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May 3rd 2024

Ms. Grace Kapaun
 AIS Compliance Liaison
 Loan & Grant Administration Section Division of Financial Assistance State
 Water Resources Control Board
 1001 "I" Street, 16th Floor, Sacramento, CA 95814

SRF Project: CWSRF No. 8372-110 (SFPUC Project No. WW-647R)
 San Francisco Public Utilities Commission Biosolids Digester Facilities Project (BDFP)

Subject: AIS Availability Waiver Request for PTFE Lined V-Loops

Dear Ms. Kapaun,

The San Francisco Public Utilities Commission respectfully requests a waiver from the American Iron and Steel (AIS) provisions required by the Clean Water State Revolving Fund loan program for the PTFE Lined V-Loops specified for Ferric Chloride service on the Biosolids Digester Facilities Project (BDFP). These v-loops are not currently produced within the United States in sufficient and reasonably available quantities. Correspondence from the two manufacturers we are aware of that would meet the specification requirements— U.S Bellows and Kelco—indicates there is no manufacturer that can supply these assemblies in small quantities with an AIS certification (Exhibit A).

The Contractor, MWH Constructors and Webcor, Joint Venture documentation includes a construction schedule (Exhibit B) Ferric Chloride PTFE Lined V-Loops are required by August 2024.

The items listed in EPA's Information Checklist for Waiver Request form are addressed below.

General:

1. Description:
 - a. PTFE Lined V-Loops for Ferric Chloride Service see attached Contract Specifications (Exhibit C), attached Process Mechanical Contract Drawings (Exhibit D), and attached Shop Drawing for expansion loop (Exhibit E) for further information.

London N. Breed
 Mayor

Tim Paulson
 President

Anthony Rivera
 Vice President

Newsha K. Ajami
 Commissioner

Kate H. Stacy
 Commissioner

Dennis J. Herrera
 General Manager



11. Engineering Discussion of PTFE V-Loops

- a. PTFE V-Loops under Specification Section 40 05 06.23 are used as expansion joints for Ferric Chloride Service (Exhibit C).

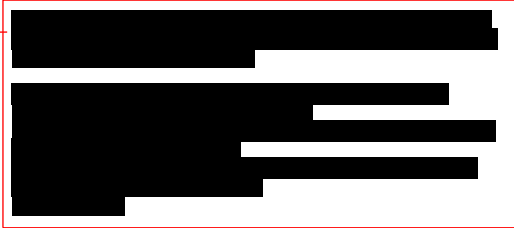
Sincerely,



Digitally signed by Ryan Cayabyab, PE, LEED AP, ENV SP
DN: cn=Ryan Cayabyab, PE, LEED AP, ENV SP, o=SFPUC - Infrastructure,
ou=Construction Management Bureau, email=rcayabyab@sfwater.org, c=US
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- I. End connections: Unless otherwise specified, flanges shall be designed to ASME B16.5, Class 150 dimensions.
- 2. Supplier and Product:
 - a. [REDACTED]
 - [REDACTED]
 - [REDACTED], or
 - d. Approved Equal.



G. Type 6.

- 1. Design
 - a. Double ball and socket type for earth settlement compensation and seismic motion for gravity PVC DWV application, nominal size range 3 through 8 inch.
 - b. Joints shall be double ball assemblies rated for 15-degree minimum deflection and not less than 8 inches offset from centerline of connecting piping, minimum, unless otherwise noted.
 - c. Assembly shall accommodate up to 8 inches of expansion and contraction in length, minimum, unless otherwise noted.
 - d. PVC conforming to ASTM D2665, with end connections compatible with ASTM D1785/D2665 and F891 pipe.
 - e. Sealing gaskets shall be constructed of EPDM.
 - f. End Connections: Connecting piping shall be solvent-welded construction to the extent required for force transfer, in accordance with manufacturer recommendations.
- 2. Supplier and Product:
 - a. [REDACTED], or
 - b. Approved Equal

H. Type 7

- 1. Design
 - a. In-line, pressure balanced expansion joint for thermal expansion compensation in steam piping.
 - b. Joints shall be stainless steel bellows with pressure areas and tie rods arranged so that the joint can be compressed without an opposing force from internal pressure.
 - c. Assembly shall accommodate up to 3 inches of expansion and contraction in length, minimum, unless otherwise noted. Assembly shall accommodate up to 1 inch of lateral displacement, unless otherwise noted.
 - d. Standard rating is for 150 psig, and 400 degrees F. Pressure and temperature requirements for high pressure steam applications are noted in the Piping Schedule and Specifications.
 - e. End Connections: Flanged, ASME B16.5 Class 300, as shown and as required by connecting pipe and fittings.
- 2. Supplier and Product:
 - a. [REDACTED] or
 - b. Approved Equal.

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I. Type 8 [Revision 1]

1. Design

- a. **Elastomeric/fabric-reinforced duct expansion joint with molded flanged corners, 1/4-inch thick with two plies, minimum.**
- b. **Joints shall be stainless steel bellows with pressure areas and tie rods arranged so that the joint can be compressed without an opposing force from internal pressure.**
- c. **Assembly shall accommodate +/- 6-inches of expansion and contraction in length, minimum, unless otherwise noted. Assembly shall accommodate up to 7.5-inches of lateral displacement, unless otherwise noted.**
- d. **Duct diameter is nominally 42-inches. Face-to-face dimension shall nominally be 24-inches.**
- e. **Standard rating is for +/- 2 psig, and 300 degrees F. Pressure and temperature requirements for Foul Air applications are noted in the Piping Schedule and Specifications.**
- f. **End Connections: 3/8-inch thick, 316 SST, retainer rings drilled to mate with ASME B16.5 Class 300 flanges, as shown and as required by connecting duct and fittings.**

2. Supplier and Product:

- a. **[REDACTED], or**
- b. **Approved Equal.**

2.04 FLEXIBLE EXPANSION/CONTRACTION LOOPS

A. General

1. Flexible expansion loops shall consist of two (2) flexible sections of hose and braid, two (2) 90-degree elbows, and a 180-degree turn (with separation as required to provide the specified deflections). Loops shall be designed to provide +/- 6-inches of motion in all directions, to move in all three (3) planes, and to impart no thrust loads on the anchors. Vee-type loops are also acceptable.
2. Loops shall be designed by the Supplier for the intended application. Refer to the Drawings for the required geometry for the loops. Note that the installation geometry may require loops to be larger than that required for required motion alone.
3. End connections shall be flanged, unless shown otherwise on the Drawings.
4. Loops shall be Type 321 stainless steel with stainless steel fittings and Type 304 stainless steel braid, unless otherwise specified. Loops used on Ferric Chloride (FC) piping shall be PTFE-lined.
5. End connections shall be attached by the heliarc welding process using stainless steel welding rod. Bronze flexible metal hose shall be provided for copper and brass systems.
6. Loops shall be designed to meet the design pressure, temperature, and movement requirements for the system, as indicated.
7. For natural gas service, loops shall be certified by the American Gas Association.
8. Loops shall be provided with factory-installed FPT drain ports and plugs, and lugs for supporting the loops.
9. Where the loops are installed horizontally, provide seismic breakaway couplings for each loop.

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10. For buried installations, install polyethylene sleeve, meeting per ANSI/AWWA C105/A21.5, in accordance with the Supplier's instructions. Refer to the Standard Details for additional requirements.
11. Supplier and Products:
 - a. [REDACTED]
 - b. [REDACTED] or
 - c. Approved Equal.

2.05 FLEXIBLE METAL HOSE

A. General

1. Flexible metal hose shall be corrugated type 316L or 321 stainless steel with stainless steel fittings and shall be provided with stainless steel single or double braid, unless otherwise specified. End connections shall be attached by the heliarc welding process using stainless steel welding rod. Bronze flexible metal hose shall be provided for copper and brass systems. Length shall be as per standard vendor supply unless otherwise specified.

B. Braided Type

1. Type A: Type A braided flexible metal hose shall be
 - a. [REDACTED]
 - b. [REDACTED]
 - c. [REDACTED] or
 - d. Approved Equal.
2. Type B: Type B braided flexible metal hose shall be
 - a. [REDACTED]
 - b. [REDACTED]
 - c. [REDACTED] or
 - d. Approved Equal.
3. Type C: Type C PTFE Lined braided metal hose. PTFE lining shall be smooth bore, stainless steel wire reinforcing.
 - a. [REDACTED], or
 - b. Approved Equal.

PART 3 EXECUTION

3.01 SHIPMENT AND STORAGE

- A. Equipment shall be shipped and stored in accordance with Section - 01 60 00 - Product Requirements.
- B. Supplier shall provide Contractor with detailed recommendations and instructions for equipment storage.