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Since 1913

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February 3, 2015

To: City of Belton, MO

RE: AIS Waiver for TR Flex Ductile Iron Restrained Joint Fittings
Belton, MO WWTF Improvements
Bid Date: February 3, 2015

To Whom It May Concern:

It has been brought to our attention during the bid process for the subject project that the TR Flex ductile iron restrained joint fittings specified for installation into the work are NOT made domestically. The original manufacturer of the TR Flex restrained system, US Pipe, sold the rights to the system to McWane several years ago. Neither US Pipe nor McWane produce the TR Flex restrained joint fittings domestically and instead have the fittings made outside the US borders. Please see the attached letter from McWane which substantiates the non-domestic production of the TR Flex restrained joint fittings.

Therefore, in accordance with the US EPA Memorandum dated March 20, 2014, the Foley Company hereby requests an **AVAILABILITY WAIVER** be granted to utilize the TR Flex restrained joint fitting that is produced outside the borders of the United States. The TR Flex restrained joint fitting is specifically required by the design engineer and no alternative is allowed. To reiterate: these fittings are NOT produced domestically.

If you have any questions, please feel free to contact me at (816) 448-5978 or via email at kevinw@foleycompany.com.

Sincerely,

Kevin D. Waddell

Kevin D. Waddell, P.E.
Sr. Estimator

This waiver request was submitted to the EPA by the city of Belton, MO. All supporting correspondence and/or documentation from contractors, suppliers or manufacturers included as a part of this waiver request was done so by the recipient to provide an appropriate level of detail and context for the submission.
Some of the referenced attachments with project diagrams, schedules, and supplier correspondence are in formats that do not meet the Federal accessibility requirements for publication on the Agency's website. Hence, these exhibits have been omitted from this waiver publication. They are available upon request by emailing SRF_AIS@epa.gov

Belton, MO
Wastewater Plant Improvements
Non Domestic Fitting List

Qty	Description
	Yard
	24”RS To Valve Vault
1	24”Trflex 90 Bend CL
	20”RS to Valve Vault
2	20”TrFlex 22 ½ Bend CL
	20”RS From Valve Vault
2	20”TrFlex 45 Bend CL
	RS Dual Force Main BB
6	20”Trflex 90 Bend CL
	RS Connection From Valve Vault 2 to Headworks
1	20”x6”TrFlex Tee CL
1	6”x4”TrFlex Reducer
2	20”Trflex 45 Bend CL
	4”RS Line
1	4”TrFlex 90 Bend CL
1	4”Trflex Plug
	Yard Piping Sheet 05C17
	30”RS from Influent Structure to New Headworks
1	30”TrFlex 90 Bend CL
	24”RS from Existing Line to Influent Splitter Box All 3 Lines
6	24”Trflex 90 Bend CL
	6”SPD
1	6”TrFlex 90 Bend CL
1	6”TrfFlex 45 Bend CL
	6”DR
2	6”TrFLex 45 Bend
1	6”TrFlex Wye
1	6”TrFlex 45 Bend
1	6”x4”TrFlex Reducer
2	4"Trflex 90 bend
	6”D From Grit Drain Pad
2	6”TrfFlex 45 Bend CL
3	6”TrfFlex Tee CL
	4”Sump Pump Drain @ Influent Pump Station
2	4”TrFlex 90 Bend CL
	Headworks
	12”RS Inlet
1	12”TrFlex Pug

SECTION 15251

DUCTILE IRON PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Ductile iron piping, joints, fittings, gaskets, and pipe lining and coating.

B. Related Sections:
1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
2. It is the Contractor's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of Contractor's Work.
3. The following Sections are related to the Work described in this Section. This list of Related Sections is provided for convenience only and is not intended to excuse or otherwise diminish the duty of the Contractor to see that the completed Work complies accurately with the Contract Documents.
   a. Section 02318 - Trenching.
   b. Section 09960 - Coatings
   c. Section 15052 - Basic Piping Materials and Methods.

1.02 REFERENCES

A. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME):
1. B 16.1 - Cast Iron Pipe Flanges and Flanged Fittings.

B. American Society for Testing and Materials (ASTM):
1. A 47 - Specifications for Ferritic Malleable Iron Castings.
2. A 183 - Specifications for Carbon Steel Tank Bolts and Nuts.
3. A 283 - Specifications for Low and Intermediate Tensile Strength Carbon Steel Plates.
4. A 536 - Ductile Iron Castings.
5. A 674 - Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids.
6. D 792 - Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
7. D 1248 - Specifications for Polyethylene Plastics Molding and Extrusion Materials.

C. American Water Works Association (AWWA):
1. C 104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
2. C 105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. C 110 - Ductile-Iron and Gray-Iron Fittings, 3 Inches Through 48 Inches, for Water and Other Liquids.
4. C 111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

5. C 115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
6. C 150 - Thickness Design of Ductile-Iron Pipe.
7. C 151 - Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
8. C 153 - Ductile-Iron Compact Fittings, 3 Inches Through 24 Inches, and 54 Inches Through 64 Inches, for Water Service.
9. C 600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
10. C 606 - Grooved and Shouldered Joints.

1.03 SUBMITTALS

A. Shop Drawings:
   1. Detailed layout drawings showing alignment of pipes, location of valves, fittings, and appurtenances, types of joints, connections to structures and thrust restraint system layouts.
   2. Thrust Restraint Systems: Layouts and supporting calculations for joint thrust restraint systems.

B. Pipe Design Calculations: Calculations for required wall thickness in accordance with AWWA C 150.

C. Product Data: Photographs, drawings, and descriptions of fittings, gaskets, couplings, grooving of pipe and fittings, pipe linings, and coatings.

D. Test Reports:
   1. Manufacturer's test reports for polyethylene and epoxy and polyurethane lining certifying successful performance of the wet sponge spark tests.
   2. Manufacturer’s test report for glass lined pipe and fittings certifying compliance with specified application and test requirements.

E. Certificates: Submit certified documentation of holiday detection testing results with all glass lined pipe shipments. This documentation shall identify each piece by mark designation and show the actual test results during the final inspection by the manufacturer prior to shipment. Acceptance criteria shall be as specified under Field Quality Control.

F. Glass Lined Pipe Sample:
   1. Length: 8 inches.
   2. Diameter: 6 inches (nominal).

1.04 DELIVERY, STORAGE, AND HANDLING

A. Block piping material for shipment, prevent damage to castings and linings.

B. Carefully handle piping material during loading, unloading, and installation. Do not drop piping material from cars or trucks. Lower piping material by mechanical means. Do not drop or pound pipe to fit grade.

C. Repair damaged cement mortar lining to match quality, thickness, and bonding of original lining in accordance with AWWA C 104. When lining cannot be repaired or repairs are defective, replace defective piping with undamaged piping.

D. Protect gaskets and polyethylene encasement from long term exposure to sunlight.

E. Store fittings and other accessories such that they do not accumulate and hold rainwater, dirt, and debris.

1.05 QUALITY ASSURANCE

A. Qualifications of Lining Manufacturers: For piping specified to receive glass lining or polyethylene lining use only a manufacturer having a minimum of 5 years experience supplying this type of product to the wastewater and water treatment industry. Glass lining manufacturer shall have a minimum of 5 years experience in application of “high temperature” coatings and linings.

B. Regulatory Requirements: Install work of this Section in accordance with local, state, and federal regulations.

C. Provide a sample of glass lined pipe to be used by jobsite inspection personnel as an approval guide for incoming glass lined material. The sample shall be provided by the glass lining manufacturer and be approved as a quality control guide by the ENGINEER prior to use for inspection purposes.

1.06 THRUST RESTRAINT SYSTEM DESIGN

A. Assume responsibility for the joint thrust restraint system design.

B. Determine the length of pipe that must be restrained on each side of the focus of a thrust load in accordance with the procedures and criteria established by the Ductile Iron Pipe Research Association (DIPRA) and the following additional criteria:
   1. Design Pressure: Test pressure or 100 pounds per square inch, whichever is greater.
   2. Laying Condition: Type 5 for pipes greater than 16 inch diameter and Type 2 for pipe less than or equal to 16 inches diameter as defined by AWWA C150.
   3. Soil Type: As defined by DIPRA. Soil properties shall be evaluated and defined by a Professional Geotechnical Engineer currently registered in Missouri.
   4. Unit Friction Resistance: Based upon the criteria presented in the DIPRA Thrust Restraint Design Manual.
   5. Safety Factor: 1.5 (for thrust restraint calculations only).

PART 2 PRODUCTS

2.01 MATERIALS

A. Ductile Iron Piping:
   1. Type, Typical: AWWA C 150 and AWWA C 151 with minimum pressure class wall thickness that meets project pressure and structural requirements, unless otherwise specified or indicated on the Drawings.
   2. Type with Screw-on Flanges: AWWA C 115 with minimum special thickness Class 53 wall thickness that meets project pressure and structural requirements, unless otherwise specified or indicated on the Drawings.
   3. Laying Condition: Type 5 for pipes greater than 16 inch diameter and Type 2 for pipe less than or equal to 16 inches diameter as defined by AWWA C150.

B. Joints:
   1. Flanged Joints:
      a. Flanges, Screw-on: Comply with the diameter, thickness, drilling, and other characteristics in accordance with ANSI B 16.1. In addition, comply with the following requirements:
         1) Ductile iron.
         2) Long hub, threaded, and specially designed for ductile iron pipe.
         3) After attaching to pipe, machine flange face to make pipe end and flange even and perpendicular to the axis of the pipe.
      b. Bolt Holes on Flanges: 2-holed and aligned at both ends of pipe.
      c. Cap Screw or Stud Bolt Holes: Tapped.
      d. Bolts and Nuts: As specified in ANSI/ASME B 16.1 except when connecting flanges underground, in concrete pipe valve boxes, or underwater, use Type 316 stainless steel. Cut and finish bolts to project a maximum of 1/4 inch beyond nut when joints are assembled.
      e. Gaskets: As specified in Section 15052.
   2. Mechanical Joints: In accordance with AWWA C 111/ANSI A 21.11.
   3. Restrained Mechanical Joints:
      a. Design: Integral retainer weldment type or lugged type joint with Type 304 stainless steel rods and nuts.
         1) Wedge action type restraints (i.e., Mega-Lug, Stargrip, etc.) or gaskets with embedded metal elements that act as wedges (i.e. Fast-Grip Gasket, Field Lok Gasket, etc) are not considered to be, or equivalent to, a restrained mechanical joint.
      b. Manufacturers: One of the following or equal:
         1) Pacific States Cast Iron Pipe Company, Lock Mechanical Joint.
         2) American Cast Iron Pipe Company, MJ Coupled Joint.
   4. Push-on Rubber Gasket Joints: AWWA C 111/ANSI A 21.11.
   5. Restrained Push-on Joints:
      a. Manufacturers: One of the following or equal:
         1) United States Pipe and Foundry Company, TR Flex.
         2) Pacific States Cast Iron Pipe Company, Thrust Lock.
         3) American Cast Iron Pipe Company, Flex Ring or Lok-Ring.
      b. Design: Suitable for the following working pressures:
         1) For 4- Through 24-inch Pipe: 350 pounds per square inch gauge.
         2) For 30- Through 60-inch Pipe: 250 pounds per square inch gauge.
   6. Grooved Joints: AWWA C 606, as complemented and modified below, radius-cut type, with following components:
      a. Couplings: Rigid type, cast from ductile iron in accordance with ASTM A 536, Grade 65-45-12 or malleable iron in accordance with ASTM A 47, Grade 32510.
      b. Bolts and nuts in accordance with ASTM A 183, Grade 2.
      c. Gaskets: Capable of being applied on surface of piping with cavities to provide for an improved seal with the internal piping pressure; material for following services:
         1) For Liquid Service: EPDM.
         2) For Air Service: Fluoroelastomer.
         3) For Hot Water Service: EPDM
      d. Fittings: AWWA C 606, rigid radius-cut groove.
         1) Center-to-center Dimensions: AWWA C 110/ANSI A 21.10.
         2) Wall Thickness and Other Characteristics: AWWA C 153.

e. Flanged Unit Connections: Flanged to grooved joint adapters or a long enough spool with 1 end flanged and the other grooved to prevent interference with the operation of adjacent valves, pumps, or other items.

C. Mechanical Restraints:
1. Mechanical joints: In accordance with AWWA C111.
2. Push-on rubber gasket joints: In accordance with AWWA C111.
3. Integrally restrained mechanical joints:
a. Application: Where designation Mech Rest. MJ is specified in the Piping Schedule provided on the Drawings, supply a restrained mechanical joint piping system, which includes restrained mechanical joints where necessary based upon thrust calculations. Standard mechanical joints as specified above can be used where thrust calculations demonstrate restraint is not required.
b. Design: Integral retainer weldment type or lugged type joint with Type 304 stainless steel rods and nuts. Restrained mechanical joints of the configuration which utilizes a gripping or friction force for restraint will not be acceptable.
c. Manufacturers: Where restrained mechanical joints are required, use one of the following or equal:
1) American Cast Iron Pipe Company, MJ Coupled Joint.
2) Pacific States Cast Iron Pipe Company, Lock Mechanical Joint.
4. Integrally restrained push-on joints:
a. Application: Where designation restrained push-on is specified in the Piping Schedule provided on the Drawings, supply a restrained push-on joint piping system, which includes restrained push-on joints where necessary based upon thrust calculations. Standard push-on rubber gasket joints as specified above can be used where thrust calculations demonstrate restraint is not required.
b. Design:
1) Restrained push-on joints of the configuration which utilizes a gripping or friction force for restraint will not be acceptable.
2) Suitable for the following working pressures:
For 4 through 24-inch pipe: 350 pounds per square inch gauge.
For 30 through 54-inch pipe: 250 pounds per square inch gauge.
c. Manufacturers: One of the following or equal:
1) United States Pipe and Foundry Company, TR Flex.
2) Pacific States Cast Iron Pipe Company, Thrust Lock.
3) American Cast Iron Pipe Company, Flex Ring or Lok-Ring.
5. Limit buried joints to half the manufacturer's published allowable angular joint deflection for purposes of pipeline alignment and elimination of fittings.

2.02 FITTINGS

A. Fittings: Ductile iron conforming with AWWA C 110/ANSI A 21.10 or AWWA C 153/ANSI A 21.53.

B. Plain end-to-flanged joint connectors using set screws are not acceptable.

2.03 PIPE LININGS AND COATINGS

A. Asphaltic Base Coating: Apply over cement mortar linings and to outside surface of pipes which will not receive another coating. Apply in accordance with AWWA C151/ANSI A21.51.

B. Cement-mortar Lining: AWWA C 104/ANSI A 21.4, apply on clean bare metal surfaces; extended to faces of flanges, ends of spigots, and shoulders of hubs.

C. Ceramic epoxy lining:
   1. Manufacturers: One of the following or equal:
      a. PROTECTO 401.
      b. SP-2000W.
   2. Material: Amine cured novalac epoxy containing at least 20 percent by volume of ceramic quartz pigment.
   3. Minimum dry film thickness (DFT): 40 mills.
   4. Application:
      a. The lining shall only be applied by a manufacturer-authorized representative with no less than 5 years of experience in applying the specified material.
      b. The application of the lining shall be performed in accordance with manufacturer's published specifications.
      c. Pipe and fittings shall be delivered to application facility with no interior lining.
      d. Interior of pipe shall be abrasive blasted per manufacturer's specifications.
   5. Coverage:
      a. Gasket and spigot ends-on joints: Provide 6 mils minimum and 10 mils maximum coverage using joint compound as specified by the manufacturer for the gasket area and spigot ends.
      b. Mechanical joints: Extend lining from spigot end to edge of gauging ring.
      c. Number of coats: As recommended by the lining manufacturer.
   6. Source quality control:
      a. Test pipe and fitting lining with a magnetic film thickness gauge. Perform testing in accordance with the method outlined in SSPC PA-2 Film Thickness Rating.
      b. Test lining integrity of pipes using a holiday detection testing instrument set at the voltage as specified by the coating manufacturer:
         1) Repair all holidays with joint compound in accordance with the recommendations of the coating manufacturer, and re-test.
      c. Discard piping or reline piping when pinholes or discontinuities are found.

D. Glass Lining:
   1. Manufacturers: The following or equal:
      a. Water Works Manufacturing, Ferrock MEH-32 Lining; Vitco Corporation, SG-14 Lining.
   2. Material: Special glasses and inorganic materials suited for lining of sewage, sludge, and scum piping with the following characteristics:
      a. Thickness: 0.008 to 0.12 inch minimum, 0.030 inch maximum, as measured with a non-destructive magnetic type thickness gauge.
      b. Hardness: 5 to 6 on the Mohs Scale.
      c. Density: 2.5 to 3.0 grams per cubic centimeter, measured in accordance with ASTM D 792.

d. Thermal Shock Resistance: Capable of withstanding an instantaneous 350 degree Fahrenheit change from 430 degrees Fahrenheit to 80 degrees Fahrenheit without crazing, blistering, or spalling.
e. Gloss Retention: Capable of retaining gloss after immersion of an 8 percent sulfuric acid solution at 148 degrees Fahrenheit for 10 minutes.
f. Weight Loss: Maximum 3 milligrams per square inch when tested in accordance with ASTM C 283.

3. Fabrication:
a. Use piping that is suitable for glass lining with minimum Class 53 wall thickness after application of glass lining.
b. Machine interior of pipe (bore or grit blast to near white metal) prior to application of glass lining.
c. Screw factory assembled flanges on pipe and align bolt holes and flange faces, unless otherwise specified.
d. Apply lining to surfaces free of chemicals.
e. Place piping in especially designed furnaces and heat piping until glass melts and fuses with a integral molecular bond to the base metal.
f. Place pipe and fittings in a specially designed furnace and heat piping to a proper maturing temperature (approximately 1,400 degrees Fahrenheit) sufficient to melt the glass and fuse the lining to the base metal, creating a chemical and mechanical molecular bond with the base metal.

2.04 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement Sheets or Tubes:
1. 8 mil thickness low density polyethylene, or
2. 4 mil thickness high density, cross laminated polyethylene.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
1. Install ductile iron piping in accordance with AWWA C 600, modified as specified in Section 15052.
2. Lay mechanical joint or bell and spigot pipe with 1/8 inch space between the spigot and shoulder of the pockets.

B. Polyethylene Encasement:
1. Wrap ductile iron pipe to be buried with polyethylene encasement in accordance with ASTM A 674 and AWWA C 105.
2. Repair tears and make joints with two layers of plastic tape.

3.02 JOINTS

A. Install types of joints as specified in piping schedule in Section 15052.

3.03 GROOVED JOINTS

A. Install piping with grooved joints where specified or indicated on the Drawings.

B. Assemble grooved joints in accordance with manufacturer's published instructions.

C. Support grooved-end pipe in accordance with manufacturer's published instructions. Install at least 1 support between consecutive couplings.

D. Grooved joints may be installed where flanged joints are scheduled, except under the following conditions:
   1. In underground and underwater installations.
   2. In piping subject to test pressure of 150 pounds per square inch gauge or more.
   3. When wall thickness of pipe is less than the minimum recommended in published instructions by the manufacturer of the grooved end coupling.

E. Make connections to flanged valves, pumps and piping appurtenances by either:
   1. Flanged-to-grooved joint adapters.
   2. Flanged-by-grooved end pipe spool of sufficient length to prevent interference with the operation of adjacent valves, pumps or other items.
   3. Integrally cast flanged-by-grooved end pipe fittings.

3.04 FIELD QUALITY CONTROL

A. Test ductile iron piping as specified in Section 15052.
   1. Do not test sections longer than 1/2 mile in total pipe length.

B. Verify that interior surfaces of glass lined pipe and fittings have continuous coverage. Verify with low voltage wet sponge holiday detector. Discard glass lined ductile iron piping and fittings with voids or casting anomalies that represent more than 0.01 percent of the total glassed surface (no more than 1-2 pinholes per fitting or an average of 5 or less per 20 feet of pipe). Discard lined piping and fittings found to have pinholes, crazing, or fish scales which expose the metal substrate. Use the approved quality control glass lined pipe sample specified in Paragraph 1.05 as a guide for verification purposes.

END OF SECTION

DOCUMENT 00895

American Iron and Steel Certification

The Contractor acknowledges to and for the benefit of City of Belton, MO and the State of Missouri that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements (see attached) commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Foley Company

Name of Contracting Firm

[signature] 2/3/15

Signature Date

Darrin Switzer - Director

Name and Title of Signer (Please type)