



## Florida Department of Transportation

RICK SCOTT  
GOVERNOR

1109 S. Marion Avenue  
Lake City, Florida 32025-5874

ANANTH PRASAD P.E.  
SECRETARY

November 16, 2011

To: Prospective Bidders & Plan Holders

**Addendum No.:**       **1, E2Q17, Financial Project # 42478625201, 42478625601**  
(SR 5A (King Street) From Malaga Street to Markland Pl) Base Work, Drainage Improvements, Curb & Gutters, Traffic Signals, Highway Signing, Sidewalks, Utility Work and other incidental construction on SR 5A in St. Johns County from Malaga Street to Markland Place in St. Johns County.

Attached is Supplemental Specifications Package Number One for the above referenced project. This Supplemental is for:

Technical Special Provisions, page(s) 367, is deleted and the following substituted:

### **TECHNICAL SPECIAL PROVISIONS.**

The following Technical Special Provisions are individually signed and sealed but are included as part of this Specifications Package.

TRAFFIC CONTROLLER ASSEMBLY  
POTABLE WATER SYSTEMS  
SANITARY SEWER SYSTEMS

If you are a BID DOCUMENT HOLDER for the subject project, please go to the Online Ordering Web Site at <https://www3.dot.state.fl.us/ContractProposal.ProcessingOnlineOrdering/> to download E2Q16 Amendment001 for this Bid Document from your Order History.

If you are a BID DOCUMENT HOLDER, please acknowledge receipt of this Addendum in Expedite Bid by opening the Acceptance of Bidding Acknowledgements folder and confirming your acknowledgement of Amendment and Addenda files. Failure to load all amendment files will cause the bid to be rejected.

You must sign, date and fax a copy of this addendum back to me by close of business today to indicate receipt.

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Company Name

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Date

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Signature

Thanks,

Patsy Elkins, CPPB  
Contracts Coordinator  
Phone: 386-758-3703  
Fax: 386-758-3791



SUPPLEMENTAL SPECIFICATIONS PACKAGE NUMBER ONE  
FOR  
FINANCIAL PROJECT ID(S). 424786-2-52-01  
  
DISTRICT TWO  
ST. JOHNS COUNTY

The 2010 Edition of the Florida Department of Transportation Standard Specifications, the Specifications Package for this project, dated August 31, 2011, attached thereto, are revised as follows:

*I hereby certify that this specifications package has been properly prepared by me, or under my responsible charge, in accordance with procedures adopted by the Florida Department of Transportation.*

The official record of this package is the electronic file signed and sealed under Rule 61G 15-23.003, F.A.C.

Name: Christopher Q. Dicks, P.E.  
Page(s): 1-18

**TECHNICAL SPECIAL PROVISIONS, page(s) 367, is deleted and the following substituted:**

**TECHNICAL SPECIAL PROVISIONS.**

The following Technical Special Provisions are individually signed and sealed but are included as part of this Specifications Package.

TRAFFIC CONTROLLER ASSEMBLY  
POTABLE WATER SYSTEMS  
SANITARY SEWER SYSTEMS

TECHNICAL SPECIAL PROVISION  
FOR  
POTABLE WATER SYSTEM  
FINANCIAL PROJECT ID. 424786-2-56-01

*The official record of this Technical Special Provision is the electronic file signed and sealed under rule 61G 15-23.003, F.A.C.*

Prepared by: Quoc H. Mai, P.E.  
Date: October 14, 2011

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## T1051 - POTABLE WATER SYSTEMS

### 1051-1 Description.

This Technical Special Provision includes furnishing and installing all potable water mains, services, fittings, and appurtenances required for a complete potable water system as shown on the Contract Documents and specified in this Technical Special Provision.

A representative of the City of St. Augustine may be present during the Utility work. Where used in this Technical Special Provision "CITY" shall mean City of St Augustine.

#### 1051-1.1 Abbreviations:

- 1) DI: Ductile Iron.
- 2) NPS: Nominal Pipe Size
- 3) HDPE: High Density Polyethylene
- 4) DIP: Ductile Iron Pipe

**1051-1.2 Minimum Qualifications for Contractors:** Provide at the pre-construction conference a list of similar size and complexity projects involving furnishing and constructing potable water mains. This list must show a minimum of 5 years continuous experience.

**1052-1.3 Referenced Documents:** Refer to the bidding documents provided and go to the following directory structure, 42478625201ETC\42478625601\utils\eng\_data, for the below document:

City of St. Augustine Approved Materials List

**1052-1.4 Submittals:** Submittal requirements for Utility work under this Technical Special Provision shall meet the requirements of FDOT Specification 5.

### 1051-2 Materials.

**1051-2.1 General:** All materials shall be free from defects impairing strength and durability. Materials shall have structural properties sufficient to safely sustain or withstand strains and stresses to which it is normally subjected and be true to detail.

**1051-2.2 Approved Materials List:** Utility Materials shall be in accordance with the CITY's Approved Materials List unless indicated otherwise in the Contract Documents.

#### 1051-2.3 Pipe and Related Materials:

**1051-2.3.1 Markings:** Provide markings that comply with 62-555.320(21)(b)3, F.A.C. All pipe and fittings shall be clearly marked with the name or trademark of the manufacturer, the nominal pipe size, strength designation and pressure rating, production record code and applicable ASTM/ANSI/AWWA requirements.

**1051-2.3.2 Wrappings:** All pipe that is to be surrounded by flowable fill shall be first wrapped with 8 mil polyethylene sheeting. Pipe joints within 20 feet of existing or proposed trees shall be wrapped with a root barrier fabric that will prevent the intrusion of tree roots into the pipe.

**1051-2.3.3 Warning Tape and Copper Locating Wire:** Plastic warning tape to be placed over non-metallic pipe during backfill shall be acid and alkali-resistant polyethylene film, 6-inches wide with a minimum thickness of 0.004 inches and shall be of a type specifically manufactured for marking underground utilities. Warning tape shall be color blue for use over water lines and green for use over sewer lines. The tape shall be marked "Warning" on one side and "Water Line" or "Sewer Line" on the other side depending on type of pipe over which the tape is placed.

Copper wire to be placed on all non-metallic pipe prior to backfill shall be 12 Gauge solid, with Type UF insulation for wet locations. The external color shall be either white or yellow. Locate wire shall be brought to grade within a valve box or locate station box at all "entry point locations" and all "exit point locations"

**1051-2.3.4. Ductile Iron Fittings Other Than Flanged:** Ductile iron fittings shall be in

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accordance to the CITY's Approved Materials List, with minimum pressure ratings of 150 psi for sizes through 12 inches, 235 psi for larger than 12 inches.

Mechanical joints shall conform to AWWA/ANSI C110/A21.10 and C111/A21.1. Use gaskets of a composition suitable for exposure to potable water.

Push-on joints shall conform to AWWA/ANSI C111/A21.11. All gaskets shall be in accordance with the corresponding AWWA requirements.

Where so indicated or approved, fittings will be furnished with approval lugs or hooks, special glands and/or accessories as required to develop a "restrained joint" condition at the fitting.

**1051-2.3.5 Flanged Pipe and Fittings:** Flanged pipe and fittings shall be used, where indicated in the Contract Documents, specifically on piping above ground, in structures and as interconnecting piping between facilities or equipment above ground

Flanged pipe and flanged joints shall conform to the dimensions and requirements of AWWA/ANSI C115/A21.15. All flanged pipe and fittings shall be faced and drilled to "American 125 Pound Standard" (ANSI B16.1) unless special drilling is called for or approved. Thickness class for screwed-on flanges shall be Class 53.

Flanged pipe approximately 12 inches or less in length shall have flanges cast solidly to pipe barrel. Flanges on longer lengths may be of the screw type, flanges and pipe faced to give a flush finish and flange end surface to be normal to axis of pipe.

Flanged joints shall be made with bolts, bolt studs with a nut on each end, or studs with nuts where the flange is tapped. The number and size of bolts shall conform to the same ASTM requirements as do the flanges. Bolts and nuts shall be Grade B conforming to the ASTM A307. Bolt studs and studs shall be of the same quality as machine bolts.

Flanged joints shall be made up tight, care being taken to prevent undue strain upon pump nozzles, valves, and other pieces of equipment. Bolts shall be tightened so as to distribute evenly the stress in the bolts and bring the pipe in alignment.

Flanged fittings shall be provided in accordance with AWWA/ANSI C110/A21.10. Screwed flanges shall be screwed in tight at the foundry by machine before they are faced and drilled. Flanges and flanged fittings shall be faced and drilled per ANSI B16.1 to conform to 125 pound American Standard except that special drilling or tapping shall be necessary to ensure correct alignment and bolting. Flanges for flanged fittings, and flanged specials shall be integrally cast at right angles to the axis, accurately faced, and drilled smooth and true.

**1051-2.3.6 PVC Over Three Inches In Diameter:** PVC pipe shall be in accordance to the CITY's Approved Materials List. All PVC pipe 4 inches to 12 inches in diameter shall conform to all requirements of AWWA Standard C900 for PVC pipe and shall be DR18 and have pressure rating of 150psi. All PVC pipe 14 inches to 36 inches in diameter shall conform to all requirements of AWWA Standard C905 for PVC pipe and shall be DR18 having pressure rating of 235 psi. Pipe shall bear the National Sanitation Foundation seal of approval and will comply with the requirements for Class 12454-A or 12454-B virgin resin per ASTM D1784.

Pipe joints shall be the manufacturer's standard push-on bell type with rubber sealing rings and shall comply with ASTM D3139 for push-on joints. Provide gasket types noted in the Contract Documents.

Mechanical joint ductile iron fittings per AWWA C110 or AWWA C153, with joints per AWWA C111 suitable for use with PVC. Fittings shall be cement mortar lined per AWWA C104 and shall be bituminous coated inside and out.

**1051-2.3.7 High Density Polyethylene Service Pipe:** High Density Polyethylene tubing shall be in accordance to the CITY's Approved Materials List. High Density Polyethylene tubing

shall conform to AWWA C901. High-density polyethylene (HDPE) 1-inch tubing meeting the applicable standards of ASTM D3350, ASTM D2239 and NSF-14.

Service fittings shall be brass, cast and machined shall be in accordance with AWWA C800 and AWWA C901, with compatible polyethylene tubing connections.

**1051-2.3.8 High Density Polyethylene (HDPE) Pipe For Directional Bore:** High density polyethylene pipe for directional bore shall conform to AWWA C906. 1051 3.7.2 Zero leak rate, heat fusion butt weld.

Use mechanical joint ductile iron fittings suitable for use with PVC and PE. Fittings shall be in general conformance with AWWA/ANSI C110/A21.10.

**1051-2.3.9 Stops:** Corporation Stops shall be brass, equipped with connections compatible with polyethylene tubing and threaded in accordance with AWWA C800 and C901.

Current Stops shall be brass, equipped with connections compatible with polyethylene tubing and threaded in accordance with AWWA C800 and C901. Sized to match meter size.

Service stop shall be 1-inch brass with wider rectangular operating head, conforming to AWWA C800, ASTM B62 and ASTM B584. 2-inch brass, iron pipe thread configuration, installed with padlock wing for locking valve in closed position, conforming to AWWA C800, ASTM B62 and ASTM B584.

**1051-2.3.10 Coatings and Linings:** Where ductile iron fittings are to be below ground or installed in a casing pipe, the coating shall be a minimum 1.0 mil thick in accordance with ANSI/AWWA A21.51/C151. Where ductile iron fittings are to be installed above ground, fittings, and valves shall be thoroughly cleaned and given one field coat of a rust inhibitor primer with a minimum 1.5 mils dry thickness. Intermediate and finished field coats of oil based paint with a minimum 1.5 mils dry thickness. Primer and field coats shall be compatible and shall be applied in accordance with the manufacturer's recommendations. All ductile iron fittings for potable water applications shall have an interior protective lining of cement-mortar with a seal coat of asphaltic material in accordance with ANSI/AWWA A21.4/C104.

All ductile fittings, except as noted otherwise, shall receive an exterior bituminous coating as specified in AWWA/ANSI C110/A21.10 for fittings.

#### **1051-2.4 Fixtures:**

**1051-2.4.1 Gaskets:** All gaskets shall be in accordance with the corresponding AWWA requirements.

**1051-2.4.2 Tapping Saddles:** Tapping (Service) Saddles shall be in accordance to the CITY's Approved Materials List. A service saddle shall be used for all service line taps up to two (2) inches. Service saddles shall be sized exactly to the water main pipe outside diameter. Service saddle body shall be brass conforming to ASTM B62, ASTM B584 and AWWA C800. Use stainless steel straps, bolts, washers and nuts meeting ASTM F593, Group 1 Alloy 304. Single band service saddles must have a total of four (4) bolts. Hinged saddles shall be allowed on 2-inch water mains only.

**1051-2.4.3 Resilient Seat Gate Valves:** Resilient Seat Gate Valves shall be Mueller Company with Catalogue #A2360-20 & A2360-16. All gate valves twelve (12) inches and smaller shall be resilient seat gate valves. Such valves shall be manufactured to meet or exceed the requirements of ANSI/AWWA C509 and certified to ANSI/NSF 61. Valves shall be mechanical joint and comply with ANSI/AWWA C111.

The valve body, bonnet, and bonnet cover shall be cast iron in accordance with ASTM A126, Class B. All inside and outside surfaces shall have an epoxy coating that meets or exceeds all applicable requirements of ANSI/AWWA C550 and certified to ANSI/NSF 61. A two (2)

inch square wrench nut shall be provided for operating the valve. All valves are to be tested in strict accordance with AWWA C515.

The valves shall be non-rising stem (NRS) with the stem made of cast, forged, or rolled bronze as specified in AWWA C515. Triple O-ring seal stuffing box (2 upper and lower O-rings). The resilient sealing mechanism shall provide zero leakage at the water working pressure when installed with the line flow in either direction.

**1051-2.4.4 Butterfly Valves:** Butterfly valves for sixteen inches and larger shall be product of Mueller Company with Catalogue #3211-20. All shut-off valves sixteen (16) inches and larger shall be butterfly valves. Butterfly valves shall meet or exceed all applicable requirements of ANSI/AWWA C504 Standard Class 150B and certified to NSF 61.

The valve body shall be constructed of close grain cast iron per ASTM A126 Class B. All above ground valves shall be coated with 3 mils phenolic alkyd primer on the valve outside diameter and 5 mils asphalt varnish on the inside diameter, meeting or exceeding AWWA C504. The disc edge shall be 316 stainless steel. Valves twenty four (24) inches and smaller shall have bonded or mechanically restrained seats as outlined in AWWA C504.

The face-to-face dimensions of valves shall be in accordance with above mentioned AWWA requirements for short-body valve.

In general, the butterfly valve operators shall conform to the requirements of AWWA for Rubber Seated Butterfly Valves, Designation C504, as applicable.

**1051-2.4.5 Water Service Assembly (Valve Assembly):** The domestic potable water service assembly shall consist of tapping saddle, corporation stop, 1" HDPE poly tubing, straight ball yoke valve, yoke bar, brass nipple, expansion connector, dual check detector, curb stop and plastic valve box with lid and shall be in accordance to the CITY's Approved Materials List. The CITY will furnish all water meters and water meter boxes for the assemblies. The Contractor shall furnish the remainder of the water service assembly items and install the entire assembly in accordance with FDEP requirements. Any items not paid for separately shall be considered incidental to the cost of valve assembly (water service assembly).

Remove existing water service assemblies where indicated in the Contract Documents.

**1051-2.4.6 Piping Supports and Restraints:** Furnish and install all supports necessary to hold piping and appurtenances in a firm, substantial manner at the lines and grades indicated in the Contract Documents.

Where required, bends, tees and other fittings in mechanical joint, and sleeved-coupled pipelines buried in the ground shall be restrained by suitable tie rods, clamps and accessories to brace the fittings properly. Such tie rods, etc., shall be coated thoroughly and heavily with an approved bituminous paint after assembly, or if necessary, before assembly.

Where buried piping contains fittings which raise or lower the centerline of the pipe, suitable socket clamps and tie rods shall be used to prevent movement of the fittings.

**1051-2.4.7 Restrained Joint Pipe and Fittings:** Pressure pipe fittings and other items requiring restraint shall use restraining assemblies as specified in this Technical Special Provision. Mechanically restrained joints shall be used for all installations. The use of concrete thrust blocks and tie rodding is prohibited. Pipelines shall be restrained at all valves, bends, tees, crosses and dead ends for a specified distance.

Restrained Joint Pipe: Meeting the requirements of this Technical Special Provision and provided with an assembly for restraining the joint against joint separation due to thrust resulting from interior pressure or external force.

Ductile iron pipe restraints and ductile iron bell restraints: To be used on both sides

of every fitting or fixture larger than 2 inches in size.

All bolts, nuts, studs, rods, bands and other uncoated parts shall be coated with coal-tar or asphalt prior to backfilling.

Installation shall be in accordance with AWWA C600 and the pipe manufacturer's recommendation.

Install the joint restraint system so that all joints are mechanically locked together to prevent joint separation in accordance with the manufacturer's printed instructions.

Gland shall be secured by tee head bolts through holes in the bell end flange of the adjoining length of pipe. Install in accordance with the pipe manufacturer's printed instructions.

**1051-2.4.8 Tapping Sleeve:** Tapping sleeves shall be in accordance with the City Approved Material List. Tapping sleeves shall meet or exceed AWWA C223. Sleeves shall be fabricated of 18-8 Type 304 stainless steel. Flange shall be Type 304 stainless steel in accordance with ANSI/AWWA C-207 Class D 150 ANSI B 16.5 CI 150. Branch shall be Type 304 stainless steel 14 gauge rolled to an I.D. of 0.5 inches larger than the nominal flange size. The branch shall be TIG (GTAW) welded to the flange and upper shell on the inside and MIG (GMAW) welded to the flange and upper shell on the outside. Bolts shall be 18-8 Type 304 stainless steel 5/8 inch – 11 track head NC rolled thread. Each sleeve shall be provided with seven (7) 1/2 inch long bolts with a minimum of 5 inch threads. Nuts shall be Type 304 stainless steel 5/8 inch heavy rolled hex with NC rolled threads tapped oversized 0.005-inch. Nuts shall be coated with an anti-seizing material. Gasket shall be vulcanized natural or synthetic rubber compounded for use in water and wastewater systems.

**1051-2.5 Fire Hydrants:** Fire hydrant shall be Muller Centurion, catalog number A442. Fire hydrants shall have a 5-1/4 inch valve opening and meet or exceed all applicable standards of ANSI/AWWA C502 Standard, for 250 psig maximum working pressure and 500 psig static pressure. The hydrant shall be of a post type dry barrel design with dry top design. The hydrant shall be "Traffic" type with stainless steel safety stem coupling. The main valve shall be compression type closed with pressure for positive seal made of reversible rubber. The hydrant shall be ordered with square operating nut. Hydrant shall open by turning to the left (counter clockwise). The hydrant shall have a protective SA series check valve internal to the hydrant shoe.

All metal parts of the hydrant both inside and outside shall be painted, in accordance with AWWA C501. All inside surfaces and the outside surfaces below the ground line shall be coated with two (2) coats of asphalt varnish in compliance with NSF-61, the first coat having dried thoroughly before the second is applied. The outside of the hydrant above the finished grade line shall be thoroughly cleaned and painted with one (1) coat of primer paint of a durable composition, and one (1) additional coat of red and silver. Paint shall be RUS-KIL enamel.

Hydrants shall be plumb and shall have their nozzles parallel with or at right angles to the curb, with the pumper nozzle facing the curb. Hydrants shall be set so that the lowest hose connection is a minimum of 18 inches and a maximum of 24 inches above the surrounding finished grade. The resetting of existing hydrants and moving and reconnecting of existing hydrants shall be handled in a manner similar to a new installation. A concrete pad using 4,000 psi concrete with nominal dimensions of six (6) inches thick and 30 inches square shall be used. Supply one (1) hydrant wrench to the CITY for every three (3) new hydrants installed. In the event there are less than three (3) hydrants, a minimum of one (1) hydrant wrench shall be supplied.

Fire hydrants shall be located in the general location as shown on the plans. Final field location of all hydrants shall be as approved by the Engineer.

Install fire hydrant in accordance with AWWA C600 and FDEP requirements.

Install Blue Raised Pavement Marker to identify fire hydrants location meeting the guidelines of the FDOT Traffic Engineering Manual.

### **1051-3 Installation.**

**1051-3.1 General:** Installation of proposed water main shall be via trenching method with appropriate trench box or embankment protection devices as needed, the trench shall be backfilled with flowable fill material from the bottom of trench to the top of the pipe in accordance with the Contract Documents.

**1051-3.2 Installing Ductile Iron Appurtenances:** Deliver, handle, and store DI potable appurtenances in accordance with AWWA C600.

Install DI potable appurtenances in accordance with AWWA C600 and FDEP requirements.

**1051-3.3 Installing PVC Water Mains and Appurtenances:** Deliver, handle, and store PVC water main and appurtenances in accordance with AWWA C605. Install PVC main and appurtenances in accordance with AWWA C605 and FDEP

**1051-3.4 Installing Water Services:** All existing water services within the project limit shall be removed, plugged, and disposed of. Reconnect all those services to the existing 16" water main via new 1" water tap, with new 1" service line, new water meter assembly, new 1" water meter, and new water meter box. All water services to the south and crossing the proposed storm pipe shall be installed over the top of the proposed storm pipe. Install water service in accordance with FDEP requirements.

### **1051-4 Service Interruption.**

All work shall be executed in such a manner as not to interfere with the operation of the CITY utility system. Interruptions and interference with the operation of the CITY utility system and inconvenience to customers shall be held to the absolute minimum. The continuity of CITY water services and the safety of the CITY water system shall be given prime consideration, and the decision of the Engineer shall be followed in such matters. Do not operate any valves, nor otherwise cause any interruption of water service without approval of the Engineer and notifying the CITY. In the event of an emergency that endangers life or property, the Contractor may take immediate action before notifying the Engineer. In all cases, however, the Engineer shall be notified. If the need arises for "shut down" of a main or portion of a main, where there will be an interruption of water service, it is the Contractor's responsibility to notify all affected parties of the proposed interruption of service in accordance with FDEP rules and the CITY's requirements.

### **1051-5 Dewatering.**

If groundwater is encountered utilize a dewatering system(s) to remove water from the excavations.

### **1051-6 System Connection.**

Perform all work necessary to make connections and ties to existing inline and lateral water mains when installing mains as shown on the Utility Plans and in accordance with the Contract Documents. The Contractor shall not make any connection of the new main to the existing main without first obtaining the Certificate of Compliance (C.O.C.) from Florida Department of Environmental Protection. Notify the Engineer and the CITY prior to making connections to the existing system.

### **1051-7 Removal and Place Out Of Service of Existing Pipe and Fixtures.**

Remove and dispose of all pipe indicated in the Contract Documents to be removed.

Existing pipe indicated in the Contract Documents to be placed out of service shall be filled with flowable fill per FDOT Requirements. Pipes to be placed out of service that are greater than 4 inches in

size must be completely filled with flowable fill. Pipes that are 4 inches and smaller must have remaining open ends (where sections are removed) plugged with flowable fill.

### **1051-8 Field Quality Control.**

Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed. Place plug in end of incomplete piping at end of day and when work stops. Flush piping between manholes and other structures to remove collected debris, unless directed otherwise by the Engineer.

Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project. Defects requiring correction include the following:

1. Alignment: Less than full diameter of inside of pipe is visible between structures.
2. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
3. Crushed, broken, cracked, or otherwise damaged piping.
4. Infiltration: Water leakage into piping.
5. Exfiltration: Water leakage from or around piping.
6. Replace defective piping using new materials, repeat inspections until within allowances.

Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not put into service before inspection and approval.
2. Conduct pressure and leakage tests in accordance with AWWA C600 and AWWA C605 as applicable.
3. Schedule tests and inspections with the Engineer and notify the CITY 48 hours in advance.
4. Submit separate reports for each test.
5. Leaks and loss in test pressure constitute defects that must be repaired.
6. Replace leaking piping using new materials, and repeat testing until all requirements are met.

### **1051-9 Method of Measurement.**

The quantities to be paid for will be the planned quantity for the following items meeting the requirements of this Technical Special Provision, completed and accepted:

1. The length, in linear feet, of Utility Pipe Furnished and Installed or Removed and Disposed.
2. The number of Utility Pipes Plugged and placed out of service.
3. The number of Utility Fittings, Utility Fixtures, and Fire Hydrants.

### **1051-10 Basis of Payment.**

**1051-10.1 General:** Prices and payment will be full compensation for all work specified in this Technical Special Provision, including excavation; dewatering; backfilling and compaction; site restoration; disposal of surplus material; testing; and clearing and grubbing necessary to accomplish all work specified in this Technical Special Provision.

**1051-10.2 Furnish and Install Utility Pipe:** Price and payment will be full compensation for all work and materials required including fittings for pipe under 8" in diameter.

**1051-10.3 Remove and Dispose Utility Pipe:** Price and payment will be full compensation for

all work and materials required.

**1051-10.4 Plug and Place out of Service Utility Pipe:** Price and payment will be full compensation for all work and materials required.

**1051-10.5 Furnish and Install Utility Fittings:** Price and payment will be full compensation for all work and materials required.

**1051-10.6 Furnish and Install Utility Fixtures:** Price and payment will be full compensation for all work and materials required.

**1051-10.7 Install Utility Fixtures:** Price and payment will be full compensation for all work required.

**1051-10.8 Furnish and Install Fire Hydrant:** Price and payment will be full compensation for all work and materials required.

**1051-10.9 Remove Fire Hydrant:** Price and payment will be full compensation for all work required.

**1051-10.10 Payment Items:** Payment will be made under:

- Item No. 1050-11-223 Utility Pipe (F&I) (PVC) (Water/Sewer) (5.0-7.9”) – per linear foot
- Item No. 1050-11-224 Utility Pipe (F&I) (PVC) (Water/Sewer) (8.0-19.9”) – per linear foot
- Item No. 1050-11-321 Utility Pipe (F&I) (HDPE) (Water/Sewer) (0-1.9”) – per linear foot
- Item No. 1050-16-003 Utility Pipe (Remove/Dispose) (5-7.9”) – per linear foot
- Item No. 1050-16-004 Utility Pipe (Remove/Dispose) (8-19.9”) – per linear foot
- Item No. 1050-18-000 Utility Pipe (Plug & Place out of service) (0-4”) – per each
- Item No. 1055-11-414 Utility Fittings (F&I) (DI/CI) (Elbow) (8.0-19.9”) – per each
- Item No. 1055-11-424 Utility Fittings (F&I) (DI/CI) (Tee) (8.0-19.9”) – per each
- Item No. 1055-11-434 Utility Fittings (F&I) (DI/CI) (Reducer) (8.0-19.9”) – per each
- Item No. 1055-11-454 Utility Fittings (F&I) (DI/CI) (Cap/Plug) (8.0-19.9”) – per each
- Item No. 1080-11-103 Utility Fixtures (F&I) (0-1.9”) (Tapping Saddle/ Sleeve) –per each
- Item No. 1080-11-104 Utility Fixtures (F&I) (0-1.9”) (Valve Assembly) – per each
- Item No. 1080-11-304 Utility Fixtures (F&I) (5.0-7.9”) (Valve Assembly) – per each
- Item No. 1080-11-309 Utility Fixtures (F&I) (5.0-7.9”) (Mechanical Joint Restraint) – per each
- Item No. 1080-11-403 Utility Fixtures (F&I) (8.0-19.9”) (Tapping Saddle / Sleeve) – per each
- Item No. 1080-11-404 Utility Fixtures (F&I) (8.0-19.9”) (Valve Assembly) – per each
- Item No. 1080-11-409 Utility Fixtures (F&I) (8.0-19.9”) (Mechanical Joint Restraint) – per each
- Item No. 1080-13-101 Utility Fixtures (Install) (0-1.9”) (Valve/Meter Box) – per each
- Item No. 1644-136-08 Fire Hydrant (F&I) (Traffic) (3 Way, Two Hose, One Pumper) (6”) –per each
- Item No. 1644-900 Fire Hydrant (Remove) –per each

TECHNICAL SPECIAL PROVISION  
FOR  
SANITARY SEWER SYSTEM  
FINANCIAL PROJECT ID. 424786-2-56-01

*The official record of this Technical Special Provision is the electronic file signed and sealed under rule 61G 15-23.003, F.A.C.*

Prepared by: Quoc H. Mai, P.E.  
Date: October 14<sup>th</sup>, 2011

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## T1052 – SANITARY SEWER SYSTEMS

### 1052-1 Description.

This Technical Special Provision includes furnishing and installing all gravity sewer collection piping, manholes, fittings, services, and appurtenances required for a complete gravity sewer collection system as shown on the Contract Documents and specified in this Technical Special Provision.

A representative of the City of St. Augustine may be present during the Utility work. Where used in this Technical Special Provision "CITY" shall mean City of St. Augustine.

#### 1052-1.1 Abbreviations:

- 1)NSP: Nominal Pipe Size
- 2)NSF or NSF International: National Sanitation Foundation.
- 3)DIP: Ductile Iron Pipe

**1052-1.2 Minimum Qualifications for Contractors:** Provide at the pre-construction conference a list of similar size and complexity projects involving furnishing and constructing sanitary sewer systems, including forcemains. This list must show a minimum of 5 years continuous experience.

**1052-1.3 Referenced Documents:** Refer to the bidding documents provided and go to the following directory structure, 42478625201ETC\42478625601\utils\eng\_data, for the below document:

City of St. Augustine Approved Materials List

**1052-1.4 Submittals:** Submittal requirements for Utility work under this Technical Special Provision shall meet the requirements of FDOT Specification 5.

### 1052-2 Materials.

**1052-2.1 General:** All materials shall be free from defects impairing strength and durability. Materials shall have structural properties sufficient to safely sustain or withstand strains and stresses to which normally subjected and be true to detail.

**1052-2.2 Approved Materials List:** Utility Materials shall be in accordance with the CITY's Approved Materials List unless indicated otherwise in the Contract Documents.

#### 1052-2.3 Pipe and Related Materials:

**1052-2.3.1 Markings:** Provide markings that comply with 62-555.320(21)(b)3, F.A.C. All pipe and fittings shall be clearly marked with the name or trademark of the manufacturer, the nominal pipe size, strength designation, production record code and applicable ASTM/ANSI requirements.

**1052-2.3.2 Wrappings:** All pipe that is to be surrounded by flowable fill shall be first wrapped with 8 mil polyethylene sheeting.

**1052-2.3.3 PVC Gravity Sewer Pipe, Joints, and Fittings:** PVC Gravity Sewer Pipe (4 inch - 15 inch), ASTM D3034, SDR 35 for pipe installations with a depth of 10 feet or less, and ASTM D3034, SDR 26 for pipe installations deeper than 10 feet - Uniform minimum "pipe stiffness" at five (5) percent deflection shall be 46psi. Applicable UNI-Bell Plastic Pipe Association standard is UNI-B-4. The minimum standard length of pipe shall be thirteen (13) feet.

PVC sewer pipe joints shall be flexible elastomeric seals per ASTM D 3212 and ASTM F477. Provisions shall be made for contraction and/or expansion at each joint with a solid cross section rubber ring. The rubber ring shall be secured in the bell in such a manner so as to prevent sliding or rolling when the spigot end of the adjoining pipe is installed. Joints between pipes of different materials shall be made with a flexible mechanical compression coupling.

Unless otherwise specified, wyes shall be provided in the gravity sewer main

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for single service lateral connections. Wyes shall be six (6) inches in diameter for residential services and six (6) inches in diameter for non-residential services, unless otherwise approved by the Engineer. All fittings shall be of the same material as the pipe. Dual type services shall not be permitted. Plugs for stub outs shall be of the same material as the pipe, and the gasket shall be the same gasket material as the pipe joint, or be of material approved by the Engineer.

**1052-2.3.4 Epoxy Lined Ductile Iron Pipe, Joints, and Fittings:** Where ductile iron pipe and fittings are to be below ground or installed in a casing pipe, the coating shall be a minimum 1.0 mil thick in accordance with ANSI/AWWA A21.51/C151. All ductile iron pipe and fittings for sanitary sewer applications shall have a interior protective lining of polyethylene in accordance with ASTM A746.

Epoxy lined ductile iron pipe for use in gravity sewer systems shall conform to ASTM A746 for push-on joints.

Standard-Pattern ductile iron fittings shall conform to AWWA C110 for push-on joints. Compact-Pattern ductile iron fitting shall conform to AWWA C153 for push-on joints.

All ductile and cast iron pipe and fittings for sewer lines shall be furnished with coal-tar epoxy liner inside, with minimum 50 mils dry-film-thickness.

All gaskets shall be in accordance with the corresponding AWWA requirements.

**1052-2.3.5 Plug Valves:** Plug Valves shall be - DeZurick PEF. All plug valves shall be installed so that the direction of flow through the valve is in accordance with the manufacturer's recommendations.

Valves shall be of the non-lubricated eccentric type with resilient faced plugs. Flanged valves shall be faced and drilled to the ANSI 125/150 lb. standard. Mechanical joint ends shall meet AWWA C111, Class B.

Plug valves shall be tested in accordance with AWWA C504. Each valve shall meet the performance, leakage, and hydrostatic tests described in AWWA C504. The leakage test shall be applied to the face of the plug tending to unseat the valve. Provide manufacturer certification covering proof of design testing as described in AWWA C504.

Manual valves shall have lever or gear actuators, tee wrenches, extension stems, floor stands, etc. as indicated on the plans. All valves 6-inch and larger shall be equipped with gear actuators. All gearing shall be enclosed in a semi-steel housing and be suitable for running in a lubricant with seals provided on all shafts to prevent entry of dirt and water into the actuator. All actuator shafts shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. All exposed nuts, bolts, and washers shall be zinc or cadmium plated. Valve packing adjustment shall be accessible without disassembly of the actuator.

### **1052-3 Installation.**

**1052-3.1 Sewer Service Laterals:** The sanitary sewer lateral is a branch gravity sewer constructed from the main gravity sewer to the right-of-way line. Laterals and fittings shall be a minimum of six (6) inches for all installations. Cleanout box & cover shall be from Brooks Products, #1-RT, traffic rated with cast iron top & cover.

Laterals shall be connected to gravity main by a machine-made tap and saddle. Gravity Sewer Tapping Saddle shall be Style CB Saddle from Romac Industry Inc.

During the pipe laying and jointing, the services and laterals shall be kept free of any water, dirt, or objectionable matter. Laterals shall be laid with a minimum grade of one foot per 100 feet. Pipe shall be laid in a straight line at a uniform grade between fittings. The

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trench shall be backfilled with flowable fill material from the bottom of trench to the top of the pipe in accordance with the Contract Documents. The exact location of the termination point of each installed service shall be marked by etching or cutting an "S" in the concrete curb. Where no curb exists, locations shall be adequately marked by painting an "S" in green color paint on the pavement, or by a method approved by the Engineer.

**1052-3.2 Sewer Force main:** Pipe used in wastewater force main systems shall be Ductile Iron Pipe (DIP).

Ductile iron pipe and fittings shall conform to ANSI/AWWA C151/A21.51 and have a minimum 350 psi pressure class rating. Ductile iron pipe shall be restrained in conforming to ANSI/AWWA A21.11/C111.

Prevent water from entering the trench during excavation and pipe laying operations to the extent required to properly grade the bottom of the trench and allow for proper placement of the flowable fill. Dewatering shall be in accordance with FDEP requirements. Pipe shall not be laid in water.

All ductile iron pipe shall be installed in accordance with AWWA C600. Cut pipe only as necessary to comply with alignment shown on the Contract Documents. Torch cutting of pipe shall not be allowed. Provide special tools and devices, such as special jacks, chokers, and similar items required for proper installation. Lubricant for the pipe gaskets shall be as specified by the pipe manufacturer.

The trench shall be backfilled with flowable fill material from the bottom of trench to the top of the pipe in accordance with the Contract Documents.

#### **1052-4 Service Interruption.**

All work shall be executed in such a manner as not to interfere with the operation of the CITY utility system. Interruptions and interference with the operation of the CITY utility system and inconvenience to customers shall be held to the absolute minimum. The continuity of CITY sewer services and the safety of the CITY sewer system shall be given prime consideration, and the decision of the Engineer shall be followed in such matters. Do not operate any valves, nor otherwise cause any interruption of water and sewer service without approval of the Engineer and notifying the CITY. In the event of an emergency that endangers life or property, the Contractor may take immediate action before notifying the Engineer. In all cases, however, the Engineer shall be notified. If the need arises for "shut down" of a main or portion of a main, where there will be an interruption of sewer service, it is the Contractor's responsibility to notify all affected parties of the proposed interruption of service in accordance with FDEP rules and the CITY's requirements.

Do not rely on the existing valves, pump stations or other devices to satisfactorily isolate the work area while connections or other work are being performed. Provide sewer bypass system including temporary pipe as needed for connection of new gravity service laterals at no additional cost. Provide additional pumping equipment or other means to maintain service, uninterrupted flow, comply with regulations and complete the construction unless otherwise approved by the Engineer.

#### **1052-5 Dewatering.**

If groundwater is encountered utilize a dewatering system(s) to remove water from the excavations.

#### **1051-6 System Connection.**

Perform all work necessary to make connections and ties to existing inline and lateral water

mains when installing mains as shown on the Utility Plans and in accordance with the Contract Documents. The Contractor shall not make any connection of the new main to the existing main without first obtaining the Certificate of Compliance (C.O.C.) from Florida Department of Environmental Protection. Notify the Engineer and the CITY prior to making connections to the existing system.

**1052-7 Removal of Existing Pipe and Fittings.**

Remove and dispose of all pipe and fittings indicated on the plans to be removed.

**1052-8 Field Quality Control.**

Low-Pressure Air Leakage Test: Testing shall be conducted in accordance with the procedure for "Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe" as established by the Uni-Bell PVC Pipe Association. Passing this test shall be presumed to establish leakage test limits of 50 gallons per day per inch of diameter per mile of sewer.

Infiltration and Ex-filtration Leakage Test: Flows shall not exceed 150 gallons per day per inch of nominal pipe diameter per mile as measured between adjacent manholes over a two (2) hour testing period.

Each test section shall not exceed 400 feet in length and be conducted between adjacent manholes.

Flush all sewers with water sufficient in volume to obtain free flow through each line. Flushing water and debris shall not enter any pump station wet well. Water will be pumped from the sewer system during flushing to an acceptable discharge location. A visual inspection shall be made and all obstructions removed. Notify the Engineer forty eight (48) hours prior to performing any leakage testing. Provide the Engineer with a copy of the leakage testing report for staff review in a format acceptable to the Engineer.

Hydrostatic Test for force main shall be in accordance with FDEP requirements. Hydrostatic tests shall consist of pressure and leakage tests. Hydrostatic tests shall be conducted on all newly laid pressure pipes, joints, and valves including all service lines to the curb stops. Air testing of pressure pipes will not be permitted under any circumstance. Tests may be made on sections not exceeding 2,000 feet when acceptable to the Engineer. Furnish all necessary equipment and material, make all taps, and furnish all closure pieces in the pipe as required.

All force main pipe sections to be pressure tested shall be subjected to a hydrostatic pressure of 150 psi. The duration of each pressure test shall be for a period of 2 hours. If during the test, the integrity of the tested line is in question, the Engineer may require a 6 hour pressure test. The basic provisions of AWWA C600 shall be applicable.

After completion of the pressure test, a leakage test shall be conducted to determine the quantity of water lost by leakage under the specified test pressure. Applicable provisions of AWWA C600 shall apply.

**1052-9 Method of Measurement.**

The quantities to be paid for will be the plan quantity for the following items meeting the requirements of this Technical Special Provision, completed and accepted:

1. The length, in linear feet, of Utility Pipe Furnished and Installed or Removed and Disposed.
2. The number of Utility Fitting and Utility Fixtures.

**1052-10 Basis of Payment.**

**1052-10.1 General:** Prices and payment will be full compensation for all work specified in this Technical Special Provision, including excavation; dewatering; backfilling and compaction; site restoration; disposal of surplus material; testing and clearing and grubbing necessary to accomplish all work specified in this Technical Special Provision.

**1052-10.2 Furnish and Install Utility Pipe:** Price and payment will be full compensation for all work and materials required including fittings for pipe under 8” in diameter.

**1052-10.3 Remove and Dispose Utility Pipe:** Price and payment will be full compensation for all work and materials required.

**1052-10.4 Furnish and Install Utility Fittings:** Price and payment will be full compensation for all work and materials required.

**1052-10.5 Furnish and Install Utility Fixtures:** Price and payment will be full compensation for all work and materials required.

**1052-10.6 Payment Items:** Payment will be made under:

Item No. 1050-11-223	Utility Pipe (F&I) (PVC) (Water/Sewer) (5.0-7.9”) – per linear foot
Item No.1050-11-425 per	Utility Pipe (F&I) (DI/CI) (Water/Sewer) (20-49.9”) – linear foot
Item No. 1050-16-003	Utility Pipe (Remove & Dispose) (5.0-7.9”) – per linear foot
Item No. 1055-11-435 each	Utility Fittings (F&I) (DI) (Reducer) (20-49.9”) – per
Item No. 1080-11-504 each	Utility Fixtures (F&I) (Valve Assembly) (20-49.9”) – per

**THIS COMPLETES  
THIS  
SUPPLEMENTAL  
SPECIFICATIONS  
PACKAGE**