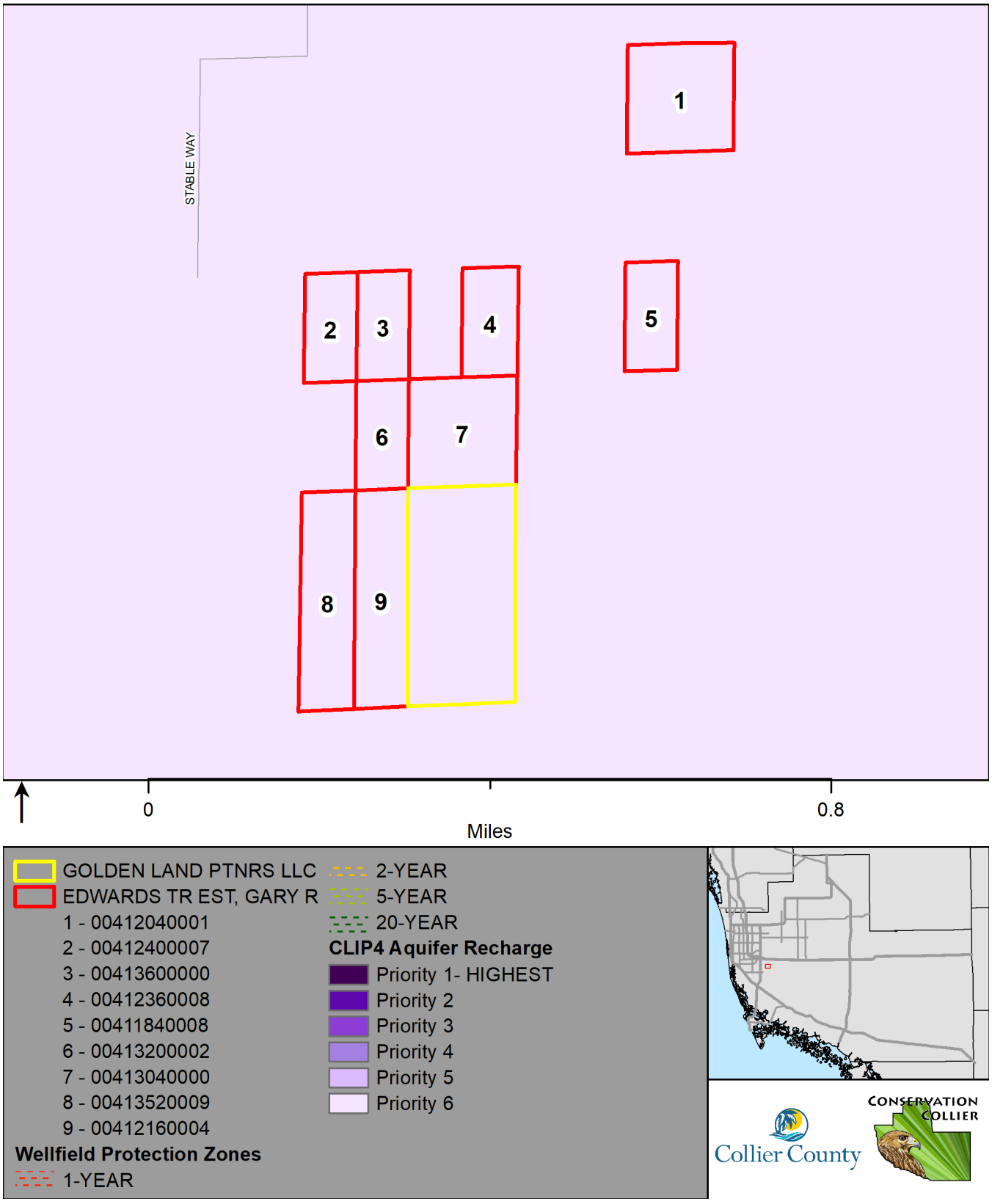


Figure 10 - CLIP Aquifer Recharge Priority and Wellfield Protection Zones

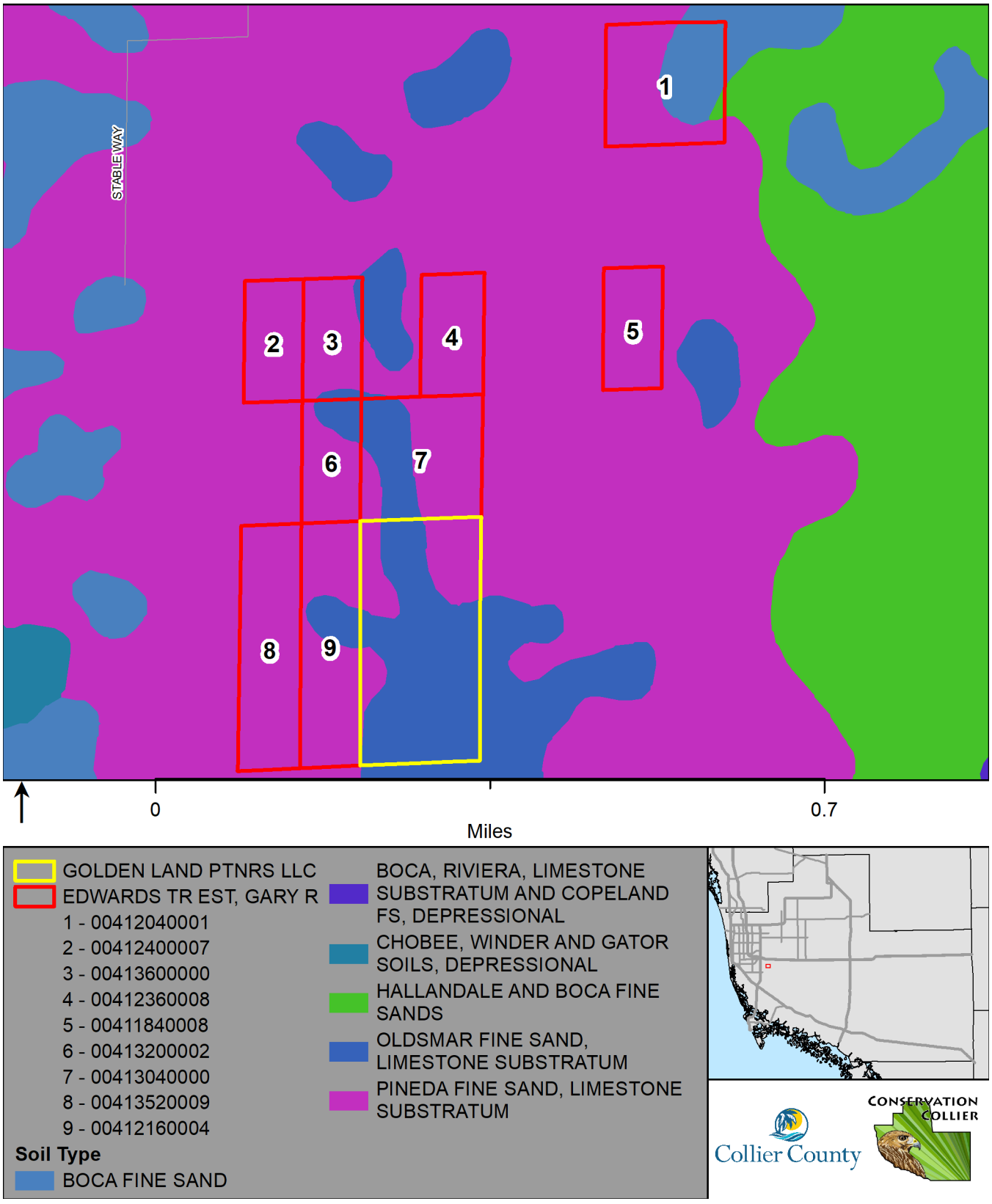


Figure 11 - Collier County Soil Survey

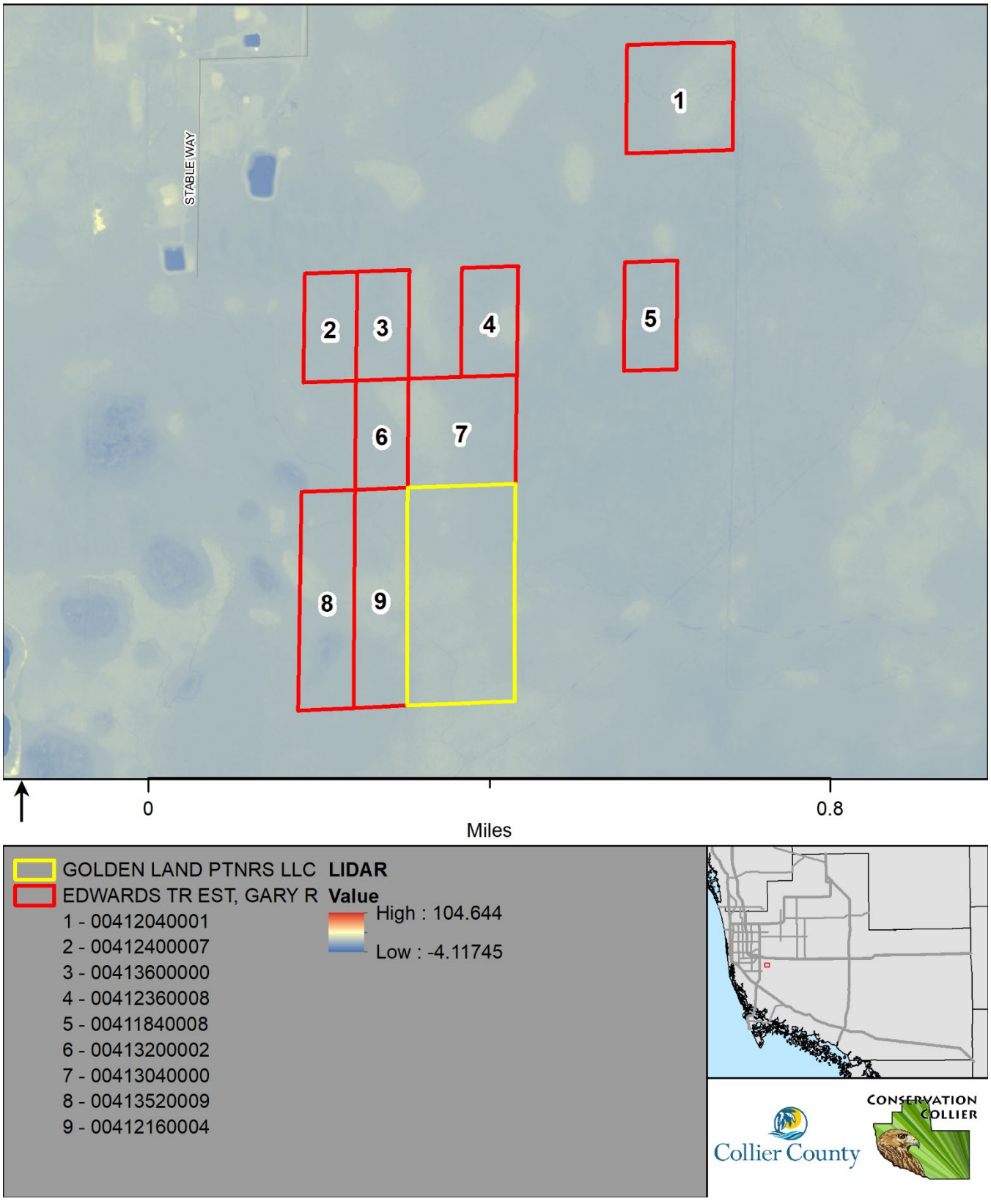


Figure 12 LIDAR Elevation Map

3.1.4 Ecosystem Connectivity

Picayune Strand State Forest lies to the north, east, and south of these parcels – with undeveloped parcels between them and Picayune, with the exception of Edwards Trust parcel 1 and the Golden Land Partners parcel, which are both adjacent to Picayune. Edwards Trust parcels 2, 3, 4, and 8 are also adjacent to private conservation easements to the west and north.

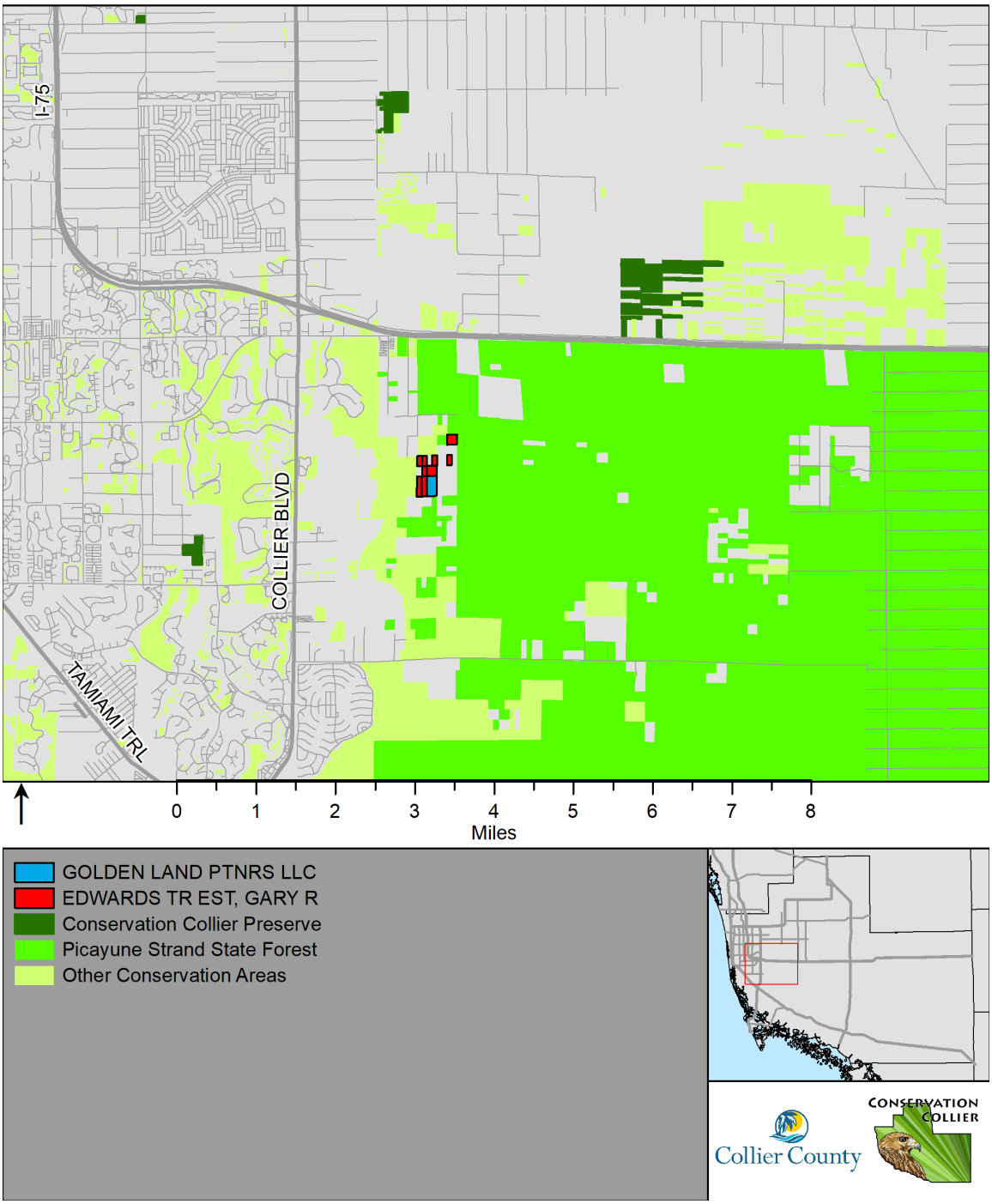


Figure 13 - Conservation Lands

3.2 Human Values

3.2.1 Recreation

These parcels could provide seasonal access for a variety of recreational activities including hunting equestrian, cycling, and hiking. The area is flooded during the wet season.

3.2.2 Accessibility

The parcels are somewhat accessible via the Picayune Strand State Forest yellow trails (Figure 15). The parcels are located approximately 1 mile south of the Picayune trailhead and parking area off Newman Dr. and could be incorporated into the Picayune trail system if Conservation Collier were to acquire four parcels between the yellow trail and the parcels.

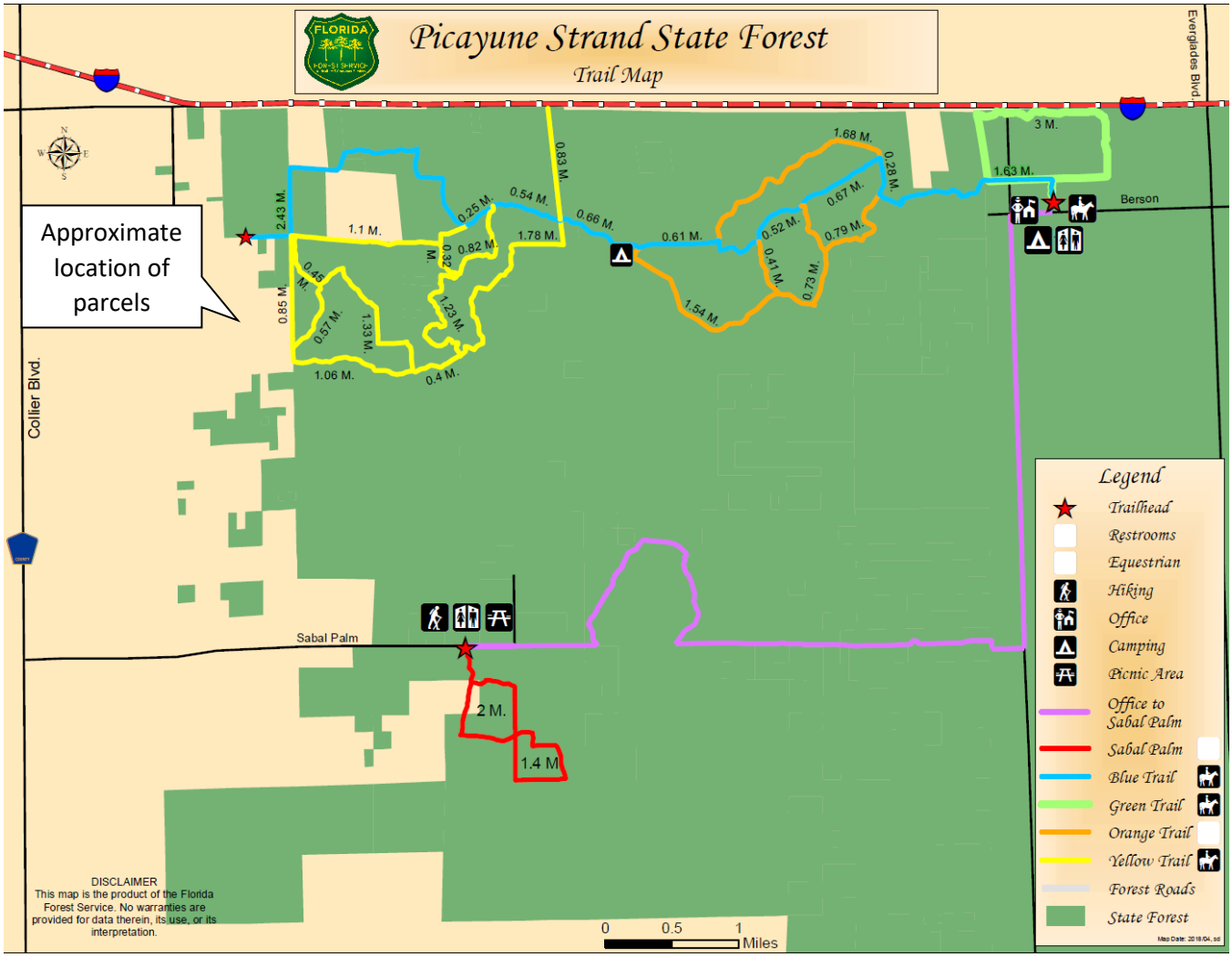


Figure 14 – Picayune Strand State Forest Trail System



Figure 15 – Picayune Strand State Forest Newman Dr. Trailhead and Parking Lot

3.2.3 Aesthetic/Cultural Enhancement

The parcels contain scenic vistas that enhance the aesthetics of Collier County.



Figure 16 – View looking north along trail within Golden Land Partners parcel

3.3 Restoration and Management

3.3.1 Vegetation Management

3.3.1.1 Invasive Vegetation

Exotic plants are present at a total estimated density of 25% - at varying densities throughout. The melaleuca forest, wet flatwoods, and cypress/pine/cabbage palm communities are more heavily infested than other areas of the properties. Primary invasive plants observed were melaleuca, earleaf acacia, and downy rosemyrtle. Other exotic plants present include Brazilian pepper, torpedograss, cogongrass, Caesarweed, and shrubby false buttonweed.

3.3.1.2 Prescribed Fire

The Lee-Williams Fire burned through the parcels in 2017, killing a majority of the slash pine canopy. Prescribed fire would be an important management tool for this property. Thinning of cabbage palms would be necessary within portions of Staff would work with the Florida Forest Service (FFS) to ensure coordinated fire management.

3.3.2 Remediation and Site Security

No site security issues appear to exist within the parcel.

3.3.3 Assistance

Prescribed fire assistance from the FFS and other agencies is anticipated. Staff would also seek to incorporate the property into the Picayune Strand Wildlife Management Area in order to facilitate hunting and coordinate exotic plant and RCW management. Staff would also pursue funding assistance through the FWC Invasive Plant Management Section to offset exotic plant control costs.

3.4 Vulnerability

3.4.1 Zoning and Land Use

The parcels are zoned Agricultural and are Sending Lands within the Rural Fringe Mixed Use District (RFMUD) with a Natural Resource Protection Area Overlay. All the parcels, except for the Golden Land Partners parcel, have an allowable density of 1 unit per 40 acres with a 90% native preservation requirement. The Golden Land Partners parcel has had the first 2 TDRs stripped / 5 acres stripped. Therefore, development within the parcel is not an allowable use.

LDC section 2.03.08.A provide the description of **Sending Lands**:

> RFMU sending lands are those lands that have the highest degree of environmental value and sensitivity and generally include significant wetlands, uplands, and habitat for listed species. RFMU sending lands are the principal target for preservation and conservation. Density may be transferred from RFMU sending lands as provided in section 2.03.07 D.4.c. All NRPAs within the RFMU district are also RFMU sending lands.

LDC section 2.03.08.B provide the description of **NRPAs**:

> The purpose and intent of the Natural Resource Protection Area Overlay District (NRPA) is to: protect endangered or potentially endangered species by directing incompatible land uses

away from their habitats; to identify large, connected, intact, and relatively unfragmented habitats, which may be important for these listed species; and to support State and Federal agencies' efforts to protect endangered or potentially endangered species and their habitats. NRPAs may include major wetland systems and regional flow-ways. **These lands generally should be the focus of any federal, state, County, or private acquisition efforts.** Accordingly, allowable land uses, vegetation preservation standards, development standards, and listed species protection criteria within NRPAs set forth herein are more restrictive than would otherwise be permitted in the underlying zoning district and shall to be applicable in addition to any standards that apply tin the underlying zoning district.

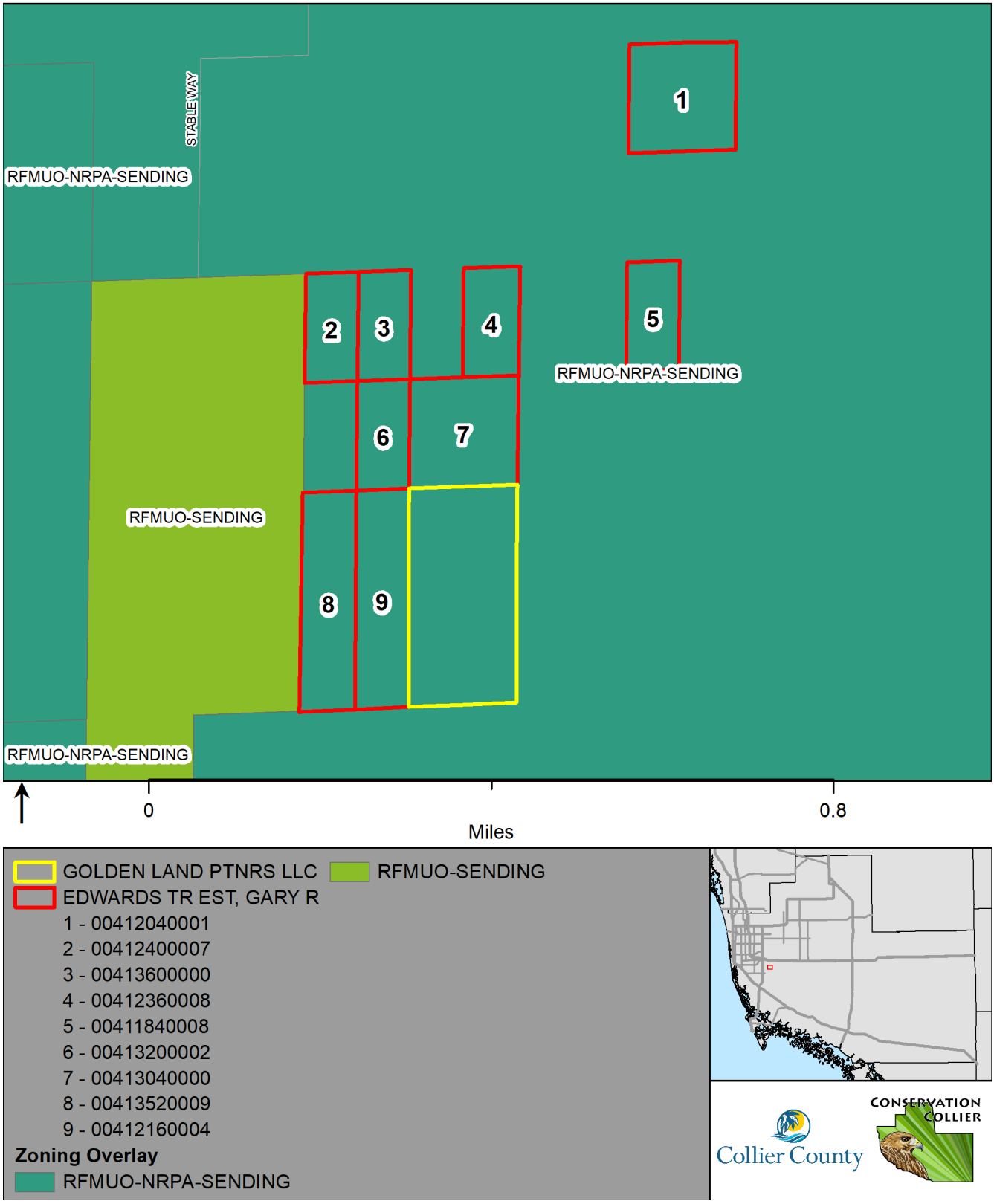


Figure 17 – Zoning Overlay

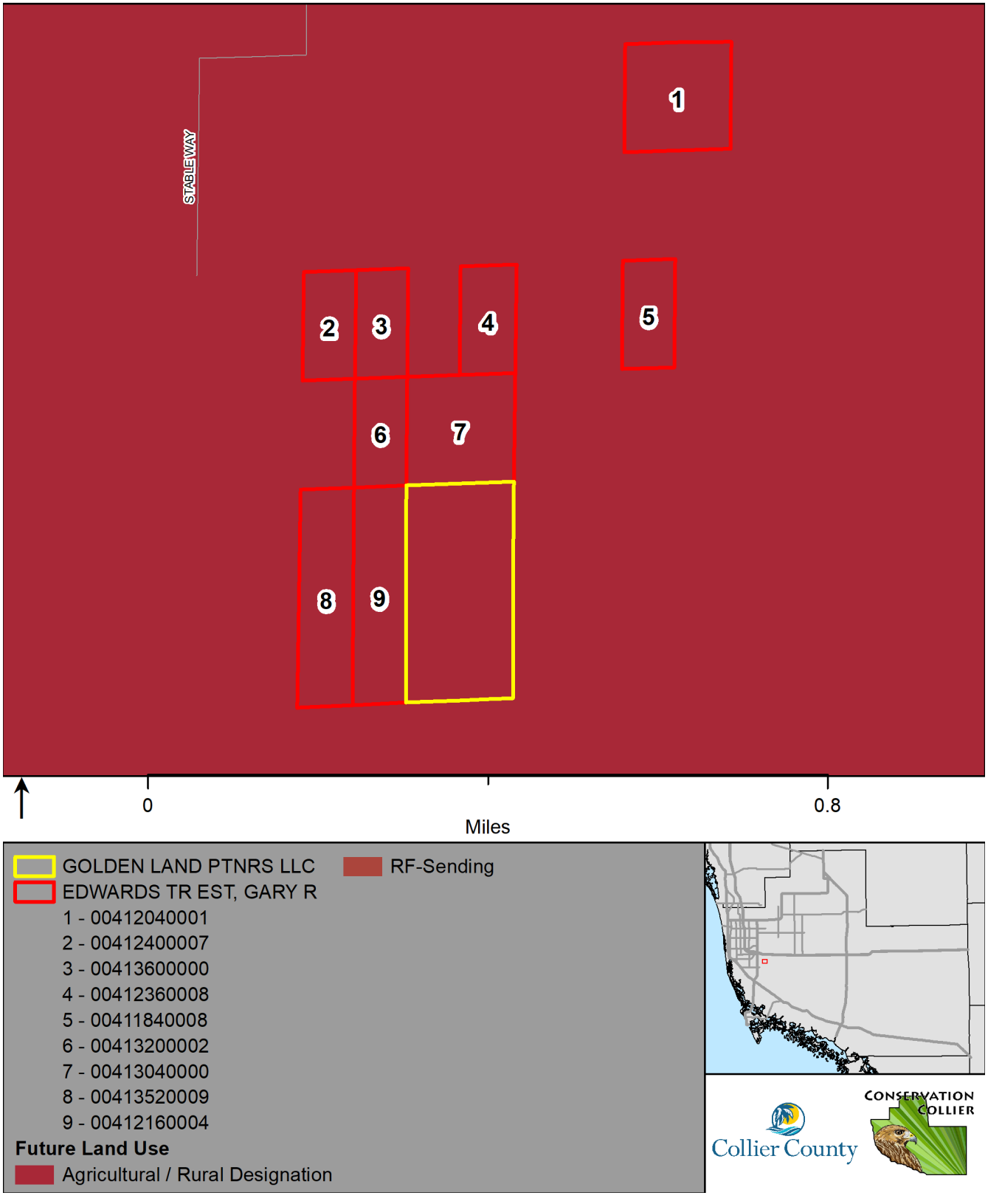


Figure 18 – Future Land Use

3.4.2 Development Plans

None of the parcels are currently planned for development.

4. Acquisition Considerations

Staff would like to bring the following items to the attention of the Advisory Committee during the review of this property. The following items may not have significantly affected the scoring but are worth noting.

These parcels are within the proposed Benfield Road Extension area which is included in the Long Range Transportation Plan (LRTP) as a need from The Lords Way to City Gate Blvd. N. The properties in this location could be impacted by future right-of-way needs or for stormwater ponds to support the right-of-way. If these properties are approved for the A-List, staff will take this information into consideration when planning amenities and public access on the site. Additionally, when applicable, language will be memorialized in the Purchase Agreements and related closing documents to ensure Collier County Transportation will be able to purchase a portion of the properties from Conservation Collier for future right-of-way, if and when needed, at the original per-acre acquisition cost.

Edwards Trust Parcels 1 and 6 and the Golden Land Partners parcel are within the state's FL Forever Acquistion Boundary; however, the state is not currently acquiring land within this area of Florida.

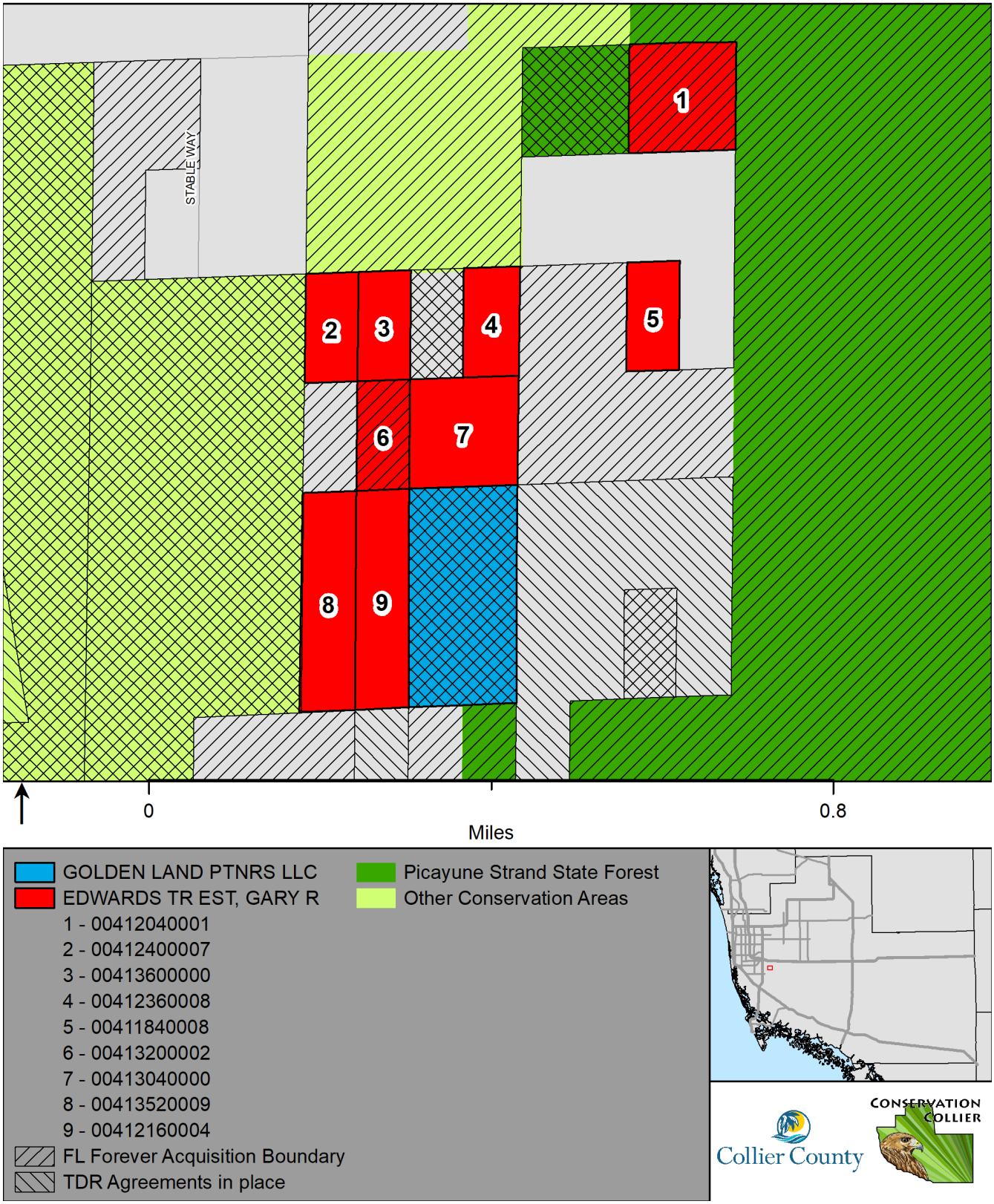


Figure 19 – Florida Forever Boundary and TDR Agreements

5. Management Needs and Costs

Table 6 - Estimated Costs of Site Remediation, Improvements, and Management

Management Element	Initial Cost	Annual Recurring Cost	Comments
Invasive Vegetation Removal	$72,250	$12,750	Initial assumes $850/acre; recurring assumes $150/acre
Cabbage Palm Treatment	$24,000	n/a	Assumes $400/acre for 60 acres
TOTAL	**$96,250**	**$12,750**	

6. Potential for Matching Funds

The primary partnering agencies for conservation acquisitions, and those identified in the ordinance are the Florida Communities Trust (FCT) and The Florida Forever Program. The following highlights potential for partnering funds, as communicated by agency staff.

Florida Communities Trust - Parks and Open Space Florida Forever grant program: The FCT Parks and Open Space Florida Forever grant program provides grant funds to local governments and nonprofit organizations to acquire conservation lands, urban open spaces, parks and greenways. Application for this program is typically made for pre-acquired sites up to two years from the time of acquisition. The Parks and Open Space Florida Forever grant program assists the Department of Environmental Protection in helping communities meet the challenges of growth, supporting viable community development and protecting natural resources and open space. The program receives 21 percent Florida Forever appropriation.

Florida Forever Program: This parcel is within the Belle Meade Florida Forever Project Area boundary, and state Real Estate Services staff has expressed interest in pursuing the property, depending on owner expectations of process and price. Additionally, the Conservation Collier Program has not been successful in partnering with the Florida Forever Program due to conflicting acquisition policies and issues regarding joint title between the programs.

Additional Funding Sources: There are no additional funding sources known at this time.

7. Secondary Criteria Scoring Form

EDWARDS TRUST

Property Name: Edwards Trust			
Target Protection Mailing Area: N/A			
Folio(s): 00411840008, 00412040001, 00412160004, 00412360008, 00412400007, 00413040000, 00413200002, 00413520009, 00413600000			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**97**	**61**
2 - Human Value	**80**	**33**	**41**
3 - Restoration and Management	**80**	**69**	**86**
4 - Vulnerability	**80**	**27**	**33**
TOTAL SCORE	**400**	**225**	**56**

1 - ECOLOGICAL VALUES (40% of total)	**Possible Points**	**Awarded Points**	**Comments**
1.1 VEGETATIVE COMMUNITIES	**200**	**110**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60	60	Mesic and hydric flatwoods
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20	20	mesic hammock, mesic and hydric flatwoods
b. Parcel has ≤ 2 CLC native plant communities	10		
c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		

c. Parcel has ≤ 2 CLC listed plant species	10		
d. Parcel has 0 CLC listed plant species	0	0	
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40		
c. 25 - 50% infestation	30	30	
d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**100**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80	80	
b. Listed wildlife species documented on adjacent property	60		
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20	20	
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0		
1.3 - WATER RESOURCES	**100**	**30**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15		
d. Wetlands exist on site	10	10	
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	

c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**125**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75	75	65 acres
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15		
e. Parcel is < 10 acres	0		
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50	50	Private CE and Picayune
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25		
c. Parcel is isolated from conservation land	0		
ECOLOGICAL VALUES TOTAL POINTS	**600**	**365**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**97**	

2 - HUMAN VALUES (20%)	Possible Points	Awarded Points	Comments
2.1 - RECREATION	**120**	**80**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20	20	
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20	20	
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		
2.2 - ACCESSIBILITY	**120**	**30**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20		
b. Parcel accessible for land-based recreation seasonally	10	10	
c. Parcel is inaccessible for land-based recreation	0		
2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50		
b. Public access via unpaved road	30		
c. Public access via private road	20		

d. No public access	0	0	
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20	20	
c. Street parking available	10		
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**5**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5	5	
c. Frontage enhances aesthetics of public thoroughfare	10		
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**115**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**33**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**95**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Exotics and cabbage palms
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		
3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	

b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0		
3.2 - REMEDIATION AND SITE SECURITY	**50**	**50**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50	50	
b. Moderate site remediation or human conflict issues predicted (Please describe)	20		
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**5**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5	5	
b. Management assistance by other entity unlikely	0		
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**150**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**69**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**55**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100		
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50	50	
d. Zoning favors stewardship or conservation	0		
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25		
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5	5	
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**5**	
4.2.1 - Development plans (Select the highest score)			
a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	

4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5	5	
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**60**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**27**	

GOLDEN LAND PARTNERS

Property Name: Golden Land Partners			
Target Protection Mailing Area: N/A			
Folio(s): 00412200003			
Secondary Criteria Scoring	**Possible Points**	**Awarded Points**	**Percentage**
1 - Ecological Value	**160**	**81**	**51**
2 - Human Value	**80**	**33**	**41**
3 - Restoration and Management	**80**	**69**	**86**
4 - Vulnerability	**80**	**4**	**6**
TOTAL SCORE	**400**	**187**	**47**

1 - ECOLOGICAL VALUES (40% of total)	Possible Points	Awarded Points	Comments
1.1 VEGETATIVE COMMUNITIES	**200**	**110**	
1.1.1 - Priority natural communities (Select highest score)			
a. Parcel contains CLIP4 Priority 1 communities (1130 - Rockland Hammock, 1210 - Scrub, 1213 - Sand Pine Scrub, 1214 - Coastal Scrub, 1312 - Scrubby Flatwoods, 1610 - Beach Dune, 1620 - Coastal Berm, 1630 - Coastal Grasslands, 1640 - Coastal Strand, or 1650 - Maritime Hammock)	100		
b. Parcel contains CLIP4 Priority 2 communities (22211 - Hydric Pine Flatwoods, 2221 - Wet Flatwoods, or 1311 - Mesic Flatwoods)	60	60	Mesic and Hydric Flatwoods
c. Parcel contains CLIP4 Priority 3 communities (5250 - Mangrove Swamp, or 5240 - Salt Marsh)	50		
d. Parcel contains CLIP4 Priority 4 communities (5250 - Mangrove Swamp)	25		
1.1.2 - Plant community diversity (Select the highest score)			
a. Parcel has ≥ 3 CLC native plant communities (Florida Cooperative Land Cover Classification System native plant communities)	20		
b. Parcel has ≤ 2 CLC native plant communities	10	10	

c. Parcel has 0 CLC native plant communities	0		
1.1.3 - Listed plant species (excluding commercially exploited species) (Select the highest score)			
a. Parcel has ≥5 CLC listed plant species	30		
b. Parcel has 3-4 CLC listed plant species	20		
c. Parcel has ≤ 2 CLC listed plant species	10		
d. Parcel has 0 CLC listed plant species	0	0	
1.1.4 - Invasive Plant Infestation (Select highest score)			
a. 0 - 10% infestation	50		
b. 10 - 25% infestation	40	40	
c. 25 - 50% infestation	30		
d. 50 - 75% infestation	20		
e. ≥75% infestation	10		
1.2 - WILDLIFE COMMUNITIES	**100**	**100**	
1.2.1 - Listed wildlife species (Select the highest score)			
a. Listed wildlife species documented on the parcel	80	80	FL panther
b. Listed wildlife species documented on adjacent property	60		
c CLIP Potential Habitat Richness ≥5 species	40		
d. No listed wildlife documented near parcel	0		
1.2.2 - Significant wildlife habitat (Rookeries, roosts, denning sites, nesting grounds, high population densities, etc) (Select highest score)			
a. Parcel protects significant wildlife habitat (Please describe)	20	20	20 acres adjacent to Picayune
b. Parcel enhances adjacent to significant wildlife habitat (Please describe)	10		
c. Parcel does not enhance significant wildlife habitat	0		
1.3 - WATER RESOURCES	**100**	**30**	
1.3.1 - Aquifer recharge (Select the highest score)			
a. Parcel is located within a wellfield protection zone or within a CLIP4 Aquifer Recharge Priority 1 area	40		
b. Parcel is located within a CLIP4 Aquifer Recharge Priority 2 or 3 area	30		
c. Parcel is located within a CLIP4 Aquifer Recharge Priority 4 or 5 area	20		
d. Parcel is located within a CLIP4 Aquifer Recharge Priority 6 area	0	0	
1.3.2 - Surface Water Protection (Select the highest score)			
a. Parcel is contiguous with and provides buffering for an Outstanding Florida Waterbody	30		
b. Parcel is contiguous with and provides buffering for a creek, river, lake, canal or other surface water body	20		
c. Parcel is contiguous with and provides buffering for an identified flowway	15		

d. Wetlands exist on site	10	10	
e. Parcel does not provide opportunities for surface water quality enhancement	0		
1.3.3 - Floodplain Management (Select all that apply)			
a. Parcel has depressional or slough soils	10	10	
b. Parcel has known history of flooding and is likely to provide onsite water attenuation	10	10	
c. Parcel provides storm surge buffering	10		
d. Parcel does not provide floodplain management benefits	0		
1.4 - ECOSYSTEM CONNECTIVITY	**200**	**65**	
1.4.1 - Acreage (Select Highest Score)			
a. Parcel is ≥ 300 acres	150		
b. Parcel is ≥ 100 acres	100		
b. Parcel is ≥ 50 acres	75		
c. Parcel is ≥ 25 acres	25		
d. Parcel is ≥ 10 acres	15	15	
e. Parcel is < 10 acres	0		
1.4.2 - Connectivity (Select highest score)			
a. Parcel is immediately contiguous with conservation lands	50	50	Picayune
b. Parcel is not immediately contiguous, but parcels between it and nearby conservation lands are undeveloped	25		
c. Parcel is isolated from conservation land	0		
ECOLOGICAL VALUES TOTAL POINTS	**600**	**305**	
ECOLOGICAL VALUES WEIGHTED SCORE (Awarded Points/Possible Points*160)	**160**	**81**	

2 - HUMAN VALUES (20%)	Possible Points	Awarded Points	Comments
2.1 - RECREATION	**120**	**80**	
2.1.1 - Compatible recreation activities (Select all that apply)			
a. Hunting	20	20	
b. Fishing	20		
c. Water-based recreation (paddling, swimming, etc)	20		
d. Biking	20	20	
e. Equestrian	20	20	
f. Passive natural-resource based recreation (Hiking, photography, wildlife watching, environmental education, etc)	20	20	
g. Parcel is incompatible with nature-based recreation	0		
2.2 - ACCESSIBILITY	**120**	**30**	
2.2.1 - Seasonality (Select the highest score)			
a. Parcel accessible for land-based recreation year round	20		
b. Parcel accessible for land-based recreation seasonally	10	10	
c. Parcel is inaccessible for land-based recreation	0		

2.2.2 - Vehicle access (Select the highest score)			
a. Public access via paved road	50		
b. Public access via unpaved road	30		
c. Public access via private road	20		
d. No public access	0	0	
2.2.3 - Parking Availability (Select the highest score)			
a. Minor improvements necessary to provide on-site parking	40		
b. Major improvements necessary to provide on-site parking (Requires site development plan)	25		
b. Public parking available nearby or on adjacent preserve	20	20	
c. Street parking available	10		
d. No public parking available	0		
2.2.4 - Pedestrian access (Select the highest score)			
a. Parcel is easily accessible to pedestrians (within walking distance of housing development)	10		
b. Parcel is not easily accessible to pedestrians	0	0	
2.3 - AESTHETICS/CULTURAL ENHANCEMENT	**40**	**5**	
2.3.1 - Aesthetic/cultural value (Choose all that apply)			
a. Mature/outstanding native vegetation	5		
b. Scenic vistas	5	5	
c. Frontage enhances aesthetics of public thoroughfare	10		
d. Archaeological/historical structures present	15		
e. Other (Please describe)	5		
f. None	0		
HUMAN VALUES TOTAL SCORE	**280**	**115**	
HUMAN VALUES WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**33**	

3 - RESTORATION AND MANAGEMENT (20%)	Possible Points	Awarded Points	Comments
3.1 - VEGETATION MANAGEMENT	**120**	**95**	
3.1.1 - Invasive plant management needs (Select the highest score)			
a. Minimal invasive/nuisance plant management necessary to restore and maintain native plant communities (<30%)	100		
b. Moderate invasive/nuisance plant management necessary to restore and maintain native plant communities (30-65%)	75	75	Invasives and cabbage palms
c. Major invasive/nuisance plant management necessary to restore and maintain native plant communities (>65%)	50		
d. Major invasive/nuisance plant management and replanting necessary to restore and maintain native plant communities (>65%)	25		
e. Restoration of native plant community not feasible	0		

3.1.2 - Prescribed fire necessity and compatibility (Select the highest score)			
a. Parcel contains fire dependent plant communities and is compatible with prescribed fire or parcel does not contain fire dependent plant communities	20	20	
b. Parcel contains fire dependent plant communities and is incompatible with prescribed fire	0		
3.2 - REMEDIATION AND SITE SECURITY	**50**	**50**	
3.2.1 - Site remediation and human conflict potential (Dumping, contamination, trespassing, vandalism, other) (Select the highest score)			
a. Minimal site remediation or human conflict issues predicted	50	50	
b. Moderate site remediation or human conflict issues predicted (Please describe)	20		
c. Major site remediation or human conflict issues predicted (Please describe)	5		
d. Resolving site remediation or human conflict issues not feasible	0		
3.3 - ASSISTANCE	**5**	**5**	
3.4.1 - Management assistance by other entity			
a. Management assistance by other entity likely	5	5	Forestry
b. Management assistance by other entity unlikely	0		
RESTORATION AND MANAGEMENT TOTAL SCORE	**175**	**150**	
RESTORATION AND MANAGEMENT WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**69**	

4 - VULNERABILITY (20%)	Possible Points	Awarded Points	Comments
4.1 - ZONING AND LAND USE	**130**	**5**	
4.1.1 - Zoning and land use designation (Select the highest score)			
a. Zoning allows for Single Family, Multifamily, industrial or commercial	100		
b. Zoning allows for density of no greater than 1 unit per 5 acres	75		
c. Zoning allows for agricultural use /density of no greater than 1 unit per 40 acres	50		
d. Zoning favors stewardship or conservation	0	0	
4.1.2 - Future Land Use Type (Select the highest score)			
a. Parcel designated Urban	30		
b. Parcel designated Estates, Rural Fringe Receiving and Neutral, Agriculture	25		
c. Parcel designated Rural Fringe Sending, Rural Lands Stewardship Area	5	5	
d. Parcel is designated Conservation	0		
4.2 - DEVELOPMENT PLANS	**50**	**5**	
4.2.1 - Development plans (Select the highest score)			

a. Parcel has been approved for development	20		
b. SFWMD and/or USACOE permit has been applied for or SDP application has been submitted	15		
c. Parcel has no current development plans	0	0	
4.2.2 - Site characteristics amenable to development (Select all that apply)			
a. Parcel is primarily upland	10		
b. Parcel is along a major roadway	10		
c. Parcel is >10 acres	5	5	
d. Parcel is within 1 mile of a current or planned commercial or multi-unit residential development	5		
VULNERABILITY TOTAL SCORE	**180**	**10**	
VULNERABILITY WEIGHTED SCORE (Awarded Points/Possible Points*80)	**80**	**4**	

8. Additional Site Photos



Eastern Boundary of Edwards Trust Parcel 1



Edwards Trust Parcel 1



Edwards Trust Parcel 5



Tall melaleuca of Edwards Trust Parcel 5 in background



Picayune Strand State Forest Yellow Trail that leads to parcels



Edwards Trust Mesic Hammock



Area of thicker melaleuca within Wet Flatwoods



Mesic Pine Flatwoods



Transition area between wet and mesic flatwoods



Wet flatwoods



Wet flatwoods showing extent of dead pines



Golden Land Partners



Golden Land Partners

APPENDIX 1 – Critical Lands and Water Identification Maps (CLIP) Definitions

This report makes use of data layers from the Florida Natural Areas Inventory and University of Florida Critical Lands and Waters Identification Project (CLIP4). CLIP4 is a collection of spatial data that identify statewide priorities for a broad range of natural resources in Florida. It was developed through a collaborative effort between the Florida Areas Natural Inventory (FNAI), the University of Florida GeoPlan Center and Center for Landscape Conservation Planning, and the Florida Fish and Wildlife Conservation Commission (FWC). It is used in the Florida Forever Program to evaluate properties for acquisition. CLIP4 is organized into a set of core natural resource data layers which are representative of 5 resource categories: biodiversity, landscapes, surface water, groundwater and marine. The first 3 categories have also been combined into the Aggregated layer, which identifies 5 priority levels for natural resource conservation.

Below is a description of each of the three CLIP4 data layers used in this report.

Figure 4 - CLIP4 Priority Natural Communities

Consists of 12 priority natural community types: upland glades, pine rocklands, seepage slopes, scrub, sandhill, sandhill upland lakes, rockland hammock, coastal uplands, imperiled coastal lakes, dry prairie, upland pine, pine flatwoods, upland hardwood forest, or coastal wetlands. These natural communities are prioritized by a combination of their heritage global status rank (G-rank) and landscape context, based on the Land Use Intensity Index (subset of CLIP Landscape Integrity Index) and FNAI Potential Natural Areas. Priority 1 includes G1-G3 communities with Very High or High landscape context. Priority 2 includes G1-G3 Medium and G4 Very High/High. Priority 3 includes G4 Medium and G5 Very High/High. Priority 5 is G5 Medium.

This data layer was created by FNAI originally to inform the Florida Forever environmental land acquisition program. The natural communities were mapped primarily based on the FNAI/FWC Cooperative Land Cover (CLC) data layer, which is a compilation of best-available land cover data for the entire state. The CLC is based on both remote-sensed (from aerial photography, primarily from water management district FLUCCS data) and ground-truthed (from field surveys on many conservation lands) data.

Figure 9 - Potential Habitat Richness CLIP4 Map

This CLIP version 4.0 data layer is unchanged from CLIP v3.0. FWC Potential Habitat Richness. Because SHCAs do not address species richness, FWC also developed the potential habitat richness layer to identify areas of overlapping vertebrate species habitat. FWC created a statewide potential habitat model for each species included in their analysis. In some cases, only a portion of the potential habitat was ultimately designated as SHCA for each species. The Potential Habitat Richness layer includes the entire potential habitat model for each species and provides a count of the number of species habitat models occurring at each location. The highest number of focal species co-occurring at any location in the model is 13.

Figure 10 - CLIP4 Aquifer Recharge Priority and Wellfield Protection Zones

High priorities indicate high potential for recharge to an underlying aquifer system (typically the Floridan aquifer but could be intermediate or surficial aquifers in some portions of the state). The highest priorities indicate high potential for recharge to springs or public water supplies. This figure also includes Wellfield Protection Zones. Collier County Wellfield Protection Zones are referenced in the Land Development Code and updated in 2010 by Pollution Control and Prevention Department Staff. The public water supply wellfields, identified in section 3.06.06 and permitted by the SFWMD for potable water to withdraw a minimum of 100,000 average gallons per day (GPD), are identified as protected wellfields, around which specific land use and activity (regulated development) shall be regulated under this section.

MINUTES OF THE CONSERVATION COLLIER LAND ACQUISITION ADVISORY COMMITTEE MEETING

Naples, Florida, December 4, 2024

LET IT BE REMEMBERED, the Conservation Collier Land Acquisition Advisory Committee in and for the County of Collier, having conducted business herein, met on this date at 9:00A.M. in REGULAR SESSION at the Growth Management Department Building, 2800 North Horseshoe Drive, Naples Florida with the following members present:

CHAIR: Michele Lenhard
VICE CHAIR: Ron Clark
Gary Bromley
Rhys Watkins
John Courtright
Nick Pearson
Austin Howell (Excused)
Oriany Brito
Christopher Satter

ALSO PRESENT: Summer Araque, Environmental Supervisor, Conservation Collier
Jamie Cook, Director, Development Review Division
Sally Ashkar, Assistant County Attorney
Melissa Hennig, Environmental Specialist, I
Kathlene Drew, Administrative Support Specialist, II
Angel Kelley, Environmental Specialist, I
Matthew Denison, Environmental Manager

1. **Roll Call**
   Chair Lenhard called the meeting to order at 9:00A.M. Roll call was taken and a quorum was established with 7 Members present.

   Ms. Araque introduced new Staff Members Julie Motkowicz, Environmental Specialist II and Victoria Carter Environmental Specialist I.

   A. **Approval of CCLAAC Members attending the meeting remotely**
      All Members were present in the Conference Room

2. **Approval of Agenda**
   Mr. Watkins moved to approve the Agenda. Second by Mr. Pearson. Carried unanimously 7 – 0.

3. **Approval of November 6, 2024 Meeting Minutes**
   Mr. Watkins moved to approve the minutes of the November 6, 2024 meeting as presented. Second by Mr. Satter. Carried unanimously 7 – 0.

4. **Old Business**
   A. **Acquisition Updates** - *Current Acquisition Status report updated monthly in advance of CCLAAC meeting provided as part of meeting packet and under Acquisition News at www.conservationcollier.com* for information purposes. The report will be updated monthly (last updated November 25, 2024) including parcels the County has acquired to date, offers made by the County, pending acquisitions and those properties where the owner withdrew the application.
      1. **Gore Nature Center Status**
         Ms. Araque reported:
         - A full presentation on the status of the property will be provided at the January meeting.
         - Recent activities include building inspections completed by a private party and the County, meetings with facilities management to review maintenance costs associated with the property, etc.
         - An application will be filed with the building department for the change of use from residential to commercial.
         - A conditional use permit will be required to allow for use of the building as a nature center (current uses allowed are educational activities outside the building).
         - Portable toilets will be available on site until a building housing rest room facilities is constructed on the property.
         - The current owner will be utilizing the site in the spring for school field trips.
         - The Purchase agreement is anticipated to be approved by the Board of County Commissioners in January of 2025 with the closing scheduled for June of 2025.

         During Committee discussion it was noted:
         - The building is 1,000 – 1,250 square feet in size and will not be renovated to meet ADA requirements.
         - The proposed restroom facility will be a separate building and meet ADA requirements for access.

Mr. Bromley arrived at 9:17am and a quorum of 8 was obtained

2. **All properties**

Ms. Hennig provided the update noting:
Symphony Properties – Purchase Agreement approved on 10/22; Phase II Environmental testing required.
Williams Farms – Purchase Agreement approved; activities ongoing.
Wildcat – Purchase Agreement not executed yet, upon approval, property will be subdivided as the landowner is only selling half the parcel to the County.
Hendrix House – negotiations continue.
Wildflower Ranch – Offer made, awaiting response from owner.
Santamaria – Application withdrawn by landowner.

5. **New Business**

B. **Annecy-Barfield parcels on Marco Island** *(this item was heard before Item 5.A)*

1. **Naming – proposed "Barfield Burrows"**

Ms. Kelley provided the Memorandum "*Naming of Annecy-Barfield Parcels*" dated December 4, 2024 noting Staff is proposing the name "*Barfield Burrows Preserve.*" Thie name is proposed as the street frontage is Barfield Drive and the property contains numerous Gopher Tortoise and Burrowing Owls burrows.

Mr. Courtright moved recommend the Board of County Commissioners name the Annecy-Barfield parcels "Barfield Burrows Preserve." Second by Mr. Clark. Carried unanimously 8 – 0.

2. **Land Management update**

Ms. Kelley provided an update noting:

- The preserve consists of 4 parcels and harbors a Bald Eagle nest, 20 Gopher Tortoise burrows, migratory birds and Burrowing Owl burrows.
- Two additional properties south of the existing preserve are in the process of being acquired.
- Land management activities on the parcels including exotics removal and debris removal, installation of a temporary fence along Barfield Drive in anticipation of a permanent barrier, public information signage installed, etc. The work occurs outside of Bald Eagle nesting season.
- Future activities include continued exotic removal, provision of a Bald Eagle observation area, wildlife surveys, debris removal, enhancement of native vegetation for the species utilizing the site, etc.

During Committee discussion, it was noted:

- No public access is planned for the preserve.
- The Bald Eagle nest is located on the north side of the property.
- The right of way access through the property will remain for use by Florida Power and Light and the City of Marco Island, however a locked gate will be installed on property to prevent unauthorized access to the preserve.
- The fencing will only be installed on the front of the property and the wildlife will be free to move off the rear and sides of the site onto neighboring parcels.

Speaker

Brad Cornell, Audubon of Florida and Audubon of the Western Everglades noted installation of permanent fencing is needed as approximately 2 dozen Gopher Tortoises have been killed on Barfield Drive. An "Owl Park" is being developed at Mackle Park and a public outreach program may be implemented to encourage adjacent property owners to promote growth of vegetation

utilized by the species. A similar concept should be considered for this preserve given the species utilizing the site.

A. Initial Criteria Screening Reports (ICSRs) and Rankings

1. 1063 Shadowlawn

Ms. Hennig presented the "*Conservation Collier Land Acquisition Program Initial Criteria Screening Report 1063 Shadowlawn.*" The parcel is located on Shadowlawn Drive, 1.89 acres in size, received a score of 201out of 400 and has an assessed value of $2,034,249. The seller will demolish the homes if the property is acquired by the County and is willing to construct a boat dock for access to the waterway adjacent to the property which has access to the Gordon River and Gulf of Mexico. Staff recommends the property be placed on the C-List for acquisition.

During Committee discussion it was noted:

- The site would be better suited as a park, however the Parks and Recreation Department has no interest in the endeavor.
- Letters were sent to adjacent owners to determine their interest in selling the properties with no response.
- Given the composition of the neighborhood, it is unlikely a multi parcel project in the area could be undertaken by the program.

Speaker

Brad Cornell, Audubon of Florida and Audubon of the Western Everglades agreed with Staff's recommendation of placing the property on the C-List for acquisition.

Mr. Clark moved to place the parcel on the C-List for acquisition. Second by Mr. Bromley. Carried unanimously 7 "yes" – 1 "no." Mr. Watkins voted "no."

2. Karlsson – Gordon River Greenway TPMA

Ms. Hennig presented the "*Conservation Collier Land Acquisition Program Initial Criteria Screening Report Karlsson Trust.*" The parcel is in the Gordon River Greenway TPMA, 0.33 acres in size, received a score of 176 out of 400 and has an assessed value of $409,208. She noted:

- The site is compromised with exotic vegetation and construction debris which was disposed on the property years ago and a Phase II environmental study would be required for the site.
- The lands have been permitted by the Army Corps of Engineers and South Florida Water Management District for a home.
- Staff recommends the property be placed on the C-List for acquisition.

During Committee discussion it was noted:

- One benefit is the property is adjacent to the Gordon River Greenway, however the asking price is approximately $1M.
- It may be beneficial to determine if the owner is willing to reduce the price and to remove the construction debris prior to sale to the County.
- A County building permit is on file however has not been issued due to permit fee issues.

Speaker

Brad Cornell, Audubon of Florida and Audubon of the Western Everglades noted the parcel is adjacent to the Gordon River Greenway and it would be advantageous to contact the owner to determine if the price may be reduced and mitigation undertaken at his expense.

Ms. Araque noted Staff could gather additional information regarding the Committee's inquires and report back at a future meeting.
Chair Lenhard polled the Committee with a majority in favor of continuing the item until additional information is available.

Mr. Bromley moved to continue the until Staff obtains more information on the property and reports back to the Committee. Second by Mr. Clark. Carried unanimously 7 "yes" – 1 "no." Mr. Courtright voted "no."

Ms. Araque noted the inquiry will revolve around the owner's willingness to remove the construction debris and if a Committee Member is interested in any additional information, they should contact Staff.

6. **Subcommittee Reports**
   A. **Lands Evaluation & Management** – Chair, Ron Clark – Last meeting June 5, 2024
   No update necessary.

   B. **Outreach** – Chair, John Courtright – Last meeting June 13, 2024
   Mr. Courtright reported:
   - A table will be manned by Staff at the Big Cypress Swamp Heritage Festival on Saturday, December 7th at Big Cypress National Preserve from 10:00am to 3:30pm.
   - A meeting will be scheduled to review the Target Protection Area Mailing letter.

   C. **Ordinance Policy and Rules** – Chair, Michele Lenhard - Last meeting December 18, 2023
   No update necessary.

7. **Coordinator Communications**
   A. **Miscellaneous**
      1. **CCLAAC Terms Expiring**
      Ms. Araque noted Ms. Lenhard and Mr. Watkins terms expire in February of 2025 and any individual wishing to fill the seats should file the necessary applications by December 23, 2024 to ensure they are heard at the January 2025 meeting where a recommendation may be provided to the Board of County Commissioners.

   B. **BCC Items Related to Conservation Collier**
   Ms. Araque provided the following updates:
      1. **Previously Heard**
         a. 11/12/2024 Purchase Agreements – Panther Walk – Ngo/Hynh/Lieu, Stone & Vikon

      2. **Upcoming**
         a. 12/10/2024 Railhead Scrub Preserve Final Management Plan 10-year update; Extension to the Memorandum of Understanding with the Florida Wildlife Corridor Foundation (FWCF)

         b. 1/14/2024 Purchase Agreements – JOL Property Ventures (Panther Walk Preserve) & Fernandez (Winchester Head Preserve); Cypress Cove Conservancy (Gore Nature Center)

         c. 1/28/2024 Purchase Agreements – HK Investment, Van Cleef (both Marco Island)

8. **Chair/Committee Member Comments**

None

9. Public General Comments

None

10. Staff Comments

None

11. Next Meeting – January 8, 2025

There being no further business for the good of the County, the meeting was adjourned by order of the chair at 10:31AM.

Conservation Collier Land Acquisition Advisory Committee

Michele Lenhard, Chair

These minutes approved by the Committee on 1.8.25 as presented_____ or as amended_____.

COLLIER COUNTY LIBRARY ADVISORY BOARD

ANNUAL MEETING

HEADQUARTERS LIBRARY

January 15, 2025

Call to Order

Nominations and Election of Officers

Other Business

Adjournment

COLLIER COUNTY LIBRARY ADVISORY BOARD
Wednesday, January 15, 2025, 10:45 a.m.
Headquarters Library – Hybrid Meeting
AGENDA

NOTICE: The public is welcome to attend Library Advisory Board meetings. Visitors will be asked to sign in and briefly describe the purpose of their visit. If the visitor is attending to discover more about the workings of the Library Advisory Board, s/he is welcome to stay for the duration of the meeting. If the visitor has a specific purpose, the Chair will recognize the visitor during Public Comments to speak for up to three (3) minutes. Additional time may be granted to the speaker at the discretion of the Chair. Robert's Rules of Order prevails. Silence cell phones and digital devices.

Call to order

1. Grant LAB Member(s) remote attendance *(Motion & Approval)*
2. Introduction of 2025 Library Advisory Board members

Pledge of Allegiance

Approval of Minutes

Awards and Recognitions

1. Library Division Cheers for Peers Recipients November & December
2. County Service Awards and VIP Certificates
    i. Michelle Galicia (SR) - November
    ii. Karen Tibbetts (AD) – November
    iii. Jayasree Gopalan (HQ) - December

Board Reports

1. Report of Officers
2. Report of Committees

Presentations

1. Report of the Friends of the Library
2. Report of the Library Director
    i. General Operations
        a. Facilities & Projects Update
        b. Staffing Update
        c. Programming
        d. Operations & Budget Update

Public Petitions to the Board for Future Consideration

Public Comments on General Topics Related to the Library Division

Unfinished Business

1. Confirmation from County Attorney's Office regarding Board voting

New Business

Public Comments on General Topics Related to the Library Division

Adjournment

Collier County Government

Communications, Government & Public Affairs
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Naples, Florida 34112-5746

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December 27, 2024

FOR IMMEDIATE RELEASE

Notice of Hybrid Remote Public Meeting
Collier County Library Advisory Board – Annual Meeting
Collier County, Florida

Wednesday, January 15, 2025
10:30 a.m.

Notice is hereby given that the **Collier County Library Advisory Board** will meet on **Wednesday, January 15,** at **10:30 a.m.** for their annual meeting, at which time an election of officers will be held. Their regular meeting with follow. This will be a Hybrid Remote meeting and it will be held at the Headquarters Library Sugden Theater located at 2385 Orange Blossom Drive, Naples. Some of the Board Members may be appearing remotely, with staff present in person. The public may attend either remotely or in person.

Individuals who would like to participate in person must complete and submit a speaker form prior to the beginning of the discussion about the item. Individuals who would like to participate remotely must complete and submit the online speaker registration form prior to the beginning of the meeting.

Individuals who would like to participate remotely, should contact Karen Tibbetts via email at Karen.Tibbetts@colliercountyfl.gov by 1:00 p.m. on January 14.

Remote participation is provided as a courtesy and is at the user's risk. The County is not responsible for technical issues.

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of those boards, councils or agencies.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Catherine Cowser at (239) 252-7311.

###

Naples, Florida, November 20, 2024

LET IT BE KNOWN that the LIBRARY ADVISORY BOARD met on this date at 10:30 a.m. in the Headquarters Library with the following members present:

CHAIR:	Connie Bettinger – District 3
VICE-CHAIR:	Joy White – District 4 (absent)
SECRETARY:	VACANT – District 1
	Marjorie H. Gagnon – District 5
	Carla Grieve – District 2

ALSO PRESENT:	Catherine Cowser, Library Director
	Karen Tibbetts, Operations Support Specialist I
	Julie Blatt, Manager, Naples Regional Library
	Denise McMahon, Manager, South Regional Library
	Chloe Snider, Manager, Headquarters Library
	Elaine Sutherland, Library Specialist I, Headquarters Library
	Cindy Ruddy, FOL President
	Katherine Albers, LAB member candidate, District 2
	Jennifer Ashford, LAB member candidate, District 2
	Rebeca Seitz, LAB member candidate, District 1

CALL TO ORDER

1) **Grant LAB Member remote attendance** *(Motion & Approval)*
   - Quorum was met for this meeting and was directed by Ms. Bettinger. No motion or approval for remote attendance was necessary.

PLEDGE OF ALLEGIANCE

APPROVAL OF MINUTES

Ms. Bettinger asked for approval of the meeting minutes of October 16, 2024. Mrs. Grieve moved to approve the minutes as written. Mrs. Gagnon seconded, and the motion was carried unanimously.

Awards and Recognitions

1) **Library Division Cheers for Peers Recipients for October**
   - Copies of the October Cheers for Peers recipients were provided to LAB members.
   - Mrs. Grieve asked if an example could be given for this recognition.
   - Mrs. McMahon stated that recently, one of her staff was out on extended leave, and another staff member volunteered to adjust their schedule to accommodate doing the tasks during their absence.
   - Mrs. Cowser stated that many staff are recognized for volunteering to assist at Library Outreaches.
2) **County Service Awards and VIP Certificates**
   - Mrs. Cowser presented Julie Blatt, Naples Regional Library Manager with a VIP award.
   - Mrs. Cowser stated that a former Library staff member was recognized on November 12 for 20 years of County service. Danielle Sanchez had worked for the Library for 18 of those years at the South Regional and East Naples Branch Libraries.

BOARD REPORTS

1) Report of Officers

- Ms. Bettinger reported that during a recent fire commission meeting that she attended, the vote a board member who remoted into the meeting made on a motion did not count. She was curious if this would be the same for LAB member who may either remote into a meeting by phone or Zoom
- Ms. Tibbetts will reach out to the County Attorney's Office for clarification.

2) Report of Committees

- Ms. Bettinger reported that the Library Advisory Board Membership Committee met on November 12 to interview candidates for the upcoming vacancies/term expirations.

PRESENTATIONS

1) Report of the Friends of the Library (FOL)

- Mrs. Ruddy presented the FOL report.
- She reported that the first of the two Spotlight Series events featuring Chanel Cleeton was held at the Norris Center on November 7 and was a complete sell-out.
- This is their most profitable series, as no food or parking are included, and the cost of the venue is low.
- To date, over 100 of the 200 available seats have been sold for the next and final event featuring Stephanie Dray on April 3.
- The Patti DeGroot Signature Series is off and running with the first event yesterday. Nancy Maxwell presented *Kaiser Wilhelm II* at the Naples Regional Library.
- Both sessions were sold out with close to 100 seats reserved.
- The FOL's second board meeting was held on Monday, November 18, and some revelations were experienced during the meeting.
    - To date, there are over 100 people on the waiting list for the nonfiction series. This event is already at the Hilton's seating capacity of 300.
    - The pavilion (tent) used at the Ritz-Carlton for the Nick Linn Lecture Series is larger than last year and will allow for another row of tables or more room for displays.
- An ad hoc committee, chaired by Patty Reed, has been created to review how the FOL can satisfy the desire for their product with their members and the public.
- The next Patti DeGroot Signature Series will be held on Tuesday, December 10 at 10am and 1pm at the Headquarters Library. Anette Isaacs will present: *Frohe Weihnachten: Unwrapping the Charms of German Christmas Traditions.*
- The next FOL Board meeting is scheduled for Friday, December 13 at the Rees Room in the Naples Regional Library at 2pm. The public is always invited.
- Mrs. Ruddy stated that the FOL Finance Committee approved the two requests to renovate the Rees art area and fund the after-school program at the Golden Gate Branch Library.

2) Report of the Library Director

a) General Operations

i. Facilities & Projects Update

- Mrs. Cowser stated that the following projects are in the works:
    - Headquarters – Replace some windows
    - Headquarters – Replace flooring in circulation area

- Headquarters – New iPad desk & computer desk in the children's room
- Estates – Replace chiller, Dec. 7 (will save on utility bill)
  A press release has been posted for the closure of EB on Dec. 7
  The location of the chiller is near the front entrance and book drop
  No materials will be due Friday-Monday at this location
- Estates – Replace carpet in children's & story time areas
  The room will be closed to remove shelves and books
- Immokalee – Three more iPads and computer desk in children's room
- Immokalee – New shelves funded by FOL

- Mrs. Cowser stated that she, Mrs. McMahon, Mr. Etzel and Mr. Meyer attended the FOL meeting on Monday to discuss ideas, budget, and determine what items their finance committee would consider to fund.
- She reported that the Immokalee Branch Library will be looking into improving their space to create more quiet space.
- Mrs. Cowser stated that the Naples Regional Library will be looking into a new sound system for the Rees Room.
- She reported that during the recent FOL meeting, it was difficult for some attendees to hear parts of the meeting.
- Mrs. Ruddy added that some attendees at the recent Patti DeGroot Signature Series event also mentioned difficulties with the sound system.
- Mrs. Cowser stated that the sound system at the South Regional Library may also need to be updated to a wireless/bluetooth system.

ii. Staffing Update

- Mrs. Cowser stated that the courier position has been posted. Jeff will be taking some vacation in the upcoming weeks.
- John Alexander from Marco Island, and Bryan Watt from South Regional will be helping with deliveries during his absence.
- A full-time Library Specialist I position is being transferred from Golden Gate to Vanderbilt Beach to provide 3.5 FTEs at this location.
- New staff being hired at Headquarters will also assist at Vanderbilt Beach as needed.

iii. Programming

- Mrs. Cowser stated that programming is not yet in full swing; however, staff are working on getting ready for season.
- The Library finished the 80th Anniversary of Smokey the Bear program
  - Smokey the Bear visited some library locations to read to the kids
  - 5,000 books were read; there were 800 participants are working on getting ready for season.
- The Library has scheduled its annual book sale. More information will be presented at the next LAB meeting.
- The Library will have the Reading Reindeer program in December.
  - More information will be on the Library's website and in the County & Library newsletters
  - Most branches will be participating in this program, depending on staffing levels.

iv. Operations & Budget Update

- Mrs. Cowser stated that the FY2025 budget has been approved.
- She added that there should be plenty of funds for utilities.
- The Library is looking into replacing the current PayPal online payment system with TBS Business Solutions.

PUBLIC PETITIONS TO THE BOARD FOR FUTURE CONSIDERATION – None

PUBLIC COMMENTS ON GENERAL TOPICS RELATED TO THE LIBRARY DIVISION – None

UNFINISHED BUSINESS

1) **Selection of Library Advisory Board Members (Districts 1,2,4,5)** ***(Motion)***
   - Ms. Bettinger reported that the LAB Membership Committee met on November 12 to interview candidates for the upcoming vacant/expiring term positions.
   - She reported that the Board is recommending the following candidates to be appointed:
     - District 1 = Rebeca Seitz
     - District 2 = Katherine Albers
     - District 4 = Joy White
     - District 5 = Marjorie Gagnon
   - Mrs. Gagnon moved to approve the candidate selections for the Library Advisory Board seats for Districts 1,2,4 and 5 as presented. Mrs. Grieve seconded, and the motion was carried unanimously.
   - Ms. Bettinger stated that the County Attorney's Office will prepare these recommendations to present to the Board of County Commissioners (BCC) at their December 10 meeting.
   - She added that once the candidates have been officially appointed, they will receive a letter from the BCC.
   - She stated that candidates will need to notify Ms. Tibbetts when they receive their letter so that an orientation meeting can be scheduled.

NEW BUSINESS

2) **2025 Library Advisory Board Meeting Dates/Locations** ***(Motion)***
   - The Library Advisory Board was presented with a draft meeting schedule for 2025, along with the history information of other library locations they've met at.
   - Discussion ensued and the Board decided to meet at the following branches in 2025:
     - February 19, 2025 = Vanderbilt Beach Branch Library
     - June 18, 2025 = Marco Island Branch Library
   - Mrs. Grieve moved to approve the Library Advisory Board to meet at the Vanderbilt Beach Branch Library on February 19, 2025. Mrs. Gagnon seconded, and the motion was carried unanimously.
   - Mrs. Gagnon moved to approve the Library Advisory Board to meet at the Marco Island Branch Library on June 18, 2025. Mrs. Grieve seconded, and the motion was carried unanimously.
   - Ms. Bettinger stated that this item was not on the agenda; however, she reported that today would be the last LAB meeting that board member Mrs. Grieve would be attending, as she is stepping down from her position.
   - Ms. Bettinger presented her with a framed photo of this year's LAB members. She added that in the past, members were presented with a plaque; however, many members mentioned that they would prefer a photograph.
   - Mrs. Grieve has been a member of the Library Advisory Board for 14 years.

- Dr. Hochschild who stepped down from her position with the LAB in September will be presented at a later time with her framed photo in recognition of her 5 years of service.

PUBLIC COMMENTS ON GENERAL TOPICS RELATED TO THE LIBRARY DIVISION – None

ADJOURNMENT
There being no further business to come before the Library Advisory Board, the meeting was adjourned at 11:10 am.

Mrs. Cowser will update LAB members as to the format of the Library Advisory Board meeting scheduled to be held on Wednesday, January 15, 2025, at the Headquarters Library, 2385 Orange Blossom Drive, Naples, FL 34109. 239.252.7311.

Approved by:



Connie Bettinger, Chair
Library Advisory Board

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

December 23, 2024

FOR IMMEDIATE RELEASE

Notice of Public Meeting
Pelican Bay Services Division Board
Collier County, Florida

January 8, 2025
1:30 p.m.

Notice is hereby given that the **Pelican Bay Services Division Board** will meet on **January 8,** at **1:30 p.m.** in the Community Center at Pelican Bay, 8960 Hammock Oak Drive, Naples, Florida.

Individuals who would like to participate must complete and submit a speaker form prior to the beginning of the discussion about the item.

The agenda will be available on the Collier County Government website on the **PBSD webpage.**

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting of those boards, councils or agencies.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless permission for additional time is granted by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call (239) 252-1355.

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PELICAN BAY SERVICES DIVISION
Municipal Services Taxing & Benefit Unit

NOTICE OF PUBLIC MEETING **WEDNESDAY, JANUARY 8, 2025**

THE PELICAN BAY SERVICES DIVISION BOARD WILL MEET AT 1:30 PM ON JANUARY 8 AT THE COMMUNITY CENTER AT PELICAN BAY, 8960 HAMMOCK OAK DRIVE, NAPLES, FLORIDA, 34108.

AGENDA

1. Pledge of Allegiance
2. Roll Call
3. Agenda approval
4. Approval of 12/11/24 Regular Session meeting minutes
5. Audience comments
6. Administrator's Report
    a. Review of the December 31 financials
7. Water Management and Clam Bay Committee Report
8. Chairman's Report
    a. PBSD election cycle (application window Dec. 10 – Jan. 7)
9. Old Business
10. New Business/Miscellaneous Correspondence
11. Adjournment

**indicates possible action items*

ANY PERSON WISHING TO SPEAK ON AN AGENDA ITEM WILL RECEIVE UP TO THREE (3) MINUTES PER ITEM TO ADDRESS THE BOARD. THE BOARD WILL SOLICIT PUBLIC COMMENTS ON SUBJECTS NOT ON THIS AGENDA AND ANY PERSON WISHING TO SPEAK WILL RECEIVE UP TO THREE (3) MINUTES. THE BOARD ENCOURAGES YOU TO SUBMIT YOUR COMMENTS IN WRITING IN ADVANCE OF THE MEETING. ANY PERSON WHO DECIDES TO APPEAL A DECISION OF THIS BOARD WILL NEED A RECORD OF THE PROCEEDING PERTAINING THERETO, AND THEREFORE MAY NEED TO ENSURE THAT A VERBATIM RECORD IS MADE, WHICH INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH THE APPEAL IS TO BE BASED. IF YOU ARE A PERSON WITH A DISABILITY WHO NEEDS AN ACCOMMODATION IN ORDER TO PARTICIPATE IN THIS MEETING YOU ARE ENTITLED TO THE PROVISION OF CERTAIN ASSISTANCE. PLEASE CONTACT THE PELICAN BAY SERVICES DIVISION AT (239) 252-1355.

PELICAN BAY SERVICES DIVISION BOARD REGULAR SESSION
DECEMBER 11, 2024

The Pelican Bay Services Division Board met on Wednesday, December 11, 2024, at 1:30 p.m. at the Community Center at Pelican Bay, 8960 Hammock Oak Drive, Naples, Florida 34108.
In attendance were:

Pelican Bay Services Division Board
Michael Fogg, Chairman
Joe Chicurel, Vice-Chairman
Jack Cullen
Jacob Damouni
Mark Ferland
Peter Griffith *(absent)*
Susan Hamilton
Brad Hildebrandt *(absent)*
Michael Rodburg
Greg Stone
Rick Swider
Michael Weir

Pelican Bay Services Division Staff
Neil Dorrill, Administrator
Dawn Brewer, Ops. Support Spec. II
Chad Coleman, Deputy Director
Darren Duprey, Supervisor – Field I
Dave Greenfield, Supervisor - Field II
Karin Herrmann, Project Manager I
Lisa Jacob, Project Manager II
Barbara Shea, Admin. Support Spec. II

Also Present
Tony D'Errico, Pelican Bay Foundation

APPROVED AGENDA *(AS PRESENTED)*

1. Pledge of Allegiance
2. Roll Call
3. Agenda approval
4. Approval of 11/21/24 Regular Session meeting minutes
5. Audience comments
6. Administrator's report
    a. Capital Projects updates
        i. Hurricane Helene and Milton update
        ii. Clam Pass update
        iii. Operations Facility update
    b. Review of the November 30 financials
7. Chairman's Report
    a. PBSD election cycle (application window Dec. 10 – Jan. 7)
    b. Resiliency Committee update
8. Old Business
9. New Business/Miscellaneous Correspondence
10. Adjournment

ROLL CALL

Mr. Griffith and Mr. Hildebrandt were absent and a quorum was established.

AGENDA APPROVAL

Ms. Hamilton motioned, Mr. Rodburg seconded to approve the agenda as presented. The motion carried unanimously.

APPROVAL OF 11/21/2024 REGULAR SESSION MEETING MINUTES

Ms. Hamilton motioned, Dr. Chicurel seconded to approve the 11/21/2024 regular session meeting minutes as presented. The motion carried unanimously.

AUDIENCE COMMENTS

None

ADMINISTRATOR'S REPORT

HURRICANE HELENE AND MILTON UPDATE

Mr. Dorrill commented that hurricane cleanup work is ongoing and that two contractors have been on site since immediately following Hurricane Milton. He noted that the sand from the emergency replacement dune installed by a FEMA grant (prior to these two hurricanes) got pushed into the dune swale. Mr. Dorrill commented that the area along this drainage swale is heavily forested with mangroves and other unique wetland coastal plants, and unfortunately a great deal of it will be lost. He noted that our biologist has indicated that this vegetation cannot sustain itself when covered with 4-6 feet of sand. Mr. Dorrill commented that we are trying to reclaim as much sand as possible, and return this sand to the beach area.

Mr. Dorrill commented that there is an area of ancient mangrove roots and stumps exposed just offshore between the North Beach and South Beach facilities (as a result of recent hurricanes) which may be hazardous to swimmers. He noted that long-reach excavators have been working on removing these hazards. Mr. Dorrill commented that the County's Coastal Zone Management Dept. is aware of this area, and that we have asked them to include an evaluation of this area as part of their 2025 beach renourishment project survey. He noted that other than this area, our Pelican Bay beaches are in pretty good shape. Mr. Stone commented that the ancient mangrove roots and stumps are exposed just offshore, in front of the Marker 36 Facility.

CLAM PASS UPDATE

Mr. Dorrill reported that on Friday, staff and PBSD environmental consultants met with Seagate residents for a courtesy briefing on the history of the Clam Bay Management Plan, the related permits, and the best path forward. He noted that any changes/updates to the management plan shall be requested through an amendment to a long-range permit. Mr. Dorrill commented that the November tide ratios were extremely high at almost .8, showing very good flushing. He noted that an expected cold front today may push the existing spit back towards the park area.

Mr. Dorrill commented that a bathymetric survey of Clam Pass is expected to be completed before Christmas. He explained that once the bathymetric survey is completed and the accumulation of sand is measured in Sections A, B, And C, a hydraulic dredge may be planned and scheduled to be completed before turtle nesting season in 2025. Mr. Dorrill commented that every 3-4 years a hydraulic dredge is necessary to remove excess sand from Section C. He noted that the TDC will fund this dredging project, and that in the past, the Pelican Bay Foundation has reimbursed the County for sand placed on PB beaches as part of a project.

OPERATIONS FACILITY UPDATE

Mr. Dorrill commented that interior construction photos of our Operations Facility Building project at the 6200 Watergate Way site were included in the agenda packet. He noted that work by our local contractor, Heatherwood Construction, is proceeding well and that internal framing is almost complete. Mr. Coleman commented that a County Project Manager is overseeing this project and that County inspections will occur as each step of the construction process is completed (a CEI engineer was not required for this project.) Mr. Dorrill commented that a staff Christmas lunch was held last Friday in our temporary trailer, and noted that we have a 91-year-old employee who has been a hard-working member of our temporary work staff for over 10 years.

REVIEW OF THE NOVEMBER 30 FINANCIALS

Mr. Dorrill reviewed the Nov. 30 financial statements and discussed highlights including, (1) $10 million in cash on hand, split among our general operating fund and our capital fund, (2) $5.3 million in project funds, (3) $1.5 million in County required reserves, and (4) $1.2 million in November assessments received. Mr. Coleman commented that our Disaster Relief Fund was not reflected on our November financial statements and that he will request that the County Clerk's Office reflect this additional fund on our December financial statements. Mr. Fogg commented that our 9/30/24 carry-forward was $1.8 million which was higher than expected.

UPDATE ON AUDIENCE COMMENTS AT THE 12/10/24 BCC MEETING

Mr. Dorrill reported that a few Seagate residents appeared at the 12/10/24 Board of County Commissioners meeting and spoke under Public Comment to express their concerns over Clam Pass dredging templates (sizing and dimensions) and Clam Bay water quality analyses. He noted that BCC policy is not to "take up" any issue brought up under Public Comment. Mr. Dorrill commented that it is his impression that the BCC will re-evaluate this issue at a further date and expects the County to hold a hearing on this issue sometime in the next month or two.

ADDITIONAL COMMENTS ON THE 12/6/24 MEETING WITH THE SEAGATE COMMUNITY AND SUBSEQUENT BRIEFING WITH COMMISSIONER KOWAL

Mr. Dorrill reported that he met with Commissioner Kowal on 12/6/24, who had requested an overview briefing on Clam Bay and Clam Pass. Commissioner Kowal represents the City of Naples (which includes the Seagate Community).

Mr. Patrick Wack commented that for clarification purposes, the Naples Cay community is part of the Seagate community's efforts relating to Clam Pass/Clam Bay issues.

Mr. Rodburg commented that he attended the 12/6/24 meeting with Seagate residents, PBSD staff, and consultants. He questioned whether we have a comprehensive history of Clam Bay/Clam Pass. Mr. Coleman commented that the November 2014 Clam Bay NRPA Management Plan Final Version 6.5 provides a high-level overview and is available on the PBSD webpage on the County website. Mr. Dorrill commented that there was a subsequent review (completed five years later) entitled, "Clam Pass 2019 Review of Inlet Management" which is also available on the PBSD webpage.

UPDATE ON HURRICANE EFFECTS TO THE MANGROVE FOREST

Mr. Dorrill commented on several areas of extremely stressed mangroves including areas near the Marker 36 Facility and the beach dune swale. He noted that areas which were inundated with sand were killed and cannot be saved. Mr. Dorrill commented that our biological consultant, Earth Tech,

does an annual survey of mangrove health and an annual evaluation of hand-dug channels. He noted that this year, Earth Tech will also look at the stressed mangrove areas near the beach dune swale.

Mr. Coleman commented that Earth Tech Enterprises removed a lot of mangrove stumps (located just offshore in several areas of our PB beach). He noted that it appears that these structures have provided stabilization to our coastline and suggested that they should not all be removed. Mr. Coleman recommended that these areas would benefit by additional sand, to maintain stabilization. He noted that he will reach out to Dr. Dabees to determine whether the County has completed their coastal beach survey. A 2025 beach renourishment project is anticipated. Mr. Coleman noted that any PBSD participation in a County beach renourishment project would be funded by the PBSD.

Mr. Ferland commented that the Ritz has spent two months moving sand back to the beach and estimates that this effort is about 90% complete. Mr. Damouni commented that the Naples Grande Beach Resort Hotel still has a lot of sand underneath their hotel building.

CHAIRMAN'S REPORT

PBSD ELECTION CYCLE

Mr. Fogg commented that the application period for the 2025 PBSD Board Election is now open. He noted that we have one commercial and four residential openings. Mr. Fogg commented that Ms. Hamilton, Mr. Cullen, and Mr. Ferland are not re-applying and he thanked them for their contribution to the PBSD. He noted that Dr. Chicurel and Mr. Rodburg will be submitting applications for an additional term on the PBSD Board. An election will be held if we receive more than four applications for our four residential openings.

RESILIENCY COMMITTEE UPDATE

Mr. Fogg commented that the PBF has formed an ad hoc storm resiliency committee and has asked for a PBSD Board member to participate on this committee. He reported that Mr. Swider has volunteered. Mr. Fogg noted that in order to comply with Florida Sunshine Law, any PBSD Board member who attends a PBF resiliency committee meeting (other than Mr. Swider), may not express his/her opinion at the meeting. Mr. Dorrill commented that any committee work product in possession of Mr. Swider will be considered public record (to comply with Sunshine Law), and that he will obtain clarification on this issue from Ms. Colleen Greene in the County Attorney's Office.

Mr. D'Errico, PBF President, commented that he hopes that there is an acceptable "work around" to comply with Sunshine Law. He noted that PBF ad hoc committees are not obligated to have public meetings, but that the PBF does comply with records requests pertaining to PBF committees. Mr. D'Errico reported that the final charter of the ad hoc storm resiliency committee has been approved by the PBF Board.

Mr. Fogg motioned, Mr. Damouni seconded to appoint Mr. Swider to the Pelican Bay Foundation ad hoc Storm Resiliency Committee. The board agreed by consensus.

AUDIENCE COMMENT

Mr. Bill McCormick, a Bay Colony resident, questioned what entity is responsible for resiliency of the drainage swale behind the Bay Colony beachfront properties. He noted that the swale provides drainage for all of the beachfront buildings and that keeping the swale open is extremely important. Mr. Fogg commented that the PBSD is responsible for the Pelican Bay water management

system, including the swale. Mr. McCormick, as an engineer, commented that he would like to help in finding a cost-effective solution. He commented on the ongoing excavation work to clean out the swale, questioned whether installing a culvert system would solve this problem permanently, and suggested that this may be a good cost-effective permanent solution. Mr. Dorrill commented that he is committed to having our engineers prepare a preliminary estimate of probable cost to include permitting of possible remediation options. Mr. Rodburg commented that this issue will be discussed at a January Water Management & Clam Bay Committee meeting.

OTHER BUSINESS

Mr. Fogg provided a handout entitled, "Coastal Storm Risk Management Feasibility Study: Planning Areas Update," provided by the Collier County Coastal Storm Risk Management Feasibility Study Ad Hoc Committee, which was added to the record. He noted that there is a list of possible remediation alternatives on page 4. Mr. Fogg also commented that the U.S. Army Corps of Engineers will be providing a report on recommended coastal resiliency projects sometime in the Spring of 2025.

Mr. Coleman commented that he reached out to the Sheriff's Dept. regarding extra law enforcement on US 41 along the Pelican Bay corridor, who suggested that we contact the F.H.P. as US 41 is a state road. Mr. Dorrill commented that the PBSD will evaluate the possibility of additional Sheriff's Deputy patrols on US 41, and will obtain an opinion from the County Attorney as to whether this contracted service would be a valid public purpose as US 41 is outside of PB boundaries. Mr. Fogg commented that noise concerns are a major issue from 8 p.m. to 11 p.m. He suggested that the PBF also looks at this issue.

Mr. Ferland commented that the Ritz has recently experienced a huge increase in trespassing by teenagers. Mr. Damouni commented that the Naples Grande is having similar experiences.

Mr. Stone commented that the PBPOA is having their monthly meeting on Jan. 9, which will include a report and discussion of a recent FDOT traffic study report on the Gulf Park Drive/US 41 intersection with an FDOT representative. Mr. Fogg commented that it is not clear if the community is behind the installation of a traffic light at this intersection. He also noted that an additional traffic light at this intersection does meet County criteria, but that the County has indicated that there is no funding available. Dr. Chicurel suggested that in his opinion, the only feasible solution would be to install a quit curb, resembling permanent delineators, in the median which would preclude a vehicle from making a left turn. He commented that he has received mixed messages from the State as to whether this option is feasible, and that he will try to get clarification, prior to the Jan. 9 meeting. Mr. Fogg commented that this issue will be discussed further at the next L&S Committee meeting.

Mr. Fogg thanked staff for all of their efforts in 2024, which included the Sidewalk Project, the Operations Replacement Building Project, and the aftermath of two hurricanes, with no major resident complaints.

ADJOURNMENT

The meeting was adjourned at 2:37 p.m.

_____
Michael Fogg, Chairman

Minutes approved [___] *as presented* OR [___] *as amended* ON [_____] *date*

Pelican Bay Services Division Project Tracking Summary **12/31/2024**

PBSD New Maintenance Facilities (Project 50211)
The main building is progressing and currently, the Contractor is framing and installing windows, and starting to construct drainage facilities for the site. The transformer is being relocated to avoid future conflicts for maintenance.

Sidewalk Improvements (Project 50212)
The Contractor is currently under a "Stop Work Order". Change Order No. 2 was approved by the Board of County Commissioners on 11/12/2024. Staff requested the Contractor's schedule to resume work and are awaiting a response.

Clam Pass
A survey will be conducted imminently that will be used to determine the condition of the Pass. This data will also be used to start the renewal of the U.S. Army Corps of Engineers and Florida Department of Environmental Protection Joint Coastal Permit renewal for maintenance dredging of Clam Pass.

Bay Colony Beach Dune Swale
As a result of Helene (September 26) and Milton (October 9), the dune swale was inundated with an enormous volume of sand that obstructed positive drainage of the entire swale. Earth Tech Environmental and McLeran Enterprises have been working to remove the sand to restore drainage since October 10. Earth Tech Enterprises assisted with knocking down the large piles of swale sand and grading the beach adjacent to the condominiums and mansions. On 12/30/2024, Shenandoah vacuumed and cleaned the pipes located within the drainage easement that immediately discharge into the swale.

Pelican Bay Beach
As a result of Helene and Milton, an enormous volume of sand was pushed onshore. Earth Tech Enterprises extracted the sand from behind both North and South beach facilities to repair and grade the beach in front of these structures. Earth Tech Enterprises will return to do the same between Reference Markers 36 and 40 (the stretch between the north and south beach facilities).

PELICAN BAY
BALANCE SHEET
Dec 31, 2024
(UNAUDITED)

	Operating Fund	Street Lighting	Pelican Bay Landscape, Safety, Lake & Beach Projects	Clam Bay Capital Projects	Assessment Funded Activities	Pelican Bay Financed Capital Projects	
OLD FUND NUMBER	109	778	322	320		323	
	1007000000	1008000000	3041000000	3040000000	Total	3042000000	TOTAL
ASSETS							
Cash and investments	5,927,597.18	552,391.60	6,593,271.78	285,596.04	13,358,856.60	909,597.12	14,268,453.72
Interest receivable	-	-	-	-	-	-	-
Trade receivable, net	-	-	-	-	-	-	-
ROU Lease Receivable-Current	-	-	-	-	-	-	-
Due from other Funds	-	-		-	-	-	-
Due from other governments	840.08	-	29,760.60	-	30,600.68	-	30,600.68
Total assets	5,928,437.26	552,391.60	6,623,032.38	285,596.04	13,389,457.28	909,597.12	14,299,054.40
LIABILITIES AND FUND BALANCE							
Liabilities:							
Accounts payable	40,925.63	792.07	355,052.80	13,785.00	410,555.50	296,412.10	706,967.60
Wages payable	-	-		-	-	-	-
Retainage payable	-		-	-	-	-	-
Due to other Government	-	-	-	-	-	-	-
Deferred Inflows-Leases	(0.01)	-	-	-	(0.01)	-	(0.01)
Commercial Paper Loan	-	-	5,500,000.00	-	5,500,000.00	-	5,500,000.00
Total liabilities	40,925.62	792.07	5,855,052.80	13,785.00	5,910,555.49	296,412.10	6,206,967.59
Fund balances:							
Fund balance	5,887,511.64	551,599.53	767,979.58	271,811.04	7,478,901.79	613,185.02	8,092,086.81
Total liabilities and fund balances	5,928,437.26	552,391.60	6,623,032.38	285,596.04	13,389,457.28	909,597.12	14,299,054.40
	-	-	-	-	-	-	-
Fund Balance at the end of the period	5,887,511.64	551,599.53	767,979.58	271,811.04		613,185.02	
Approved Project Financing Available to Draw						-	
Unspent balance of projects:							
Small projects under $200K	-	-	15,868.91	-		-	
50103-PBSD Signage	-	-	258,487.23	-		-	
50126-Beach Renourishment	-	-	879,775.58	-		-	
50211-PBSD OPS BLD	-	-	2,956,758.69	-		-	
50212-PBSD PH1-SW	-	-	710,977.71	-		-	
50212-PBSD PH2-SW	-	-	-	-		599,763.89	
50272-Streetlight Improvement	-	-	301,660.21	-		-	
51100-Clam Bay Restoration	-	-	-	254,442.95		-	
Total unspent balance of major projects	-	-	5,123,528.33	254,442.95		599,763.89	
Budgeted reserves:							
991000-Reserve for contingencies	184,400.00	11,000.00	-	-		-	
991700-Reserve for disaster relief	700,000.00	-	-	-		-	
992090-Reserve for sinking fund	-	-	-	-		-	
993000-Reserve for capital outlay	129,100.00	28,900.00	-	-		-	
994500-Reserve for future construction and improvement	-	-	-	-		-	
998000-Reserve for cash	475,000.00	40,000.00	-	-		-	
Total budgeted reserves	1,488,500.00	79,900.00	-	-		-	
Budgeted commitments at the end of the period	1,488,500.00	79,900.00	5,123,528.33	254,442.95		599,763.89	
	4,399,011.64	471,699.53	(4,355,548.75)	17,368.09		13,421.13	

Financing Recap:

Funding for current sidewalk program planned	6,500,000.00
Funding reserved for future capital projects	3,500,000.00
Financing Secured	10,000,000.00

This is the difference between interest earned on unspent proceeds and accrued interest paid on the borrowing.

PELICAN BAY
INCOME STATEMENT
OPERATING FUND - 1007000000
Dec 31, 2024
(UNAUDITED)

	Adopted Budget	Amended Budget	Commitments	October	November	December	Total Expenditures	Variance	% Budget Consumed
REVENUES AND CARRYFORWARD									
Special assessments	5,380,000.00	5,380,000.00	-	15,576.85	1,209,353.88	3,231,361.40	4,456,292.13	(923,707.87)	82.8%
FEMA	-	-	-	-	-	-	-	-	#DIV/0!
Interest	53,000.00	53,000.00	-	8,058.29	7,935.55	-	15,993.84	(37,006.16)	30.2%
Miscellaneous	44,500.00	44,500.00	-	-	-	-	-	(44,500.00)	0.0%
Transfers in	34,100.00	34,100.00	-	-	-	-	-	(34,100.00)	0.0%
Negative 5% of estimated revenue	(273,900.00)	(273,900.00)	-	-	-	-	-	273,900.00	
Budgeted carryforward	1,774,800.00	1,832,689.00	-	-	-	-	-	(1,832,689.00)	
Total revenues + carryforward	**7,012,500.00**	**7,070,389.00**	**-**	**23,635.14**	**1,217,289.43**	**3,231,361.40**	**4,472,285.97**	**(2,598,103.03)**	**63.3%**
EXPENDITURES AND RESERVES									
Personal services									
Salaries, taxes and retirement	2,203,209.00	2,203,209.00	-	32,962.08	260,383.02	171,026.83	464,371.93	1,738,837.07	21.1%
Health, dental, life insurance; Short term, lor	471,091.00	471,091.00	471,091.00	-	-	-	-	-	100.0%
Total personal services	2,674,300.00	2,674,300.00	471,091.00	32,962.08	260,383.02	171,026.83	464,371.93	1,738,837.07	**35.0%**
Operating									
182602-Lake & Stormwater Management fie	803,600.00	830,416.00	539,664.76	28,230.19	25,196.16	48,230.26	101,656.61	189,094.63	77.2%
182901-Right of way beautification field	1,780,400.00	1,811,473.00	991,271.86	59,834.73	81,708.38	147,124.92	288,668.03	531,533.11	70.7%
Total operating	2,584,000.00	2,641,889.00	1,530,936.62	88,064.92	106,904.54	195,355.18	390,324.64	720,627.74	**72.7%**
Capital outlay	156,500.00	156,500.00	28,226.66	-	-	-	-	128,273.34	18.0%
Transfers out	148,500.00	896,500.00	-	51,739.29	24,187.08	64,627.23	140,553.60	755,946.40	15.7%
Total expenditures	5,563,300.00	6,369,189.00	2,030,254.28	172,766.29	391,474.64	431,009.24	995,250.17	3,343,684.55	47.5%
Budgeted reserves									
991000-Reserve for contingencies	184,400.00	136,400.00	-	-	-	-	-	136,400.00	
991700-Reserve for disaster relief	700,000.00	-	-	-	-	-	-	-	
993000-Reserve for capital outlay	129,100.00	129,100.00	-	-	-	-	-	129,100.00	
998000-Reserve for cash	475,000.00	475,000.00	-	-	-	-	-	475,000.00	
Total reserves	1,449,200.00	701,200.00	-	-	-	-	-	740,500.00	
Total expenditures + reserves	**7,012,500.00**	**7,070,389.00**	**2,030,254.28**	**172,766.29**	**391,474.64**	**431,009.24**	**995,250.17**	**4,084,184.55**	42.8%
EXCESS OF REVENUE OVER EXPENDITURES	-	-		(149,131.15)	825,814.79	2,800,352.16	3,477,035.80		

2,410,475.84	Carryforward as of 9/30/24
5,887,511.64	Fund Balance as of 12/31/2024
-	

PELICAN BAY
INCOME STATEMENT
STREET LIGHTING - 1008000000
Dec 31, 2024
(UNAUDITED)

	Adopted Budget	Amended Budget	Commitments	October	November	December u	Total Expenditures	Variance	% Budget Consumed
REVENUES AND CARRYFORWARD									
Current Ad Valorem Taxes	879,400.00	879,400.00	-	1,586.79	213,339.29	512,738.38	727,664.46	(151,735.54)	82.7%
Miscellaneous revenue	21,100.00	21,100.00	-	-	-	-	-	(21,100.00)	0.0%
Interest	8,200.00	8,200.00	-	568.60	533.90	-	1,102.50	(7,097.50)	13.4%
Insurance refunds	-	-	-	-	-	-	-	-	#DIV/0!
Negative 5% of estimated revenue	(45,500.00)	(45,500.00)	-	-	-	-	-	45,500.00	
Transfers in	-	-	-	-	-	-	-	-	
Budgeted carryforward	137,000.00	137,000.00	-	-	-	-	-	(137,000.00)	
Total revenues + carryforward	**1,000,200.00**	**1,000,200.00**	**-**	**2,155.39**	**213,873.19**	**512,738.38**	**728,766.96**	**(271,433.04)**	**72.9%**
EXPENDITURES AND RESERVES									
Personal services									
Salaries, taxes and retirement	119,210.00	119,210.00	-	1,822.67	13,825.02	8,790.80	24,438.49	94,771.51	20.5%
Health, dental, life insurance; Short term, long term disability; W	18,390.00	18,390.00	18,390.00	-	-	-	-	-	100.0%
Total operating	137,600.00	137,600.00	18,390.00	1,822.67	13,825.02	8,790.80	24,438.49	94,771.51	**31.1%**
Operating									
182701-Street Lighting Field Operations	235,000.00	235,000.00	125,750.09	18,327.34	15,995.03	11,408.40	45,730.77	63,519.14	73.0%
Total operating	235,000.00	235,000.00	125,750.09	18,327.34	15,995.03	11,408.40	45,730.77	63,519.14	**73.0%**
Capital outlay	500.00	500.00	-	-	-	-	-	500.00	0.0%
Transfers out	547,200.00	547,200.00	-	47.60	4,293.77	272,704.77	277,046.14	270,153.86	50.6%
Total expenditures	920,300.00	920,300.00	144,140.09	20,197.61	34,113.82	292,903.97	347,215.40	428,944.51	53.4%
Budgeted reserves									
991000-Reserve for Contingencies	11,000.00	11,000.00	-	-	-	-	-	11,000.00	
993000-Reserve for capital outlay	28,900.00	28,900.00	-	-	-	-	-	28,900.00	
998000-Reserve for cash	40,000.00	40,000.00	-	-	-	-	-	40,000.00	
Total reserves	79,900.00	79,900.00	-	-	-	-	-	79,900.00	
Total expenditures + reserves	**1,000,200.00**	**1,000,200.00**	**144,140.09**	**20,197.61**	**34,113.82**	**292,903.97**	**347,215.40**	**508,844.51**	49.1%
EXCESS OF REVENUE OVER EXPENDITURES	-	-		**(18,042.22)**	**179,759.37**	**219,834.41**	**381,551.56**		

170,047.97	Carryforward as of 9/30/24
551,599.53	Fund Balance as of 12/31/2024
-	

INCOME STATEMENT
CLAM BAY CAPITAL PROJECT FUND - 3040000000
Dec 31, 2024
(UNAUDITED)

	Adopted Budget	Amended Budget	Commitments	October	November	December	Total Expenditures	Variance	% Budget Consumed
REVENUES AND CARRYFORWARD									
Special assessments	190,600.00	190,600.00	-	551.89	42,847.68	114,487.86	157,887.43	(32,712.57)	82.8%
Interest	200.00	200.00	-	573.06	566.67	-	1,139.73	939.73	569.9%
Transfer In	-	-	-	-	-	-	-	-	#DIV/0!
Negative 5% of estimated revenue	(9,600.00)	(9,600.00)	-	-	-	-	-	9,600.00	0.0%
Budgeted carryforward	22,500.00	130,421.95	-	-	-	-	-	(130,421.95)	
Total revenues + carryforward	**203,700.00**	**311,621.95**	**-**	**1,124.95**	**43,414.35**	**114,487.86**	**159,027.16**	**(152,594.79)**	**51.0%**
EXPENDITURES AND RESERVES									
Projects:									
51100-Clam Bay Restoration	189,100.00	297,021.95	151,702.00	(14,967.00)	43,761.00	13,785.00	42,579.00	102,740.95	65.4%
Total operating	189,100.00	297,021.95	151,702.00	(14,967.00)	43,761.00	13,785.00	42,579.00	102,740.95	**65.4%**
Transfers out	14,600.00	14,600.00	-	894.88	856.95	2,289.74	4,041.57	10,558.43	27.7%
Total expenditures	203,700.00	311,621.95	151,702.00	(14,072.12)	44,617.95	16,074.74	46,620.57	113,299.38	63.6%
Budgeted reserves									
991000-Reserve for contingencies	-	-	-	-	-	-	-	-	
998000-Reserve for cash	-	-	-	-	-	-	-	-	
Total reserves	-	-		-	-	-			
Total expenditures + reserves	**203,700.00**	**311,621.95**	**151,702.00**	**(14,072.12)**	**44,617.95**	**16,074.74**	**46,620.57**	**113,299.38**	63.6%
EXCESS OF REVENUE OVER EXPENDITURES	**-**	**-**		**15,197.07**	**(1,203.60)**	**98,413.12**	**112,406.59**		

159,404.45	Carryforward as of 9/30/24
271,811.04	Fund Balance as of 12/31/2024
-	

PELICAN BAY
INCOME STATEMENT
PELICAN BAY LANDSCAPE, SAFETY, LAKE & BEACH PROJECTS - 3041000000
Dec 31, 2024
(UNAUDITED)

	Adopted Budget	Amended Budget	Commitments	October	November	December	Total Expenditures	Variance	% Budget Consumed
REVENUES AND CARRYFORWARD									
Special assessments	2,057,000.00	2,057,000.00	-	5,955.74	462,391.44	1,235,497.63	1,703,844.81	(353,155.19)	82.8%
Misc Revenue	-	218,876.64	-	-	-	-	-	(218,876.64)	0.0%
Interest	40,000.00	40,000.00	-	16,560.92	15,884.60	-	32,445.52	(7,554.48)	81.1%
Insurance refunds	-	-	-	-	-	-	-	-	#DIV/0!
Transfers in	1,044,900.00	1,044,900.00	-	-	-	392,450.00	392,450.00	(652,450.00)	37.6%
Negative 5% of estimated revenue	(104,900.00)	(104,900.00)	-	-	-	-	-	104,900.00	
Budgeted carryforward	2,900.00	5,479,072.17	-	-	-	-	-	(5,479,072.17)	
Total revenues + carryforward	**3,039,900.00**	**8,734,948.81**	**-**	**22,516.66**	**478,276.04**	**1,627,947.63**	**2,128,740.33**	**(6,606,208.48)**	**24.4%**
EXPENDITURES AND RESERVES									
Projects:									
50066-PBSD Landscape Improvement	331,300.00	414,900.34	11,148.50	21,910.00	-	-	21,910.00	381,841.84	8.0%
50103-PBSD Signage	-	258,487.23	29,322.72	-		-	-	229,164.51	11.3%
50126-Beach Renourishment	500,000.00	908,711.58	1,611.00	28,936.00	-	-	28,936.00	878,164.58	3.4%
50154-Hurricane Irma	-	-	-	-	-	-	-	-	#DIV/0!
50158-PBSD Roadway Safety	-	10,959.34	5.50	-	-	-	-	10,953.84	0.1%
50178-Sidewalk Maintenance/Enhancement	-	5,040.82	2,212.57	131.25	-	-	131.25	2,697.00	46.5%
50211-PBSD OPS BLD	-	3,927,650.44	2,931,414.41	340,207.75	381,290.70	249,393.30	970,891.75	25,344.28	99.4%
50212-PBSD PH1-SW	-	712,192.21	702,102.41	119.00	604.00	491.50	1,214.50	8,875.30	98.8%
50272-Streetlight Maint.	150,000.00	301,660.21	99,271.24	-	-	-	-	202,388.97	32.9%
50307-PB Drain/Pipe Maint.	700,000.00	700,000.00	12,465.00		-	-			
51026-PBSD Lake Bank Restoration	608,600.00	615,346.64	-	-	-	-	-	615,346.64	0.0%
Total expenditures	2,289,900.00	7,854,948.81	3,789,553.35	391,304.00	381,894.70	249,884.80	1,023,083.50	3,042,311.96	**13.0%**
Transfers out	750,000.00	880,000.00	-	25,507.07	26,547.84	414,459.96	466,514.87	413,485.13	53.0%
Total expenditures	3,039,900.00	8,734,948.81	3,789,553.35	416,811.07	408,442.54	664,344.76	1,489,598.37	3,455,797.09	17.1%
Budgeted reserves									
998900-Reserve for Proj	-	-	-	-	-		-	-	
993000-Reserve for capital outlay	-	-	-	-	-	-	-	-	
992090-Reserve for sinking fund	-	-	-	-	-	-	-	-	
991700-Reserve for disaster relief	-	-	-	-	-	-	-	-	
Total reserves	-	-	-	-	-	-	-	-	#DIV/0!
Total expenditures + reserves	**3,039,900.00**	**8,734,948.81**	**3,789,553.35**	**416,811.07**	**408,442.54**	**664,344.76**	**1,489,598.37**	**3,455,797.09**	**60.4%**
EXCESS OF REVENUE OVER EXPENDITURES	**-**	**-**		**(394,294.41)**	**69,833.50**	**963,602.87**	**639,141.96**		

5,628,837.62	Carryforward as of 9/30/24
6,267,979.58	Fund Balance as of 12/31/2024
5,500,000.00	Commercial Paper loan

PELICAN BAY
INCOME STATEMENT
COMMERCIAL PAPER - 3042000000
Dec 31, 2024
(UNAUDITED)

	Adopted Budget	Amended Budget	Commitments	October	November	Total Expenditures	Variance	% Budget Consumed
REVENUES AND CARRYFORWARD								
Loan Proceeds	-	-	-	-	-	-	-	#DIV/0!
Interest			-	3,087.08	3,143.43	6,230.51	6,230.51	#DIV/0!
Budgeted carryforward	-	601,237.89	-	-	-	-	(601,237.89)	0.0%
		-	-	-	-	-	-	#DIV/0!
			-	-	-	-	-	
Total revenues + carryforward	**-**	**601,237.89**	**-**	**3,087.08**	**3,143.43**	**6,230.51**	**(595,007.38)**	**1.0%**
EXPENDITURES AND RESERVES								
Projects:								
50212-Pelican Bay Sidewalk Improvements Phase 2		601,237.89	599,763.89	-	1,474.00	1,474.00	-	100.0%
Total Expenditure	-	601,237.89	599,763.89	-	1,474.00	1,474.00	-	**100.0%**
Transfers out	-	-	-	-	-	-	-	#DIV/0!
Total expenditures	-	601,237.89	599,763.89	-	1,474.00	1,474.00	-	100.0%
Budgeted reserves								
993000-Reserve for capital	-	-	-	-	-	-	-	
Total reserves	-	-		-	-			
Total expenditures + reserves	**-**	**601,237.89**	**599,763.89**	**-**	**1,474.00**	**1,474.00**	**-**	100.0%
EXCESS OF REVENUE OVER EXPENDITURES	**-**	**-**		**3,087.08**	**1,669.43**	**4,756.51**		

608,428.51	Carryforward as of 9/30/24
613,185.02	Fund Balance as of 12/31/2024
-	

PELICAN BAY SERVICES DIVISION BOARD REGULAR SESSION
DECEMBER 11, 2024

The Pelican Bay Services Division Board met on Wednesday, December 11, 2024, at 1:30 p.m. at the Community Center at Pelican Bay, 8960 Hammock Oak Drive, Naples, Florida 34108.
In attendance were:

Pelican Bay Services Division Board
Michael Fogg, Chairman
Joe Chicurel, Vice-Chairman
Jack Cullen
Jacob Damouni
Mark Ferland
Peter Griffith *(absent)*
Susan Hamilton
Brad Hildebrandt *(absent)*
Michael Rodburg
Greg Stone
Rick Swider
Michael Weir

Pelican Bay Services Division Staff
Neil Dorrill, Administrator
Dawn Brewer, Ops. Support Spec. II
Chad Coleman, Deputy Director
Darren Duprey, Supervisor – Field I
Dave Greenfield, Supervisor - Field II
Karin Herrmann, Project Manager I
Lisa Jacob, Project Manager II
Barbara Shea, Admin. Support Spec. II

Also Present
Tony D'Errico, Pelican Bay Foundation

APPROVED AGENDA *(AS PRESENTED)*

1. Pledge of Allegiance
2. Roll Call
3. Agenda approval
4. Approval of 11/21/24 Regular Session meeting minutes
5. Audience comments
6. Administrator's report
    a. Capital Projects updates
        i. Hurricane Helene and Milton update
        ii. Clam Pass update
        iii. Operations Facility update
    b. Review of the November 30 financials
7. Chairman's Report
    a. PBSD election cycle (application window Dec. 10 – Jan. 7)
    b. Resiliency Committee update
8. Old Business
9. New Business/Miscellaneous Correspondence
10. Adjournment

ROLL CALL

Mr. Griffith and Mr. Hildebrandt were absent and a quorum was established.

AGENDA APPROVAL

Ms. Hamilton motioned, Mr. Rodburg seconded to approve the agenda as presented. The motion carried unanimously.

APPROVAL OF 11/21/2024 REGULAR SESSION MEETING MINUTES

Ms. Hamilton motioned, Dr. Chicurel seconded to approve the 11/21/2024 regular session meeting minutes as presented. The motion carried unanimously.

AUDIENCE COMMENTS

None

ADMINISTRATOR'S REPORT

HURRICANE HELENE AND MILTON UPDATE

Mr. Dorrill commented that hurricane cleanup work is ongoing and that two contractors have been on site since immediately following Hurricane Milton. He noted that the sand from the emergency replacement dune installed by a FEMA grant (prior to these two hurricanes) got pushed into the dune swale. Mr. Dorrill commented that the area along this drainage swale is heavily forested with mangroves and other unique wetland coastal plants, and unfortunately a great deal of it will be lost. He noted that our biologist has indicated that this vegetation cannot sustain itself when covered with 4-6 feet of sand. Mr. Dorrill commented that we are trying to reclaim as much sand as possible, and return this sand to the beach area.

Mr. Dorrill commented that there is an area of ancient mangrove roots and stumps exposed just offshore between the North Beach and South Beach facilities (as a result of recent hurricanes) which may be hazardous to swimmers. He noted that long-reach excavators have been working on removing these hazards. Mr. Dorrill commented that the County's Coastal Zone Management Dept. is aware of this area, and that we have asked them to include an evaluation of this area as part of their 2025 beach renourishment project survey. He noted that other than this area, our Pelican Bay beaches are in pretty good shape. Mr. Stone commented that the ancient mangrove roots and stumps are exposed just offshore, in front of the Marker 36 Facility.

CLAM PASS UPDATE

Mr. Dorrill reported that on Friday, staff and PBSD environmental consultants met with Seagate residents for a courtesy briefing on the history of the Clam Bay Management Plan, the related permits, and the best path forward. He noted that any changes/updates to the management plan shall be requested through an amendment to a long-range permit. Mr. Dorrill commented that the November tide ratios were extremely high at almost .8, showing very good flushing. He noted that an expected cold front today may push the existing spit back towards the park area.

Mr. Dorrill commented that a bathymetric survey of Clam Pass is expected to be completed before Christmas. He explained that once the bathymetric survey is completed and the accumulation of sand is measured in Sections A, B, And C, a hydraulic dredge may be planned and scheduled to be completed before turtle nesting season in 2025. Mr. Dorrill commented that every 3-4 years a hydraulic dredge is necessary to remove excess sand from Section C. He noted that the TDC will fund this dredging project, and that in the past, the Pelican Bay Foundation has reimbursed the County for sand placed on PB beaches as part of a project.

OPERATIONS FACILITY UPDATE

Mr. Dorrill commented that interior construction photos of our Operations Facility Building project at the 6200 Watergate Way site were included in the agenda packet. He noted that work by our local contractor, Heatherwood Construction, is proceeding well and that internal framing is almost complete. Mr. Coleman commented that a County Project Manager is overseeing this project and that County inspections will occur as each step of the construction process is completed (a CEI engineer was not required for this project.) Mr. Dorrill commented that a staff Christmas lunch was held last Friday in our temporary trailer, and noted that we have a 91-year-old employee who has been a hard-working member of our temporary work staff for over 10 years.

REVIEW OF THE NOVEMBER 30 FINANCIALS

Mr. Dorrill reviewed the Nov. 30 financial statements and discussed highlights including, (1) $10 million in cash on hand, split among our general operating fund and our capital fund, (2) $5.3 million in project funds, (3) $1.5 million in County required reserves, and (4) $1.2 million in November assessments received. Mr. Coleman commented that our Disaster Relief Fund was not reflected on our November financial statements and that he will request that the County Clerk's Office reflect this additional fund on our December financial statements. Mr. Fogg commented that our 9/30/24 carry-forward was $1.8 million which was higher than expected.

UPDATE ON AUDIENCE COMMENTS AT THE 12/10/24 BCC MEETING

Mr. Dorrill reported that a few Seagate residents appeared at the 12/10/24 Board of County Commissioners meeting and spoke under Public Comment to express their concerns over Clam Pass dredging templates (sizing and dimensions) and Clam Bay water quality analyses. He noted that BCC policy is not to "take up" any issue brought up under Public Comment. Mr. Dorrill commented that it is his impression that the BCC will re-evaluate this issue at a further date and expects the County to hold a hearing on this issue sometime in the next month or two.

ADDITIONAL COMMENTS ON THE 12/6/24 MEETING WITH THE SEAGATE COMMUNITY AND SUBSEQUENT BRIEFING WITH COMMISSIONER KOWAL

Mr. Dorrill reported that he met with Commissioner Kowal on 12/6/24, who had requested an overview briefing on Clam Bay and Clam Pass. Commissioner Kowal represents the City of Naples (which includes the Seagate Community).

Mr. Patrick Wack commented that for clarification purposes, the Naples Cay community is part of the Seagate community's efforts relating to Clam Pass/Clam Bay issues.

Mr. Rodburg commented that he attended the 12/6/24 meeting with Seagate residents, PBSD staff, and consultants. He questioned whether we have a comprehensive history of Clam Bay/Clam Pass. Mr. Coleman commented that the November 2014 Clam Bay NRPA Management Plan Final Version 6.5 provides a high-level overview and is available on the PBSD webpage on the County website. Mr. Dorrill commented that there was a subsequent review (completed five years later) entitled, "Clam Pass 2019 Review of Inlet Management" which is also available on the PBSD webpage.

UPDATE ON HURRICANE EFFECTS TO THE MANGROVE FOREST

Mr. Dorrill commented on several areas of extremely stressed mangroves including areas near the Marker 36 Facility and the beach dune swale. He noted that areas which were inundated with sand were killed and cannot be saved. Mr. Dorrill commented that our biological consultant, Earth Tech,

does an annual survey of mangrove health and an annual evaluation of hand-dug channels. He noted that this year, Earth Tech will also look at the stressed mangrove areas near the beach dune swale.

Mr. Coleman commented that Earth Tech Enterprises removed a lot of mangrove stumps (located just offshore in several areas of our PB beach). He noted that it appears that these structures have provided stabilization to our coastline and suggested that they should not all be removed. Mr. Coleman recommended that these areas would benefit by additional sand, to maintain stabilization. He noted that he will reach out to Dr. Dabees to determine whether the County has completed their coastal beach survey. A 2025 beach renourishment project is anticipated. Mr. Coleman noted that any PBSD participation in a County beach renourishment project would be funded by the PBSD.

Mr. Ferland commented that the Ritz has spent two months moving sand back to the beach and estimates that this effort is about 90% complete. Mr. Damouni commented that the Naples Grande Beach Resort Hotel still has a lot of sand underneath their hotel building.

CHAIRMAN'S REPORT

PBSD ELECTION CYCLE

Mr. Fogg commented that the application period for the 2025 PBSD Board Election is now open. He noted that we have one commercial and four residential openings. Mr. Fogg commented that Ms. Hamilton, Mr. Cullen, and Mr. Ferland are not re-applying and he thanked them for their contribution to the PBSD. He noted that Dr. Chicurel and Mr. Rodburg will be submitting applications for an additional term on the PBSD Board. An election will be held if we receive more than four applications for our four residential openings.

RESILIENCY COMMITTEE UPDATE

Mr. Fogg commented that the PBF has formed an ad hoc storm resiliency committee and has asked for a PBSD Board member to participate on this committee. He reported that Mr. Swider has volunteered. Mr. Fogg noted that in order to comply with Florida Sunshine Law, any PBSD Board member who attends a PBF resiliency committee meeting (other than Mr. Swider), may not express his/her opinion at the meeting. Mr. Dorrill commented that any committee work product in possession of Mr. Swider will be considered public record (to comply with Sunshine Law), and that he will obtain clarification on this issue from Ms. Colleen Greene in the County Attorney's Office.

Mr. D'Errico, PBF President, commented that he hopes that there is an acceptable "work around" to comply with Sunshine Law. He noted that PBF ad hoc committees are not obligated to have public meetings, but that the PBF does comply with records requests pertaining to PBF committees. Mr. D'Errico reported that the final charter of the ad hoc storm resiliency committee has been approved by the PBF Board.

Mr. Fogg motioned, Mr. Damouni seconded to appoint Mr. Swider to the Pelican Bay Foundation ad hoc Storm Resiliency Committee. The board agreed by consensus.

AUDIENCE COMMENT

Mr. Bill McCormick, a Bay Colony resident, questioned what entity is responsible for resiliency of the drainage swale behind the Bay Colony beachfront properties. He noted that the swale provides drainage for all of the beachfront buildings and that keeping the swale open is extremely important. Mr. Fogg commented that the PBSD is responsible for the Pelican Bay water management

system, including the swale. Mr. McCormick, as an engineer, commented that he would like to help in finding a cost-effective solution. He commented on the ongoing excavation work to clean out the swale, questioned whether installing a culvert system would solve this problem permanently, and suggested that this may be a good cost-effective permanent solution. Mr. Dorrill commented that he is committed to having our engineers prepare a preliminary estimate of probable cost to include permitting of possible remediation options. Mr. Rodburg commented that this issue will be discussed at a January Water Management & Clam Bay Committee meeting.

OTHER BUSINESS

Mr. Fogg provided a handout entitled, "Coastal Storm Risk Management Feasibility Study: Planning Areas Update," provided by the Collier County Coastal Storm Risk Management Feasibility Study Ad Hoc Committee, which was added to the record. He noted that there is a list of possible remediation alternatives on page 4. Mr. Fogg also commented that the U.S. Army Corps of Engineers will be providing a report on recommended coastal resiliency projects sometime in the Spring of 2025.

Mr. Coleman commented that he reached out to the Sheriff's Dept. regarding extra law enforcement on US 41 along the Pelican Bay corridor, who suggested that we contact the F.H.P. as US 41 is a state road. Mr. Dorrill commented that the PBSD will evaluate the possibility of additional Sheriff's Deputy patrols on US 41, and will obtain an opinion from the County Attorney as to whether this contracted service would be a valid public purpose as US 41 is outside of PB boundaries. Mr. Fogg commented that noise concerns are a major issue from 8 p.m. to 11 p.m. He suggested that the PBF also looks at this issue.

Mr. Ferland commented that the Ritz has recently experienced a huge increase in trespassing by teenagers. Mr. Damouni commented that the Naples Grande is having similar experiences.

Mr. Stone commented that the PBPOA is having their monthly meeting on Jan. 9, which will include a report and discussion of a recent FDOT traffic study report on the Gulf Park Drive/US 41 intersection with an FDOT representative. Mr. Fogg commented that it is not clear if the community is behind the installation of a traffic light at this intersection. He also noted that an additional traffic light at this intersection does meet County criteria, but that the County has indicated that there is no funding available. Dr. Chicurel suggested that in his opinion, the only feasible solution would be to install a quick curb, resembling permanent delineators, in the median which would preclude a vehicle from making a left turn. He commented that he has received mixed messages from the State as to whether this option is feasible, and that he will try to get clarification, prior to the Jan. 9 meeting. Mr. Fogg commented that this issue will be discussed further at the next L&S Committee meeting.

Mr. Fogg thanked staff for all of their efforts in 2024, which included the Sidewalk Project, the Operations Replacement Building Project, and the aftermath of two hurricanes, with no major resident complaints.

ADJOURNMENT

The meeting was adjourned at 2:37 p.m.

Michael Fogg, Chairman

Minutes approved [ ] *as presented* OR [✓] *as amended* ON [1-8-25] *date*

Collier County Government

Communications, Government & Public Affairs
3299 Tamiami Trail E., Suite 102
Naples, Florida 34112-5746

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November 26, 2024

FOR IMMEDIATE RELEASE

Notice of Hybrid Remote Public Meeting
Rock Road Improvement MSTU Advisory Committee
Collier County, Florida

December 11, 2024
3:00 p.m.

Notice is hereby given that the **Rock Road Improvement Municipal Service Taxing Unit (MSTU) Advisory Committee** will meet on **Wednesday, December 11, 2024,** at **3:00 p.m.** This will be a Hybrid Remote meeting and held in the Conference Room at the Florida University Extension, 14700 Immokalee Road, Naples, Florida. The public may participate either remotely or in person.

Individuals who would like to participate remotely should contact Rosio Garcia at Rosio.Garcia@colliercountyfl.gov by noon on December 11.

Remote participation is provided as a courtesy and is at the user's risk. The County is not responsible for technical issues.

The agenda will be available on the Collier County Government website at https://www.collierptne.com/mtsu/rock-road-improvement-mstu/

About the public meeting:

Two or more members of the Collier County Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future meeting.

All interested parties are invited to attend, and to register to speak. All registered public speakers will be limited to three minutes unless changed by the chairman.

Collier County Ordinance No. 2004-05 requires that all lobbyists shall, before engaging in any lobbying activities (including, but not limited to, addressing the Board of County Commissioners, an advisory board or quasi-judicial board), register with the Clerk to the Board at the Board Minutes and Records Department.

Anyone who requires an auxiliary aid or service for effective communication, or other reasonable accommodations to participate in this proceeding, should contact the Collier County Facilities Management Division, located at 3335 Tamiami Trail E., Suite 101, Naples, Florida 34112, or (239) 252-8380, as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

For more information, call Judy Sizensky at (239) 252-4980.

###

Rock Road MSTU
Advisory Committee
8300 Radio Road
Naples, FL 34104



DECEMBER 11, 2024 3:00 PM – 4:00 PM

Committee Members and Project Manager will meet at
UF/IFAS Collier Extension, 14700 Immokalee Road, Naples, FL 34120
All others are encouraged to attend via Zoom video conference

AGENDA

I. Attendance

Advisory Committee	Alberto Sanchez Jimenez – Chair (3/26/27)
	Gregory Davenport – Vice Chair (3/26/26)
	Jana Boger (3/26/27)
	Brian Galligan (3/26/26)
	Jean Hofstetter (3/26/27)
Staff	Judy Sizensky – PTNE Project Manager
	Rosio Garcia – Operations Coordinator
Transcriptionist	Wendy Warren

II. Approval of Agenda

III. Approval of Minutes – November 13, 2024

IV. Project Manager Report – Judy Sizensky

A. Discussion of maintenance-Preferred materials has been awarded contract #24-8259 for Asphalt Maintenance and Related Services" which includes limerock materials and repairs. The revised cost estimate to repair the specific area portions are:

Rock Road-(Mingo to Keri Island)	$39,100
Keri Island-(Rock Road to Catawba)	$44,269
Deer Run Road-(Rock Road to Curve)	$35,353
TOTAL	$118,722

B. Budget Report

V. Old Business

VI. New Business

VII. Public Comments

VIII. Member Comments

IX. Adjourn

Next Meeting Date:
TBD

Rock Road MSTU

8300 Radio Road,
Naples, FL 34104



Rock Road MSTU Public Meeting
IFAS
14700 Immokalee Road
Naples, FL 34120

MINUTES
November 13, 2024

I. CALL TO ORDER

Chair Sanchez called the meeting to order at 3:00 P.M. Roll call was taken, and a quorum of three was present.

II. ATTENDANCE

Advisory Committee	Chair – Alberto Sanchez
	Vice Chair – Gregory Davenport (Excused)
	Jana Boger
	Brian Galligan – (Excused)
	Jean Hofstetter
Staff	Brian Wells, Director, PTNE - ZOOM
	Judith Sizensky, Project Manager
	Keyla Castro, Operations Support Analyst
	Rosio Garcia, Operations Analyst
	Zornitsa Stankova – Budget Analyst, PTNE
Contractors	Wendy Warren, Premier Staffing
Public	Linnea Chasse - Resident
	Connie Dickson - Resident
	Barbara Lightcap – Resident
	Earl Lightcap – Resident

III. APPROVAL OF THE AGENDA

Ms. Hofstetter moved to approve the Agenda of the Rock Road MSTU Advisory Committee. Second by Ms. Boger. Carried unanimously 3 - 0.

IV. APPROVAL OF THE MINUTES

Ms. Hofstetter moved to approve the minutes of the October 16, 2024, Rock Road Advisory Committee meeting subject to the following change:

Page 1, Public Attendance, from "… Debra Lightcap) …," to … Connie Dickson …)."

Second by Ms. Boger. Carried unanimously 3 – 0.

V. PROJECT MANAGER REPORT – Judy Sizensky

A. Discussion of Maintenance

Ms. Sizensky reported:

- On November 12, 2024, the Board of County Commissioners awarded an *Asphalt Maintenance and Related Services Contract* to Preferred Materials, LLC,
- The countywide contract is for asphalt maintenance, materials, and services as needed, including but not limited to, roadway milling, resurfacing, lime rock road conversions, pothole repairs, spot repairs grading, overlays, tack coat placement, and material delivered for County roadways, right-of-way, and properties.
- Preferred Maintenance submitted an "unofficial" proposal in the amount of $167,344 to scarify the road surface, put down lime rock and roll the following roadways:
    1. Rock Road from Mingo Drive to Shady Lane: $84,957.00
    2. Keri Island Road west side: $67,172.00.
    3. Keri Island Road east side: $15,213.00.
- A solicitation can be distributed via OpenGov, the County's technology website, for bid proposals from independent contractors. The contract would be awarded to the lowest qualified bidder.
- In the future, a consulting firm could be retained to recommend short and long term action plans.

Ms. Sizensky will:

- Request a proposal from Preferred Materials to scarify and apply lime rock on three sections of road:
    1. Rock Road from Mingo Drive to the south of Keri Island Road.
    2. Keri Island Road from Rock Road to Catawba Street.
    3. Deer Run Lane to Catawba Street before it narrows.
- Schedule a delivery of #57 gravel to Top Cut USA, LLC., to spread and fill potholes on Shady Lane.

B. Budget Report

Ms. Sizensky reported:

Rock Road MSTU FY25 Fund Budget 1632 dated November 13, 2024 – prepared November 8, 2024.

- Budget Summary
    a. Revenue – Ad Valorem Taxes Assessed are $25,100.00.
    b. Contributions and Transfers – Unexpended funds from prior years carry-forward total $102,800.00 plus ENC $3.435.15, 5% negative revenues (uncollected property taxes) are estimated at $1,300.00 netting a total amended budget of $130,035.15.
    c. Operating Expense – Of the $94,535.15 budgeted, $2,135.41 is committed to existing Purchase Orders and $3063.74 is expended, leaving the remainder of $89,336.00 available within budget for additional operating expenses as needed.
    d. County Overhead – Of the $9,000.00 budgeted, $98.58 has been transferred and a balance of $8,901.42 remains for transfer. (PTNE Staff & support, Property Appraiser & Tax Collector).
    e. Reserves for Capital - A balance of $26,500.00 remains for improvement projects.
    f. All Expenses – Of the $130,035,15 budgeted, tabulated Commitments to existing Purchase Orders total $2,135.41 and $3,162.32 has been expended, leaving the remainder of $124,737.42 available for MSTU expenditure.

- General
  a. MSTU Tax Rate: 3.0 Mills to maintain MSTU Roadways within the taxing district.
  b. Funds collected by the Rock Road MSTU cannot be utilized outside of the MSTU.

VI. OLD BUSINESS

None

VII. NEW BUSINESS

None

VIII. PUBLIC COMMENTS

Landscape Maintenance

Ms. Sizensky reported:

- The Road Maintenance Division is responsible for trimming trees on the County owned paved portion of Rock Road.
- Vegetation in the Right of Way (ROW) is not maintained by the County or the MSTU.
- A Revision to the Ordinance is required for the MSTU to expand the scope of their asset maintenance and improvements.

IX. MEMBER COMMENTS

Discussions ensued regarding possible future extension of Rock Road, or side roads, extending south to Vanderbilt Beach Road.

X. ADJOURNMENT

There being no further business to come before the Committee, the meeting was adjourned by Chair at 3:55 P.M.

https://www.collierptne.com/mtsu/rock-road-improvement-mstu/

ROCK ROAD MSTU ADVISORY COMMITTEE

_____

Alberto Sanchez, Chair

The Minutes were approved by the Committee on _____,2024 as presented ____, or as amended ____.

NEXT MEETING: **DECEMBER 11, 2024 - 3:00 P.M.**
UF/IFAS COLLIER EXTENSION
14700 IMMOKALEE ROAD
NAPLES, FL 34120

ROCK ROAD MSTU FUND 1632 December 11, 2024 FY25

Item #	GL/Commitment item#	GL/Commitment item name	Vendor	PO#	Adopted Budget	Amended Budget	Commitments	Actuals(Expenditures)	Available (Total)
1	311100	CURRENT AD VALOREM TAXES			$ (25,100.00)	$ (25,100.00)	$ -	$ (14,564.14)	$ (10,535.86)
2	361170	OVERNIGHT INTEREST						$ (178.60)	$ 178.60
3	361180	INVESTMENT INTEREST						$ (122.96)	$ 122.96
4	361320	INTEREST TAX COLLECTOR						$ -	$ -
****REVENUE - OPERATING Sub-Total**					**$ (25,100.00)**	**$ (25,100.00)**	**$ -**	**$ (14,865.70)**	**$ (10,234.30)**
5	486600	TRANSFER FROM PROPERTY APPRAISER						$ (23.77)	$ 23.77
6	486700	TRANSFER FROM TAX COLLECTOR							$ -
7	489200	CARRY FORWARD GENERAL			$ (102,800.00)	$ (102,800.00)			$ (102,800.00)
8	489201	CARRY FORWARD OF ENC				$ (3,435.15)			$ (3,435.15)
9	489900	NEGATIVE 5% ESTIMATED REVENUES			$ 1,300.00	$ 1,300.00			$ 1,300.00
****CONTRIBUTION AND TRANSFERS Sub-Total**					**$ (101,500.00)**	**$ (104,935.15)**	**$ -**	**$ (23.77)**	**$ (104,911.38)**
*****REVENUE Sub Total**					**$ (126,600.00)**	**$ (130,035.15)**	**$ -**	**$ (14,889.47)**	**$ (115,145.68)**
10	634970	INDIRECT COST REIMBURSEMENT			$ 900.00	$ 900.00	$ 900.00	$ -	$ -
11	634999	OTHER CONTRACTUAL SERVICES	GRIPPO PA	4500228394	$ 89,100.00	$ 92,535.15	$ 397.77	$ 3,037.38	$ 89,100.00
13	645100	INSURANCE GENERAL			$ 100.00	$ 100.00	$ 100.00	$ -	$ -
14	649100	LEGAL ADVERTISING			$ 600.00	$ 600.00		$ -	$ 600.00
15	649990	OTHER MISCELLANEOUS SERVICES	PREMIER S	4500234226			$ 465.50	$ 148.50	$ (614.00)
16	651110	OFFICE SUPPLIES GENERAL			$ 100.00	$ 100.00			$ 100.00
17	651210	COPYING CHARGES	JM TODD	4500234730	$ 200.00	$ 200.00	$ 123.64	$ 26.36	$ 50.00
18	652990	OTHER OPERATING SUPPLIES			$ 100.00	$ 100.00			$ 100.00
****OPERATING EXPENSE**					**$ 91,100.00**	**$ 94,535.15**	**$ 1,986.91**	**$ 3,212.24**	**$ 89,336.00**
19	911011	TRANS TO 1011 UNINCO			$ 6,600.00	$ 6,600.00		$ -	$ 6,600.00
****TRANSFERS**					**$ 6,600.00**	**$ 6,600.00**	**$ -**	**$ -**	**$ 6,600.00**
20	930600	PA BUDGET TRANS			$ 600.00	$ 600.00		$ 98.58	$ 501.42
21	930700	BUDGET TRANSFERS TAX COLLECTOR			$ 1,800.00	$ 1,800.00		$ 436.92	$ 1,363.08
****TRANSFER CONST**					**$ 2,400.00**	**$ 2,400.00**	**$ -**	**$ 535.50**	**$ 1,864.50**
22	993000	RESERVE FOR CAPITAL OUTLAY			$ 26,500.00	$ 26,500.00	$ -	$ -	$ 26,500.00
****RESERVES**					**$ 26,500.00**	**$ 26,500.00**	**$ -**	**$ -**	**$ 26,500.00**
Total Budget					**$ 126,600.00**	**$ 130,035.15**	**$ 1,986.91**	**$ 3,747.74**	**$ 124,300.50**

Total Available Balance	$	124,300.50
Plus Commited And Not Spent	$	1,986.91
Estimated Cash	**$**	**126,287.41**

Taxable Value	Fiscal Year	% from prior fiscal year	Milage Rate	Valorem Rec'd
$37,201,064	FY 22 July 1 Taxable Value	#VALUE!	3.0000	$ 111,600
$34,277,450	FY 23 July 1 Taxable Value	-7.86%	1.3413	$ 46,000
$85,517,869	FY 24 July 1 Taxable Value	149.49%	3.0000	$ 256,600

Prepared 12/09/2024 ZS

Preferred MATERIALS, INC.
A CRH COMPANY

December 3, 2024

Attn: Judy Sizensky

Keri Island (Section from Rock Road to Catawba)		21' x 1308'
Limerock Conversion Preparation	Item #43	3052 SY @ $9.00 = $27,468.00
Limerock and Delivery	Item #46	530 Tons @ $31.70 = $16,801.00
Estimate based on 3" of Limerock material for 3052 SY		**$44,269.00**

Rock Road (Section from Mingo to Keri Island)		22' x 1100'
Limerock Conversion Preparation	Item #43	2689 SY @ $9.00 = $24,201.00
Limerock and Delivery	Item #46	470 Tons @ $31.70 = $14,899.00
Estimate based on 3" of Limerock material for 2689 SY		**$39,100.00**

Deer Run Road (Section from Rock Road to Corner)		15' x 1300'
Limerock Conversion Preparation	Item #43	2167 SY @ $9.00 = $19,503.00
Limerock and Delivery	Item #46	500 Tons @ $31.70 = $15,850.00
Estimate based on 4" of Limerock material for 2167 SY		**$35,353.00**

Estimate prepared for Collier County by Chuck Croley, Project Manager

Rock Road MSTU

8300 Radio Road,
Naples, FL 34104



Rock Road MSTU Public Meeting
IFAS
14700 Immokalee Road
Naples, FL 34120

MINUTES
November 13, 2024

I. CALL TO ORDER

Chair Sanchez called the meeting to order at 3:00 P.M. Roll call was taken, and a quorum of three was present.

II. ATTENDANCE

Advisory Committee	Chair – Alberto Sanchez
	Vice Chair – Gregory Davenport (Excused)
	Jana Boger
	Brian Galligan – (Excused)
	Jean Hofstetter
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	Judith Sizensky, Project Manager
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	Rosio Garcia, Operations Analyst
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Contractors	Wendy Warren, Premier Staffing
Public	Linnea Chasse - Resident
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III. APPROVAL OF THE AGENDA

Ms. Hofstetter moved to approve the Agenda of the Rock Road MSTU Advisory Committee. Second by Ms. Boger. Carried unanimously 3 - 0.

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- General
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  b. Funds collected by the Rock Road MSTU cannot be utilized outside of the MSTU.

VI. OLD BUSINESS
None

VII. NEW BUSINESS
None

VIII. PUBLIC COMMENTS
Landscape Maintenance
Ms. Sizensky reported:

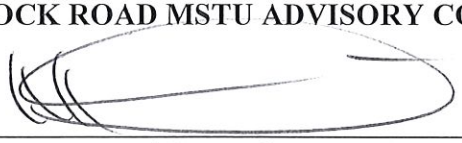
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X. ADJOURNMENT
There being no further business to come before the Committee, the meeting was adjourned by Chair at 3:55 P.M.

https://www.collierptne.com/mtsu/rock-road-improvement-mstu/

ROCK ROAD MSTU ADVISORY COMMITTEE



Alberto Sanchez, Chair

The Minutes were approved by the Committee on Dec 11 ,2024 as presented X, or as amended ____.

NEXT MEETING: **DECEMBER 11, 2024 - 3:00 P.M.**
UF/IFAS COLLIER EXTENSION
14700 IMMOKALEE ROAD
NAPLES, FL 34120