Executive Summary

Recommendation to direct staff to advertise, and bring back for a Public Hearing, a Resolution amending the Collier County Utilities Standards and Procedures Ordinance and the Collier County Water-Sewer District Utilities Standards Manual.

OBJECTIVE: The public purpose is for the installation of sustainable and safe utility infrastructure within the Collier County Water-Sewer District (CCWSD) by updating the Collier County Utilities Standards Manual (Manual)**.** This action is to advertise the resolution to update the Manual.

CONSIDERATIONS: On May 11, 2004, under Agenda Item No. 8.D, 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, the Collier County Utilities Standards and Procedures Ordinance, and the Manual, including all of the Manual's exhibits, as amended. 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. The Manual, an integral part of the Ordinance, provides engineering and drawing detail sheets for components of utility systems. Public Utilities Department staff vetted all proposed changes with the Development Services Advisory Committee (DSAC), and the Public Utilities Department's Water and Wastewater Divisions to achieve the optimal, best-value design, operation, and maintenance of the utilities infrastructure.

The DSAC, the Public Utilities Department (PUD) and the Growth Management Department actively participate in monthly utilities discussion group meetings and have reviewed the proposed Manual revisions in detail. On July 14th, 2026, and July 28th, 2026, the DSAC Utility Subcommittee reviewed and approved the Manual revisions. Then, on August 5th, 2026, at its regular DSAC meeting, the proposed Manual revisions were unanimously approved in their entirety and recommended to be forwarded to the Board. The proposed changes to the Ordinance and Manual are listed in the Resolution (attached). Changes include a minimum requirement of 5 horsepower pumps on county lift stations, a reduction of brass elements within the utility system, and a range of administrative updates related to email addresses, websites, office names, clarifying language, and organization of information within the manual.

This item is consistent with the Collier County strategic plan objective to maintain public infrastructure and facilities to effectively, efficiently, and sustainably meet the needs of our community. It further is in support of the Infrastructure and Asset Management Strategic Focus Area's objectives to optimize the useful life of all public infrastructure resources through proper planning and preventative maintenance. This item is aligned with the Annual Update and Inventory Report (AUIR) and other planning tools that establish and implement plans for availability and adequacy of public facilities and remain in compliance with all regulatory requirements.

FISCAL IMPACT: There is no cost for advertising using the Clerk's website for public advertisements.

GROWTH MANAGEMENT IMPACT: This project meets current Growth Management Plan standards to ensure the adequacy and availability of viable public facilities.

LEGAL CONSIDERATIONS: This item is approved as to form and legality and requires majority vote for approval.-HFAC

RECOMMENDATION(S): Recommendation to direct staff to advertise, and bring back for a Public Hearing, a Resolution amending the Collier County Utilities Standards and Procedures Ordinance and the Collier County Water-Sewer District Utilities Standards Manual.

PREPARED BY: Stephen Sarabia, Project Manager II - Public Utilities Engineering, Public Utilities.

ATTACHMENTS:

1. USM 2026 with Resolution
2. USM Table of Revisions

RESOLUTION NO. 2026 - _____

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 _____ day of _____, 2026.

ATTEST:
CRYSTAL K. KINZEL, CLERK

By: _____
Deputy Clerk

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

By: _____
Dan Kowal, Chairman

Approved as to Form and Legality:

_____ HFAC
Heidi Ashton-Cicko 8-11-26
Managing Assistant County Attorney

Exhibit A-Utility Standards Manual in part-amended pages

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EXHIBIT A

COLLIER COUNTY PUBLIC UTILITIES
ENGINEERING AND PROJECT MANAGEMENT



UTILITIES STANDARDS MANUAL

DESIGN CRITERIA
TECHNICAL SPECIFICATIONS
UTILITIES DETAIL DRAWINGS
APPENDICES

REVISION DATE: JUNE 2026

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SECTION 1

DESIGN CRITERIA

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

https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 1

DESIGN CRITERIA

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CONTROL SYSTEMS

4.1 Electrical and Control System Material

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PART 1 GENERAL

1.1. Pipeline Separation Requirements (Outer Edge to Outer Edge)

1. Potable water pipelines shall be separated from wastewater lines and /or stormwater lines by 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.

9. Pipelines of the same utility type (potable water mains to potable water mains, non-potable irrigation water mains to non-potable irrigation water mains, wastewater force mains to wastewater force mains) shall maintain a minimum horizontal separation of five feet and a minimum vertical separation of 18 inches unless otherwise approved by the County.

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. For hot tap installations, the CONTRACTOR shall notify the COUNTY prior to installation and torquing of tapping saddles. Tapping saddle torquing

operations shall be performed in the presence of the COUNTY inspector or authorized representative.

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~~ Meter Operations 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 pumps shall be minimum 5 HP (horsepower).

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 receive flow from any other pump station 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></td><td></td></tr>
<tr><td rowspan="2">Reserve Volume</td><td rowspan="3">Reserve Capacity</td></tr>
<tr><td rowspan="2">Alarm</td></tr>
<tr><td rowspan="2">Storage Volume</td></tr>
<tr><td rowspan="2">On</td><td rowspan="2">Effective Volume</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.

[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).

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 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:

https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 2

TECHNICAL SPECIFICATIONS

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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

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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 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 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 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 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.

G. Pneumatic underground piercing tools ("missiles") shall not be permitted for installation of utilities within County rights-of-way or Collier utility easement (CUE). Roadway crossings shall be constructed using approved jack-and-bore or directional bore methods as specified by EOR.

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
2. AWWA C 605 - Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings

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

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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:

$$L = \frac{SD\,(P)^{1/2}}{148{,}000}$$

   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, $L = (8.275 \times 10^{-5})\,SD$

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 and C605, 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 312316

EXCAVATION - EARTH AND ROCK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for performing open cut 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 designer 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 whatever 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 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 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 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 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 open-cut 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 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.

F. Pneumatic underground piercing tools ("missiles") shall not be permitted for installation of utilities within County rights-of-way or Collier utility easement (CUE). Roadway crossings shall be constructed using approved jack-and-bore or directional bore methods as specified by EOR.

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. Over excavate soft zones and replace with compact 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 disposal of excavated rock at an offsite disposal location. Obtain the offsite 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, therefore.

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 offsite 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

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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 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 high density polyethylene meeting cell classification 345434C or 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 C-110 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

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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 inches (1.5”).

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 333200

PUMP STATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK

A. This section includes the following items: 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 around the pump station in accordance with Section 323113.

PART 2 EQUIPMENT

2.1 MATERIALS

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

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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 minimum 5 HP (horsepower) and 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,

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.

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.

PART 3 EXECUTION

Not Used

END OF SECTION

NO TEXT FOR THIS PAGE

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SECTION 3

UTILITIES DETAILS

For the latest revisions to the Utilities Details, please visit:

https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 3

UTILITIES DETAILS DRAWINGS

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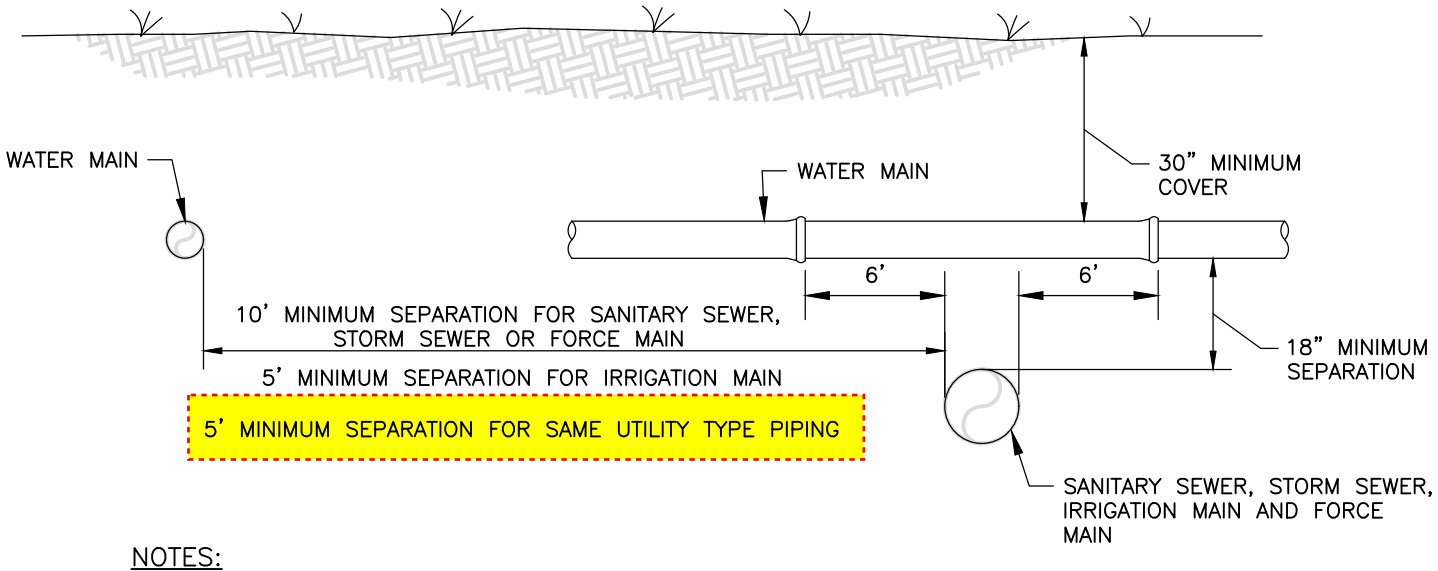
Drawing No.	Title		Revision Date
	General Details		
G-1	Unpaved Area Trench Backfill Detail		04/2006
G-2	Paved Area Trench Restoration Detail for Private Roads		07/2018
G-2A	State Road, Major County Road, and Numbered County Road Flowable Fill Road/Trench Restoration		07/2018
G-2B	Road and Trench Restoration for Local Roads		07/2018
G-3	Pipe Separation Detail	~~07/2018~~	06/2026
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
G-7	Typical Valve Setting Detail	~~07/2018~~	06/2026
G-8	Typical Horizontal Directional Drill (HDD) Under a Roadway		07/2018
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G-9A	Subaqueous Water Main Valve Detail	~~07/2018~~	06/2026
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NP-2	Typical Irrigation Service Meter Setting Detail for Connection to Irrigation Main	~~05/2009~~	06/2026
NP-3	Not Used		
NP-4	Reuse, Raw, and Supplemental Water Air Release Valve Detail	~~05/2009~~	06/2026
NP-E1	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site General Note and Keynotes	~~04/2006~~	06/2026

Drawing No.	Title		Revision Date
NP-E2	Standard Irrigation Water Meter Assembly 3" and Larger -Telemetry	~~07/2018~~	06/2026
NP-E3	~~Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Layout & Elementary~~ (Not Used)		~~08/2008~~
NP-E4	~~Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Open/Closed MOV Control Diagram~~ (Not Used)		~~04/2006~~
NP-E5	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Electrical Equipment Elevations	~~08/2008~~	06/2026
NP-E6	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Level Transducer Mounting Details	~~08/2008~~	06/2026
NP-E7	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Electrical Details		08/2008
NP-E8	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Electrical Details		04/2006
NP-E9	Reuse System Standard Service Connections Open/Close Valve Single Control Panel Site Typical RTU Antenna Tower Details		08/2008
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W-5	Potable Water Air Release Valve Detail		08/2008
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Drawing No.	Title		Revision Date
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Drawing No.	Title		Revision Date
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WW-14	Not Used		
WW-15	Typical Flow Line Channels Detail		04/2006
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WW-18A	Grease Interceptor Tables		04/2006

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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 305 (DR14) AWWA C-900 PVC OR CLASS 235 (DR18) AWWA C-900 PVC PIPE CENTERED ON THE CROSSING.

3. 18 INCHES CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.

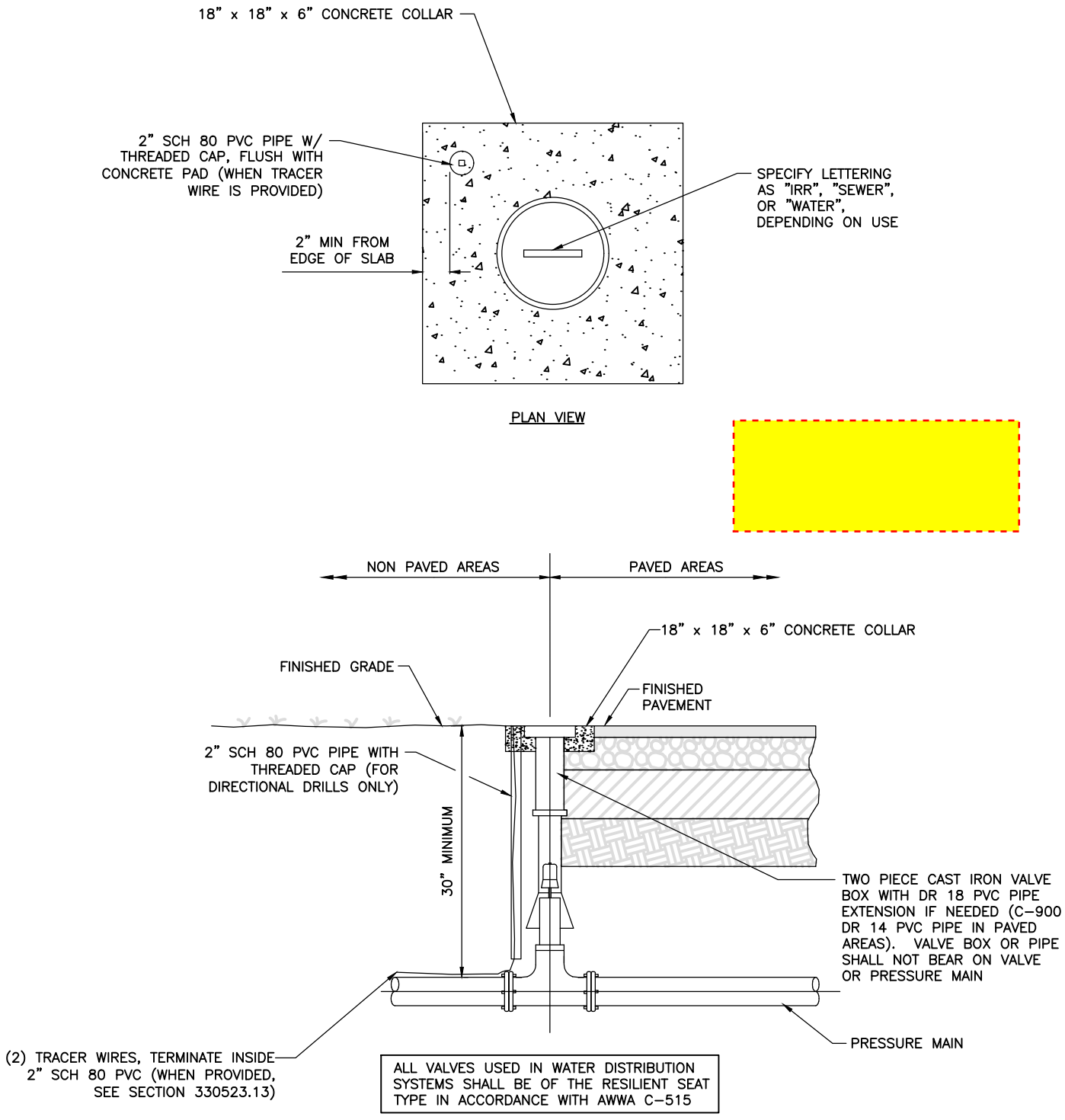
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.

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.

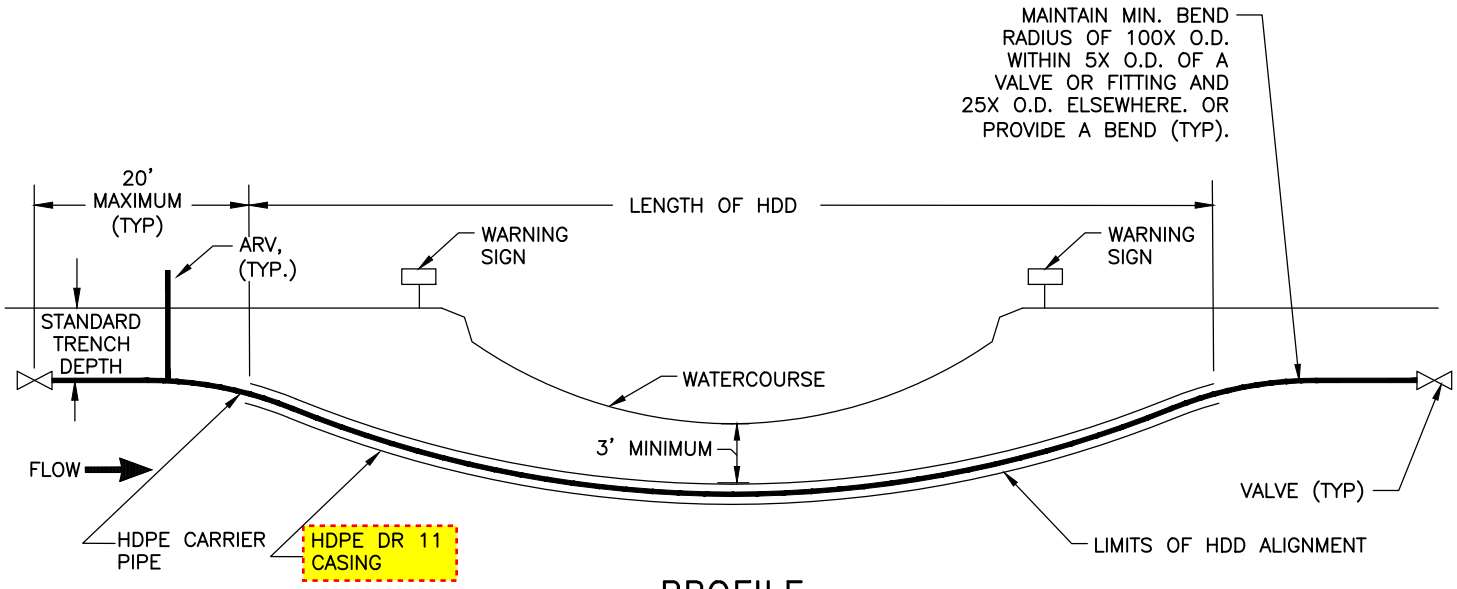
6. IF THE VERTICAL SEPARATION BETWEEN GRAVITY SANITARY SEWER AND STORMWATER LINES IS LESS THAN 18 INCHES, THEN 57 STONE SHALL BE UTILIZED BETWEEN THE TWO LINES.

7. SEE SECTION 1- DESIGN CRITERIA FOR ADDITIONAL REQUIREMENTS.

PIPE SEPARATION DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. G-3
NTS			



TYPICAL VALVE SETTING DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. G-7
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 DIVISION. SUBAQUEOUS WATER MAINS SHALL REQUIRE APPROVAL BY THE WATER OR WASTEWATER DIVISION.

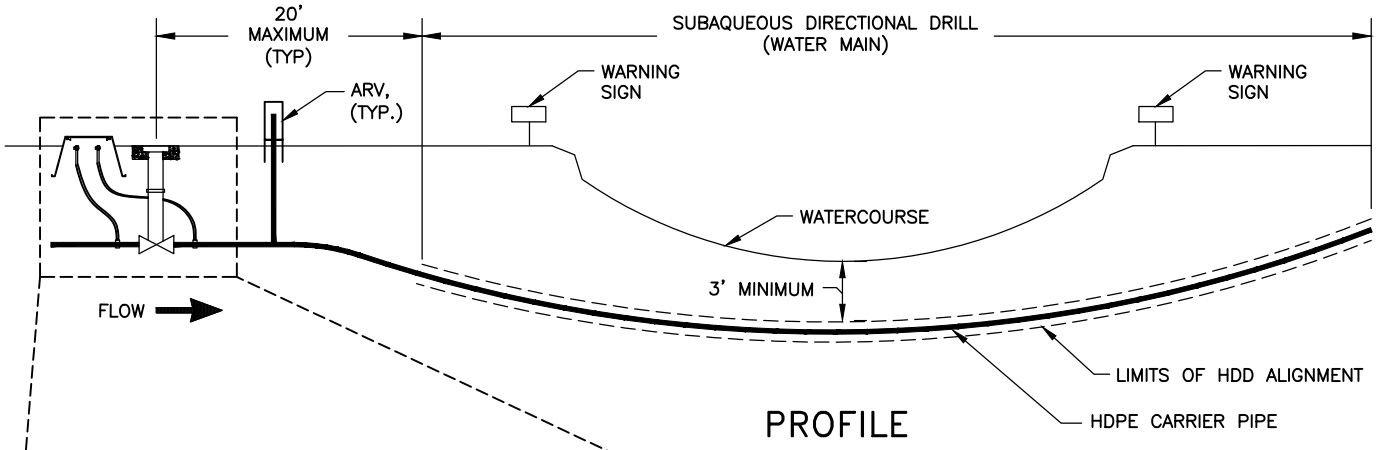
4. WARNING SIGNS SHALL BE PLACED ALONG BANKS OF WATERWAY TO CLEARLY IDENTIFY SUBAQUEOUS CROSSING. SIGNS SHALL INDICATE TYPE OF PIPELINE AND DEPTH OF PIPELINE BELOW BOTTOM OF WATER BODY.

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.

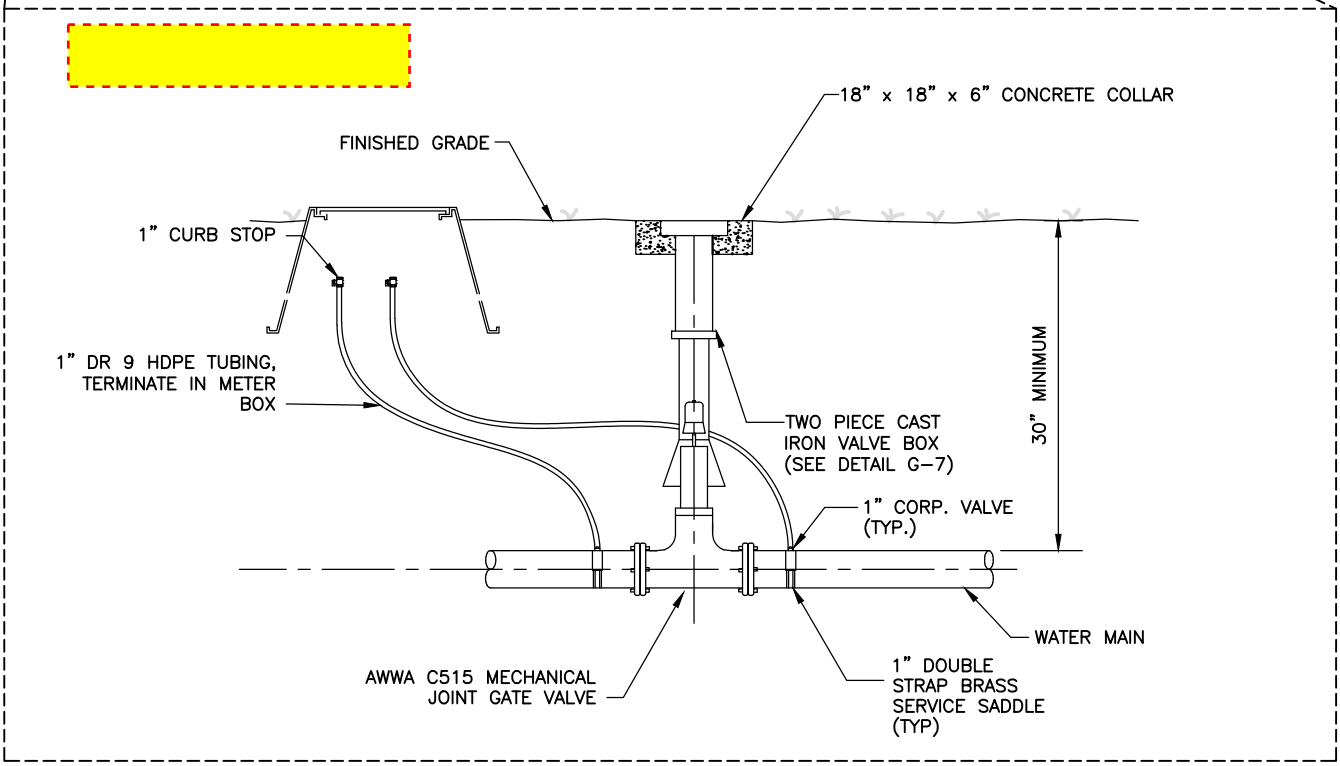
TYPICAL SUBAQUEOUS HORIZONTAL DIRECTIONAL DRILL (HDD)	REVISION DATE: JUNE 2026	Collier County	SHEET NO. G-9
NTS			

20AO



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	REVISION DATE: JUNE 2026	Collier County	SHEET NO. G-9A
NTS			

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.
6. LONG BOLTS TO BE POSITIONED AT TOP AND BOTTOM OF RESTRAINT DEVICES.

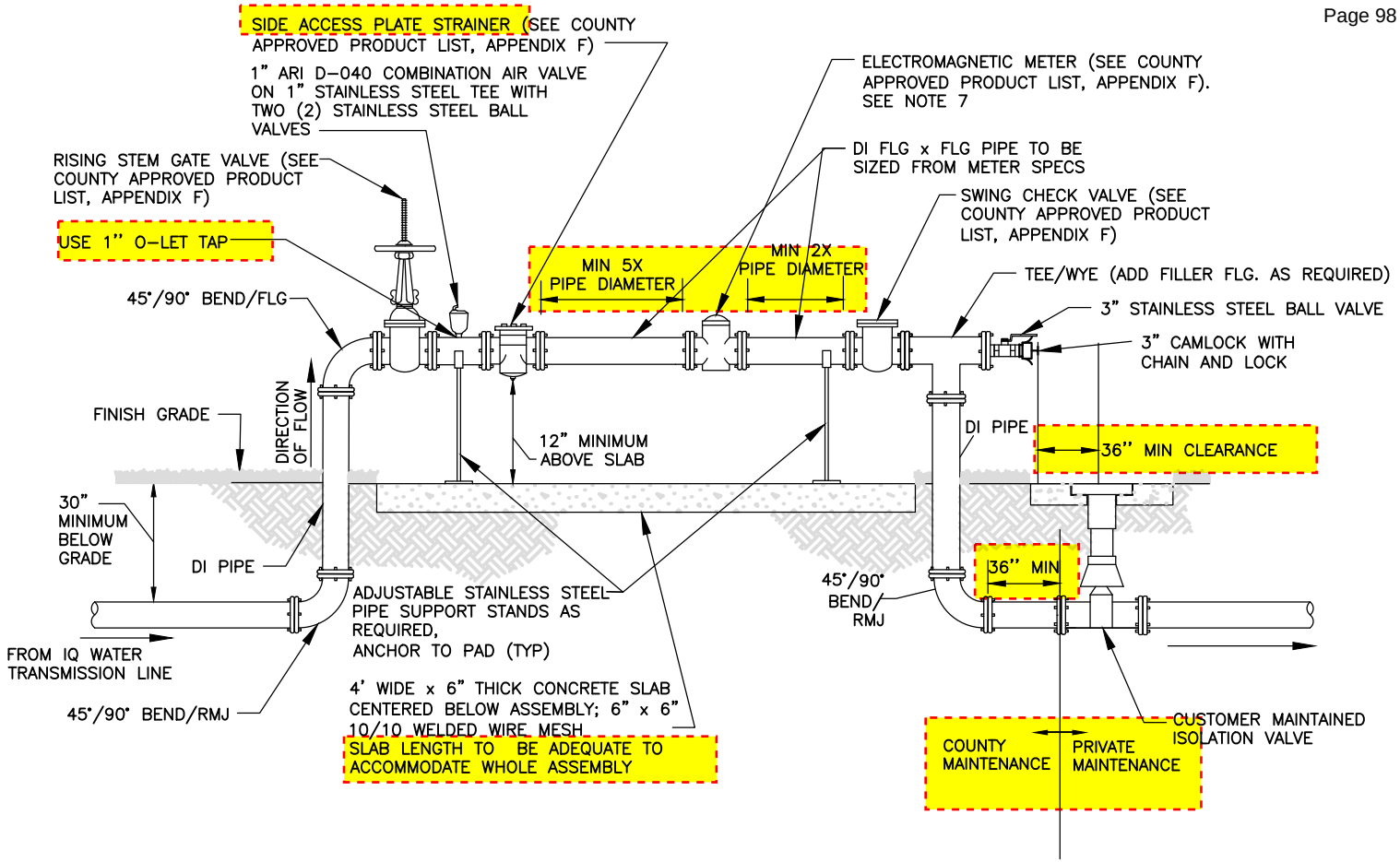
PIPE RESTRAINT SCHEDULE

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO.
G-10



NOTES:

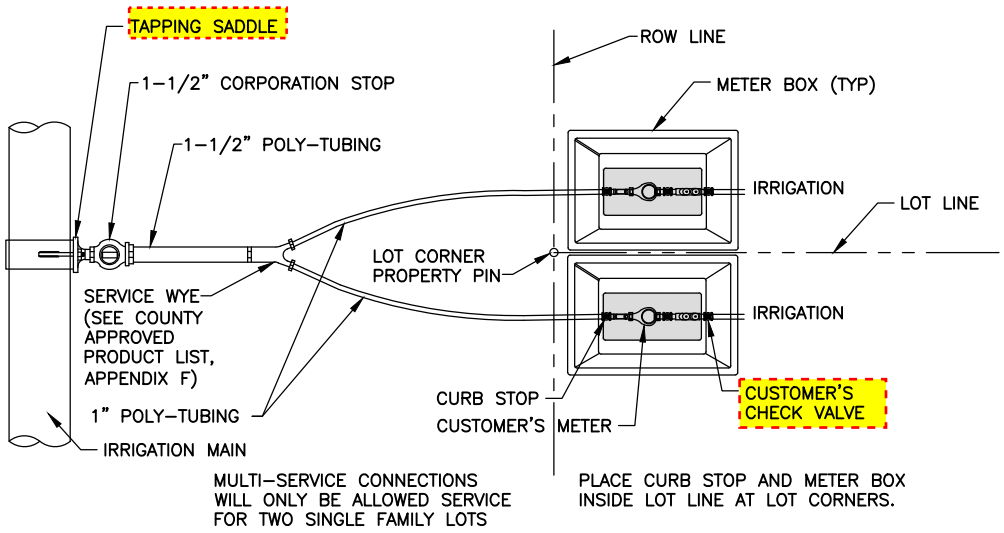
1. ALL ABOVE GROUND PIPE SHALL BE PAINTED PANTONE PURPLE 522-C.
2. ALL ABOVE GROUND PIPES WILL BE FLANGED END. ALL NUTS & BOLTS SHALL BE STAINLESS STEEL.
3. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND METER. SUBMIT FOR REVIEW AND APPROVAL. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS.
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.
8. BACK TAP NOT PERMITTED.

STANDARD IRRIGATION WATER NON-TELEMETRY METER ASSEMBLY 3" AND LARGER

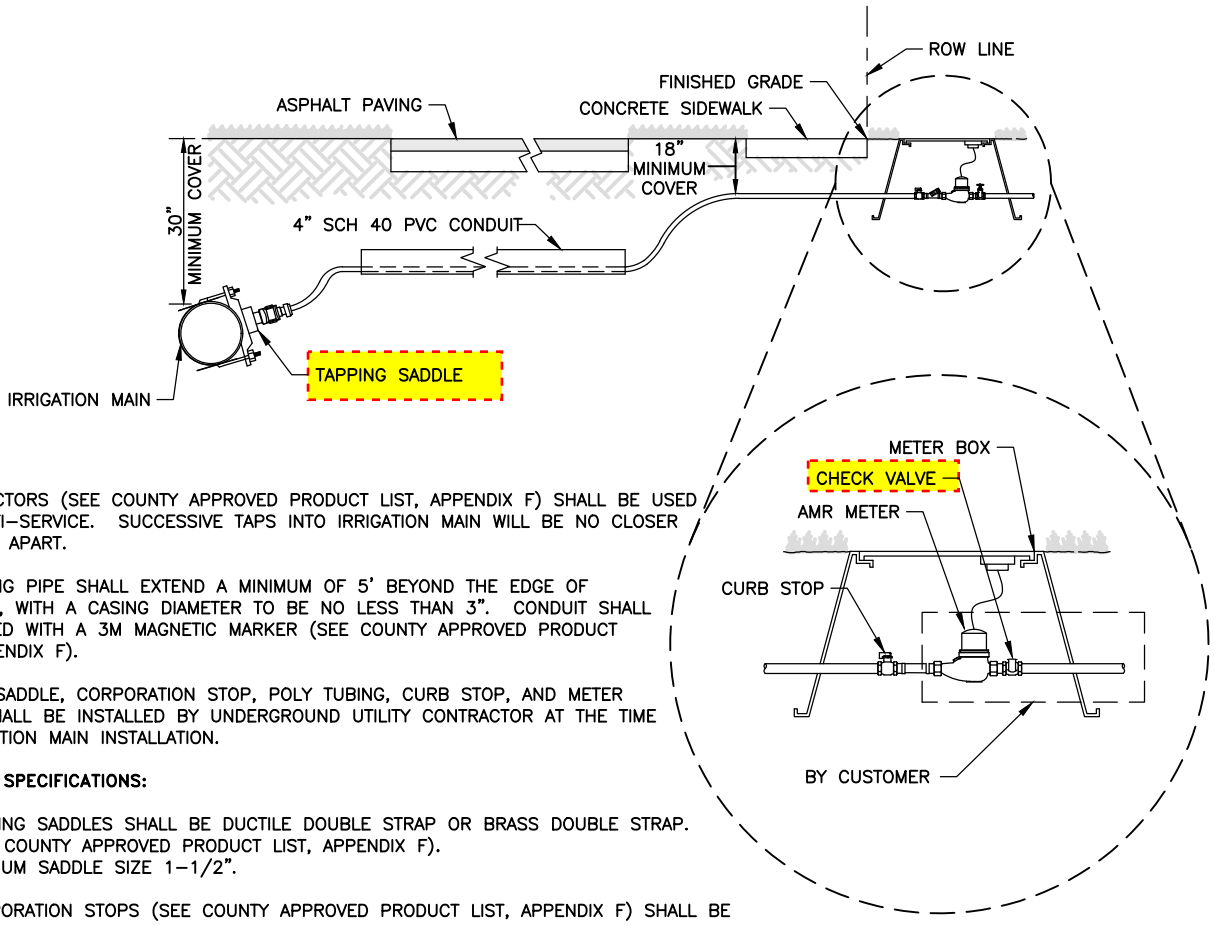
REVISION DATE:
JUNE 2026
NTS

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:**

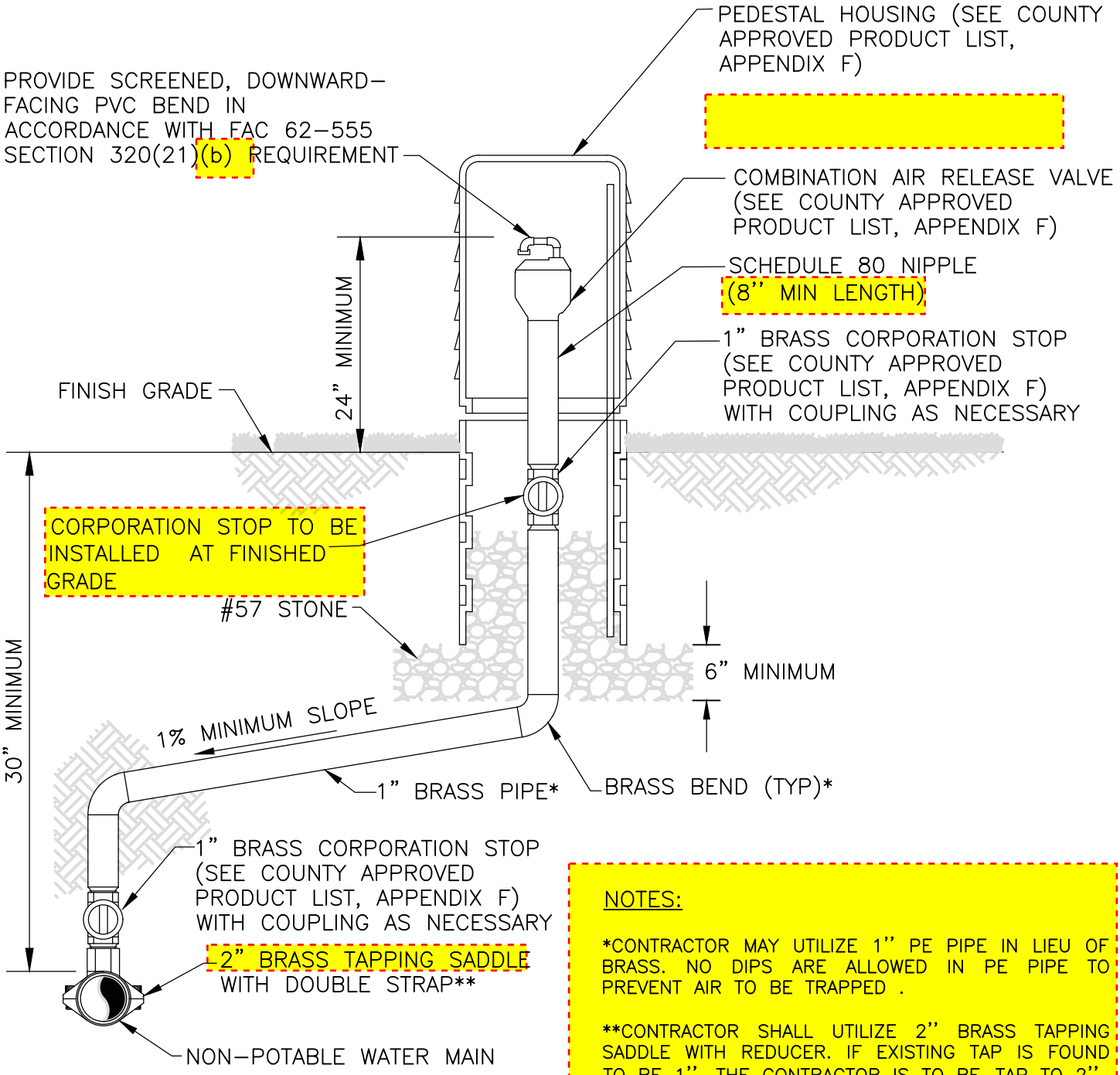
   A. TAPPING SADDLES SHALL BE DUCTILE DOUBLE STRAP OR BRASS DOUBLE STRAP. (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F). MINIMUM SADDLE SIZE 1–1/2".

   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).

TYPICAL IRRIGATION SERVICE METER SETTING DETAIL FOR CONNECTION TO IRRIGATION MAIN NTS	REVISION DATE: JUNE 2026	Collier County	SHEET NO. NP–2



NOTES:

*CONTRACTOR MAY UTILIZE 1'' PE PIPE IN LIEU OF BRASS. NO DIPS ARE ALLOWED IN PE PIPE TO PREVENT AIR TO BE TRAPPED .

**CONTRACTOR SHALL UTILIZE 2'' BRASS TAPPING SADDLE WITH REDUCER. IF EXISTING TAP IS FOUND TO BE 1'', THE CONTRACTOR IS TO RE-TAP TO 2''.

REUSE, RAW AND SUPPLEMENTAL WATER AIR RELEASE VALVE DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. NP-4
NTS			

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 STAINLESS STEEL.
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

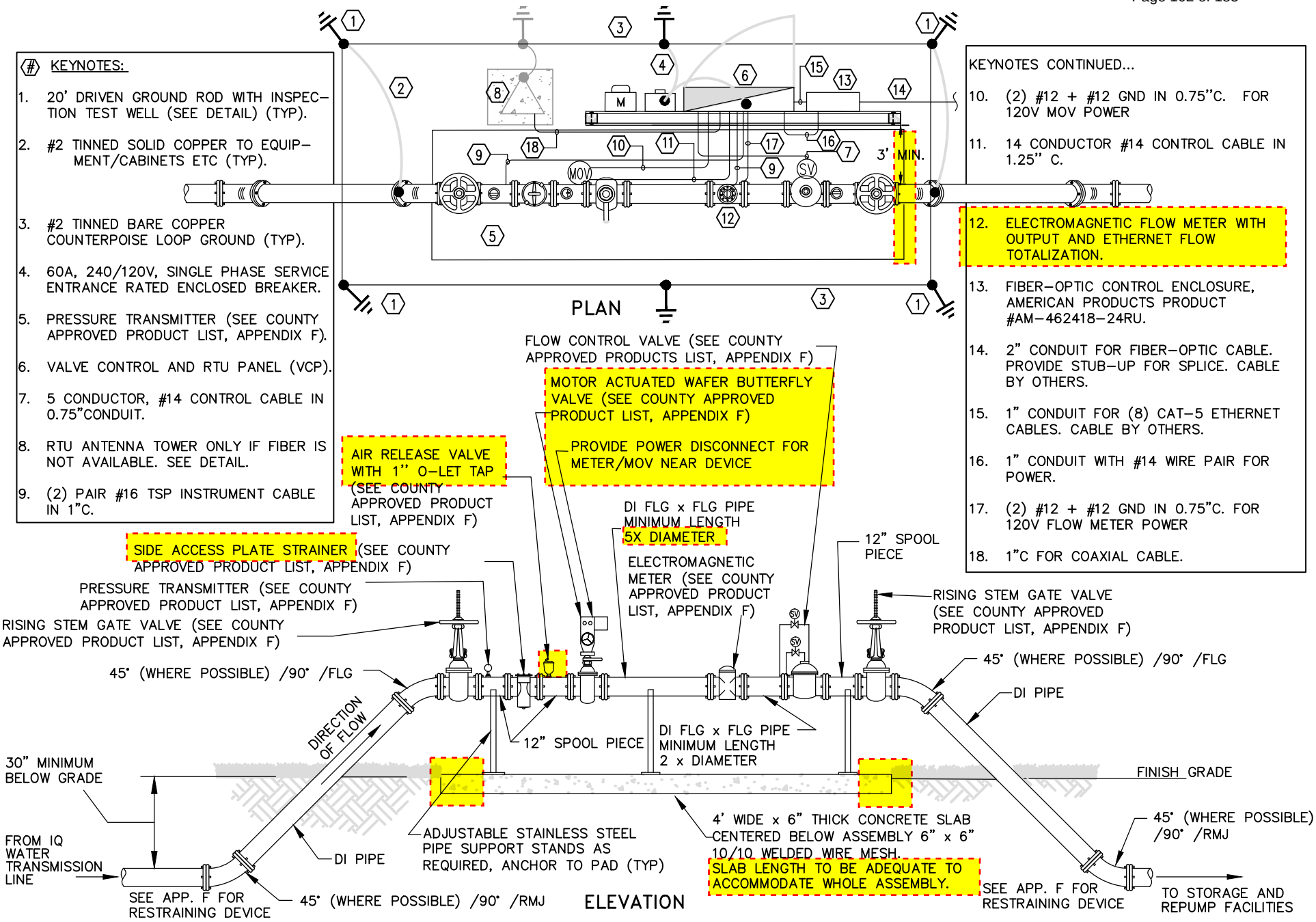
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE GENERAL NOTE AND KEYNOTES

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO.
NP–E1



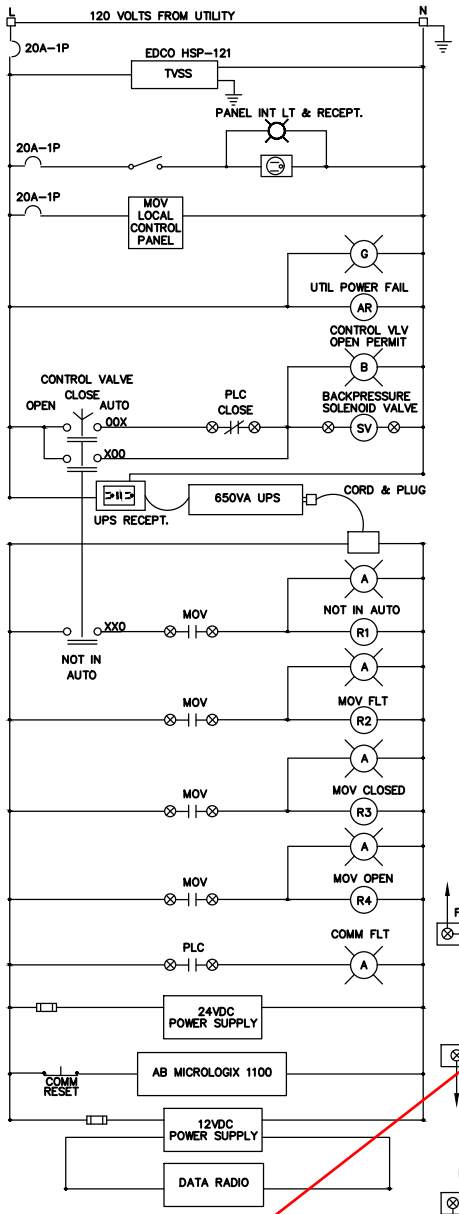
STANDARD IRRIGATION WATER METER ASSEMBLY 3" AND LARGER – TELEMETRY

NTS

REVISION DATE:
JUNE 2026

Collier County

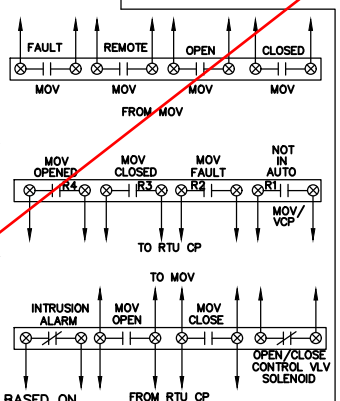
SHEET NO.
NP-E2

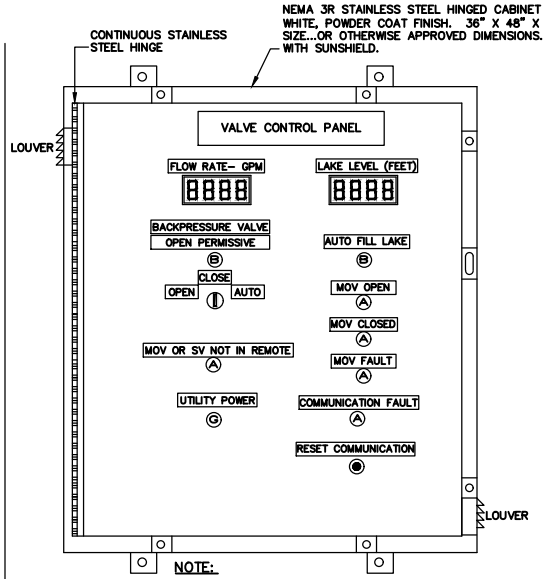


NOTE:

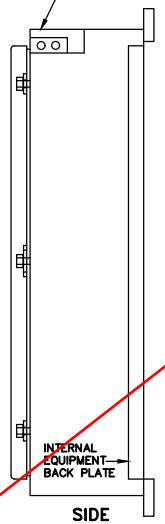
TYPICAL CONTROL PANEL WIRING AND MOUNTING IS BASED ON USING SINGLE PANEL FOR VALVE CONTROL AS WELL AS TELEMETRY. FOR SITES WHERE SEPARATE PANEL PROVISIONS ARE REQUIRED (ONE FOR VALVE CONTROL AND ONE FOR TELEMETRY), CONSULT WITH COUNTY PUED/IQ STAFF FOR APPROVED MODIFICATIONS TO THIS AND RELATED DRAWINGS.

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

NOT USED

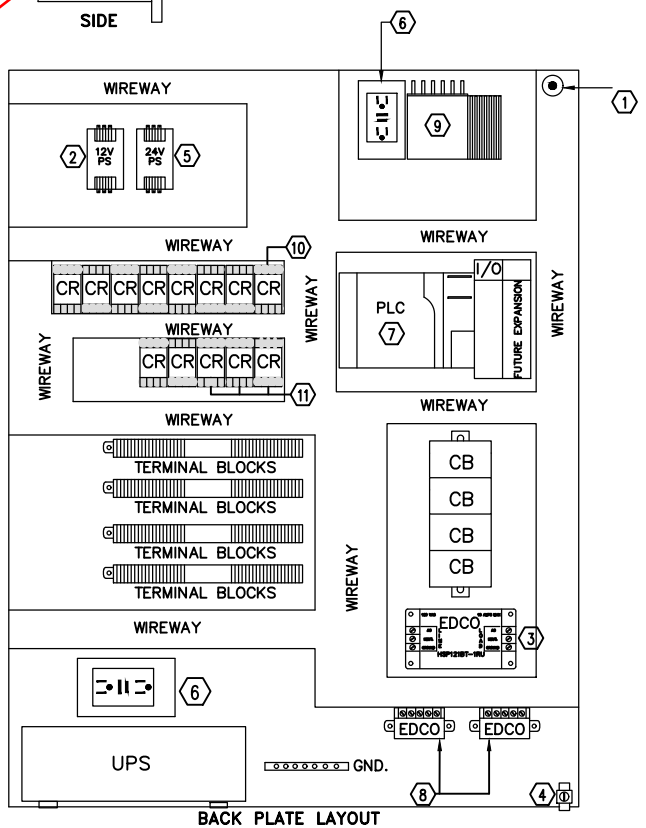
OPEN/CLOSE REUSE SERVICE CONNECTION RTU I/O POINT LIST

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

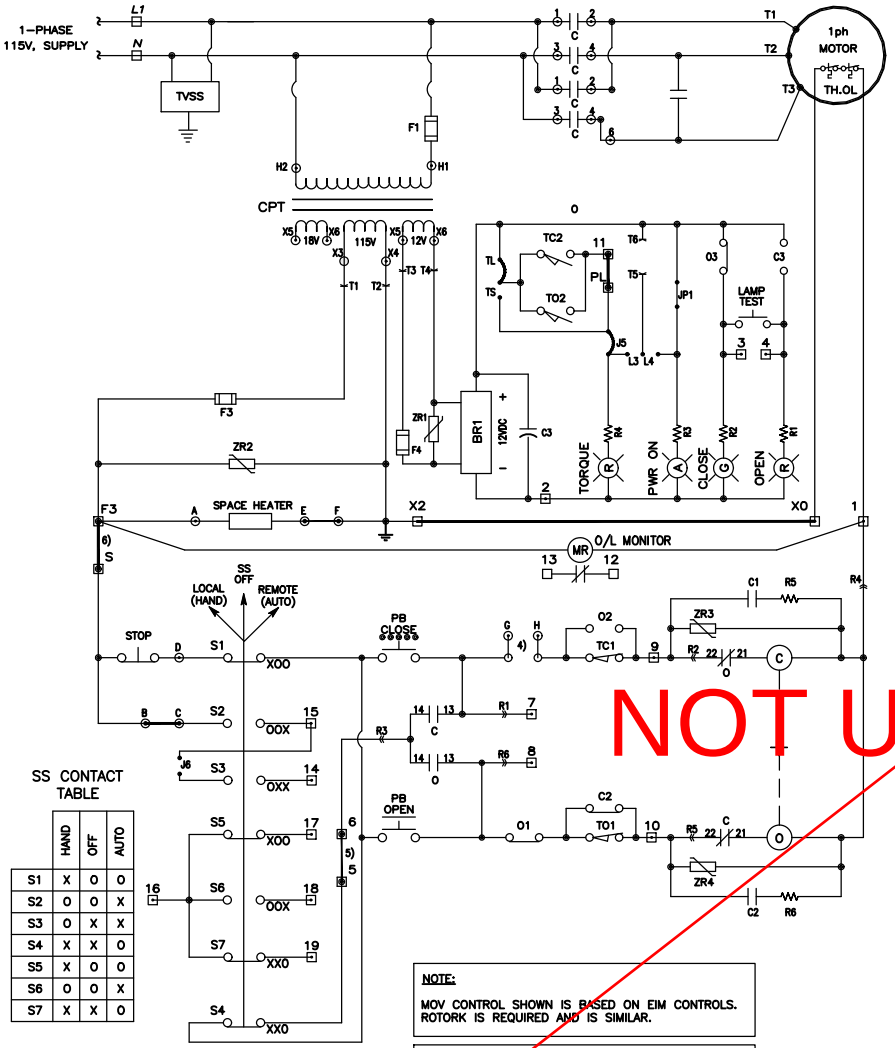
NTS

REVISION DATE:
AUGUST 2008

Collier County

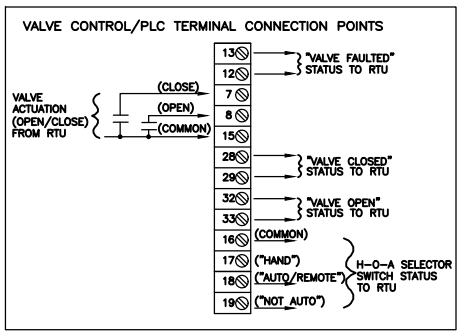
SHEET NO.
NP-E3

20AO



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

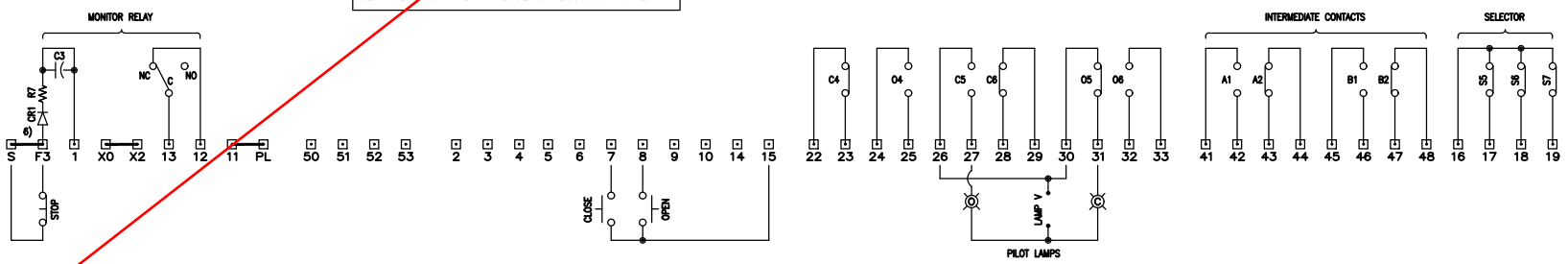
		VALVE POSITION			CONTACT FUNCTION
		CLOSE	MID	OPEN	
CLOSE rotor	C1	O	X	X	CLOSE COIL
	C2	X	O	O	BYPASS TO1
	C3	O	X	X	OPEN LAMP
	C4	X	O	O	
	C5	O	X	X	
	C6	O	X	O	
OPEN rotor	O	X	X	O	OPEN COIL
	O2	O	O	X	BYPASS TC1
	O3	X	X	O	CLOSE LAMP
	O4	O	O	X	
	O5	X	O	O	
	O6	O	O	X	
A	A1	O		X	SPARE
	A2	X		O	SPARE
B	B1	O		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

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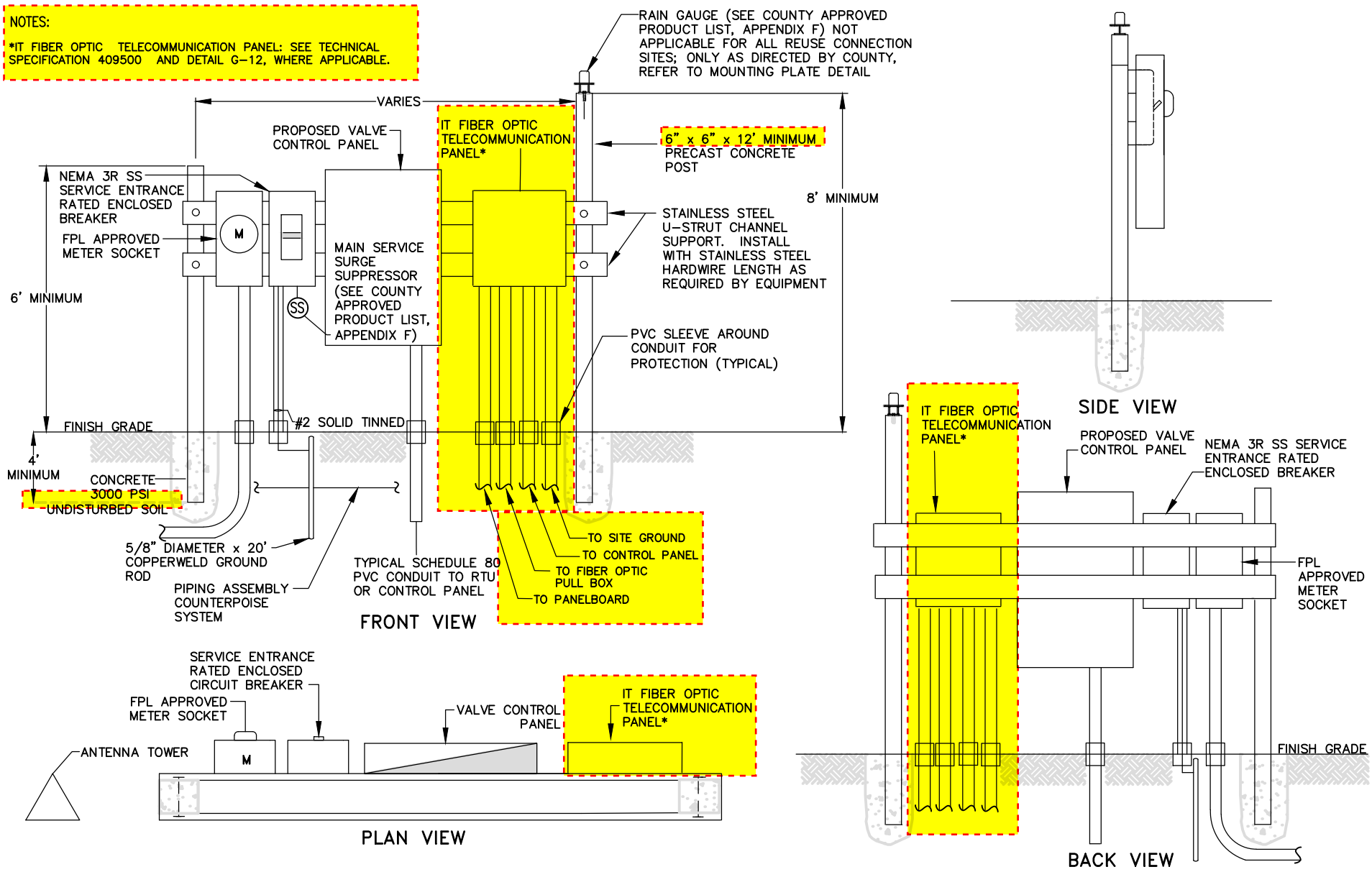
REVISION DATE:
APRIL 2006

Collier County

SHEET NO.
NP–E4

NOTES:

*IT FIBER OPTIC TELECOMMUNICATION PANEL: SEE TECHNICAL SPECIFICATION 409500 AND DETAIL G-12, WHERE APPLICABLE.



REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE ELECTRICAL EQUIPMENT ELEVATIONS

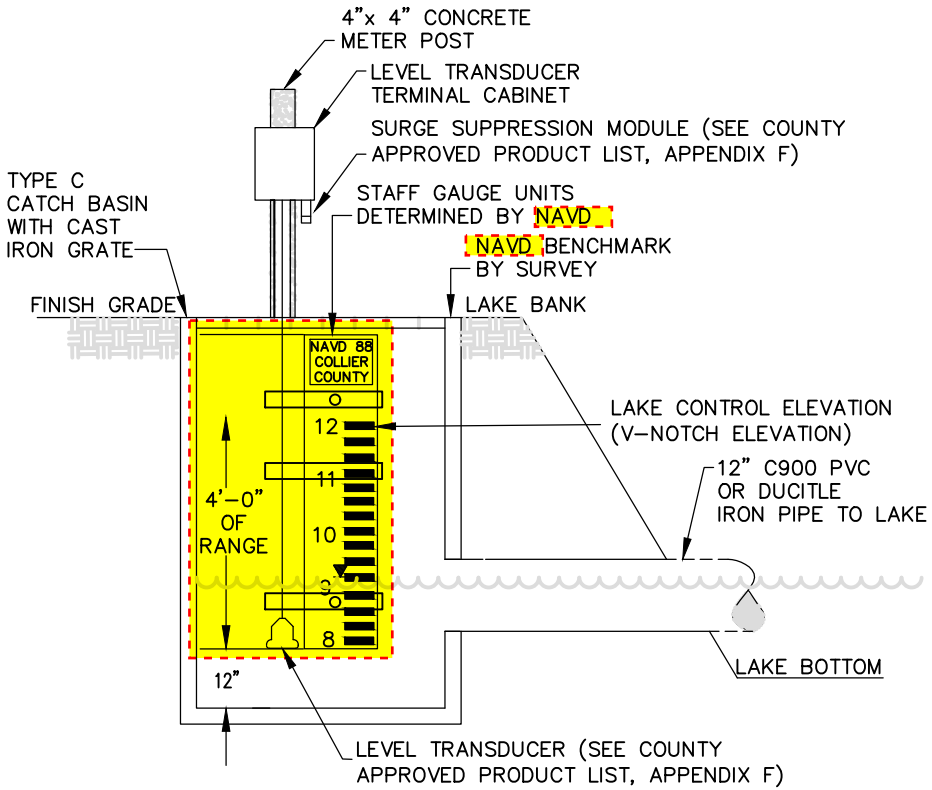
NTS

REVISION DATE:
JUNE 2026

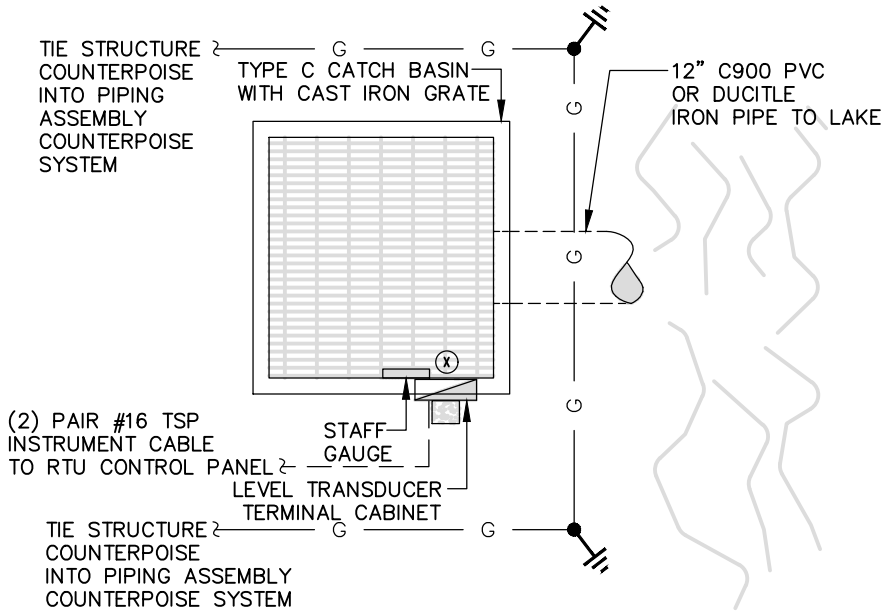
Collier County

SHEET NO.
NP-E5

20AO



CROSS SECTION



PLAN VIEW

NOTES:

1. STAFF GAUGE SHALL BE MANUFACTURED FROM 2"X10" TANGENT TECHNOLOGIES, LLC PLASTIC LUMBER OR APPROVED EQUAL AND SST MOUNTING COMPONENTS SHALL BE STAINLESS STEEL.
2. 5" X 8-1/2" ROUTED HDPE DATUM SIGN PANEL- 2" LETTERS WITH RED AND WHITE COLOR CORE MATERIAL WITH RED BORDER.
3. MANUFACTURER TO PERMANENTLY MOUNT DATUM SIGN PANEL IN ROUTED CAVITY.
4. ELEVATION VARY BY LOCATION.

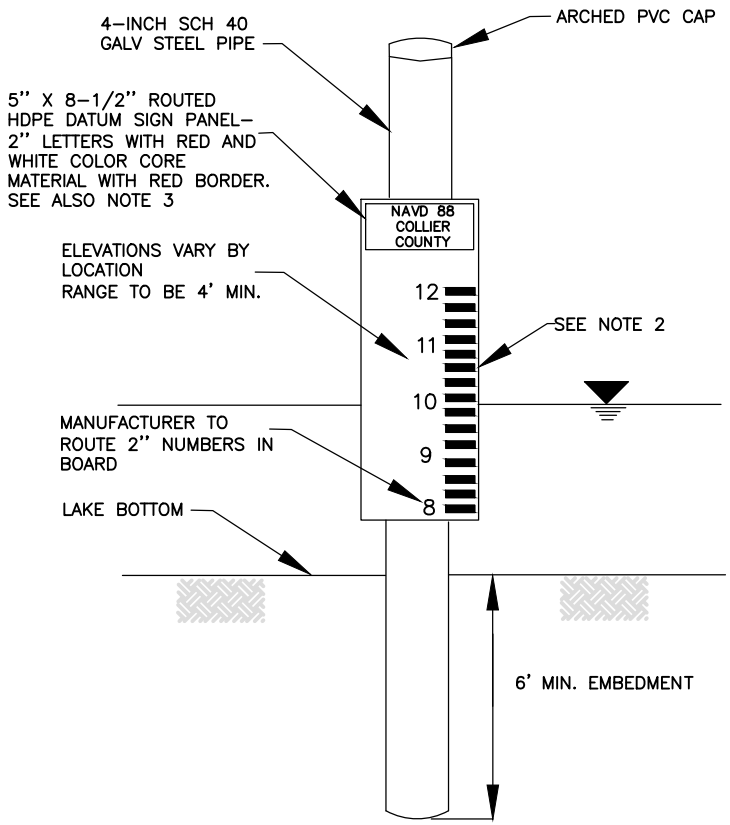
REUSE SYSTEM STANDARD SERVICE CONNECTIONS OPEN/CLOSE VALVE SINGLE CONTROL PANEL SITE LEVEL TRANSDUCER MOUNTING DETAILS

NTS

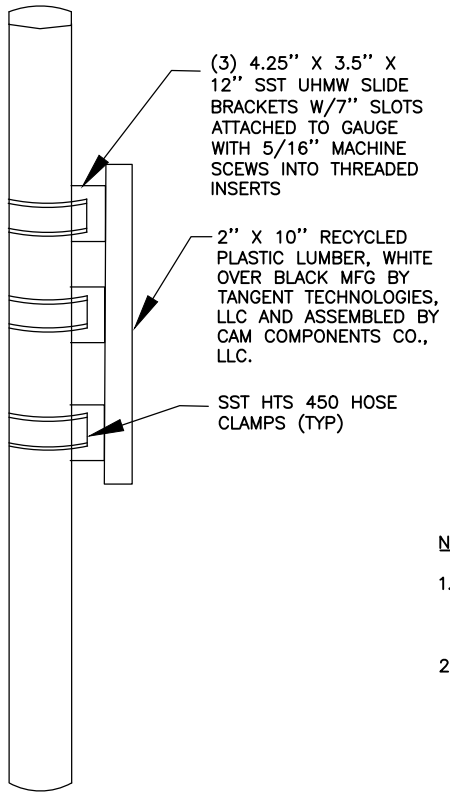
REVISION DATE:
JUNE 2026

Collier County

SHEET NO.
NP-E6



FRONT VIEW



SIDE VIEW

NOTES:

1. EXACT LOCATION OF PIPE TO BE FIELD LOCATED WITH COLLIER COUNTY IQ.
2. STAFF GAUGE SHALL BE MANUFACTURED FROM TANGENT TECHNOLOGIES, LLC PLASTIC LUMBER OR APPROVED EQUAL AND SST MOUNTING COMPONENTS SHALL BE MANUFACTURED AND PROVIDED BY CAM COMPONENTS LLC, OR APPROVED EQUAL.
3. MANUFACTURER TO PERMANENTLY MOUNT DATUM SIGN PANEL IN ROUTED CAVITY.

STAFF GAUGE

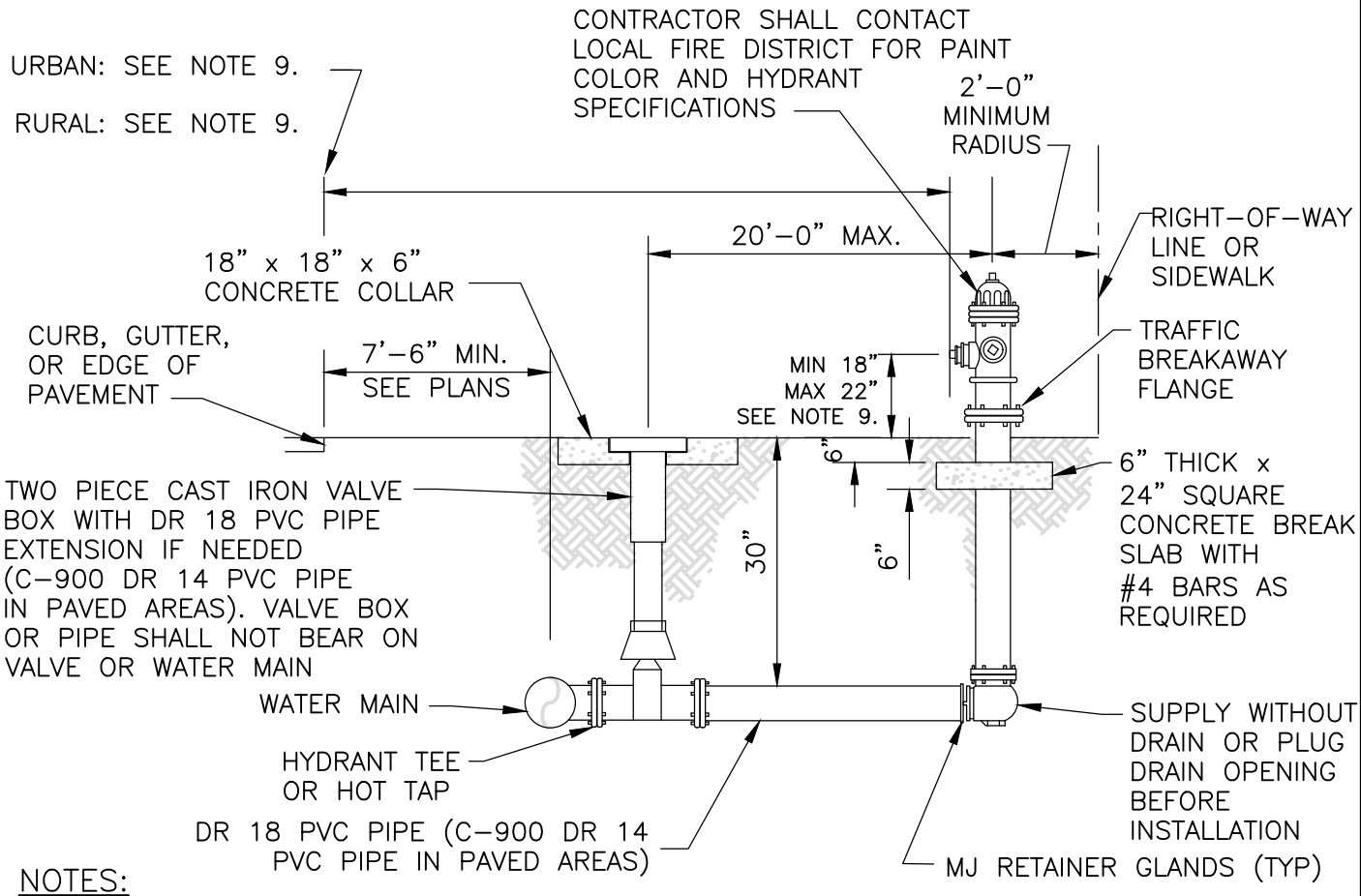
REVISION DATE:
JUNE 2026

NTS

Collier County

SHEET NO.
NP–E10

20AO

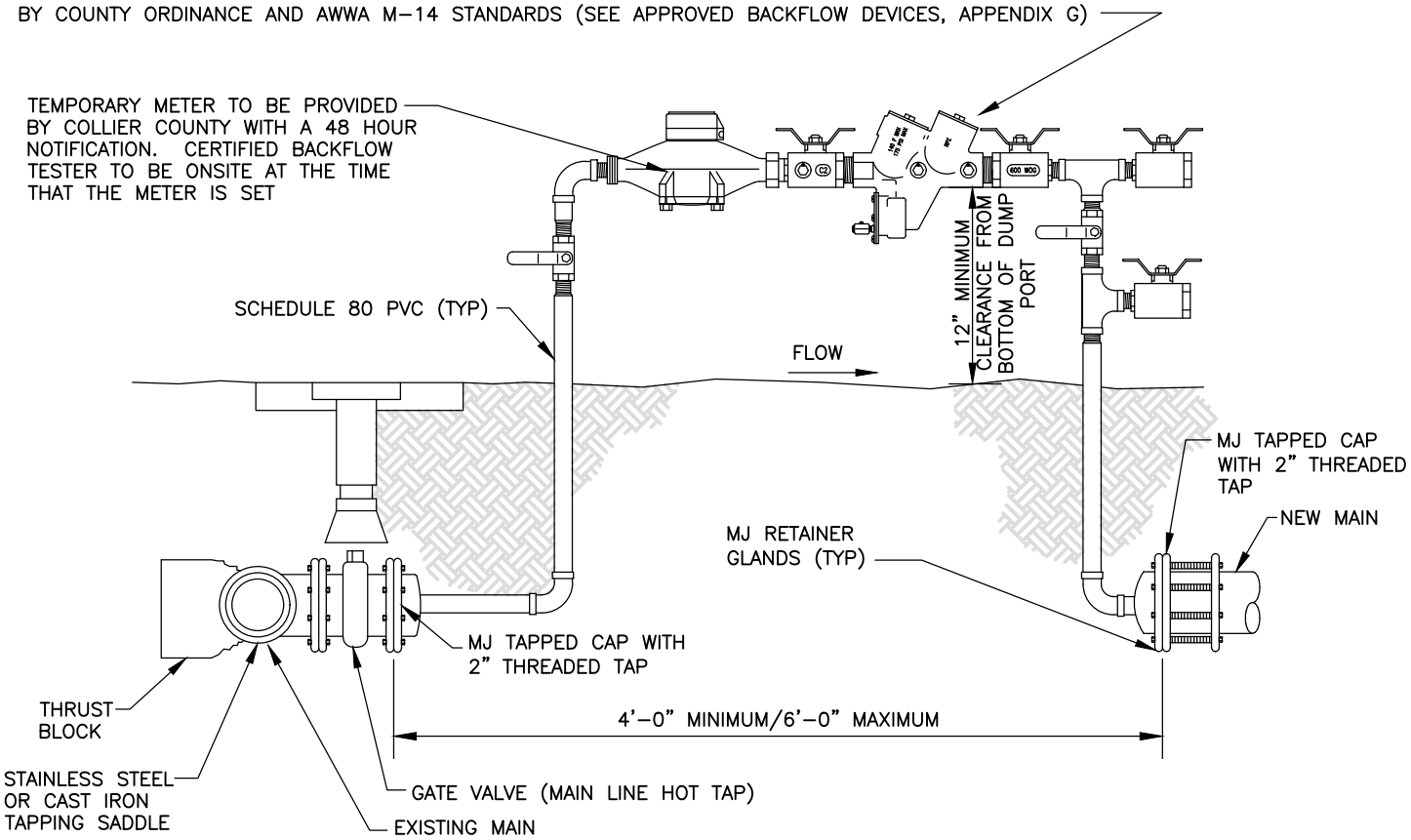


NOTES:

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.
10. BACK TAP NOT PERMITTED.

FIRE HYDRANT DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-3
NTS			

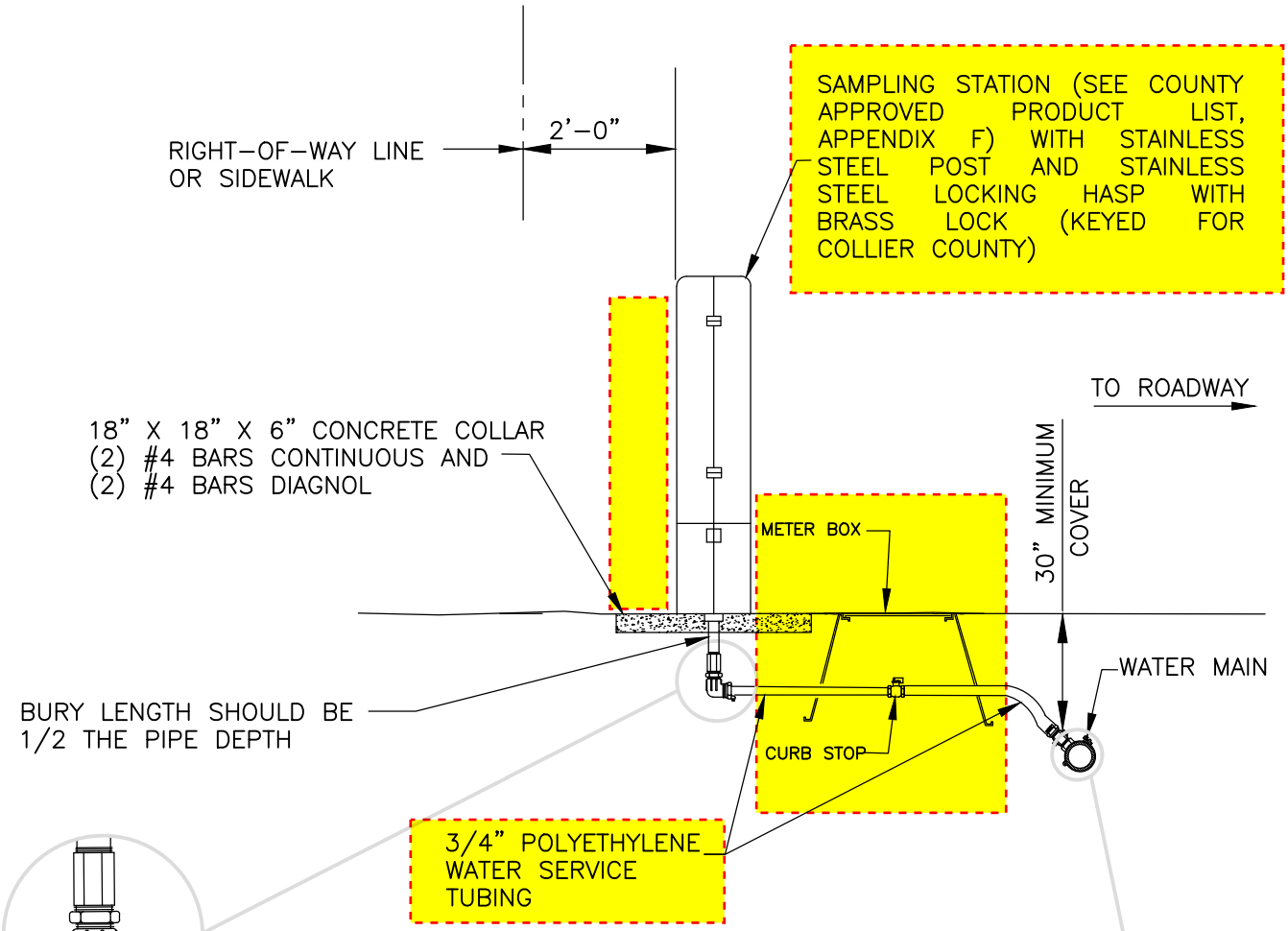
REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY (PROVIDED BY CONTRACTOR) SUPPLIED WITH AMMONIA AND CHLORINE RESISTANT SEATS AND SILICONE RUBBER SEALS. INSTALLATION AS REQUIRED BY COUNTY ORDINANCE AND AWWA M-14 STANDARDS (SEE APPROVED BACKFLOW DEVICES, APPENDIX G)



NOTES:

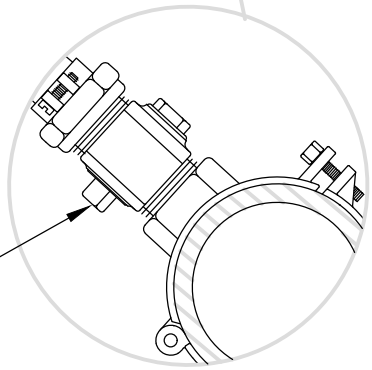
1. FINAL CONNECTION TO BE WITNESSED BY COLLIER COUNTY WATER DISTRIBUTION.
2. MJ TAPPED CAPS TO BE PROPERLY RESTRAINED.
3. INSTALL JUMPER TAP SYSTEM FOR TEMPORARY METER DOWNSTREAM OF BLIND FLANGE FOR CONSTRUCTION WATER.
4. TAPPING SADDLES MAY BE EITHER STAINLESS STEEL OR DUCTILE IRON. ALL TAPPING SADDLES 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.
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: JUNE 2026	Collier County	SHEET NO. W-4

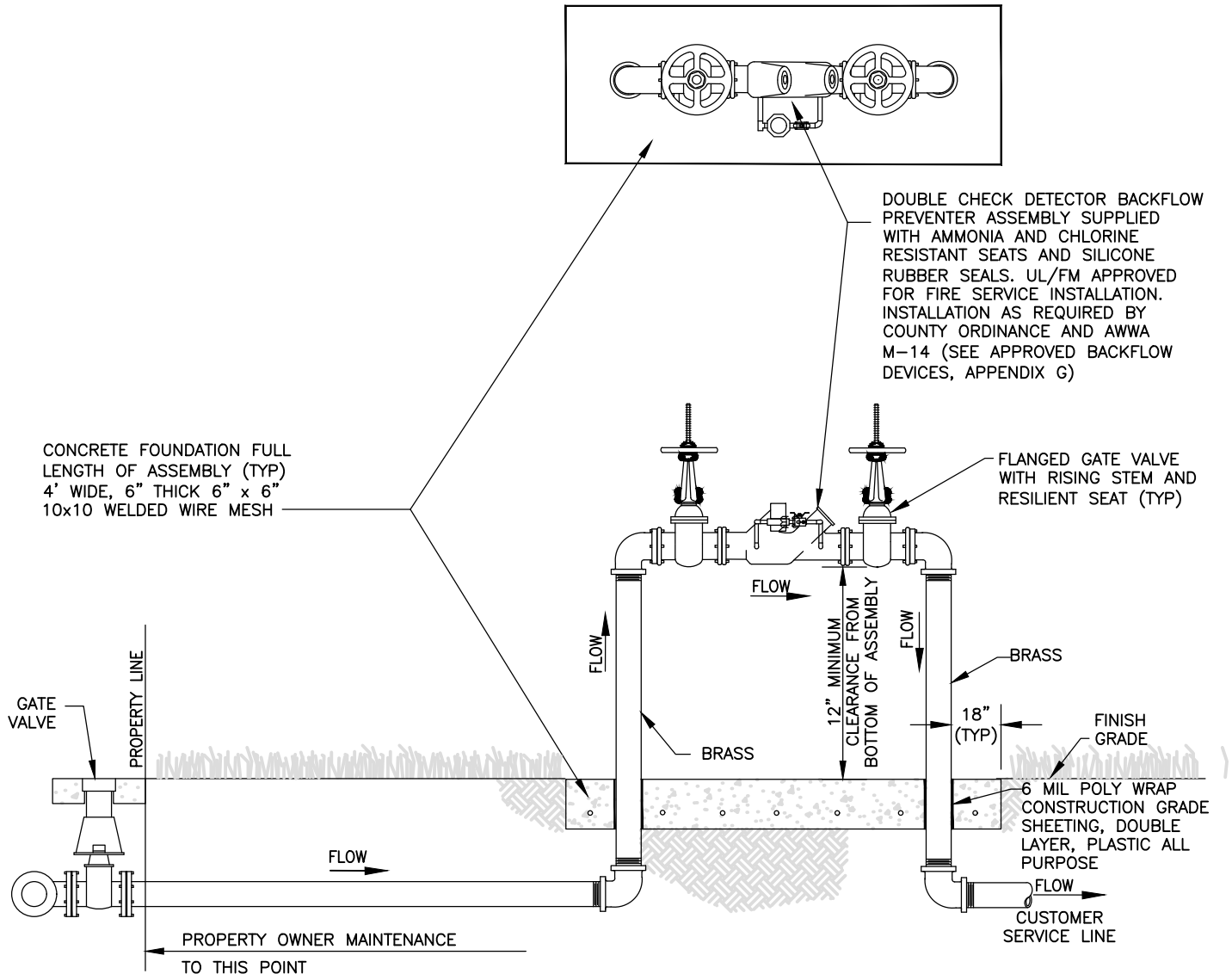


SIDE VIEW

BRASS SERVICE SADDLES WITH CORPORATION STOP (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) FOR PVC C–900 6" TO 12". ALL SIZES DUCTILE IRON PIPE SHOULD BE DIRECT TAP WITH CORPORATION STOP (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F)



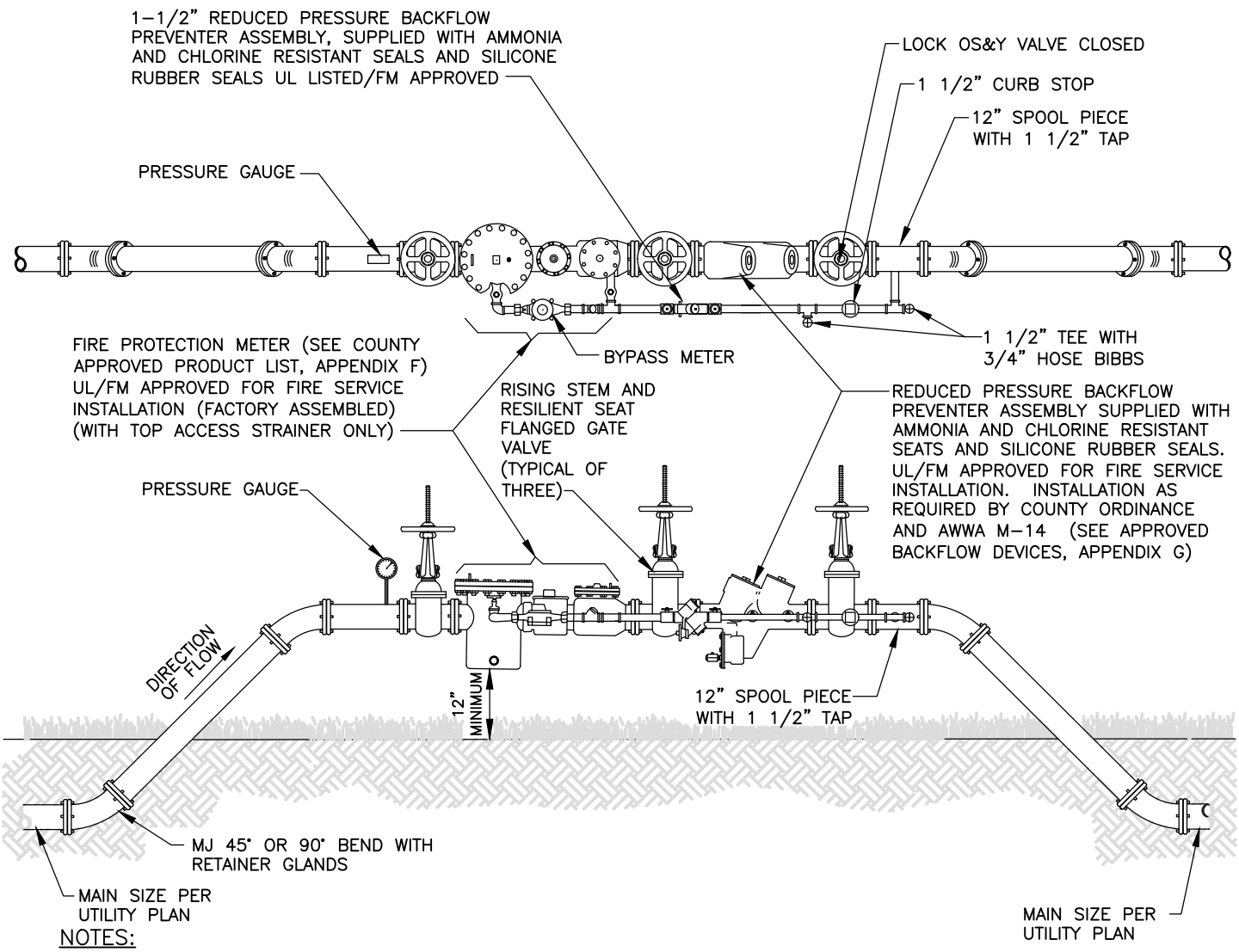
PERMANENT BACTERIAL SAMPLE POINT DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W–6
NTS			



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 DIVISION.
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.
9. BACK TAP NOT PERMITTED.

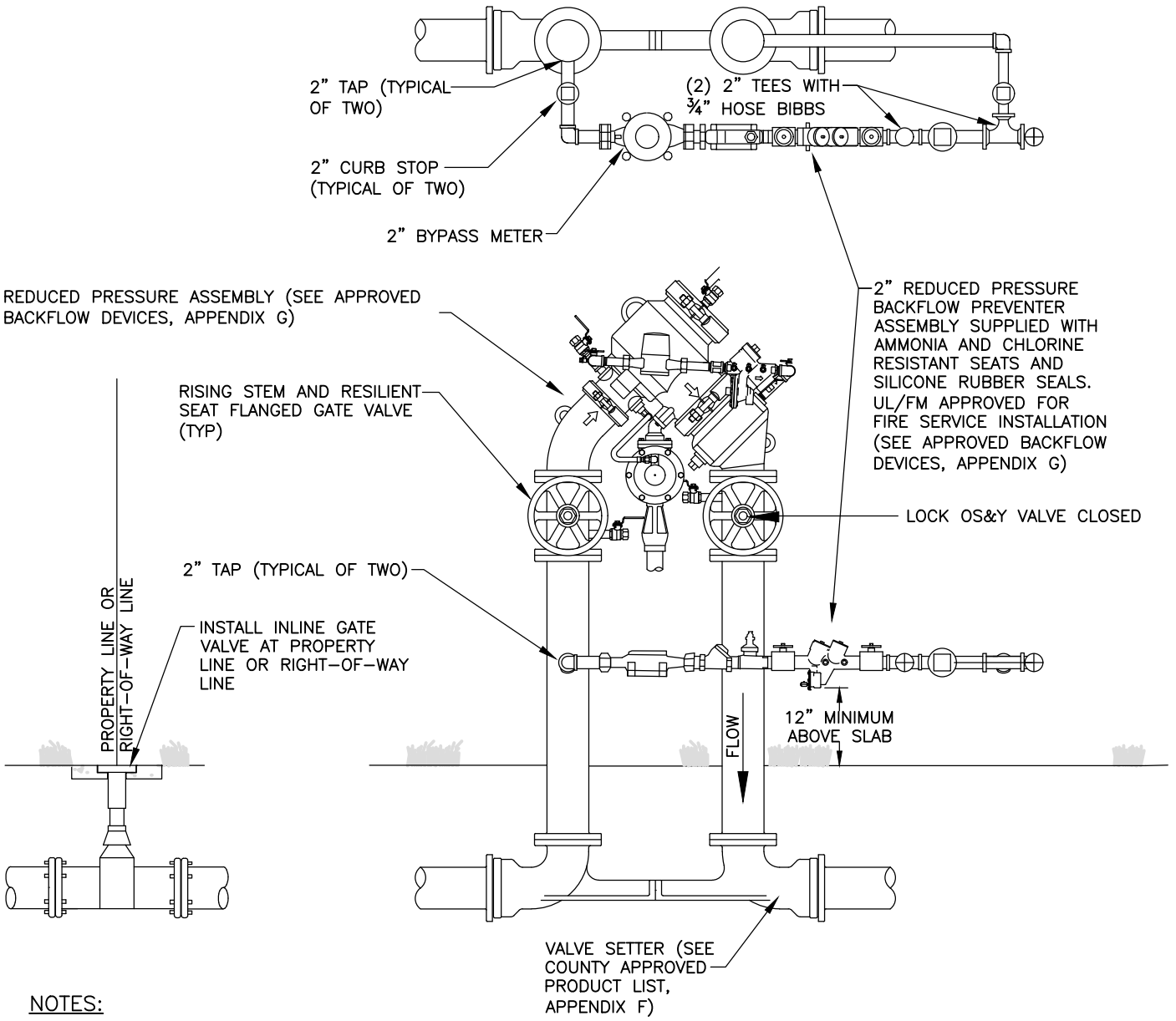
2-½" AND SMALLER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-8
NTS			



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 DIVISION 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.

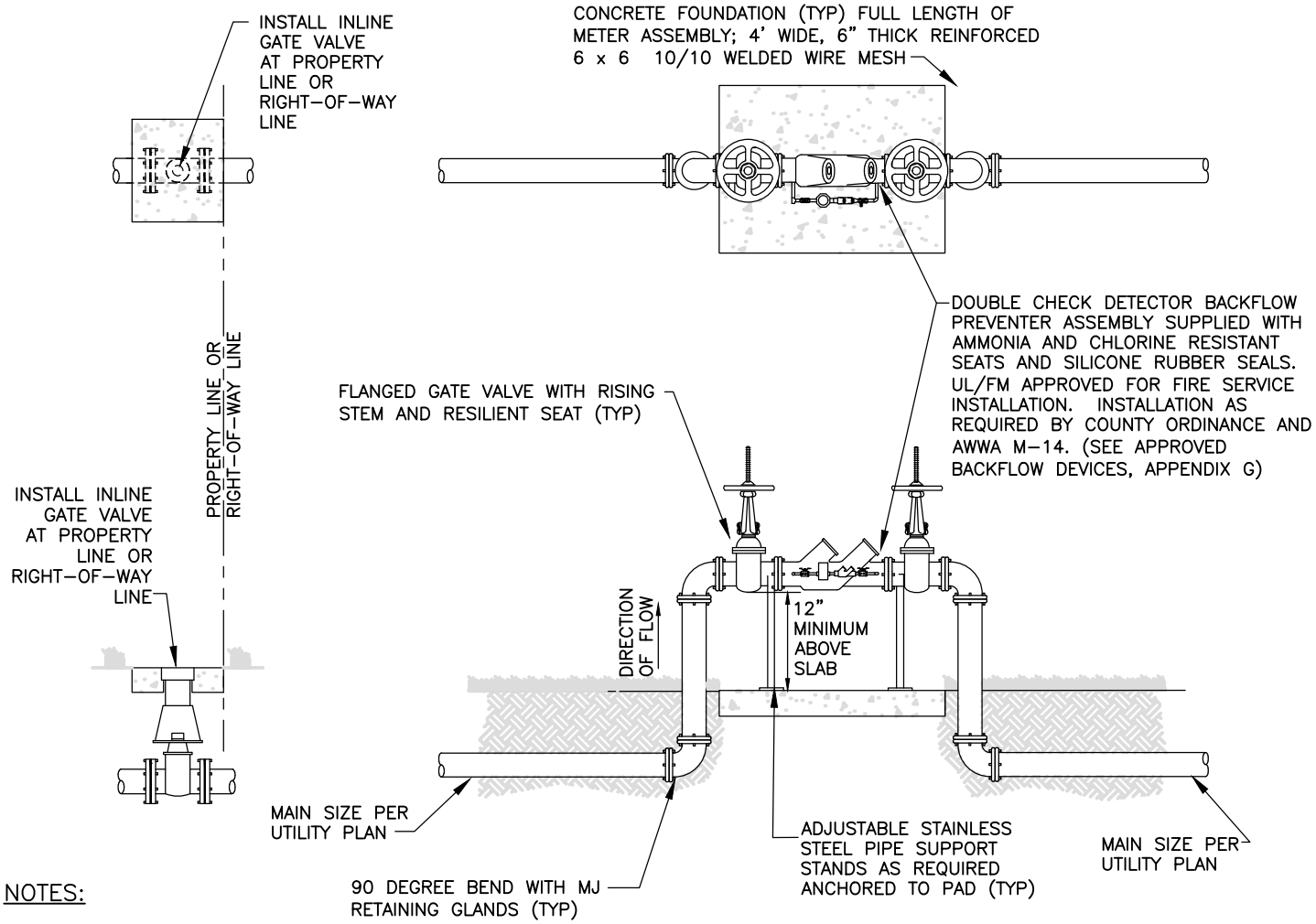
TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE–IN ASSEMBLY	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W–9
NTS			



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 DIVISION 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.

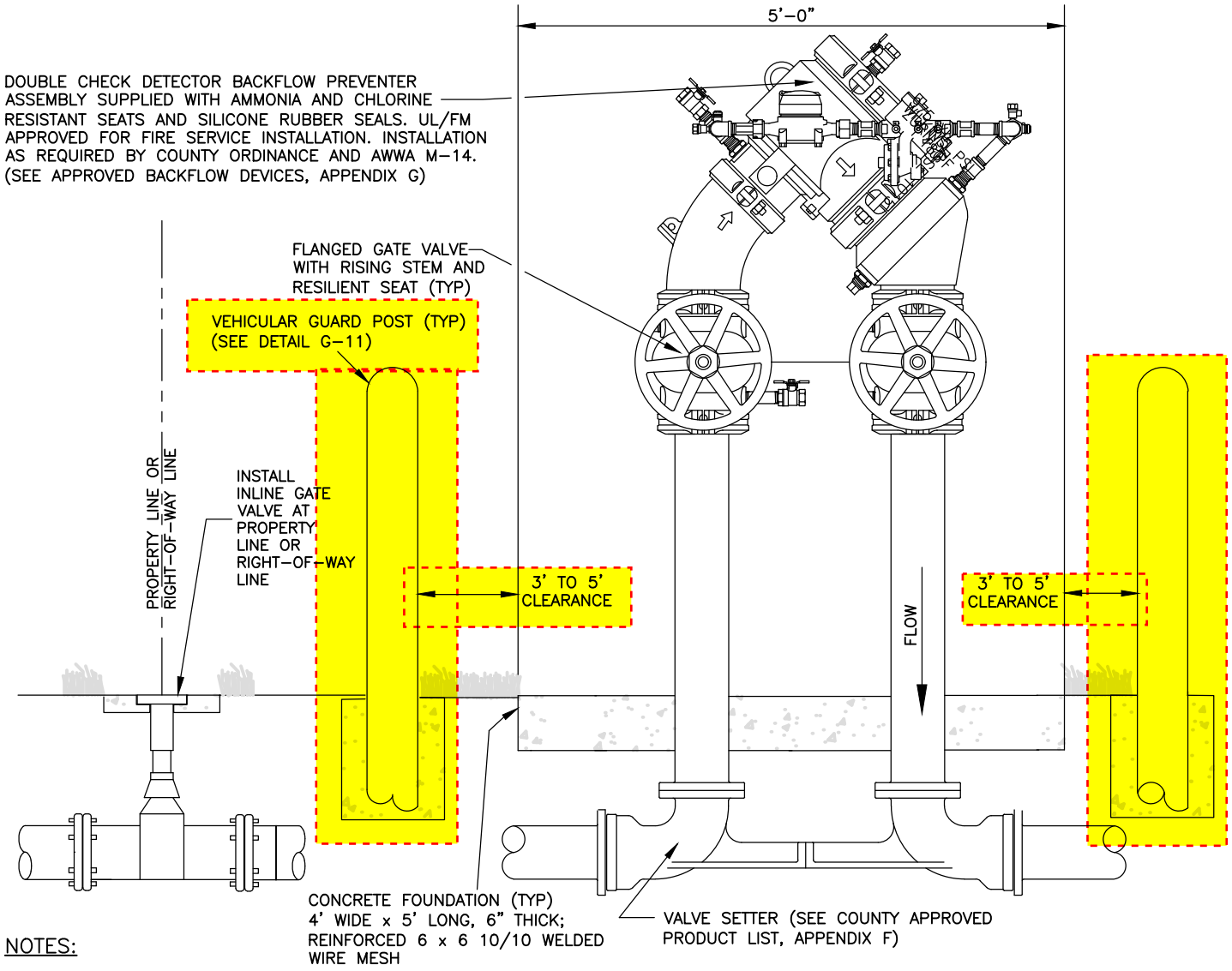
ALTERNATE TEMPORARY BACKFLOW PREVENTER AND FIRE PROTECTION METER TIE-IN ASSEMBLY NTS	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-9A



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 DIVISION.
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.

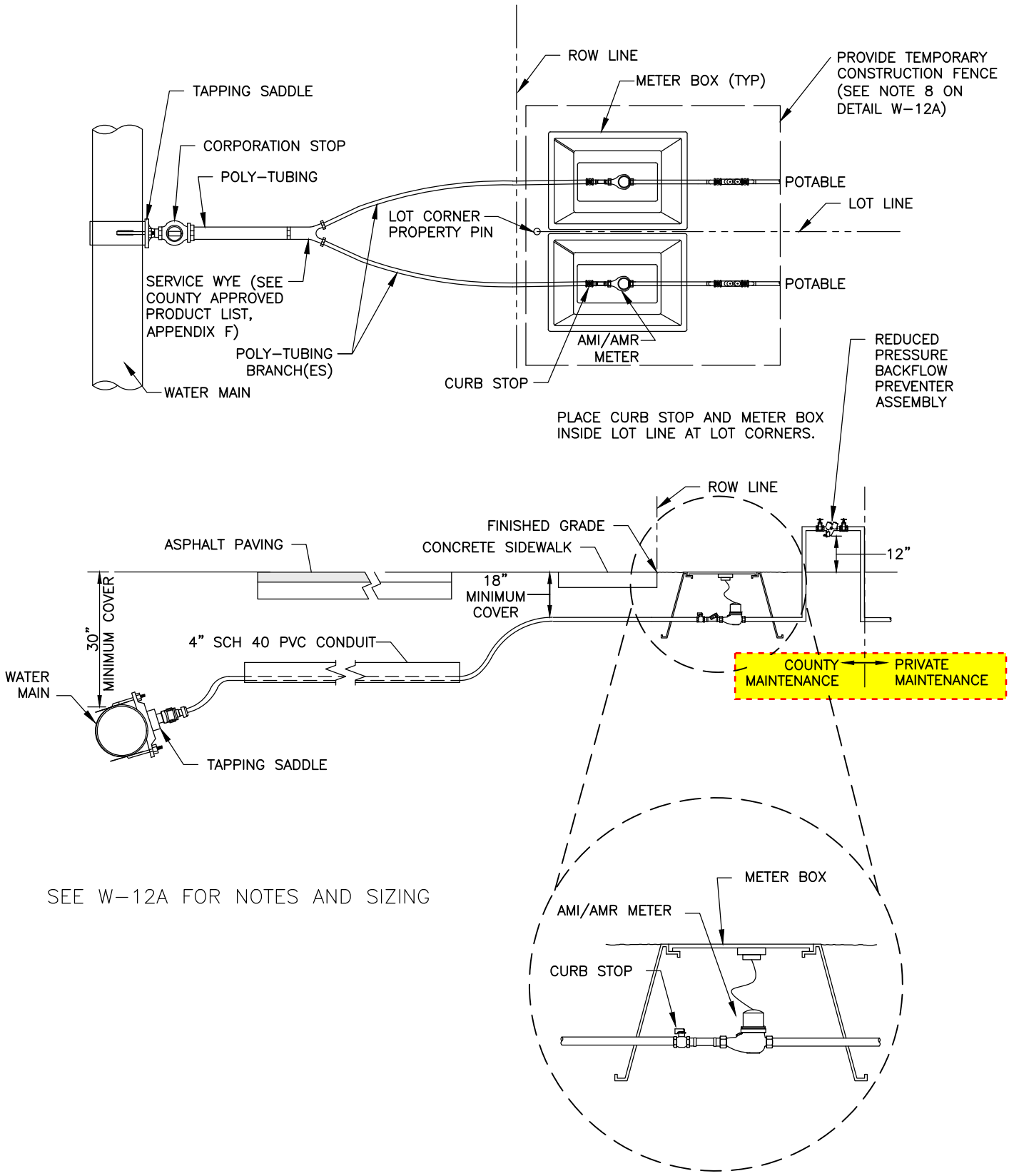
3" AND LARGER FIRE SYSTEM DETECTOR CHECK ASSEMBLY DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W–11
NTS			



NOTES:

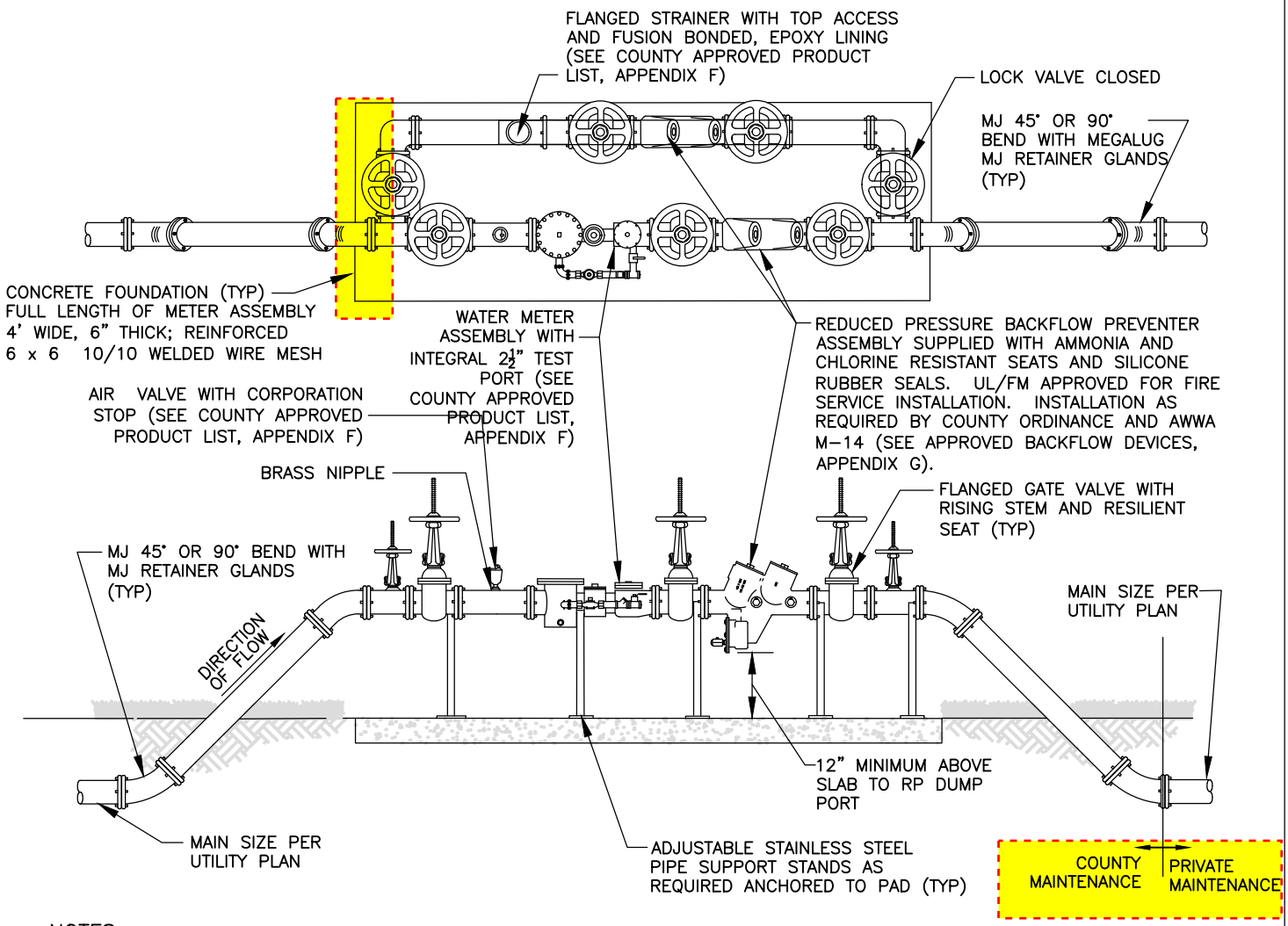
1. ALL ABOVE GROUND PIPE WILL HAVE FLANGED END DUCTILE IRON PIPE, PRESSURE CLASS 350. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. (4) VEHICULAR GUARD POSTS TO BE INSTALLED AROUND ASSEMBLY. CONFIGURATION TO BE ILLUSTRATED ON CONSTRUCTION DOCUMENTS SUBMITTED FOR REVIEW AND APPROVAL.
3. AS THIS UNIT 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 DIVISION.
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	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-11A
NTS			



SEE W-12A FOR NOTES AND SIZING

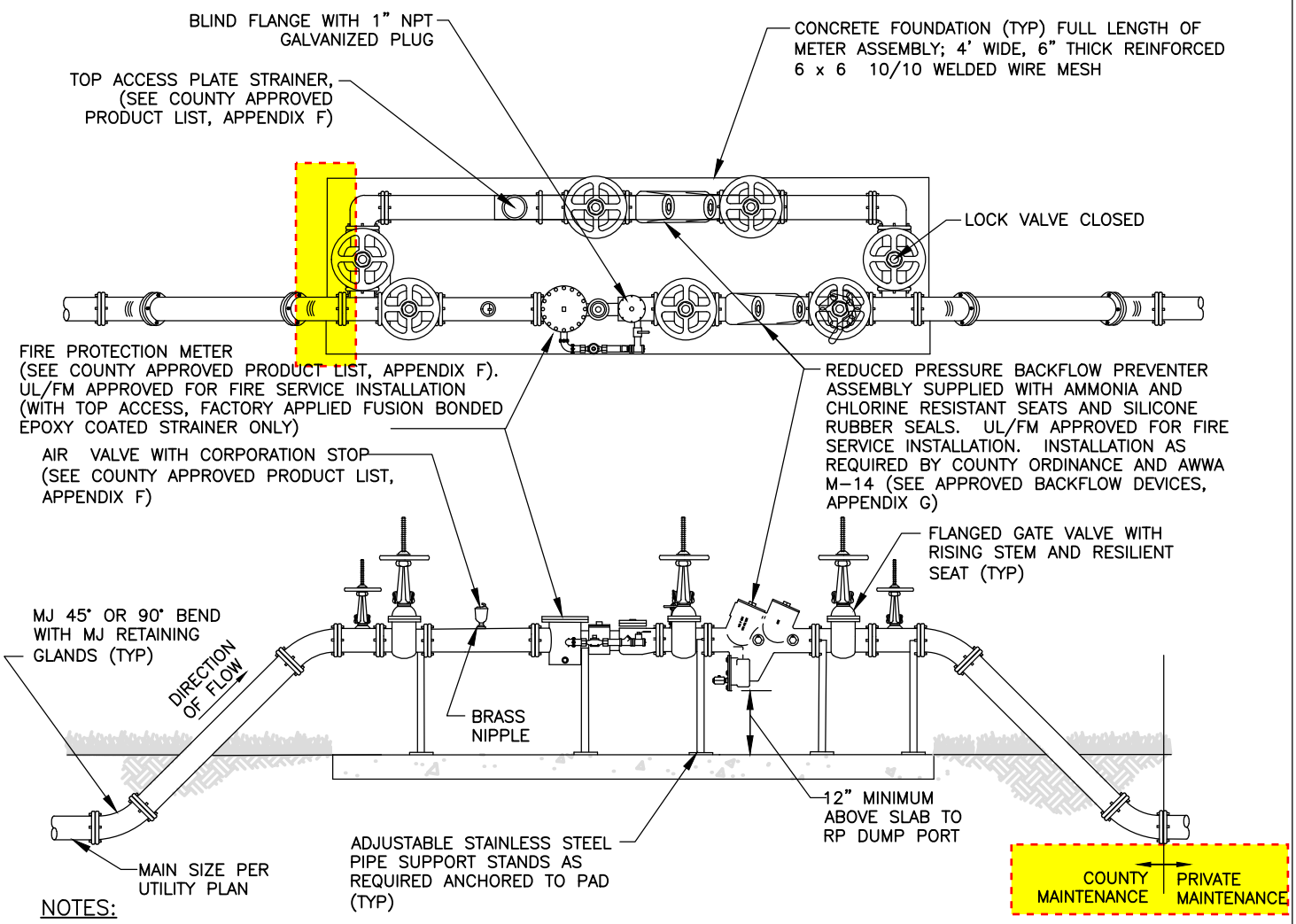
TYPICAL SHORT AND LONG SIDE WATER SERVICE METER SETTING DETAIL FOR CONNECTION TO WATER MAIN	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-12
NTS			



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 DIVISION 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).

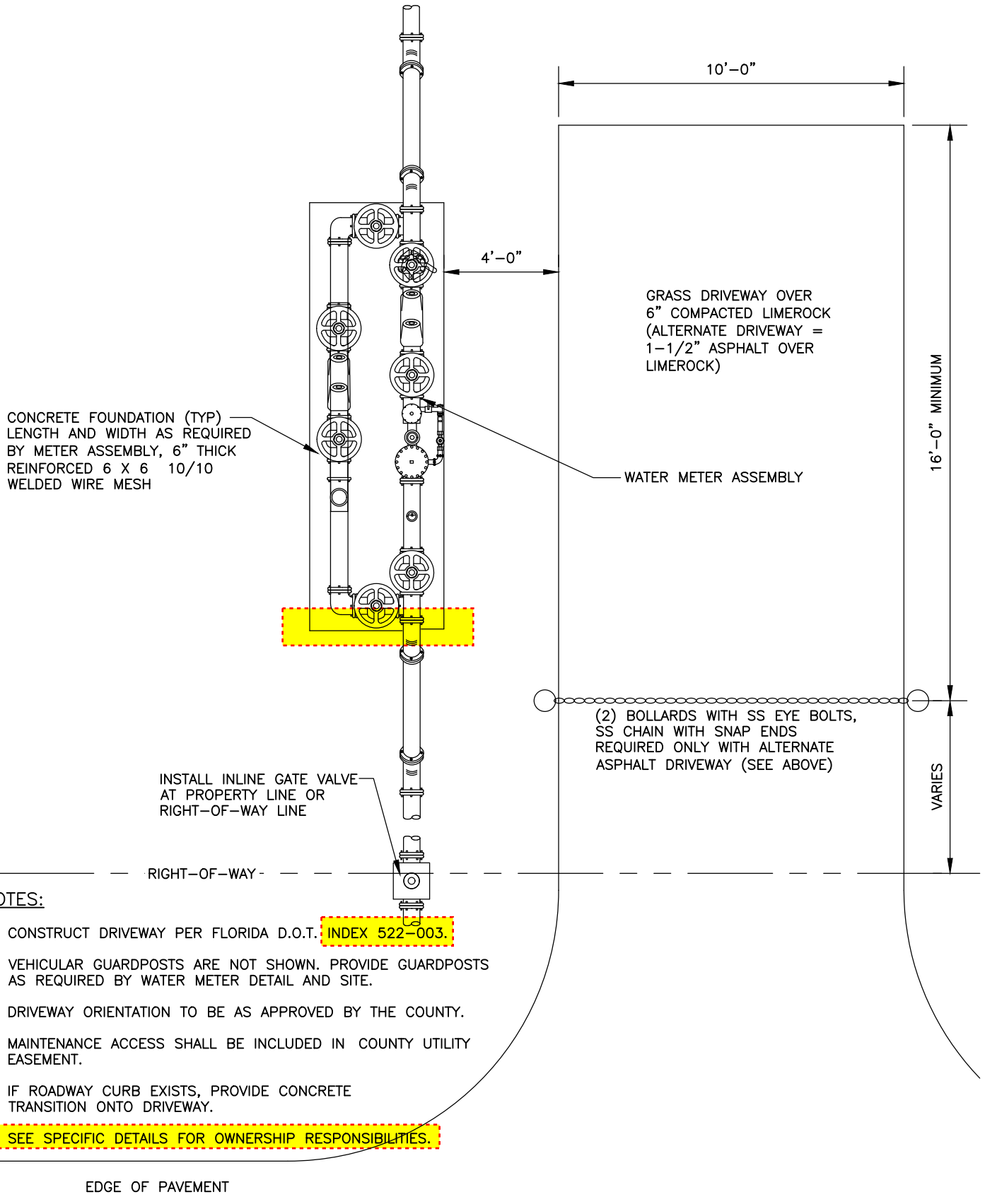
3" AND OVER POTABLE WATER METER ASSEMBLY DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-13
NTS			



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 DIVISION.
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 OF WAY (SEE DETAIL W-14A FOR CORRECT DRIVEWAY ORIENTATION),

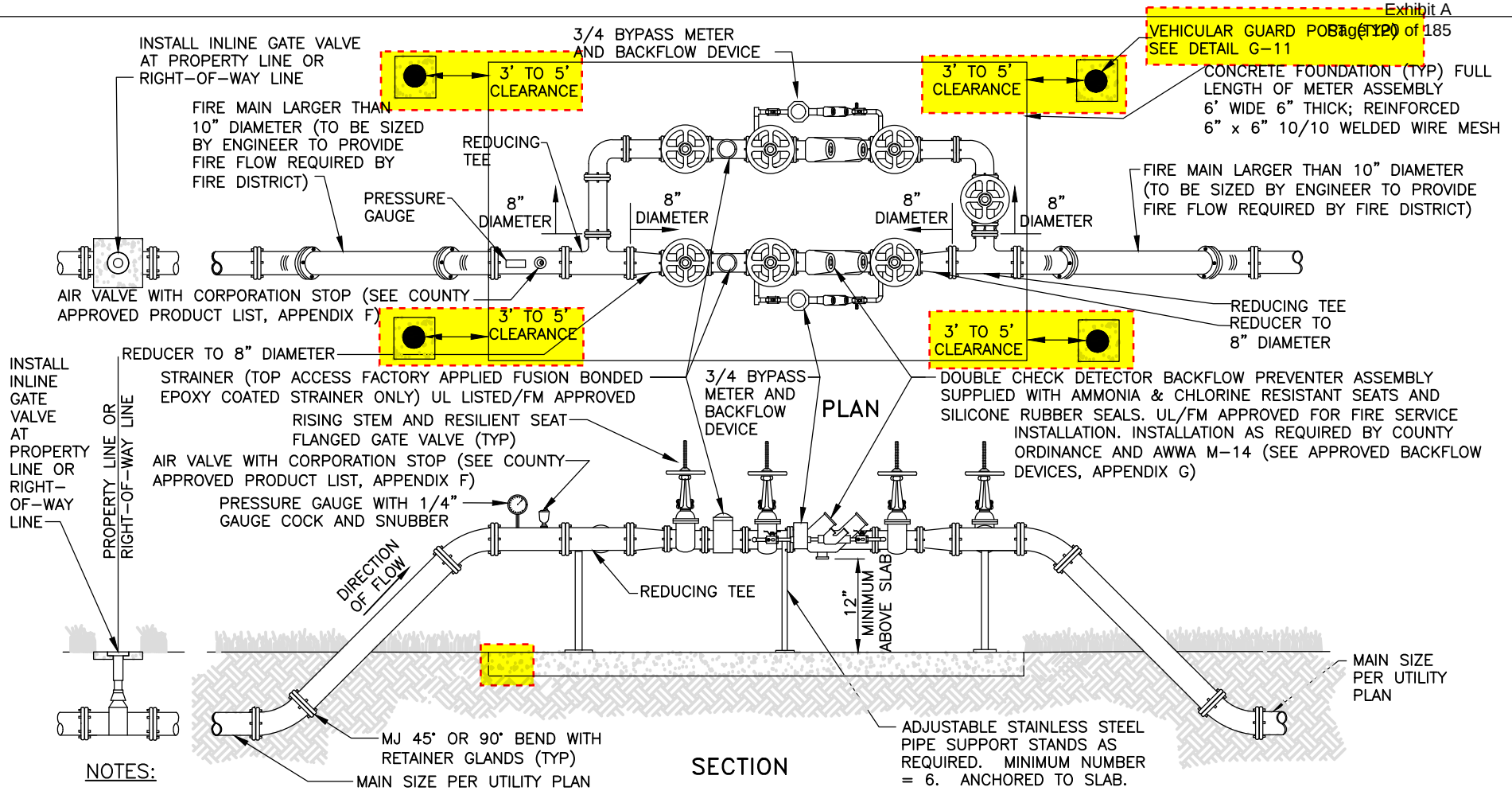
4" AND OVER POTABLE-WATER FIRE AND DOMESTIC METER ASSEMBLY DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. W-14
NTS			



NOTES:

1. CONSTRUCT DRIVEWAY PER FLORIDA D.O.T. INDEX 522–003.
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.
6. SEE SPECIFIC DETAILS FOR OWNERSHIP RESPONSIBILITIES.

MAINTENANCE DRIVEWAY FOR WATER METERS 3" AND LARGER	REVISION DATE: JUNE 2026	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 DIVISION.
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.

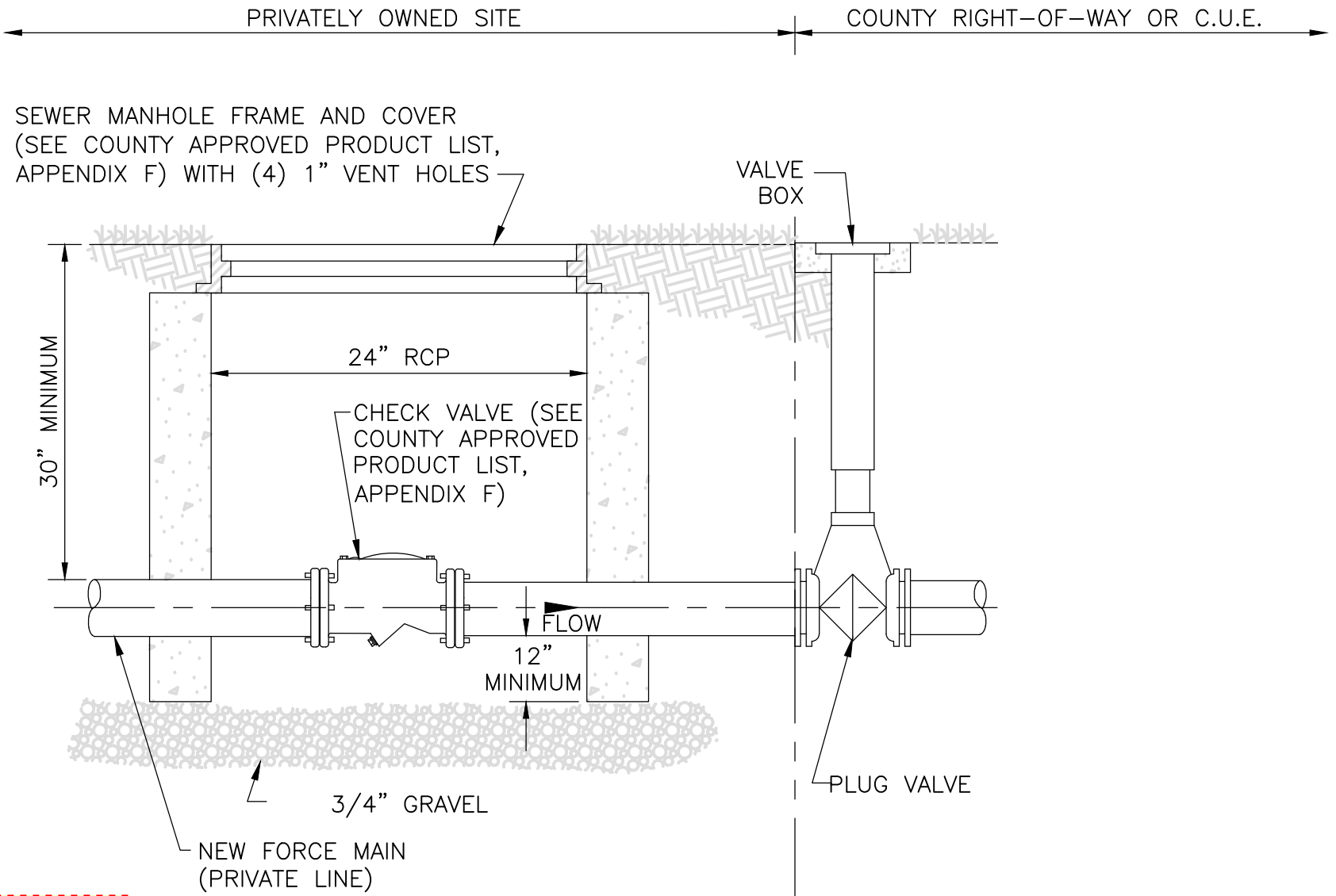
FIRE SERVICE DUAL DETECTOR CHECK ASSEMBLY OVER 10" FIRE MAIN DETAIL (DUAL 8" ASSEMBLIES)

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO.
W-16



NOTES:

1. BACK TAP NOT PERMITTED.

PRIVATE FORCE MAIN CONNECTION TO COUNTY FORCE MAIN DETAIL

REVISION DATE:
JUNE 2026

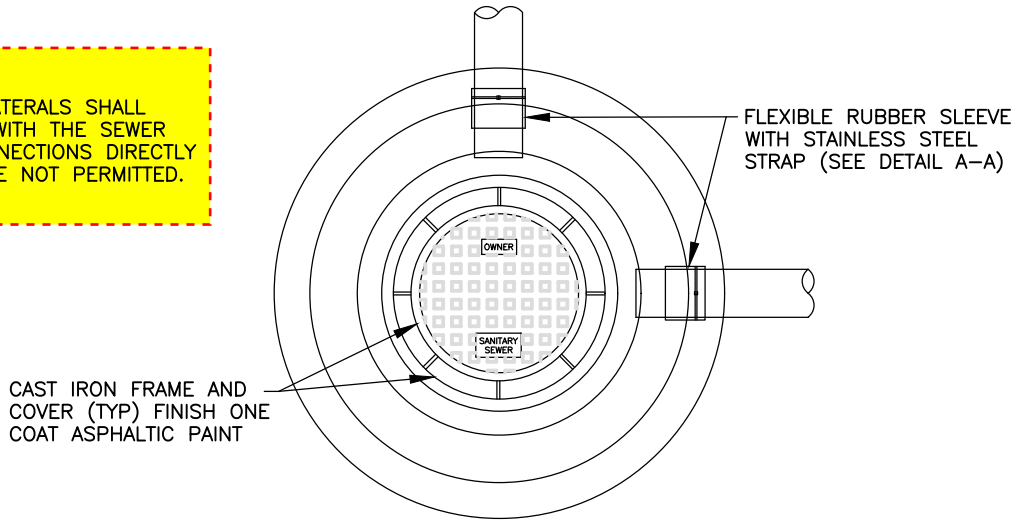
NTS

Collier County

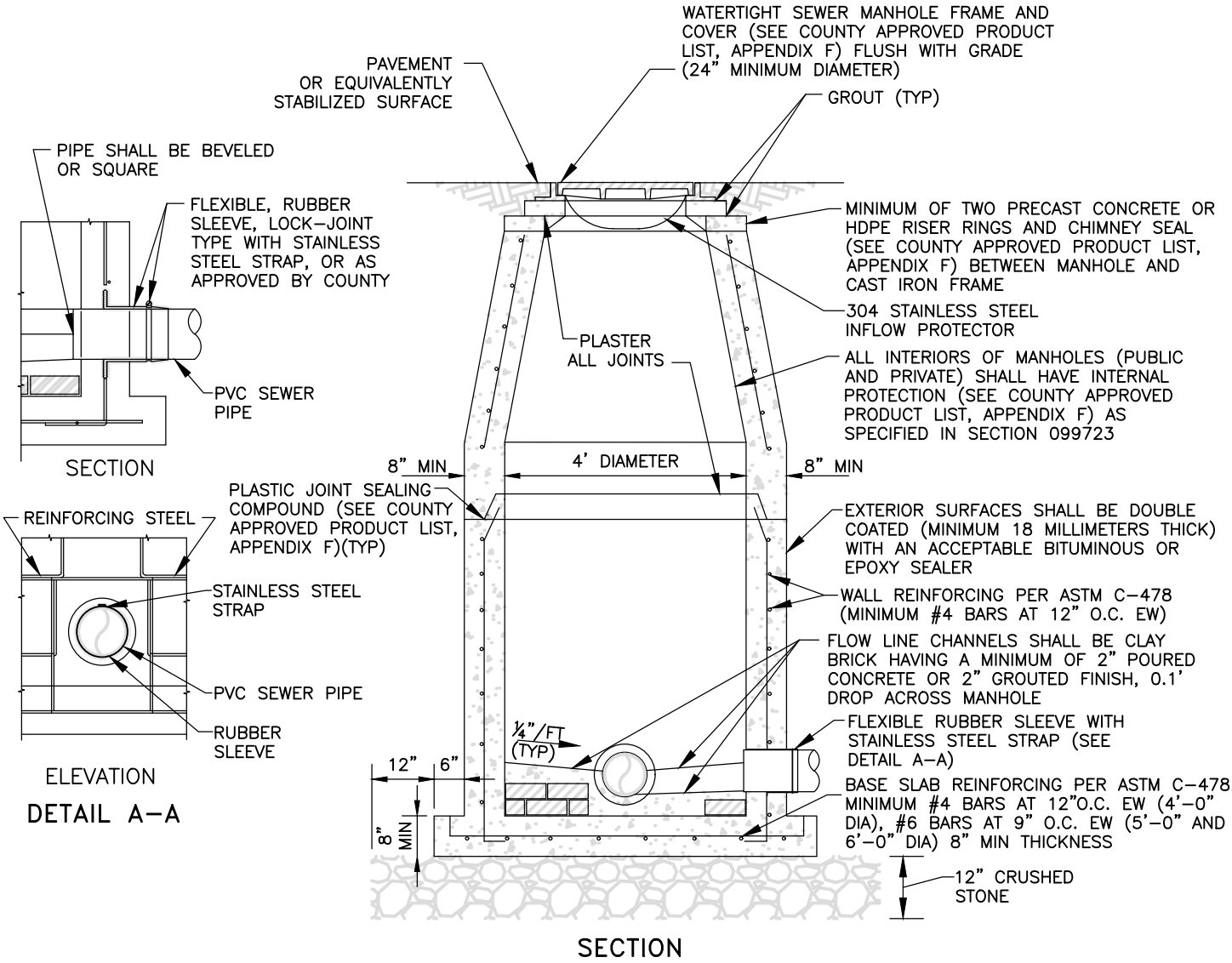
SHEET NO.
WW-2

CAO

NOTES:
SANITARY SEWER LATERALS SHALL CONNECT IN-LINE WITH THE SEWER MAIN. LATERAL CONNECTIONS DIRECTLY INTO MANHOLES ARE NOT PERMITTED.

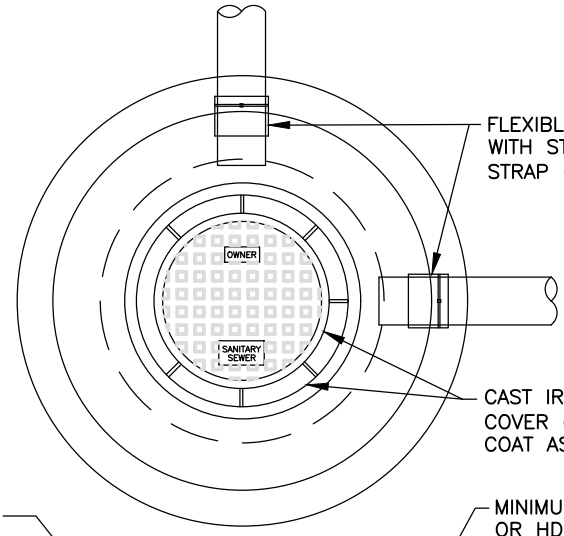


PLAN



SECTION

PRECAST REINFORCED CONCRETE MANHOLE DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. WW-3
NTS			



PLAN

FLEXIBLE RUBBER SLEEVE WITH STAINLESS STEEL STRAP (SEE DETAIL A–A)

CAST IRON FRAME AND COVER (TYP) FINISH ONE COAT ASPHALTIC PAINT

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

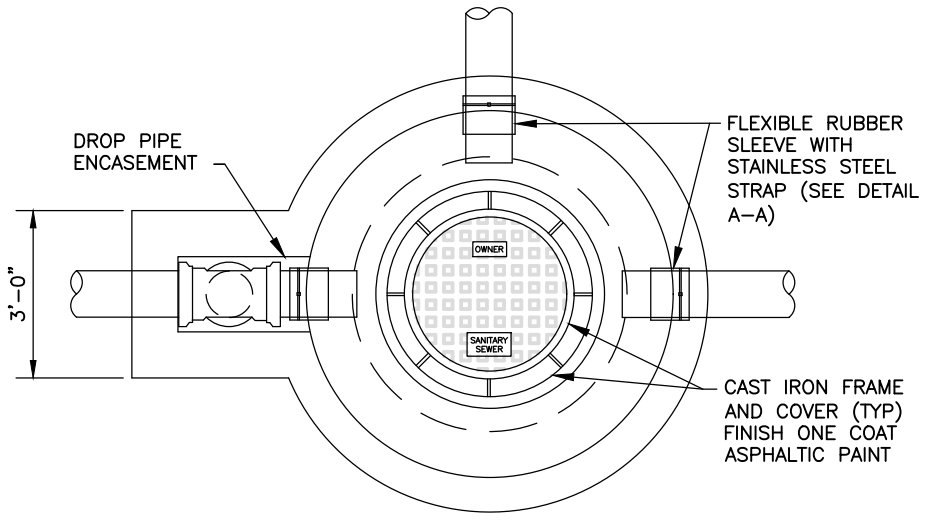
RUBBER SLEEVE

ELEVATION

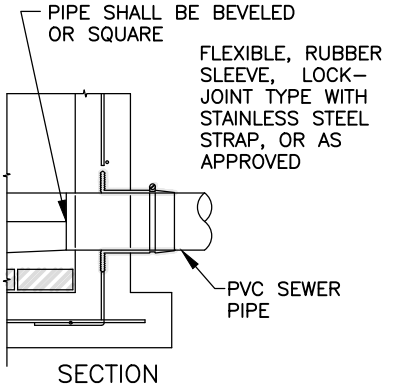
DETAIL A–A

NOTES:
SANITARY SEWER LATERALS SHALL CONNECT IN–LINE WITH THE SEWER MAIN. LATERAL CONNECTIONS DIRECTLY INTO MANHOLES ARE NOT PERMITTED.

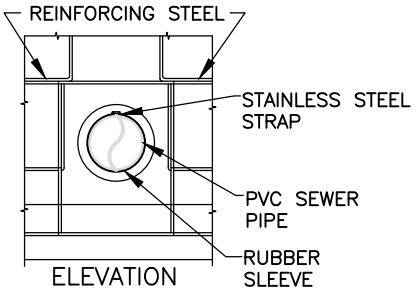
SHALLOW MANHOLE DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. WW–4
NTS			



PLAN

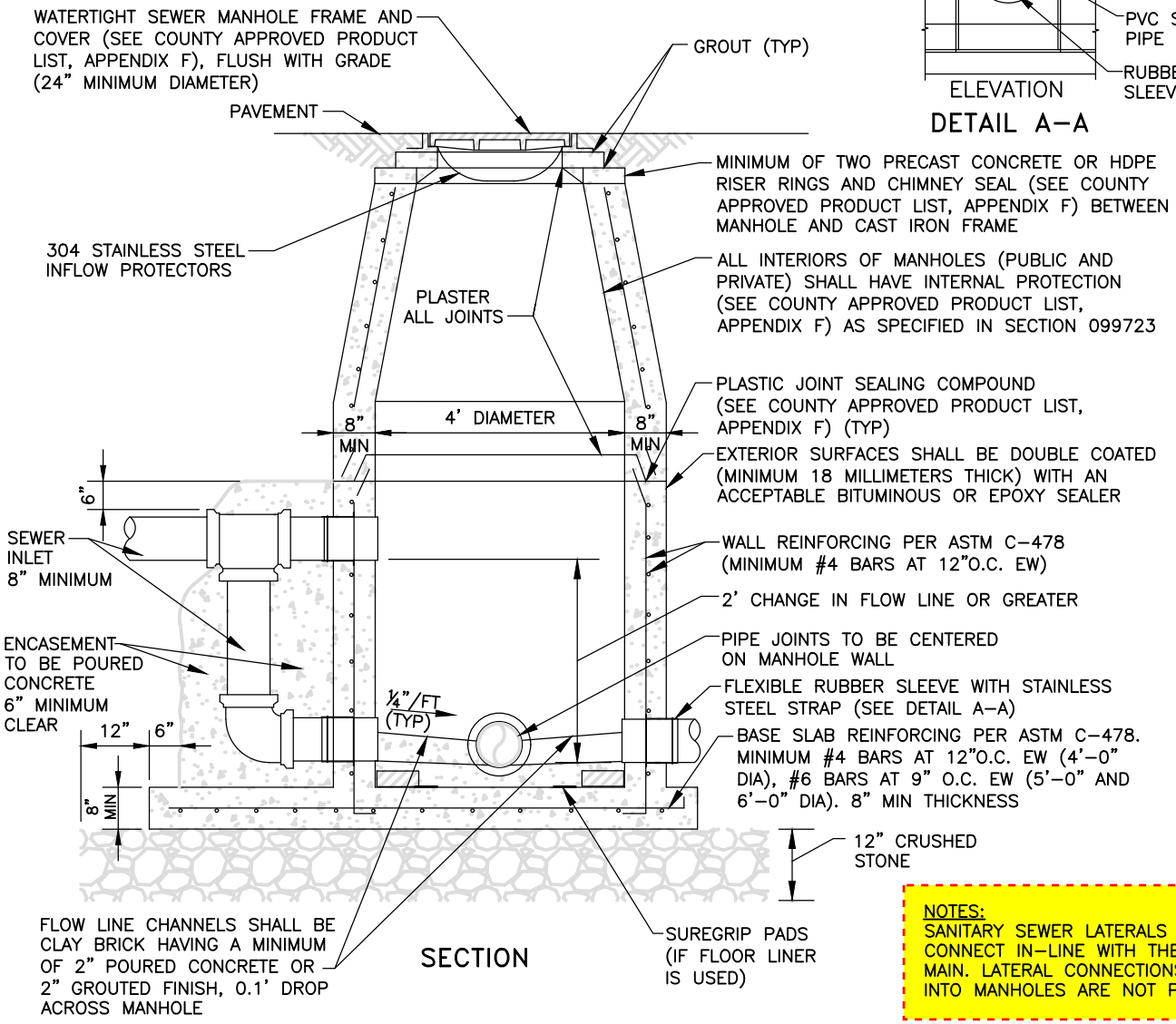


SECTION



ELEVATION

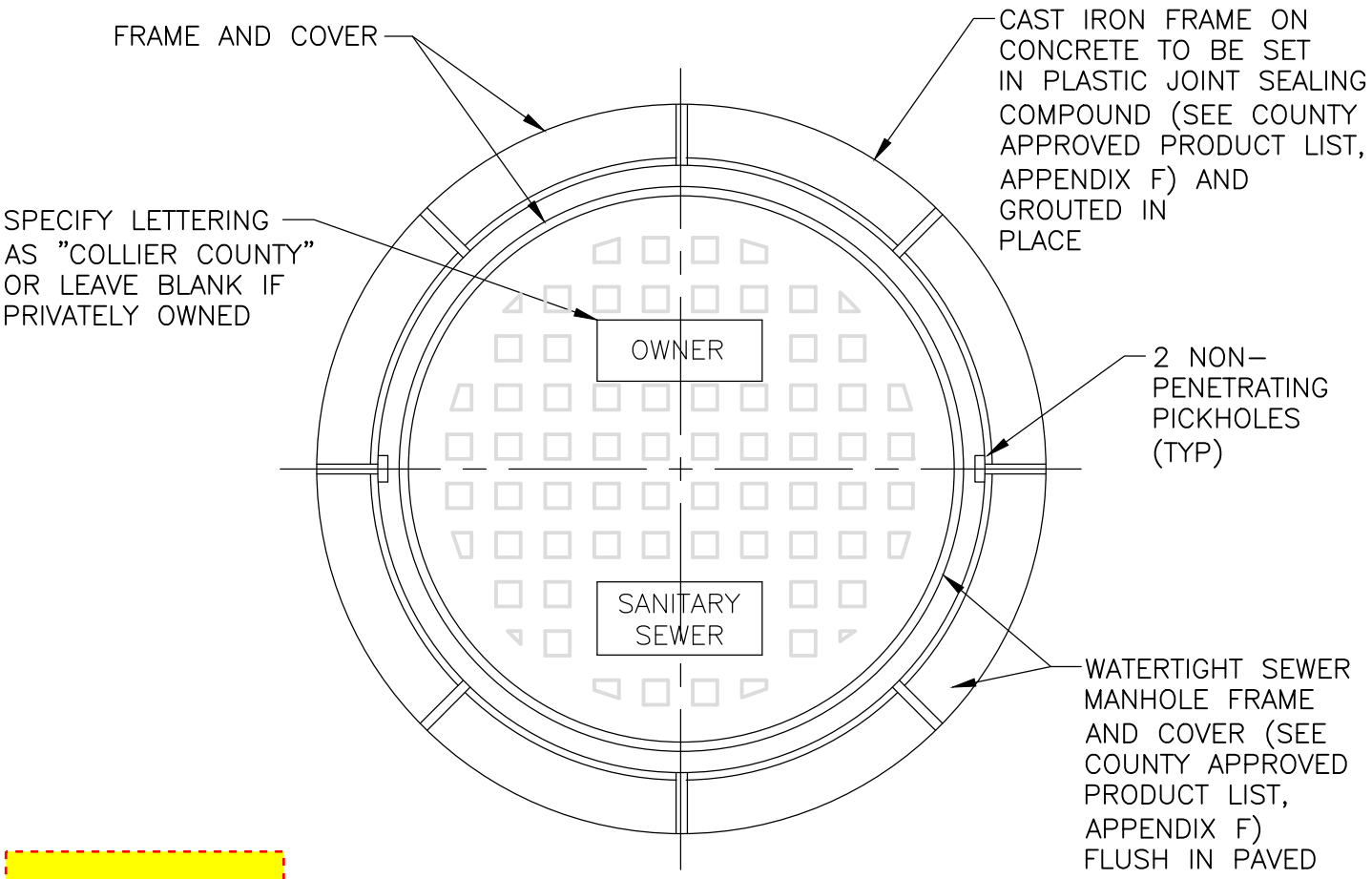
DETAIL A–A



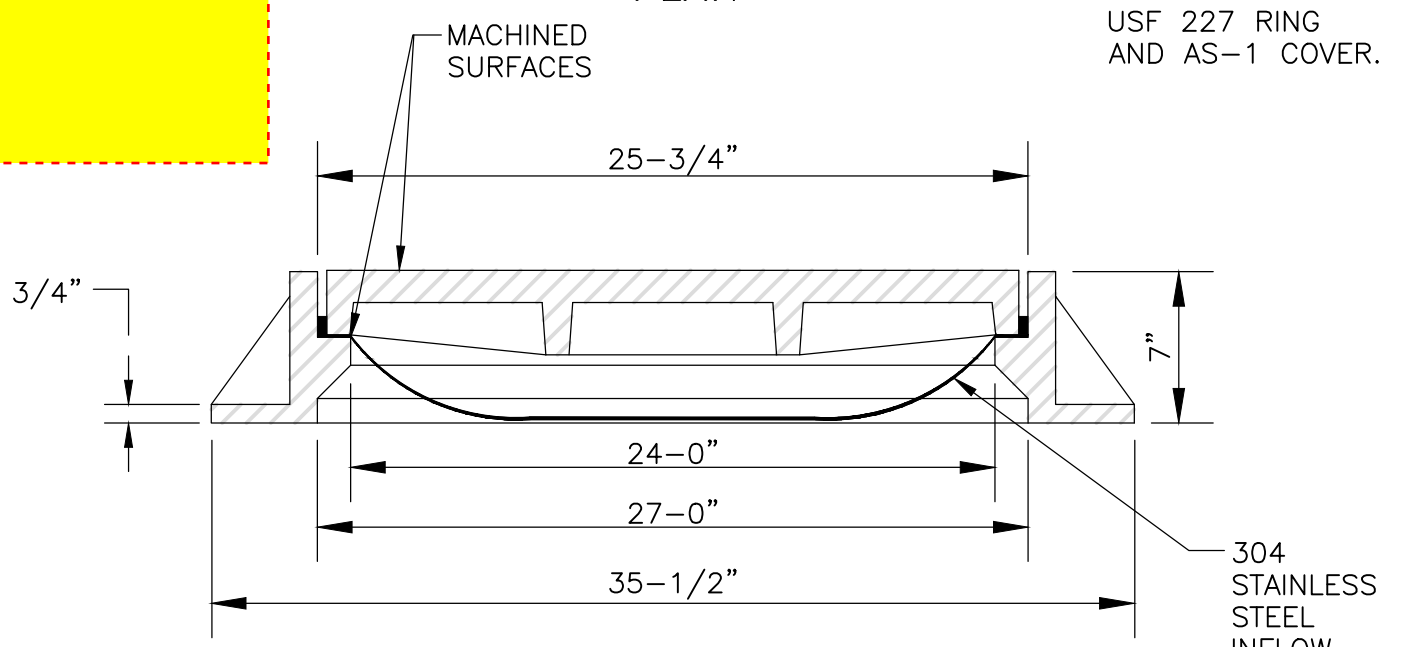
SECTION

NOTES:
SANITARY SEWER LATERALS SHALL CONNECT IN–LINE WITH THE SEWER MAIN. LATERAL CONNECTIONS DIRECTLY INTO MANHOLES ARE NOT PERMITTED.

DROP MANHOLE DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. WW–5
NTS			

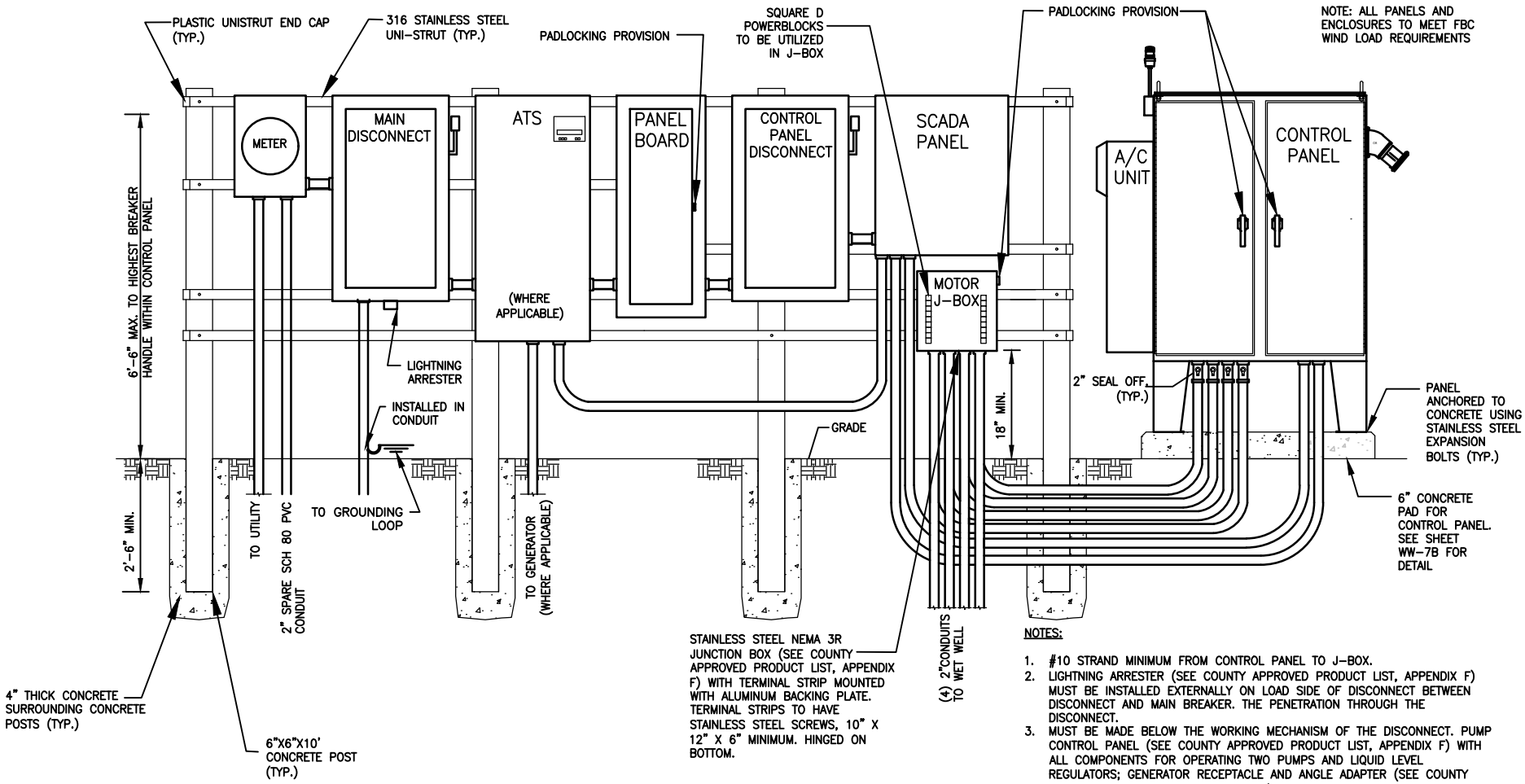


PLAN



SECTION

MANHOLE RING AND COVER DETAIL	REVISION DATE: JUNE 2026	Collier County	SHEET NO. WW–6
NTS			



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. $\frac{1}{2}$" 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 POWER METER (ON POWER COMPANY 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.

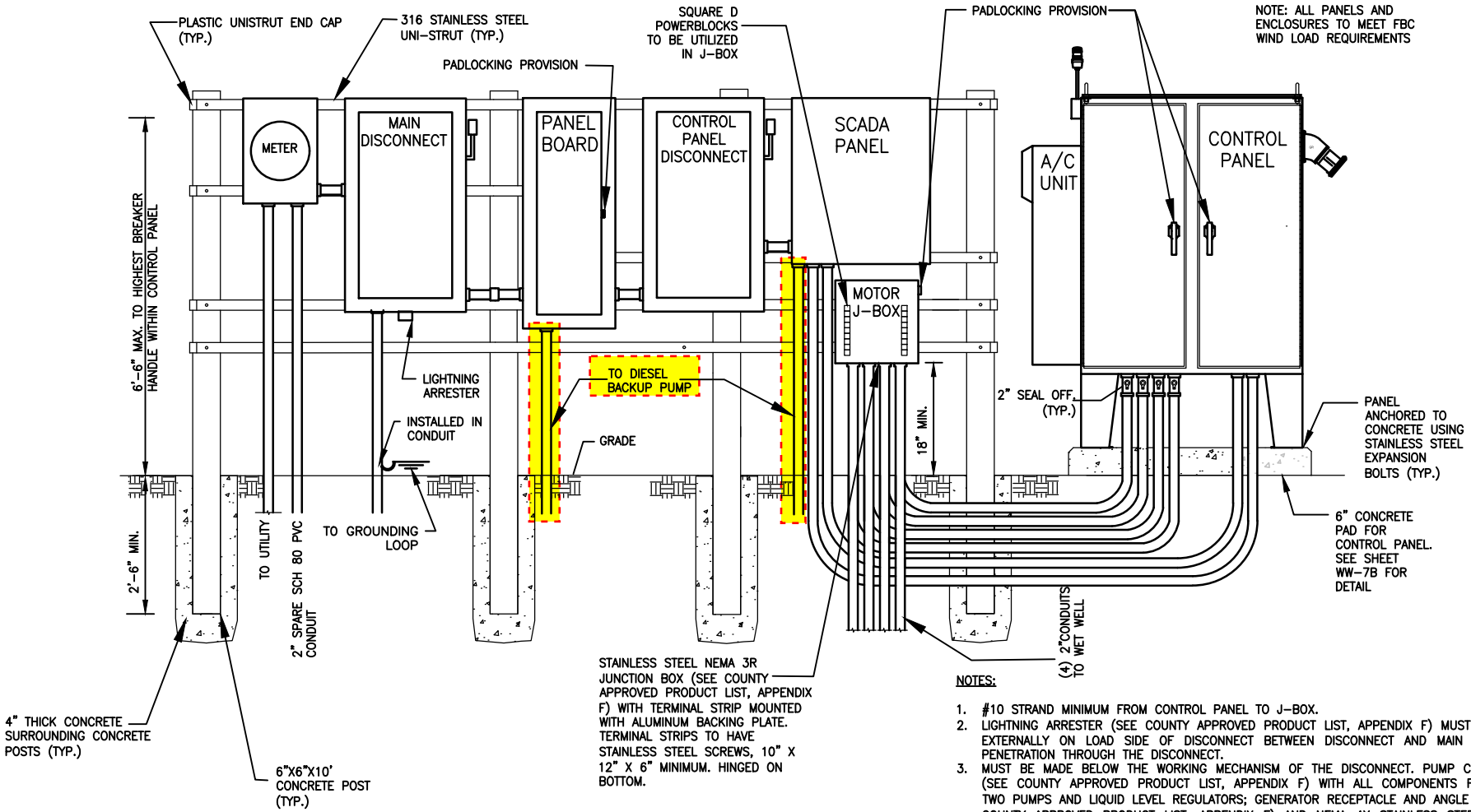
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JUNE 2026

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.
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 POWER METER (ON POWER COMPANY SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD. FIRE EXTINGUISHER ON POST FURTHEST FROM DIESEL PUMP WITH APPROPRIATE 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.
14. SEE DIESEL BACKUP PUMP TECHNICAL SPECIFICATION SECTION 221336 FOR ADDITIONAL REQUIREMENTS.

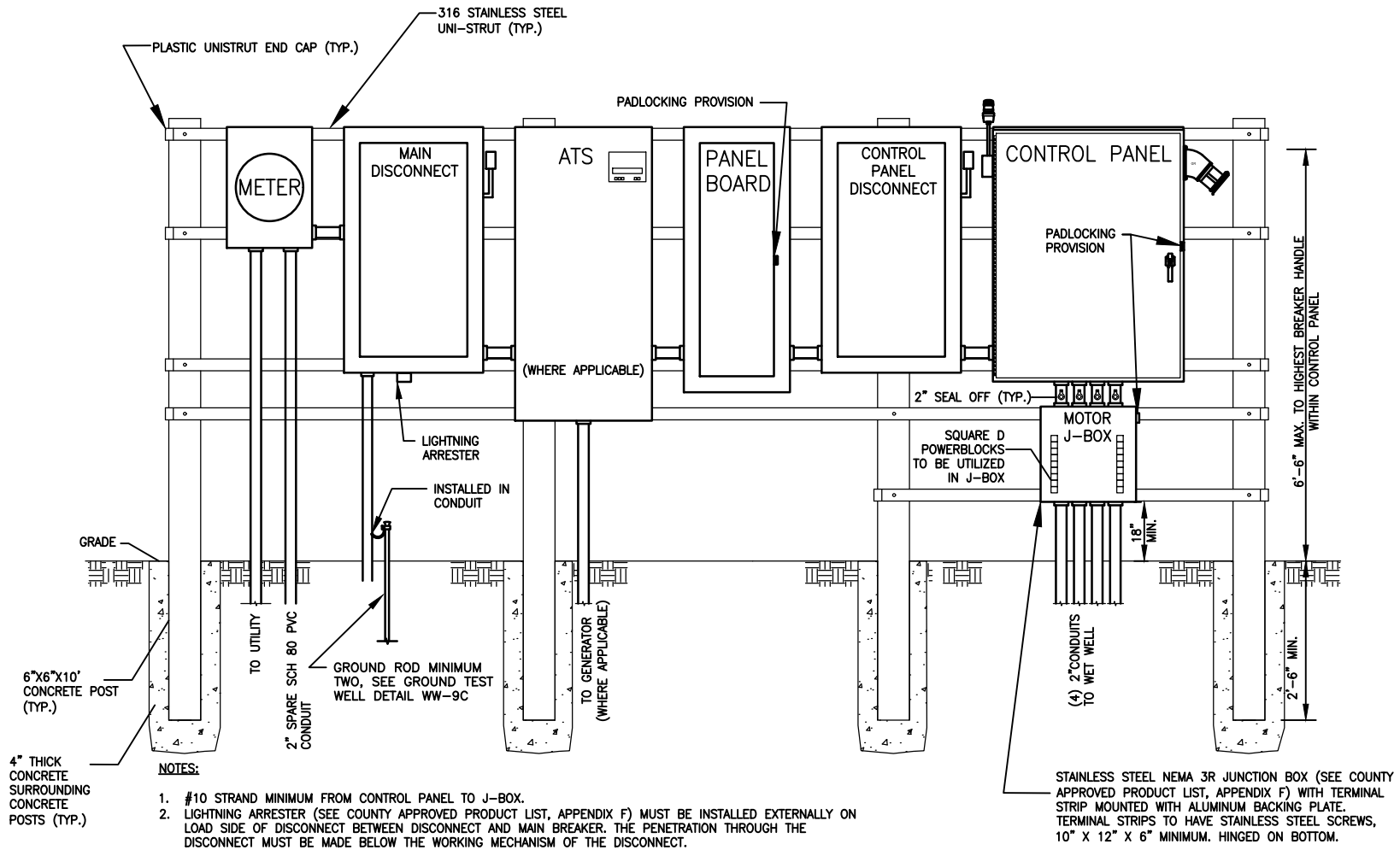
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
VFD STATION WITH DIESEL BACKUP PUMP

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO. WW-9AA



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 POWER METER (ON POWER COMPANY 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.

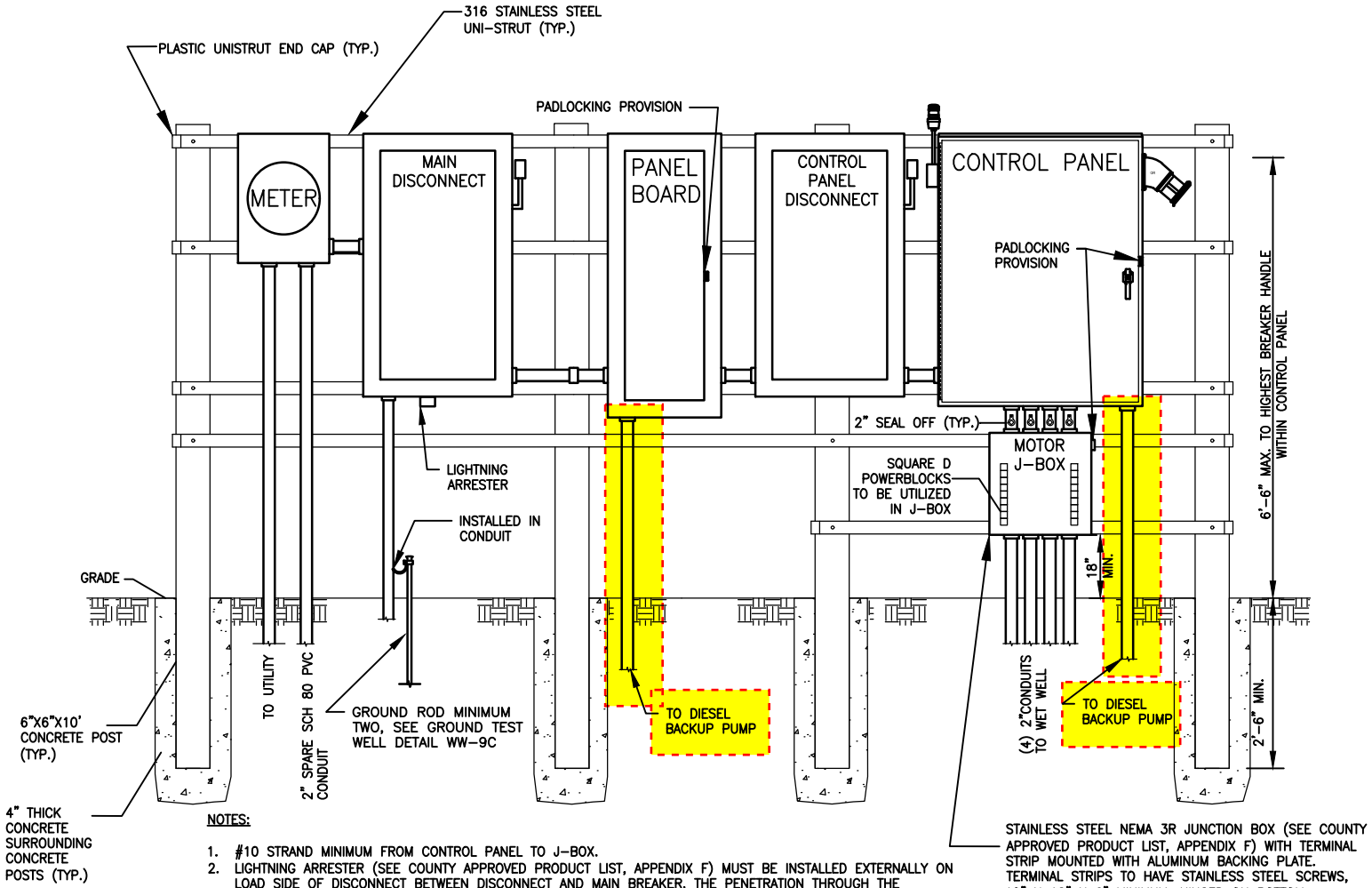
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH GENERATOR

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO.
WW-9B



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 POWER METER (ON POWER COMPANY SIDE).
10. CHICO USED TO SEAL-OFF IN EXPLOSION PROOF FITTINGS UNDER J-BOX, PUTTY FOR ALL OTHER CONDUIT OPENINGS.
11. ADD FIRE EXTINGUISHER ON POST FURTHEST FROM DIESEL BACKUP PUMP WITH APPROPRIATE 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.
14. SEE DIESEL BACKUP PUMP TECHNICAL SPECIFICATION SECTION 221336 FOR ADDITIONAL REQUIREMENTS.

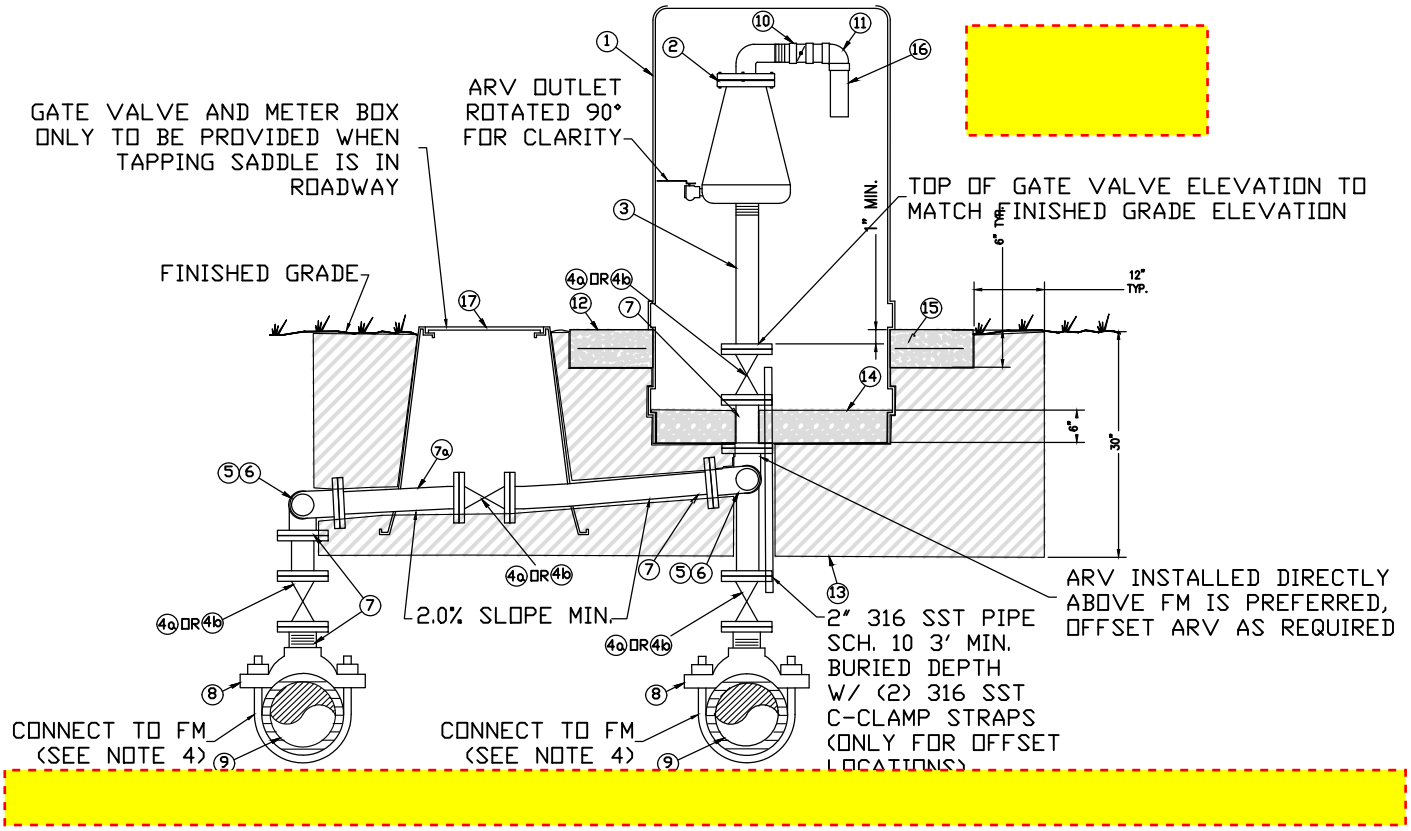
COMMUNITY PUMP STATION CONTROL PANEL DETAIL
NON-VFD STATION WITH DIESEL BACKUP PUMP

NTS

REVISION DATE:
JUNE 2026

Collier County

SHEET NO. WW-9BB



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 4710 FOR 2" ARVS. 3" - 8" HDPE PIPE, PE 4710, 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 3'-0" RADIUS AROUND ARV ENCLOSURE CLEAR OF ALL LANDSCAPING FOR MAINTENANCE ACCESS.
2. PROVIDE 316 SST PIN ALLEN BOLT KEY SYSTEM WITH EACH ENCLOSURE.
3. 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.
4. 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:
JUNE 2026

Collier County

SHEET NO.
WW-13

SECTION 4

APPENDICES

For the latest revisions to the Appendices, please visit:

https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures

COLLIER COUNTY WATER-SEWER DISTRICT
UTILITIES STANDARDS MANUAL

SECTION 4

APPENDICES

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Appendix H	Basic User Application & Agreement for Delivery and Reuse of IQ Water

Collier County

COLLIER COUNTY PUBLIC UTILITIES DEPARTMENT

ENGINEERING AND PROJECT MANAGEMENT DIVISION

3339 East Tamiami Trail
Suite 303
Naples, FL 34112

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@collier.gov.

Please maintain one 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 private 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.

Collier County Utilities Deviation Request submissions must prove that the alternate design maintains or improves system performance and explicitly protects the health, safety, and welfare of Collier County citizens. Per Collier County Code of Ordinances Sec 134-51 through 134-64, the burden of proof rests entirely on the applicant to show that the deviation will not lower operation or maintenance standards.

Key items reviewed and considered by staff in your application packet will streamline the administrative review process. These items vary based on project. The items given the greatest weight include but are not limited to: site constraints including why specific standards are impractical, engineering reports, demand calculations, alternative enhancements which provide equal or greater protection or reliability for the utility, costs to maintain/operate conveyed assets.

Items that may not be considered as a basis for a deviation generally include but are not limited to: installation/construction costs, stated brand/developer preferences without technical support or site constraints, private assets do not carry a maintenance responsibility for the utility.

Please note that inconsistencies within a deviation package will delay final determinations.

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 email your questions to UtilityPlanning@collier.gov.

AO

Collier County

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: _____

_____

20AO

Collier County

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@collier.gov

Collier County

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.

_____

AO

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.**

AO

Collier County

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:**

_____

_____

_____

AO

Collier County

The applicant hereby affirms the information provided with this Application Form is complete, accurate and current.

Submitted by _____

Signature _____

Firm name _____

Date _____

20AO

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	160, 161, 162 & 168	Section 330518, Page 9, 3.2 O.2
Electronic Warning Tape	3M Electronic Marking System (EMS)	7900, 7900-XT Series	Section 330523.13, Page 12, 3.5 B
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
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

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
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, HydrantMounted	Mueller/Hydro-Guard	HG-6	W-2
Automatic Flushing Device, HydrantMounted	Kupferle Foundry Company	Eclipse #9700	W-2
Backflow Preventer Assembly	See Approved Backflow Devices List, Appendix G	See Approved Backflow Devices List, Appendix G	DC. 2.2.2, 2.4.2, 2.6.2, Section 331200 Part 2, 2.1.D.1.,G.2.A./W-9/W-9A
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
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, Regular Duty	DFW	Regular Duty	W-12
Meter Box, Regular Duty	Carson	Regular Duty	W-12
Meter Box,Heavy Duty	DFW	Heavy Duty	W-12
Meter Box,Heavy Duty	Carson	Heavy Duty	W-12

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
Meter Box,Heavy Duty	Hubbel	Heavy Duty	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 – with test port	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	Mueller Safety Guard B.O.S.S.	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	NP-1/NP-2/NP-E2/W-9/W-13/W-14/W-16
Strainer, Flanged ~~(Staff Use)~~	Neptune	Rilsan nylon-coated ductile iron	NP-1/NP-2/NP-E2/W-9/W-13/W-14/W-16
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

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
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
120VAC Surge Suppressor	Edco	HSP121	~~NP-E3~~ NP-E5
12VDC Power Supply	Allen Bradley	1606-XLS	~~NP-E3~~ NP-E5
12VDC Power Supply	Sola HD	SDN-P	~~NP-E3~~ NP-E5
12VDC Power Supply	PULS	Dimension - QS	~~NP-E3~~ NP-E5
24VDC Power Supply	Allen Bradley	1606-XLE	~~NP-E3~~ NP-E5
24VDC Power Supply	Sola HD	SDN-P	~~NP-E3~~ NP-E5
24VDC Power Supply	PULS	Dimension - QS	~~NP-E3~~ NP-E5

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
Antenna Subsystem	Badger	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~~ NP-E5
Data Signal Line Surge Processor	Edco	PC642 Series	~~NP-E3~~ NP-E5
Geomembrane	GSE Environmental		Section 334713, Page 4, 1.6 A.1
Level Transducer	Wika		NP-E6
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
Pedestal Housing	Wagco	WDS 14 x 20	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

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
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
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-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	Badger	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	LSS Internal Manhole Chimney Seal	Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Chimney Seal	Trelleborg	Bidco C-56 joint sealant	Section 333913, Page 4, 2.2 K/WW-3/WW-4/WW-5
Coaxial Cable	Badger	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
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. WW-9AA/WW-9BB
Lightning Arrestor	Square D	SDSA-1175 for 1-phase	Section 333200, Page 5, 2.1 O/WW-9, WW-9AA/WW-9BB

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
Lightning Arrestor	Square D	SDSA-3650 for 3-phase	Section 333200, Page 5, 2.1 O/WW-9, WW-9AA/WW-9BB
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	Trelleborg	Bidco-C-56 Joint Sealant	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Plastic Joint Sealing Compound	Trelleborg	Bidco-Joint Wrap	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Joint Sealing Compound	Concrete Sealants, Inc. (Conseal)	CS-102RNK - Joint Sealant	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Joint Sealing Compound	Concrete Sealants, Inc. (Conseal)	CS-212 - Joint Wrap	Section 333913, Pages 2, 2.1 A/WW-3/WW-4/WW-5/WW-6/WW-7/WW-18
Joint Sealing Compound	Indiana Sealant & Adhesives (INSEAL)	Crete Stik	Section 333913, Pages 2, 2.1 A, 2.2 D, 3.1 C/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/WW-9AA/WW-9BB
Pump Control Panel	ECS		Section 333200, Page 43, 2.1 I/WW-7/WW-9/WW-9AA/WW-9BB
Pump Control Panel	Suncoast Hydraulic		Section 333200, Page 43, 2.1 I/WW-7/WW-9/WW-9AA/WW-9BB
Pump Controller	Badger	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/WW-9AA/WW-9BB
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

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	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/WW-9A/WW-9B/WW-9AA/WW-9BB
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
Valve, Duckbill (Staff Use)	Red Valve Co., Inc. Longwood, FL	"Tideflex"	WW-7
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
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 Non-Standard 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
Teledyne Isco Refrigerated Autosampler Products and Services	Accutech Instrumentation Inc.	24-028-NS	Wastewater
Supervisory Control and Data Acquisition	Badger Meter Inc.	24-007-NS	Wastewater
Work & Asset Management System Software License and Annual Maintenance	Cartegraph Systems LLC.	22-029-NS	Utilities Finance
Acrulog Products, Service, And Software	Detection Instruments Corp	25-344NSWV	Wastewater
Odor Control Products and Services	Evoqua Water Technologies LLC.	24-032-NS	Wastewater
Meters	Ferguson Enterprises LLC.	20-040-NS	Utilities Finance
Epoxytech CPP Epoxy Coating, Equipment and Services	Florida Service Painting, Inc.	23-8169	Water, Wastewater, And Irrigation Quality (IQ) Systems
Ge Digital Master Products and Services	Ge Vernova Electrification Software	17-7189-NS	Utilities Finance
Scada Licensing and Support	Gray Matter Systems	17-7189-WV	Utilities Finance
Hach Lab Equipment Products and Services	Hach Company	24-031-NS	Water
Laboratory Parts, Supplies, & Services	Idexx Laboratories Inc.	25-311NSWV	Water
Sewer Line Rapid Assessment Tool & Data	Infosense Inc.	24-055-NS	Wastewater
Master Sales Agreement Terms and Condition	Itron Inc	18-7301-NS	Utilities Finance
Commodities and Services for Utility Plant Operations	John Mader Enterprises, Inc.	PB-421	Water, Wastewater, And Irrigation Quality (IQ) Systems
Komline-Sanderson Belt Press Equipment	Komline-Sanderson Corporation	24-059-NS	Water, Wastewater, And Irrigation Quality (IQ) Systems
HF Scientific Chlorine and Turbidity Analyzers and Services	Lazenby And Associates Inc	25-054-NS	Wastewater
Supply Agreement for Auto Meter Reading	Mueller Systems LLC.	22-013-NS	Utilities Finance
Utility Billing & Customer Service Integrated Software System	N Harris Computer Corporation	21-001-NS	Utilities Finance
Lien Search Service Agreement	Proplogix, LLC.	23-027-NS	Utilities Finance
Allen Bradley Rockwell Products & Service	Rexel Usa Inc.	24-033-NS	Utilities Finance
Seal Analytical Supplies and Services	Seal Analytical Inc.	25-324NSWV	Wastewater

Collier County Public Utilities Department
County Approved Non-Standard Contract List

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Item	Vendor	Contract #	Applicability
Xylem Mixers, Pumps & Related Equipment, Products and Services	Xylem Water Solutions Usa Inc.	24-029-NS	Wastewater

Collier County Public Utilities Department
County Approved Waiver List
Single Source

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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
ProMinent Equipment, Parts, and Services	Badger	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telog Software, Pressure Sensor, Recorders and Services	Badger Meter Inc.	Water	Water, Wastewater, and Irrigation Quality (IQ) 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~~
Countywide Utility Services	Centurylink Communications LLC	Public Utilities Department	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.~~ Badger	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) Systems
Master Meter Flow Meter and software	Empire Pipe and Supply Company Inc.	Wastewater	Wastewater Systems
Promag Electromagnet Flow Meters, Analyzers, Level Transmitters, replacement parts, and service	Endress Hauser	Wastewater	Wastewater Systems

Collier County Public Utilities Department
County Approved Waiver List
Single Source

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Item	Vendor	Division	Applicability
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
ROSEMOUNT Replacement, Part, Maintenance, and Equipment	Fluid Control Specialties LLC	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) 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~~ Ingersol Rand	Wastewater	Wastewater Systems
License, service, and support for the SCADA System	~~GE Digital LLC~~ InnovatePro Management USA 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
Laboratory Equipment, Supplies, and Materials, Testing Services, etc.	Hach Company	Water	Equipment, Chemicals, & Services
~~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

Collier County Public Utilities Department
County Approved Waiver List
Single Source

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Item	Vendor	Division	Applicability
Live Bee Removal Services	La Apiaries LLC	Utilities Finance	Water, Wastewater, and Irrigation Quality (IQ) Systems
Labworks Software Maintenance & Support	Labworks LLC	Wastewater	Water, Wastewater, and Irrigation Quality (IQ) 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~~
~~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

Collier County Public Utilities Department
County Approved Waiver List
Single Source

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Item	Vendor	Division	Applicability
~~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
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

Collier County Public Utilities Department
County Approved Waiver Product List

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Item	Vendor / Manufacturer	Model(s)	Applicability
Analog Control Module (ACM002)	Badger	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Badger	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Badger	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-01) AC 8DO, 4DI	Badger	DFS-00297-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-02) AC 4DO, 8DI	Badger	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)	Badger	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)	Badger	DFS-00297-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-05) DC 8DO, 4DI	Badger	DFS-00297-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-06) DC 4DO, 8DI	Badger	DFS-00297-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Badger	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, 100W)	Badger	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Badger	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC001)	Badger	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC800) w/PMT	Badger	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
PLC Bypass Card (PBC001)	Badger	DFS-00309-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007-34 (VDR002-01, 217-220 MHz)	Badger	DFS-00513-008-34	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
TIM007 Board-Only (no radio, all TIM007 versions)	Badger	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01 (for TIM007-34, 217-220 MHz)	Badger	DFS-00530-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module - (NIM001)	Badger	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module (SIM001, 5 PORT)	Badger	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM001, 8 PORT)	Badger	DFS-00375-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (5-Port, Prosafe, -04 NSM & SIM)	Badger	002-0567	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch (8-Port, Prosafe, -16 NSM)	Badger	002-0568	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00l-10/100)	Badger	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Fiber Module - (NFM00l-10/100)	Badger	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	Badger	002-0566	Water, Wastewater, and Irrigation Quality (IQ) Systems
NFM Cable - For connecting extra NFM's in an HSS	Badger	002-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Cell-Router Module - (NCM001)	Badger	DFS-00375-008-15	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module (HSM003)	Badger	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	Badger	DFS-00349-008-01	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
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	Badger	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	Badger	DFS-00349-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
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	Badger	DFS-00280-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 w/MBP002 (the rest is same as 204 above)	Badger	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	Badger	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	Badger	DFS-00280-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU210/216 - Special Quote Required from Systems Engineering	Badger		Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Fiberglass Enclosure (MBP NOT INCLUDED) 14"h 12"w 811d	Badger	038-0053	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
RTU202 Modular Backplane, MBP202-01	Badger	DFS-00348-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-02 (CUT FOR SOLAR)	Badger	DFS-00348-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane, MBP202-03 (CUT FOR PLC)	Badger	DFS-00348-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Aluminum Plate for 202 Enclosure 14x 12 (BP1412AL)	Badger	039-0135	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU204 Enclosure (MBP NOT INCLUDED) 15.5"h 23"w 7.S"d	Badger	DFS-00280-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-1) (for single backplane use)	Badger	DFS-00279-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-2) (2nd & 3rd for 210, 216)	Badger	DFS-00279-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-3) (for PLC use)	Badger	DFS-00279-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-4 for Solar Power Module SPM)	Badger	DFS-00279-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-5 for FTU - requires 2 RIMs)	Badger	DFS-00279-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TAC Pack Enclosures	Badger	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00l) - No Radio, controller only (add P3 and P4 connectors for Mod bus application)	Badger	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TAC Pack TCU w/VDR002 (217-220 MHz)	Badger	DFS-00367-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 - NO RADIO, MODBUS CONFIG	Badger	DFS-00540-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 - NO RADIO, SERIAL FOR EXTERNAL RADIO	Badger	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800-IP - NETWORK INTERFACE (NO RADIO)	Badger	DFS-00540-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 w/VDR002 (217-220 MHz)	Badger	DFS-00540-008-21	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
TCU800 w/DUAL COMMS (VDR002 217-220 MHz & NETWORK)	Badger	DFS-00540-008-31	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00I "Basic Snap-In" Installation Kit - Includes: snap-in mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00I, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery.	Badger	DFS-00392-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00I "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, SPS00I, 10A Circuit Breaker, TFS, TFS.	Badger	DFS-00396-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00I "Basic Front-Mount" Installation Kit- Includes dead-front mounting bracket, spring loaded connectors, Wago terminals for resistors and fuses only, SPS00I, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery. (Add 3-Phase Surge Protector & Polyphaser Kit)	Badger	DFS-00392-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00I "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, SPS00I, 10A Circuit Breaker, TFS, TFS Install kit for TCU, 2.6 aH Battery.	Badger	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	Badger	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)	Badger	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)	Badger	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)	Badger	DFS-00552-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
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)	Badger	DFS-00552-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems

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TCU800 HARNESS 480V 3-PHASE UPGRADE KIT. (Use this 480V upgrade if purchasing a Deluxe Installation Kit)	Badger	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU PI,P2 Connector (Wire Enters Top, Snap-In, 24-Pin) Each	Badger	016-0154	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU PI,P2 Connector (Wire Enters Rear, Front Mount, 24-Pin) Each	Badger	016-0182	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l ONLY- P3 Connector (Configuration/ Address Board)	Badger	DFS-00391-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 ONLY- P3 Connector (Added 1/0)	Badger	016-0270	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)	Badger	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	Badger	016-0184	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Snap-in Mounting Bracket	Badger	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	Badger	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	Badger	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	Badger	DFS-00394-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Accu-CT split-core current transformer (20A), ACTL-0750-020 (EACH)	Badger	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	Badger	008-0077	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Accu-CT split-core current transformer (lO0A), ACTL-0750-100 (EACH)	Badger	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	Badger	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	Badger	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	Badger	DFS-00540-108-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l SS Enclosure - ENCL ONLY 18"h 16"w l0"d	Badger	038-0012	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00l Fiberglass Enclosure - ENCL ONLY 18"h 16"w 8"d	Badger	038-0051	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU00118x16 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Badger	039-0127	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 &TCU Enclosures	Badger	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	Badger	DFS-00552-008-06	Water, Wastewater, and Irrigation Quality (IQ) Systems

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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	Badger	DFS-00552-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 HARNESS RELAY ADDER (adds interposing relays for all outputs)	Badger	DFS-00552-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 SS Enclosure- ENCL ONLY 24"h 20"w lO"d	Badger	038-0197	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 Fiberglass Enclosure - ENCL ONLY 24"h 20"w l0"d	Badger	038-0206	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU800 24x20 Enclosure Plate (CUSTOM - RAW PLATE ONLY)	Badger	039-0337	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tower Mount Bracket "Pair" for RTU202 & TCU Enclosures	Badger	DFS-00349-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
2.6 aH Battery (12V Battery w/Leads)	Badger	DFS-00363-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7 aH Battery 12V Battery w/Leads)	Badger	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	Badger	023-0045	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Lead (battery-side for 2.6, 3.0 and 7.0 aH)	Badger	DFS-00165-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU204/202, 12"	Badger	DFS-00165-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, RTU210, 36"	Badger	DFS-00165-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 48"	Badger	DFS-00165-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Cable, TCU/TAC PACK, 72"	Badger	DFS-00165-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems

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10' Big-Ass Battery Cable Assembly (see Battery White Paper)	Badger	DFS-00501-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Battery Shelf (for 2.6, 3.0 and 7.0 aH batteries only)	Badger	039-0018	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU Surge Protection Kit includes: the following: (1) Polyphaser Coaxial Surge Protector, (1) SPS001, (1) TFS.	Badger	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)	Badger	DFS-00364-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
SPS001, 120VAC Single-Phase Surge Protector	Badger	005-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 1-Phase Surge Protector {Ditek, UL LISTED) (Also 208VAC)	Badger	005-0120	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 240VAC 3-Phase Surge Protector (Ditek, UL LISTED)	Badger	005-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector {Ditek, UL LISTED)	Badger	005-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU 480VAC 3-Phase Surge Protector KIT (Ditek, UL LISTED)	Badger	DFS-00393-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Kit- includes Polyphaser and RF Pigtail (specify length)	Badger	DFS-00392-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Polyphaser Coax Surge Protector (Standard, BS0LN-C2)	Badger	005-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco DRS-036 (DIN MOUNT ANALOG SURGE PROTECTOR)	Badger	022-0231	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PC-642C-036 {MODULE)	Badger	022-0056	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PC-642C (BASE)	Badger	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (MODULE)	Badger	022-0129	Water, Wastewater, and Irrigation Quality (IQ) Systems
Edco PH-036 (BASE)	Badger	012-0011	Water, Wastewater, and Irrigation Quality (IQ) Systems

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API ANALOG LOOP ISOLATOR {API-4380-G-D)	Badger	022-0268	Water, Wastewater, and Irrigation Quality (IQ) Systems
API OCTAL BASE (NDS-8)	Badger	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems
Zone Barrier CATS/CAT6 Network Surge Protector (Network RTU/TCU/HSS)	Badger	002-0584	Water, Wastewater, and Irrigation Quality (IQ) Systems
Transient Filter Shield - TFS00l-2	Badger	DFS-00306-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for TCU and TAC Pack TCU	Badger	DFS-00319-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
TFS Install Kit for RTU2XX with PCM001	Badger	DFS-00319-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
10 Amp Breaker (Din Mount)	Badger	014-0010	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B Converter, RS-232 to RS-485	Badger	022-0340	Water, Wastewater, and Irrigation Quality (IQ) Systems
B&B RS485 Surge Protector (typical for TCU P4 / Modbus)	Badger	005-0165	Water, Wastewater, and Irrigation Quality (IQ) Systems
Tripp-Lite DTEL2 "Inline" Telephone Line Surge Protector (replaces both Edco PCTEL MODULE & BASE)	Badger	002-0605	Water, Wastewater, and Irrigation Quality (IQ) Systems
Wago Operating Tool (Wago Bone)	Badger	026-0003	Water, Wastewater, and Irrigation Quality (IQ) Systems
1 Amp fuse holder assembly (mounts to din-rail)	Badger	DFS-00271-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 Amp fuse holder assembly (mounts to din-rail)	Badger	DFS-00271-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
¼ Amp fuse holder assembly (mounts to din-rail)	Badger	DFS-00271-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
FUSE BLOCK, MIDGET, 3 POS,30A,600V (for 480V 3PH kit) (add fuses)	Badger	040-0044	Water, Wastewater, and Irrigation Quality (IQ) Systems
IA FUSE, MIDGET, TIME DELAY, 600 VAC, KTQ (for 480V 3PH kit)	Badger	040-0043	Water, Wastewater, and Irrigation Quality (IQ) Systems
47K RESISTOR 2 COND WAGO TERMINAL	Badger	DFS-00271-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
249 Ohm RESISTOR 2 COND WAGO TERMINAL	Badger	DFS-00271-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
l00K IW RESISTOR 2 COND WAGO TERMINAL	Badger	DFS-00271-008-07	Water, Wastewater, and Irrigation Quality (IQ) Systems
200K 2W RESISTOR 2 COND WAGO TERMINAL	Badger	DFS-00271-008-08	Water, Wastewater, and Irrigation Quality (IQ) Systems
100K 1/2W,0.1% RESISTOR (for old "pre-2020" 480V 3PH kit)	Badger	DFS-00271-008-14	Water, Wastewater, and Irrigation Quality (IQ) Systems
49.9K RESISTOR 2 COND WAGO TERMINAL (for new 480V 3PH kit)	Badger	DFS-00271-008-24	Water, Wastewater, and Irrigation Quality (IQ) Systems
4 COND WAGO THRU BLOCK (feed through, 4 hole)	Badger	026-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
3 COND WAGO THRU BLOCK (feed through, 3 hole)	Badger	026-0062	Water, Wastewater, and Irrigation Quality (IQ) Systems
2 COND WAGO THRU BLOCK (feed through, 2 hole)	Badger	026-0061	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (GREY)	Badger	026-0021	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO 2 COND END PLATE (ORANGE)	Badger	026-0022	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO END STOP (Qty 50 in package)	Badger	026-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ADJACENT GREY	Badger	026-0034	Water, Wastewater, and Irrigation Quality (IQ) Systems
WAGO JUMPER-ALTERNATE GREY	Badger	026-0035	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 120VAC, SPDT	Badger	012-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC SLIM POWER RELAY, 12VDC, SPDT	Badger	012-0064	Water, Wastewater, and Irrigation Quality (IQ) Systems
IDEC RJ SLIM POWER RELAY BASE	Badger	012-0065	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 120 VAC COIL, DPDT (use 012-0019 base)	Badger	012-0002	Water, Wastewater, and Irrigation Quality (IQ) Systems
OMRON/AAE OCTAL RELAY, 24 VDC COIL, DPDT (use 012-0019 base)	Badger	012-0023	Water, Wastewater, and Irrigation Quality (IQ) Systems

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OMRON/AAE OCTAL RELAY BASE (NDS-8)	Badger	012-0019	Water, Wastewater, and Irrigation Quality (IQ) Systems
SNUBBER,0.lUF,47 OHM,1/2WATT	Badger	007-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
.375A, SLOW BLOW FUSE FOR TCU, 1.25"x.25"	Badger	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	Badger	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	Badger	DFS-00242-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
RETROFIT KIT, BIRD 4300-400 PEAK POWER (use with high speed TIM)	Badger	035-0037	Water, Wastewater, and Irrigation Quality (IQ) Systems
36" RG-58 cable w/BNC Connector (Watt Meter & Attenuator to radio)	Badger	DFS-00125-008-16	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIM/PLC Service Port Cable, 9-Pin Female "D" to PLC	Badger	DFS-00128-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
7' TCU/PCU Service Port Cable, 9-Pin to Telephone Style	Badger	DFS-00128-008-05	Water, Wastewater, and Irrigation Quality (IQ) Systems
GENDER CHANGER,25PIN FEMALE TO FEMALE	Badger	016-0020	Water, Wastewater, and Irrigation Quality (IQ) Systems
TCU Panel Simulation Fixture (aka TCU Test Fixture/ TCU Demo Box)	Badger	DFS-00243-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTA209 -VHF (217-220 MHz) 9.2 db Yagi	Badger	DFS-00303-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
LAA217 - 217 MHz "0 dB" Grounded Antenna (Length: 68 inches)	Badger	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)	Badger	DFS-00322-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems

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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)			
Item	**Vendor / Manufacturer**	**Model(s)**	**Applicability**
CTA206 Dipole (2 lobes)- (217-220 MHz) (Telewave ANT220D3) Assembled antenna cannot be shipped (requires DFS Delivery@ SQR)	Badger	DFS-00322-008-12 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems
CTA203 Dipole (1 lobe)-(217-220 MHz) (Telewave ANT220D)	Badger	005-0118 (CAN'T SHIP)	Water, Wastewater, and Irrigation Quality (IQ) Systems
Rubber Duck for 217-220 MHz - Antennex BEXB000BN NOTE: Connector type is BNC, may require a BNC to N-Type Adapter	Badger	005-0074	Water, Wastewater, and Irrigation Quality (IQ) Systems
BNC to N-Type Adapter (Female BNC to Male N-Type)	Badger	016-0059	Water, Wastewater, and Irrigation Quality (IQ) Systems
RF Pigtails (BNC to N-Type)	Badger		Water, Wastewater, and Irrigation Quality (IQ) Systems
811 RF Pigtail - (used in RTU202 and 204)	Badger	DFS-00125-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
20" RF Pigtail - (used in TAC Pack Enclosure)	Badger	DFS-00125-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
33" RF Pigtail - (used in RTU210)	Badger	DFS-00125-008-11	Water, Wastewater, and Irrigation Quality (IQ) Systems
46" RF Pigtail - (used in large RTU panels & TCU control panels)	Badger	DFS-00125-008-12	Water, Wastewater, and Irrigation Quality (IQ) Systems
72" RF Pigtail - (used in large RTU panels & TCU control panels)	Badger	DFS-00125-008-18	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 Pre-assembled 23' with connectors	Badger	DFS-00316-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
DFS RTC-400 (price per foot) LMR400-DB (500' Roll)	Badger	019-0063	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-400 coax connectors (RFN-1006-3I) (crimp pin)	Badger	016-0058	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 (price per foot) LMR600-DB	Badger	019-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 N-Type Male coax connector (crimp pin) 3190-1268	Badger	016-0123	Water, Wastewater, and Irrigation Quality (IQ) Systems
DFS RTC-600 N-Type Female coax conn (unique, crimp pin) 3190-616	Badger	016-0147	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 9" coated SS cable tie (100 in bag)	Badger	020-0016	Water, Wastewater, and Irrigation Quality (IQ) Systems
Band-it 18" coated SS cable tie	Badger	020-0050	Water, Wastewater, and Irrigation Quality (IQ) Systems
1" Glue-Type Heat Shrink, LIST PRICE IS PER FOOT (comes in 4' lengths)	Badger	020-0001	Water, Wastewater, and Irrigation Quality (IQ) Systems
N-Type Barrel Connector (female-to-female)	Badger	016-0094	Water, Wastewater, and Irrigation Quality (IQ) Systems
Anatech Filter	Badger	005-0084	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM00I) obsolete	Badger	DFS-00185-009-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Control Module (ACM002)	Badger	DFS-00350-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM00I) obsolete	Badger	DFS-00108-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Analog Monitor Module (AMM002)	Badger	DFS-00240-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Bus Extender Module	Badger	DFS-00223-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM00I) (obsolete)	Badger	DFS-00101-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM002) (obsolete)	Badger	DFS-00211-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Control Module (DCM003-01, -03, -OS)	Badger	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Digital Control Module (DCM003-02, -04, -06)	Badger	DFS-00297-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM00l) (obsolete)	Badger	DFS-00100-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM002) (obsolete)	Badger	DFS-00285-008-0X	Water, Wastewater, and Irrigation Quality (IQ) Systems
Digital Monitor Module (DMM003)	Badger	DFS-00518-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM002, S0w) (obsolete)	Badger	DFS-00209-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Power Supply Module (PSM003-1, l00W)	Badger	DFS-00296-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM00l) (obsolete)	Badger	DFS-00260-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Solar Power Module (SPM002)	Badger	DFS-00517-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC00l)	Badger	DFS-00213-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC033)	Badger	DFS-00507-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Programmable Logic Controller (PLC800) w/PMT	Badger	DFS-00539-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Modular Backplane (MBP00l-XX) (all versions)	Badger	DFS-00279-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
RTU202 Modular Backplane (all versions)	Badger	DFS-00348-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIM006 Module (no radio)	Badger	DFS-00295-008-26	Water, Wastewater, and Irrigation Quality (IQ) Systems
TIM007 Board-Only (no radio, all TIM007 versions)	Badger	DFS-00513-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Back Pack Radio (BPR) Board-Set (no radio)	Badger	DFS-00264-008-XX	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-01, -02, 217-220 2W Radio (for TIM or TCU)	Badger	024-0040	Water, Wastewater, and Irrigation Quality (IQ) Systems
VDR002-03, 450-470 2W Radio (for TIM or TCU)	Badger	024-0042	Water, Wastewater, and Irrigation Quality (IQ) Systems

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Item	Vendor / Manufacturer	Model(s)	Applicability
Integrated Network Adapter (for TCU00l-IP)	Badger	N/A	Water, Wastewater, and Irrigation Quality (IQ) Systems
Integrated Network Adapter (for TCU800-IP)	Badger	N/A	Water, Wastewater, and Irrigation Quality (IQ) Systems
Pump Control Unit (PCU00l) (no radio)	Badger	DFS-00219-008-02	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU00l) (no radio,IP,AD,C)	Badger	DFS-00367-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Telemetry Control Unit (TCU800) (no radio,IP,AD,C)	Badger	DFS-00540-008-03	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Interface Module -(NIM00l)	Badger	DFS-00375-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
Switch Interface Module - (SIM00l)	Badger	DFS-00375-008-13	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Switch Module - (NSM00l)	Badger	DFS-00375-008-04	Water, Wastewater, and Irrigation Quality (IQ) Systems
Fiber Interface Module - (FIM00l-10/100)	Badger	DFS-00375-008-09	Water, Wastewater, and Irrigation Quality (IQ) Systems
Network Fiber Module- (NFM00l-10/100)	Badger	DFS-00375-008-10	Water, Wastewater, and Irrigation Quality (IQ) Systems
Hyper Server Module-HSM003 (STANDARD REPAIR)	Badger	DFS-00525-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE DRIVE - REPAIR ADDER)	Badger		Water, Wastewater, and Irrigation Quality (IQ) Systems
HSM003 (REPLACE PROCESSOR-REPAIR ADDER)	Badger		Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-128 Input/ Output Device	Badger	DFS-00398-008-01	Water, Wastewater, and Irrigation Quality (IQ) Systems
RIO-032 Input/ Output Device	Badger	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

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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
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

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ZABOCS-5000	Evoqua Water Technologies LLC	Biofilter	Water, Wastewater, and Irrigation Quality (IQ) Systems
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
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

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Item	Vendor / Manufacturer	Model(s)	Applicability
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
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

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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
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

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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
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
M100+ WL LAB TURBIDIMETER 0-4000	Lazenby & Associates	28060	Water, Wastewater, and Irrigation Quality (IQ) Systems

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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
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

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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
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

Collier County Public Utilities Department
County Approved Waiver Product 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 / Manufacturer	Model(s)	Applicability
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
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

Collier County Public Utilities Department
County Approved Waiver Product List

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Item	Vendor / Manufacturer	Model(s)	Applicability
TUBING,BLK TYG R3400 50FT ROLL	Lazenby & Associates	21201S	Water, Wastewater, and Irrigation Quality (IQ) Systems
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
Drives & Accessories	Rexel		Water, Wastewater, and Irrigation Quality (IQ) Systems
End of Life Products (EOL)	Rexel		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
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
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

Collier County Public Utilities Department
County Approved Waiver Product List

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Item	Vendor / Manufacturer	Model(s)	Applicability
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

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?

_____

AO

Collier County

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.collier.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:_____

_____

_____

AO

Item	Sub-Section I Detail	Revision Summary	Fiscal Impact of change to Developer (Approx.)
	Cover Page		
1	Cover Page	A cover page for Utilities Standards Manual has been added.	None
	Table of Content		
2	Table of Content	Table of content has been revised based on removal/addition.	None
	Section 1 – Design Criteria		
3	Cover Page	The link to the official website address for the Utilities Standards and Procedures has been added.- (https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures)	None
4	Table of Content	Table of content has been formatted properly.	None
5	1.1 Pipeline Separation Requirements	Language has been added for horizontal separation to be minimum 5 ft and vertical separation to be minimum 18 inches between same type of utility piping.	None
6	2.5 Connection to Collier County Facilities	Language has been added for inspector to be present while tapping saddles are being torqued prior to hot tap.	None
7	2.6.2 Water Meters	Text has been changed from "Water Distribution Office" to "Meter Operations".	None
8	3.3 Wastewater pump stations	Minimum 5 HP and three phase requirement has been added for county lift stations	$4000
	Section 2 - Technical Specifications		
9	Cover Page	The link to the official website address for the Utilities Standards and Procedures has been added.- (https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures)	None
10	Table of Content	Table of content has been formatted properly.	None

11	020500 Connections to Existing Systems	Section 3.4: Language has been added to not allow the use of missiles in CUE.	None
12	022501 Leakage Tests	Section 1.3: AWWA C605 reference has been added. Section 3.1.2: Leakage testing formula has been revised per AWWA standards.	None
13	312316 Excavations- Earth and Rock	Section 3.1: Language has been added to not allow the use of missiles in CUE.	None
14	330502 HDPE Pipes and Fittings	Section 3.3-A: C-110 glands specified.	None
15	330518 Laying and Jointing Buried Pipe Lines	Section 3.2-P: Reference to DC 1.3 has been removed.	None
16	333200 Pump Stations	Section 2.1-D: Minimum 5 HP requirement has been added for county lift stations.	$4000
Section 3 - Utilities Detail Drawings			
17	Cover Page	The link to the official website address for the Utilities Standards and Procedures has been added.- (https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures)	None
18	Table of Content	Table of content has been revised based on removal/addition of details.	None
19	G-3 Pipe Separation Detail	Added callout 5’ minimum separation for same utility type piping. Crossing thickness class changed from CLASS 200 to CLASS 305, AWWA C-905 standard changed to C-900.	None
20	G-7 Typical Valve Setting Detail	Brass tag requirements from 18”X18”X6” concrete collar have been removed.	Small deduction of $50
21	G-9 Typical Subaqueous Horizontal Directional Drill (HDD)	HDPE DR 11 Casing label has been added to outer casing.	None
22	G-9A Subaqueous Water Main Valve Detail	Brass tag requirements from 18”X18”X6” concrete collar have been removed.	Small deduction of $50

23	G-10	Pipe Restraint Schedule	Added note #6 – Long bolts positioning	None
24	NP-1	Standard Irrigation Water Non-Telemetry Meter Assembly 3'' and Larger	Added Note 8. Back tap not permitted. Detail revised to include side access for the strainer, an O-let tap connection for the ARV, required minimum straight pipe lengths, slab length adjustments, and clarification of the ownership transfer location.	$250
25	NP-2	Typical Irrigation Service Meter Setting Detail for Connection to Irrigation Main.	The DI tapping saddle callouts have been changed to tapping saddle callouts. The Wye strainer has been removed, the gate valve has been replaced with a check valve at the same location, Note 4.D has been revised to remove the requirement for a cast iron read lid. Added call-out for corporation stop to be at final grade.	$100
26	NP-4	Reuse, Raw and Supplemental Water Air Release Valve Detail	The stainless steel post callout has been removed, the minimum nipple length has been revised to 8 inches, a PE piping option has been added to the 1-inch brass piping detail along with a note to prevent trapped air, and the detail has been revised to require a 2-inch tapping saddle with a reducer, with upsizing to 2 inches if a 1-inch connection is encountered. Add corporation stop at finished grade.	$100
27	NP-E1	Reuse System Standard Service Connections, Open/Close Valve Single Control Panel Site, General Notes, and Keynotes.	Note 5. Brass has been replaced with stainless steel. Added slab length call-out.	$100
28	NP-E2	Standard Irrigation Water Meter Assembly, 3-Inch and Larger – Telemetry.	A power disconnect has been added for the meter/MOV near the device, the strainer has been revised from top access to side access, the air release valve detail has been updated to match NP-1, the minimum pipe length between the MOV and meter has been increased to five (5) pipe diameters, Appendix F language has been added for the MOV callout, a 1-inch O-let tap has been specified for the ARV, and Keynote 12 has been revised to replace the 4–20 mA signal with Ethernet pulse communication. Added slab length call-out	$500
29	NP-E3	Reuse System Standard Service Connections, Open/Close Valve	Not Used	None

		Single Control Panel Site Layout & Elementary.		
30	NP-E4	Reuse System Standard Service Connections, Open/Close Valve Single Control Panel Open/Closed MOV Control Diagram	Not Used	None
31	NP-E5	Reuse System Standard Service Connections, Open/Close Valve Single Control Panel, and Electrical Equipment Elevations.	An Optical Fiber Panel has been added to the detail in front view, back view and plan view. The precast concrete post dimensions have been adjusted to 6”x6”x10’. A dimension line has been added above undisturbed soil. Added Note: IT Fiber Optic Telecommunication Panel: See Technical Specification 409500 and Detail G-12, where applicable.	Optional cost for Developer upgrade.
32	NP-E6	Reuse System Standard Service Connections, Open/Close Valve Single Control Panel Site Level Transducer Mounting Detail	Staff gauge range changed from 3’ to 4’. Additional requirements have been added in the notes for staff gauge.	None
33	NP-E10	Staff Gauge	New Detail added.	$100
34	W-3	Fire Hydrant Detail	Added Note 10. Back tap not permitted. Added ¾” call-out for both sides of the curb stop. Added post and locking hasp to call-out.	None
35	W-4	Connection Existing Water Main Detail (Gap Configuration)	Note 9: Removed word department.	None

36	W-6	Permanent Bacterial Sample Point Detail	A meter box with curb stop has been added. The concrete post has been removed.	$100
37	W-8	2-1/2 inch and Smaller Fire Detector Check Assembly Detail	Added Note 9. Back tap not permitted. Note 3: Water Department changed to Water Division.	None
38	W-9	Temporary Backflow Preventer and Fire Protection Meter Tie-in Assembly	Note 3: Changed Water Department to Water Division	None
39	W-9A	Alternate Temporary Backflow Preventer and Fire Protection Meter Tie-in Assembly	Note 3: Changed Water Department to Water Division.	None
40	W-11	3-inch and Larger Fire System Detector Check Assembly Detail	Note 6: Changed Water Department to Water Division.	None
41	W-11A	4-inch Through 10-inch Compact Fire System Detector Check Assembly Detail.	The detail has been revised so that the bollards are offset from the concrete pad and are no longer located within the pad. A reference to Detail G-11 has been added for the vehicle guard post detail. Note 6: Water Department changed to Water Division.	$500
42	W-12	Typical Short and Long Side Water Service Meter Setting Detail for Connection to Water Main.	County Maintenance and Private Maintenance boundary line have been specified.	None
43	W-13	3-inch and Larger Potable Water Meter Assembly Detail.	County Maintenance and Private Maintenance boundary line have been specified. Concrete slab length has been adjusted. Note 5: Water Department changed to Water Division.	None

44	W-14	4-inch and Larger Potable Water Fire and Domestic Meter Assembly Detail.	County Maintenance and Private Maintenance boundary line have been specified. Concrete slab length has been adjusted. Note 5: Water Department changed to Water Division. Note 10. Typo error fixed by removing “or right”.	None
45	W-14A	Maintenance Driveway for Water Meters, 3-inch and Larger.	Note 1: Florida D.O.T. index changed from 515 to 522-003. Note 6 has been added for ownership responsibilities. Concrete slab length has been adjusted.	None
46	W-16	Fire Service Dual Detector Check Assembly Over 10-inch Fire Main Detail (Dual 8-inch Assemblies).	The detail has been revised so that the bollards are offset from the concrete pad and are no longer located within the pad. A reference to Detail G-11 has been added for the vehicle guard post detail. Note 5: Water Department changed to Water Division.	$500
47	WW-2	Private Force main Connection to County Force main Detail	Added Note 1. Back tap not permitted.	None
48	WW-3	Precast Reinforced Concrete Manhole Detail	A note has been added to not allow sewer laterals to connect directly into a manhole.	None
49	WW-4	Shallow Manhole Detail	A note has been added to not allow sewer laterals to connect directly into a manhole.	None
50	WW-5	Drop Manhole Detail	A note has been added to not allow sewer laterals to connect directly into a manhole.	None
51	WW-6	Manhole Ring and Cover Detail	The detail has been revised to omit the rubber seal on the approved replacement to 420-C-ORS.	None
52	WW-9A	Community Pump Station Control Panel Detail – VFD Station with Generator	Note 9: FPL meter (on FPL side) changed to Power meter (on power company side)	None

53	WW-9B Community Pump Station Control Panel Detail – Non-VFD Station with Generator	Note 9: FPL meter (on FPL side) changed to Power meter (on power company side)	None
54	WW-9AA Community Pump Station Control Panel Detail – VFD Station with Diesel Backup Pump.	New detail added.	None
55	WW-9BB Community Pump Station Control Panel Detail – Non VFD Station with Diesel Backup Pump.	New detail added. Note 9: FPL meter (on FPL side) changed to Power meter (on power company side)	None
56	WW-13 Force Main Air Release Valve Detail	The brass tag, warning sign attached to the ARV, and green reflective pavement marker (RPM) requirements have been removed. PE 3408/3608 changed to PE 4710.	None
Section 4 – Appendices			
Item	**Sub-Section I Detail**	**Revision Summary**	**Fiscal Impact of change to Developer (Approx.)**
57	Cover Page	The link to the official website address for the Utilities Standards and Procedures has been added.- (https://www.collier.gov/County-Development/Utility-Resources/Standards-and-Procedures)	None
58	Table of Content	Table of content has been formatted properly.	None
59	Appendix A Utility Deviation Form	Updated County logo and email address. New language has been added to instruction page.	None
60	Appendix E Vendor and Manufacturer Approval Application Form	Updated County logo and email address.	None

61	Appendix F Approved Products List	3M EMS Warning Tape added. Mach10- with test port added. Staff use removed from Neptune Flanged Strainer. Mars Plate Strainer, (Top access is removed). Wagco Pedestal Housing WDS 14 x 20 added. Henry (Ram-Nek) plastic joint sealant has been removed. Trelleborg- Bidco Joint Sealant and Wrap added. Non-Standard Contract List: Added approved manufacturers for refrigerated autosamplers, SCADA acquisition and licensing, work and asset management software, AccuLoad products and software, odor control products and services, meters, epoxy coating equipment and services, GE Digital Master products and services, Hach laboratory equipment, laboratory parts and supplies, sewer line rapid assessment tools, master sales agreement terms and conditions, belt press equipment, chlorine and turbidity analyzers, automatic meter reading supply agreement, utility billing and customer service software, lien search service agreement, Allen-Bradley/Rockwell products and services, Seal Analytical supplies and services, and Xylem mixers, pumps, and related equipment, products, and services. Single Source List: Added ProMinent equipment, parts, and services; Telog software, pressure sensors, recorders, and services; ROSEMOUNT replacement parts, maintenance, and equipment; SCADA software licensing and support; Labworks software maintenance and support; and live bee removal services. Removed: Removed HOMA submersible sewage pumps and services; NOV/Moyno progressive cavity pumps and services; Flowserve vertical turbine pumps and services; NozzTeq nozzles and services; screening handling equipment and services; grit removal systems and equipment; Xylem Sanitaire diffused aeration equipment and UGSI chemical feed systems; Aqua Guard self-cleaning bar/filter screens; New York Blower odor control blowers and services; Seepex progressive cavity pumps and services; Telog software, pressure sensors, recorders, and services (Trimble); and Trillium Flow Technologies grit pumping and separation equipment.	None
62	Appendix H	Updated website address (www.collier.gov)	None