



DESIGN & CONSTRUCTION GUIDELINES

DIVISION 33 UTILITIES

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SECTION 33 00 00 SITE UTILITIES 2

SECTION 33 00 00 SITE UTILITIES**PART 1 – GENERAL****1.1 RELATED WORK**

- A. Refer to [Section 22 05 19, Meters and Gages for Plumbing Piping](#) for meter requirements.
- B. Refer to [Section 31 05 00, Earthwork, Paragraph 1.2, Excavating & Backfill](#) for related excavation and backfill requirements.
- C. Refer to [Section 31 05 00, Earthwork, Paragraph 1.4, Soil Compaction](#) for related compaction requirements.
- D. Refer to [Section 31 10 00, Site Clearing, Subparagraph 1.1.A.1, Protection of Trees](#) for protection of trees.

1.2 IDENTIFICATION

- A. The Architect/Engineer (A/E) is to consult with the Owner and review Owner files to establish a general working knowledge of the extent, type, and probable locations of all existing utilities. The A/E is to use this information to help define and direct the scope of the site-specific survey and utility locating work. All existing utilities, proposed alterations thereto and new utilities lines are to be shown on the Civil Site Plans.
- B. The A/E is to ensure that the plans and specifications provide ample notation for the contractor to properly notify all utility owners through the "[Sunshine 811](#)" service and the University directly prior to any digging.

1.3 CONNECTION TO EXISTING SYSTEMS

- A. Specify that any connection to existing utility systems must first be scheduled with the USF Facilities Management-Operations (FM-OPS) so disruption of services is minimized.
- B. It is to be amply noted in the plans and specifications that the Contractor is not authorized to operate any valve of an existing utility system. When needed, such activity is to be requested of the FM-OPS who will perform the necessary operation. Ample advanced notice is to be required to schedule this service. Two days is the normal minimum notice period, but could be a lot stronger depending on complexity and extent of impact on services and operations.

PART 2 – MATERIALS**2.1 SUBMITTALS**

- A. Stipulate and define shop drawings to be submitted by the Contractor for verifying products furnished are in compliance with the specifications. Provide enough copies for A/E's use plus one approved set to the Owner.

2.2 WATER DISTRIBUTION

- A. Quality Assurance
 - 1. It is required that the design of potable water distribution systems comply with [Chapter 62-555, Florida Administrative Code \(F.A.C.\)](#).
 - 2. It is required that all new and relocated water main pipe, fittings, valves, fire hydrants, and related products that will come into contact with drinking water be in conformance with the [National Science Foundation / American National Standards Institute \(NSF/ANSI\), International Standard 61](#) and comply with the applicable [American Water Works Association \(AWWA\) Standards](#).
- B. Pipe: Pipe provided is to be Ductile Iron Pipe (DIP) conforming to [ANSI A-21.51](#) and [AWWA C-151](#). For pipe to be buried, provide Pressure Class 350 for less than 12 inches and Pressure Class 250 for pipe equal to and larger than 12 inches. For pipe to be above ground, provide Class 53. The interior of the pipe shall have a standard thickness cement mortar lining with seal coat conforming to [ANSI A-21.4](#) and [AWWA C104](#). The exterior is to have a factory applied bituminous or coal tar varnish coating.
- C. Fittings: Fittings are to be either cast iron or ductile iron and of a pressure class compatible with the pipe. Fittings are to also have the same interior and exterior treatments as required for the pipe.

- D. Joints: Joints for below grade DIP and fittings shall be push-on or standard mechanical joint type with rubber gaskets complying with AWWA C111. All fitting joints and pipe joints below grade where needed shall be mechanically restrained. Joints for above grade piping shall be flanged.
- E. Valves:
 - 1. Gate Valves: For valves 3 inches and larger, provide resilient seat gate valves complying with AWWA C509 such as U.S. Pipe Metroseal. Minimum working pressure shall be 150 PSI. The interior and exterior shall be epoxy coated in compliance with AWWA C550. Where installation is below grade, valves are to have a two (2) inch operating nut housed in a cast iron slip sleeve valve box.
 - 2. Check Valves: Provide Iron-body, bronze mounted swing check, horizontal installation conforming to AWWA C508.
- F. Backflow Preventers: Backflow preventers are to be provided in accordance with the University's Environmental Health & Safety Guidelines. Specify, Reduced Pressure (RP) assemblies for low hazard applications and double check valve assembly for high hazard conditions. A/E is to consult with Owner to determine the degree of hazard. Acceptable manufacturers: Conbraco Industries, Watts Industries.
- G. Water Meters: Each new build service connection shall include an inline, full flow meter for measuring domestic consumption. The meter is to be ahead of and coupled with the backflow prevention assembly. The design of the full assembly is to give due regard to subsequent maintenance operations including ease of disassembly via use of unions, couplings or other appropriate fittings. A/E is to confirm meter size and type with the USF Facilities Management-Operations (FM-OPS). Refer to Section 22 05 19, Meters and Gages for Plumbing Piping for meter details.
- H. Water Sampling Ports: For new and extended potable water distribution systems requiring permit and Health Department clearances, A/E is to specify and show on the drawings the locations of all required sample ports. A/E is also to verify if any of the sample ports are to remain as permanent installations. In such cases, A/E is to confirm size, type, and configuration with the FM-OPS.

2.3 SANITARY SEWERS

- A. Quality Assurance: It is required that the design of wastewater collection and transmission systems be in accordance with the standards and criteria set forth in the Florida Administrative Code, F.A.C. 17-604.
- B. Pipe and Fittings:
 - 1. Gravity Systems: Gravity sewer piping and fittings are to be plastic polyvinyl chloride (PVC) conforming to the requirements of American Society for Testing and Materials (ASTM) designation D3034, SDR-35. Joints for gravity systems are to be push-on elastomeric gasket type.
 - 2. Force Mains: For sanitary force mains, provide plastic polyvinyl chloride (PVC) conforming to the requirements of American Society for Testing and Materials (ASTM) designation D3034, SDR-35. The pipe and fittings shall have a minimum pressure rating of 150 psi, utilize standard push-on or mechanical gasket sealed joints.
 - 3. Valves: Valves are to be acid resisting bronze body eccentric plug valves as manufactured by DeZurik, Series 100. The plug shall be resilient (NBR) rubber coated suited for wastewater applications. Sizes 3 inches and smaller shall have lever actuators and NPT connections. Sizes 4 inches and larger shall have gear reduced handwheel actuators and be flanged or mechanical joint connected. Below grade installations shall be placed in a vault.
 - 4. Manholes: Specify manholes to be precast concrete manholes conforming to ASTM designation C478. Wall thickness shall be eight (8) inches and the bottom barrel section is to be monolithic with the bottom. Pipe connections shall be made watertight with rubber boots casted integral into the wall sections. Specify an asphaltic seal coating to be applied to the interior and exterior surfaces. Invert channels are to be provided to facilitate smooth directional changes in flow. Provide details in the plans and also show the manholes to be properly bedded on gravel consisting of crushed granite or blast slag stone.

5. Manhole Cover: All sanitary manhole covers shall be watertight cast iron with embossed word: "SANITARY."

2.4 STORM SEWER SYSTEM

- A. Pipe: Stormwater drainage pipe shall be either round reinforced concrete culvert pipe conforming to ASTM designation C76, or reinforced concrete horizontal elliptical pipe conforming to ASTM designation C507. The pipe joints are to be rubber gaskets meeting the ASTM C 443 Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets, ASTM C 361 Standard Specification for Reinforced Concrete Low-Head Pressure Pipe, or ASTM C 1628 Standard Specification for Joints for Concrete Gravity Flow Sewer Pipe, using Rubber Gaskets requirements. Specify special bedding requirements where warranted.
- B. Structures: Specify stormwater structures at all changes in pipe direction, points of drainage entry and connection points of branch piping. Stormwater structures are to be constructed of either precast or cast-in-place reinforced concrete conforming to Florida Department of Transportation (FDOT) Roadway and Traffic Design Standards, Standard Indexes. Where grating is required in bicycle and pedestrian use areas, stipulate that the grating shall be reticulate steel. Cast iron grates are to be used in all other areas outside of pedestrian and bicycle ways. When structures are placed in vehicle use areas, grating, if used, is to be specified as traffic bearing. Also specify, where steel grating is used, it shall be hot dipped galvanized coated.

2.5 GAS SERVICE

- A. Where gas services are required for laboratory, food preparation, and hot water needs, the A/E is to consult with the franchised gas service supplier. A/E is to advise Owner, and show the proposed gas service lines on the Civil Site Plans to ensure coordination with other site improvements and prevention of conflict. The associated work is to be indicated as provided by others on the plans.

2.6 HOT/CHILLED WATER

- A. See Division 23, HVAC for specific requirements regarding piping, valves, fittings, manhole materials, and placement. Show all site related mechanical improvements on the Civil Site Plans for proper coordination with other utilities and resolution of conflicts.

2.7 SITE ELECTRICAL

- A. See Division 26, Electrical for specific requirements regarding conduits, cabling, manholes, site lighting, transformers and switching materials, placement, and meters. Show all site related electrical improvements on the Civil Site Plans for proper coordination and resolution of conflicts.
 1. Develop installation specifications for all utility systems satisfying manufacturer's recommendations and other related Division 2, Sitework requirements. Coordinate with the USF Electrical Engineer prior to design for project requirements, utility source, and medium voltage distribution design and specifications.
 2. Specify that dry trench conditions are to be maintained to facilitate effective installations by well pointing where needed.
 3. The A/E is to make sure that any new or modified system is not put into service until the agency approval/clearance letter has been received.

PART 3 – EXECUTION (Not used)

END OF SECTION 33 00 00