CITY OF BALTIMORE
BRANDON M. SCOTT, Mayor

DEPARTMENT OF PUBLIC WORKS
Khalil Zaied, Director
Abel Wolman Municipal Building, 6th Floor
200 N. Holliday Street
Baltimore, Maryland 21202

Ms. Ashley Osler
Environmental Protection Agency

March 24, 2025

RE: Sanitary Contract No. 992R, Egg-Shaped Digester Rehabilitation Improvements at the Back River Wastewater Treatment Plant

Subject: Digester Gas Pipe - AIS Waiver

Dear Ms. Osler:

Baltimore City, Department of Public Works, is requesting a waiver for the American Iron and Steel (AIS) requirement that is part of the WIFIA loan program. The waiver request is for schedule 40S carbon steel fittings in 10", 16", and 24" nominal pipe sizes on the above-referenced project. The contractor (Ulliman Schutte Construction) documented the details in the attached letter. We agree with the details contained in the contractor's letter and support the waiver request. The following documents are attached:

[redacted]

We hope this information is sufficient to satisfy the waiver requirements. If you have any questions or need additional information, please contact this office.

Sincerely,

Blake Succa

Blake Succa

NOTE:
This waiver submission may include references to proprietary items and brand name products. These references have been retained to provide context for the waiver submission. EPA does not evaluate a waiver based on a proprietary item but reviews the performance-based specifications for the project/products. As such, any references to brand or proprietary items are reviewed on an "or equal" basis by EPA.

Items and pages may have been intentionally redacted or excluded by the EPA. Contact WIFIAWaiver@epa.gov for more information if necessary.

ADD the following Section 33 31 00

J. STEEL PIPE AND FITTINGS

1. General

Steel pipe and fittings shall be provided in accordance with the “Pipe Schedule”. All fittings and supports shall be provided as shown on the Drawings. All steel pipe and fittings shall be tested in accordance with AWWA C200. All steel pipe shall be welded in accordance with ANSI/AWWA C206.

2. Materials

1. Pipe and fittings shall be provided by the same manufacturer. Steel pipe shall conform to AWWA C200 and be manufactured by fabricator certified to ISO 9001. Fittings shall conform to AWWA C208. Steel and or pipe shall conform to ASTM A139 Grade B or C or ASTM 1018 Grade 35 or 40.

2. All pipe and fittings shall be rated for 150 psi service.

3. The minimum pipe wall thickness shall be a minimum of 0.100 inches.

3. All fabrication and welding shall be performed by certified welders to ASME approved procedure and ASW Standards. All welding shall be by the shielded arc, inert gas, MIG or TIG method. Filler wire shall be added to all welds to provide a cross section of weld metal equal to, or greater than, the parent metal. Inert gas shielding shall be provided to the interior and exterior of the joint. Interior weld beads shall be smooth, even, and not have an interior projection more than 1/6 inch beyond the I.D. of the pipe or fitting.

4. Coatings

1. Interior of all pipe and fittings shall be Portland cement mortar lined in accordance with AWWA C205. The exterior of all pipe and fittings shall be primed and finished painted in accordance with Division 9 for metal in interior non-immersion service as appropriate.

Exterior pipe coating required for buried digester gas per RFI 003-R1

ADD the following to the end of Section 33 31 00

K. CPVC DOUBLE WALL PIPING SYSTEM

1. The CPVC double wall piping system shall be a pre-fabricated containment piping system as manufactured by Guardian Systems, MI Division of IPEX Industrial, or equal. The system shall be designed, fabricated, installed and tested in accordance with manufacturer’s recommendations and as specified herein and shall be suitable for the intended service. Manufacturer shall have a minimum of five 5 years experience. Contractor shall not design and or fabricate the piping system.

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Ms. Ashley Osler
Environmental Protection Agency

March 24, 2025

RE: Sanitary Contract No. 992R, Egg-Shaped Digester Rehabilitation
Improvements at the Back River Wastewater Treatment Plant

Subject: Thermostatic Steam Trap - AIS Waiver

Dear Ms. Osler:

Baltimore City, Department of Public Works, is requesting a waiver for the American Iron and Steel (AIS) requirement that is part of the WIFIA loan program. The waiver request is for the thermostatic steam traps that are components of the steam injector assemblies included in the above-referenced project. The contractor (Ulliman Schutte Construction) documented the details in the attached letter. We agree with the details contained in the contractor's letter and support the waiver request. The following documents are attached:

- [redacted]

We hope this information is sufficient to satisfy the waiver requirements. If you have any questions or need additional information, please contact this office.

Sincerely,

Blake Succa

Blake Succa

SECTION 40 23 36.23

STEAM INJECTORS

PART 1 GENERAL

1.1 DESCRIPTION

A. Provide sludge heating equipment as shown on the Drawings, as specified herein, and as needed for a complete and proper installation. Steam injectors are to be installed at the Acid Phase Reactor (APR) and Egg-Shaped Digesters 7 and 8 (ESDs).

B. This section covers the furnishing and installation of anaerobic digester steam injectors for sludge heating.

1. Furnish all labor, material, equipment and incidentals as shown and specified for each complete working system.

C. Sludge heating shall be accomplished with heaters directly injecting steam into the sludge with the ability to internally modulate steam addition within the body of the heater.

D. Steam injection heaters shall be designed to allow for unrestricted flow of sludge while steam is being introduced. The use of any steam device that projects in the path of sludge flow and is able to collect rags and debris shall not be acceptable.

1.2 QUALITY ASSURANCE

A. Comply with all Federal and local laws or ordinances, as well as all applicable codes, standards, regulations and/or regulatory agency requirements including the partial listing below.

B. American Society of Testing and Materials

1. ASTM A351-CF8M for cast stainless steel material.

2. ASTM 216-WCB for cast steel materials.

C. American Society of Mechanical Engineers

1. ASME Boiler and Pressure Vessel Code, Section VIII Division 1

2. ASME Power and Piping Code B31.1

D. American National Standards Institute

1. ANSI B16.42 Ductile Iron flanges and flanged fittings.

2. ANSI B16.34 Steel valves, flanged

3. ANSI B16.5 Steel pipe flanges and flanged fittings.

E. National Electrical Code

F. All direct contact steam heaters shall be designed in accordance with ASME B31.1

G. Manufacturer shall have a minimum of five (5) direct contact steam heater applications with internal modulation design in municipal or industrial sludge applications.

1.3 SUBMITTALS

A. Submittal Procedures: Furnish submittals accordance with appropriate Section 01 33 00.

B. Maintenance Data and Operating Instructions: Furnish O&M manual in accordance with appropriate Section 01 78 23.

C. Factory Test Results: All pressurized components shall be hydrostatically tested as a complete unit in accordance with Power Piping code B31.1. Testing to be done by the manufacturer prior to shipment.

D. Equipment Guarantee and Certification Form:

In addition to submitting working drawings for the steam injection equipment, the Contractor shall obtain and submit to the Engineer certification from the manufacturer that the steam injector meets the requirements of the contract specifications. This certification shall be provided by way of the Equipment Guarantee and Certification Form included in Division 1. The steam injector submittal will not be approved without a completed unaltered Equipment Guarantee and Certification Form.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURES

A. Hydro-Thermal Corporation, Waukesha, Wisconsin, or Approved Equal.

2.2 DESIGN REQUIREMENTS

A. Specific Design Requirements: Egg-Shaped Digesters

1. Number of Heaters: 6

2. Sludge Heating Capacity per Heaters (MMBtu/hr): 5.5

3. Sludge flow rate per Heater (gpm): 400 gpm to 1000 gpm variable

4. Sludge pressure entering heater (psig): < 10 psi

5. Inlet Sludge Temperature Range (°F): 89 °F Min and 98 °F Max
6. Outlet Sludge Temperature Range (°F): 98 - 100 °F
7. Max. Steam Pressure (psig): 10 to 15 psi
8. Connection Size: 8”
9. Actuator Rating: Explosion Proof, Class 1, Div. 1, Group C & D

B. Specific Design Requirements: Acid Phase Reactor

1. Number of Heaters: 2
2. Sludge Heating Capacity per Heaters (MMBtu/hr): 5.5
3. Sludge flow rate per Heater (gpm): 500 gpm to 1250 gpm variable
4. Sludge pressure entering heater (psig): < 10 psi
5. Inlet Sludge Temperature Range (°F): 73 °F Min and 86 °F Max
6. Outlet Sludge Temperature Range (°F): 85 - 100 °F
7. Max. Steam Pressure (psig): 15 psi
8. Connection Size: 8”
9. Actuator Rating: Explosion Proof, Class 1, Div. 1, Group C & D

C. Operation: The heater shall function as a Non-Obstructing flow path with minimal pressure drop, Class IV steam flow control device with integral steam trim incorporated around the inside peripheral.

2.3 FABRICATION AND MATERIALS

A. Ratings

1. The body, steam head and liquid head pressure bearing surfaces shall be rated for 300 psig service at design temperature.
2. Seals and gaskets shall be rated for steam service at a design pressure of 300 psig at 450 °F.

B. Connections

1. Flanged Connections
   a. Heaters manufactured from cast components shall have integrally cast flanged connections.
   b. Flanges will be raised face of size and rating as shown on the product drawings but in no case be less than 300 psig.
2. Threaded Connections: Connections to be manufactured to standard

NPT dimensions. Sizing and configuration as shown on product drawing.

C. Materials

1. Cast head and body components material selection shall be based on the intended service.

   a. Castings: 316 stainless steel shall meet the requirements of A351-CF8M

2. Fabricated body components shall be 316 stainless steel and meet A312.

3. The heaters diffuser shall be manufactured from a 17-4 PH stainless steel meeting the requirements of A564.

4. All other internal components shall be manufactured from 316 stainless steel and meet the material requirement of UNS31600.

D. SPARE PARTS

1. One set of seals and gaskets for each steam injection heater.

2.4 ACTUATOR

A. ROTORK MODEL IQTF OR APPROVED EQUAL

B. The electric actuator shall be a multi-turn type suitable for use on a 120 volt, 1-phase, and 60-Hertz power supply. It shall incorporate a motor, solid state motor switching incorporating motor speed control, local control facilities (open/close and remote/off/local) and terminals for remote control and indication. The actuator shall include a digital position indicator with a display from fully open to fully closed in 1% increments. Red, green, and yellow lights corresponding to Open, Closed, and Intermediate positions and indication of torque overload and actuator fault shall be included on the actuator. The digital display shall be maintained even when the power to the actuator is isolated. The actuator shall include a device to automatically correct for improper phasing to provide the correct output rotation for the required direction of valve travel.

C. MOTOR

1. The electric motor shall be Class H insulated, permanent magnet 24 VDC motor (DC supply derived internally from 3-phase or 1-phase supplies) incorporating thermostat protection and low inertia design. The contactor shall be of a rated for 1800 starts/hr.

D. TORQUE, TURNS LIMITATION and TWO-SPEED TIMER

1. Torque and turns limitation shall be adjustable. Position setting range 0.5 to 22 turns with resolution to 7.5 degrees of actuator output. Torque

shall be sensed electronically and adjustable from 40% to 100% of actuator rated output. It shall be possible to carry out the setting of the torque turns limitation and timer functions with Bluetooth® setting tool without removing any covers.

E. REMOTE VALVE POSITION/ACTUATOR STATUS INDICATION

1. Four contacts shall be provided which can be selected to indicate any position of the valve with each contact selectable as normally open or normally closed. The contacts shall be rated at 5A, 250V AC, 30V DC. In the event of a power failure, the discrete contacts must continue to supply actuator remote position feedback and maintain interlock capabilities. The discrete contacts must be updated at once, even when the power supply is not present. As an alternative to providing valve position, any of the four above contacts shall be selectable to signal one of the following:

   a. Valve Opening or Closing
   b. Valve Moving (Continuous or Pulsing)
   c. Motor Tripped on Torque in Mid-Travel
   d. Motor Stalled
   e. Actuator Being Operated by Handwheel
   f. Actuator Fault
   g. In Remote

2. Discrete output contacts shall be initially set for normally open, and shall be configured for remote indication of the following:

   a. Fully Open
   b. Fully Closed
   c. Actuator Fault
   d. In Remote

3. Actuator shall be provided with Folomatic and CPT (Current Position Feedback) for 4-20mA input control and 4-20mA position feedback, both proportional to percent open position.

2.5 ENCLOSURE

A. Actuators shall be 'O' ring sealed, watertight to FM certified to NEMA 4 and 6 (21ft of water for 72 hr.) without any special conduit. There shall be no mounting restrictions. Heaters shall not be permitted to prevent moisture ingress.

B. Actuator shall be rated for Factory Mutual to FM3615 or cCSAus NEC500. The rating shall provide Class 1, Div. 1, Groups C, D, E, F, G. Standard temperature rating shall be -22 to 158F [-30C to 70C].

2.6 OPERATION

A. The heater shall function as a steam flow control device with integral steam trim incorporated within the body of the heater and meet a Class IV shut-off requirement.

B. The heater shall operate without the use of an external steam pressure control valve.

C. Steam flow will be controlled by varying the area available for steam injection through the diffuser. This will be achieved by a plug operated by a worm gear.

D. The heater shall be capable of controlling steam flow from 0 to 100% of maximum design without hammer or instability occurring.

E. The heater shall be capable of maintaining a constant positive steam to process pressure differential from 0 to 100% of maximum design steam flow.

2.7 CONTROLS

A. No electrical controls are included with the direct steam injectors, other than the actuators mounted to the heaters.

2.8 INSULATION

A. The heater shall be supplied with a removable insulation jacket. Insulation Jackets will be installed by the contractor after all piping and wiring to the Steam Injectors is complete.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation shall be in complete accordance with approved Shop Drawings, Manufacturer’s instruction and recommendations, as shown on the Drawings, and herein specified.

B. Heater shall be leveled and secured in accordance with the Manufacturer’s recommendations and as shown on the Drawings. Bolt size, number, and spacing shall be as recommended by the manufacturer.

C. Installation shall include furnishing and applying an initial supply of consumables recommended by the Manufacturer.

D. Connect all piping, valves, and accessories as detailed on the Drawings and approved Shop Drawings.

E. Installation shall be coordinated and interfaced with other digester equipment and accessories.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. The contractor shall include with his bid the services of the manufacture's field service technician for a period of three (3) trips consisting of ten (10) days total onsite, based on the following criteria

   One (1) trip – four (4) days for the first ESD

   One (1) trip – three (3) days for the second ESD

   One (1) trip – three (3) days for the APR based on both heaters being installed

2. Service shall be for the purpose of check-out, initial start-up, certification and instruction of plant personnel.

3. A written report covering the technician's findings and installation certification shall be submitted to the Engineer covering all inspections.

3.3 TRAINING

Provide in accordance with Section 01 75 08, Systems and Equipment Training.

END OF SECTION