3670 Lacon Road
Hilliard, Ohio 43026

614-777-0020
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October 25, 2019

Re: Flex Ring Fitting request for AIS Waiver

Dear Mr. Dragovich,

On behalf of the City of Columbus and project "Mound District Booster Station 20-Inch Discharge Line, we are requesting a waiver for the required Flex Ring fittings. These ductile iron fittings are only produced outside of the United States. We have worked with American Pipe Company and the City of Columbus to eliminate some of the tee fittings by allowing them to weld outlets onto the pipe. We will still have 28 fittings that will need a waiver.

We have reached out to the SRF research team and provided them with the necessary documentation so they do their own research also. We have read through requirements and are providing the following documentation for review.

1. City of Columbus waiver request
2. Material list and cost
3. Schedule
4. Waivers from other projects
5. Supplier letter
6. City of Columbus Specs
7. City of Columbus Approved Material List

Thanks
Jason Hazelbaker

Rocco A Eramo - Chairman | Anthony J Eramo - President/CEO | John T Eramo - Executive Vice President
Christopher D. Eramo - CFONice President | Michael G. Eramo - Vice President Utility Division | Bryan R. Eramo - Vice President Earthwork Division

"An Equal Opportunity Employer"

This waiver request was submitted to the EPA by the state of Ohio. 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. There may be documents with project diagrams, schedules, and supplier correspondence 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 DWSRFWaiver@epa.gov.

Testing: Virgin Polyethylene Encasement Film as delivered may undergo third party specification compliance testing by the City. The City will require the Contractor to reimburse the City for the cost of such test if the testing reveals non-virgin polyethylene encasement material and the material fails to meet the specifications. Additionally, the City will require the Contractor to immediately remove the non-compliant film from the site. Remove and replace pipe installed with non-compliant polyethylene encasement film at no additional cost to the City.

Installation: Deliver film to the jobsite contained in a sound sacrificial sleeve of UV Protected Polyethylene to protect contents during storage prior to installation.

Install the polyethylene encasement per Method A of ANSI/AWWA C105/A21.5. Remove all lumps of clay, mud, cinders, etc. from the pipe surface before encasing the pipe. Keep soil, or bedding material, from becoming trapped between the pipe and the polyethylene sleeve. When lifting polyethylene-encased pipe use a fabric type sling or padded cable to protect the polyethylene. Overlap joints (double coverage) and tape. Fold excess slack over the top of the pipe and tape in place every three feet. Carefully backfill the pipe according to Item 801.11 and 801.12. To avoid damage during backfilling allow adequate slack in the film tube at joints. Use backfill material free of cinders, rocks, boulders, nails, sticks or other material that could damage the polyethylene sleeve.

Appurtenances:

a. Cover Pipe Shaped appurtenances in the same manner as the pipe.

b. For odd-Shaped appurtenances, pass a split length of sleeve under the appurtenance and then over the appurtenance. Bring together around the body and securely tape into place. Make seams by folding edges over twice and taping.

c. Bolted Joints and Valves: Overlap joints as for pipe installation. Tape film securely around valve stems and other penetrations. Use care to prevent penetration of the film by bolts and other Protrusions.

d. Branches, Blow-offs, Air Valves, Taps: Wrap a minimum of three layers of tape completely around the polyethylene encased pipe to cover area where tapping machine will contact the pipe. Install the corporation stop directly through the tape and polyethylene. Repair any damage after the installation with tape or an additional wrap of polyethylene film. Wrap copper water tap at least three feet back from the installation with tape or additional polyethylene film to prevent electrolysis.

Tape: Provide 1- 1/2" minimum width, 6mil nominal thickness PVC Tape, Use to fit, anchor, or repair the encasement film.

801.04 Fittings for Use with Ductile Iron Pipe. Provide Class 250 fittings, manufactured in accordance with AWWA C110 or C153. For pipes 24-inches and larger, provide AWWA C153 Compact Ductile Iron Fittings. Provide fittings with ends made in accordance with AWWA C111. Coat all fittings inside and outside with a bituminous coating complying with AWWA C110 or C153. Provide factory-coated carbon steel bolts for mechanical joint fittings, and coat with

bitumastic paint, wax-tape coating system, or petrolatum-based tape coating system as approved in the current Division of Water Approved Materials List.

801.05 Concrete Pipe and Fittings. The Contractor may use prestressed concrete cylinder pipe and fittings in sizes 20-inches or larger in diameter. Manufacture in accordance with AWWA C301.

Provide steel cylinder for fittings designed in conformance to AWWA Steel Pipe Manual, M11, (latest revision) so that allowable deflection of the pipe under combined dead and live loads does not exceed 2 percent of the internal diameter of the steel cylinder.

Design Criteria:

a. Use 90-degree Olander coefficients for earth and live loads and water weight contained in pipe along with 15-degree Olander coefficients for pipe weight.

b. Tunnel and Augered Sections: Provide constant outside diameter from bell to spigot end for pipe. Exclude structural benefits associated with primary liner. Design pipe and pipe joints to carry loads including but not limited to: overburden and lateral earth pressures, subsurface soil, grouting, other conditions of service, thrust of jacks, and stress anticipated during handling and installation.

Butt straps for closure piece: minimum 12-inch wide split butt-strap; minimum plate thickness equal to thinnest joined member; fabricated from material equal in physical and chemical properties of thinnest joined member. Provide minimum lap of 4 inches between joined member and edge of butt strap, welded both inside and outside. Provide minimum 6-inch welded outlet for inspecting each closure section. The City will not require a welded outlet for inspection when a closure section contains an access manway within 40 feet of the closure section.

Visible cracks: The City will not accept visible cracks longer than 6 inches, within 15 degrees of a line parallel to pipe longitudinal axis except:

a. In surface laitance of centrifugally cast concrete,

b. In sections of pipe with steel reinforcing collars or wrappers, or

c. Within 12 inches of pipe ends.

Repair interior lining cracks that exceed 1/16-inch (0.0625 inches) wide. The City will reject pipe with exterior coating cracks that exceed 0.01 inches wide. When pipe has irreparable cracks exceeding limitations, immediately remove pipe from site.

Field repair procedures for coatings/linings:

a. Areas less than or equal to 6 inches in diameter: Patch honeycomb and minor defects in concrete surfaces with non-shrink grout. Use only manual chisels to chip away mortar coating or lining. Cut out unsatisfactory material and replace with non-shrink grout, securely bonded to existing coating or lining. Finish junctures between patches and existing concrete as inconspicuous as possible. Strike off non-

Engineer, and construct with Class COC 6 concrete as per Item 499. Include the cost of temporary timber backers and the cost of excavating to line and grade shown for the supports in the unit price bid for Item 801.

On all water mains 20-inch diameter and larger, provide adequate restrained joint lengths. Provide restrained joints at all tees, bends, dead ends and at any other locations shown on the plans. Provide restrained joints with limits designed by an engineer in accordance with manufacturer's suggested recommendations or as shown on the Plans. When installing bends at connections to existing water mains, concrete backing will be required in addition to the restrained joint bend fitting. Provide concrete backing in accordance with the Plans. Prior to ordering the pipe and commencing with construction, submit a pipe laying schedule showing the proposed designed restraining system for the entire water main improvement for approval by the City of Columbus Division of Water.

Include the cost of the restrained joints, backing, supports and/or buttresses or design thereof in the unit price bid for Item 801.

Rubber Gasketed Joints:

During any construction, keep rubber gaskets and lubricants in an area heated to at least 40°F when the outside temperature falls below 40°F. Place gaskets or use lubricant in the bell or on the spigot of the pipe no later than 5 minutes after removal from the heated area. Lubricate all joints according to the manufacturer's recommendations.

Steel Pipe Installation:

Install pipe stulls (cross bracing) prior to placement of pipe, bends, and fittings to prevent deflection during installation. Stulls to remain in place, horizontally and vertically positioned until completion of welding. Remove stulls no sooner than 24 hours after completing placement of backfill to natural ground level or to pavement subgrade level.

Immediately replace damaged plastic end-caps. Do not leave uncapped for more than 4 hours.

Pipe deflection: After backfill completion, test pipe for excessive deflection by measuring actual inside vertical diameter. For maximum allowable deflection, see Item 801.06. The Engineer may measure deflection along the pipe. The City will not accept arithmetic averages of deflection. If deflection exceeds that specified, perform one of the following:

a. Remove backfill and side support. Reround the pipe and properly replace compacted backfill and side support. Examine cement mortar lining to verify no damage occurred. Replace damaged mortar lining.

b. Remove entire portion of deflected pipe section and install new pipe as directed by Engineer, at no additional cost to the City.

Installation shall comply with manufacturer's instructions and with AWWA Manual M11.