



Sunnyvale

City Hall
Public Works

456 West Olive Avenue
Sunnyvale, CA 94088-3707
408-730-7500
Sunnyvale.ca.gov

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April 24, 2024

Yared Girmai
Portfolio Manager, WIFIA Program
U.S. Environmental Protection Agency
via electronic submittal: girmai.yared@epa.gov

Re: Project Waiver for American Iron and Steel Requirements for Strainers, Globe/Needle Valves and Small Bore 150# Threaded Fittings

Dear Mr. Girmai,

The City of Sunnyvale (City) has a current WIFIA loan for the Sunnyvale Cleanwater Program Phase 2 (WIFIA — N18121CA). The City is requesting a project specific waiver of the AIS requirements due to lack of availability of the following:

- (16) ½” stainless steel strainers
- (8) ½” stainless steel globe/needle valves
- (14) ¼” stainless globe/needle valves
- (100) 150# threaded 90-degree elbows (½” – 2”)
- (10) 150# threaded tees (½” – 2”)
- (30) 150# threaded bushings (½” – 2”)
- (60) 150# threaded unions (½” – 2”)

Project Description

The City assessed its Water Pollution Control Plant and determined that, due to the age of the facilities, many of them need to be rehabilitated or replaced to maintain permit compliance and reliability. The Phase 2 Program includes Existing Plant Rehabilitation Construction, which will keep some existing Plant facilities functional until they are replaced during later phases. Improvements include replacing equipment (such as pumps, valves, and motors), restoring deteriorated concrete, and modernizing the automation system at the western half of the Plant.

Project Schedule

The City’s project schedule is attached. It includes several construction packages which constitute the Phase 2 Program.

██████████ is the general contractor’s supplier for the products listed above. ██████████ conducted a thorough online and materials network search to identify possible domestic resources for products to meet the project’s technical provisions in compliance with AIS requirements and was unable to find suitable domestic products. The following supporting documentation has been included for your review:

- Supplier request for Availability Waiver
- Project specification for products
- Project plan drawings
- Correspondence in search for domestic sources



Please let us know if you need any additional information to process this project specific waiver. You can contact me at ABoyer@sunnyvale.ca.gov or (408) 730-7516 if you have any questions.

Very truly yours,

Allison Boyer Digitally signed by Allison Boyer
DN: C=US,
E=aboyer@sunnyvale.ca.gov, O=City
of Sunnyvale, OU=Department of
Public Works, CN=Allison Boyer
Date: 2024.04.30 08:32:04-07'00'

Allison Boyer, PE
Assistant City Engineer
City of Sunnyvale, Department of Public Works
456 W. Olive Avenue
Sunnyvale, CA 94086

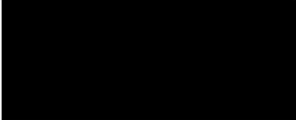
Strainers

Supplier Request for Availability
Waiver

January 16, 2023



RE: Request for Waiver for Non-AIS Component in the Sunnyvale Existing Plant Rehabilitation Project



Project: **City of Sunnyvale Existing Plant Rehabilitation Project / UY-21-04**

Santa Fe Water Systems (SFWS) is the supplier responsible for the below listed products for this project. SFWS is requesting an AIS waiver for the products listed below required on the City of Sunnyvale Existing Plant Rehabilitation Project / UY-21-04 Project:

***NOTE: Section 15125 2.01 All listed Valves do not meet AIS.**

Spec. #	Qty	Size	Product Description	Non-AIS Mfg. - Delivery
15125 2.01	16	0.5"	STAINLESS STEEL STRAINERS	All listed products in specifications are not made in AIS.

SFWS has conducted a thorough online & materials network research exercise to identify possible domestic resources that produce the products to meet the project's technical provisions and with AIS certification within the models requested.

Each Manufacturer listed below was contacted by SFWS personnel to request AIS product quotations. Research included the following response data:

Spec. #	Qty	Size	Product Description	Mfg. Contacted & Response	
15125 2.01	See List	1/2"-3"	Strainers	See list below	
Armstrong	11/17/23	1/2"-1-1/2"	AIS unavailable	E7FL is not AIS	
Apollo	11/17/23	1/8"-4" 1/4"-3"	AIS unavailable	59 and YCT Series are not AIS	
Hellan Strainers	10/17/23	1/2"-3"	AIS unavailable	Model 141-B is not AIS	
Crane	10/11/23	1/2"-2"	AIS unavailable	Type 8.3 is not AIS	

SFWS is unable to locate a known source for these products. Please grant an availability-based project-specific waiver for these items.

Sincerely,

George Andrecht
Project Manager

Note 2. AIS is not an option at all for strainers, as such no AIS pricing or AIS delivery lead times can be provided. Following pages show correspondence with manufacturers that indicate an AIS strainers is not made.

Strainers

Specification Section 15125

SECTION 15125

STRAINERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Strainers.

1.02 REFERENCES

- A. ASTM International (ASTM):
1. A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
 2. A420 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service.
- B. Society of Automotive Engineers (SAE).

1.03 SUBMITTALS

- A. Submit as specified in ec 01340 - Shop Drawings, Product Data and Samples.
- B. Product data: As specified in Section 15052 - Common Work Results for General Piping.

PART 2 PRODUCTS

See Note 1.

will be stainless steel to match stainless steel line material (see attached plan drawings)

2.01 Y-TYPE STRAINERS

Building Safety Division
City of Sunnyvale

- A. Y-type strainers less than 4 inches in diameter:
1. **Materials:** For installation in the City of Sunnyvale subject to code requirements
a. Bodies: Bronze for copper piping. Cast iron or semi-steel for steel piping.
b. Ends: Flanges or threaded.
c. Screen: Brass or Type 304 stainless steel.
 2. Suitable for maximum pressure of 250 pounds per square inch gauge.
 3. Screens: Perforations: 1/32 inch.
 4. Manufacturers: The following or equal:
a. Armstrong, Y-Type Strainer.

~~2.02 BASKET TYPE STRAINERS~~

- A. Provide basket type strainers single or duplex as indicated on the Drawings.
- B. Materials:
1. Bodies: 316 stainless steel.
 2. Baskets: Low-zinc bronze or stainless steel.

STRAINERS

- C. Pressure rating: Where not otherwise indicated on the Drawings, 125 pounds per square inch gauge, minimum.
- D. Connections: Threaded or flanged, as required.
- E. Covers:
 - 1. For strainers 6 inches and smaller in size, secured by yokes or similar quick opening devices.
 - 2. For strainers larger than 6 inches in size, bolted or hinged and bolted with slotted washers so that bolts or nuts need not be completely removed to open the strainer.
 - 3. Provide lifting eyes on covers weighing more than 50 pounds.
- F. Baskets:
 - 1. Screen: Mesh or perforated sheet.
 - 2. Openings: Not greater than 40 mesh.
 - 3. Free area: Not less than 30 percent.
 - 4. Free area to pipe ratio: Not less than 3.
- G. Provide duplex strainers with tapered plug transfer valve or with gate type transfer valves.
 - 1. Where action on two valve actuators is required to transfer operation from one chamber to the other, provide actuators mechanically linked for simultaneous operation.
- H. Manufacturers: One of the following or equal:
 - 1. Single basket strainers:
 - a. Fluid Engineering, Simplex.
 - b. Mueller Steam Specialty.
 - 2. Double basket strainers:
 - a. Fluid engineering, Series 534 for sizes 1-1/2 inch to 8 inch, and Series 424 for sizes 10 inch and larger.
 - b. Mueller Steam Specialty.
 - 3. Basket strainers for chemical service:
 - a. Hayward.
 - b. Dual or simplex as indicated on the Drawings; baskets and bodies PVC; gaskets Viton or EPDM as required for the chemical service; basket mesh size to be specified by the Engineer during shop drawing review.

For installation in the City of Sunnyvale subject to code requirements
DIGITAL SET APPROVED

By Daniel Reyna
BUILDING-PLUMBING-ELECTRICAL-MECHANICAL
The stamping of this plan shall not be held to permit or to be an approval of the violation of any provision of any City or State Law.

JOB COPY

These plans must be kept on the job site at all times.

CITY OF SUNNYVALE

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with the manufacturer's recommendations.

3.02 COMMISSIONING

- A. As specified in Section 01756 - Commissioning and this Section.

STRAINERS

- B. Manufacturer services for mechanically cleaned strainers, only:
 - 1. Provide certificates:
 - a. Manufacturer's Certificate of Installation and Functionality Compliance.
 - 2. Manufacturer's Representative onsite requirements:
 - a. Installation: 1 trip, 1 day minimum.
 - b. Functional Testing: 1 trip, 1 day minimum each.
 - 3. Training:
 - a. Maintenance: 2 hours per session, 2 sessions.
 - b. Operation: 1 hour per session, 2 sessions.
 - 4. Process operational period:
 - a. As required by Owner or Contractor.
- C. Functional testing:
 - 1. Mechanically cleaned strainers only:
 - a. Test witnessing: Witnessed.
 - b. Conduct Level 1 General Equipment Performance Test.

END OF SECTION

Building Safety Division
City of Sunnyvale

Jun 12 2023

For installation in the City of Sunnyvale subject to code requirements
DIGITAL SET APPROVED

By Daniel Reyna

BUILDING-PLUMBING-ELECTRICAL-MECHANICAL

The stamping of this plan shall not be held to permit or to be an
approval of the violation of any provision of any City or State Law.

JOB COPY

These plans must be kept on the job site at all times.

CITY OF SUNNYVALE

Globe/Needle Valves

Supplier Request for Availability
Waiver

February 12, 2024



RE: Request for Waiver for Non-AIS Component in the Sunnyvale Existing Plant Rehabilitation / UY-21-04

To: Bryce Moody,
Walsh Construction
9915 Mira Mesa Blvd
San Diego, CA 92131

Project: **City of Sunnyvale Water Pollution Control Plant Existing Plant Rehabilitation Project / UY-21-04**

() is the supplier responsible for the below listed products for this project.
is requesting an AIS waiver for the products listed below required on the City of Sunnyvale Water Pollution Control Plant Existing Plant Rehabilitation Project / UY-21-04:

***NOTE: Section 15115 All listed Valves do not meet AIS.**

Spec. #	Qty	Size	Product Description	Non-AIS Mfg. - Delivery	Pricing
15115	14	1/4"	STAINLESS STEEL GLOBE/NEEDLE VALVES	All listed products in specifications are not AIS.	\$450.30
15115	8	1/2"	STAINLESS STEEL GLOBE/NEEDLE VALVES	All listed products in specifications are not AIS.	\$578.26

has conducted a thorough online & materials network research exercise to identify possible domestic resources that produce the products to meet the project's technical provisions and with AIS certification within the models requested.

Each Manufacturer listed below was contacted by S personnel to request AIS product quotations.
research included the following response data.

Spec. #	Qty	Size	Product Description	Mfg. Contacted & Response
15115 2.03	See List	1/8"-2"	NEEDLE VALVES	See list below
Swagelok	10/16/23	1/8"-3/8"	AIS unavailable	Swagelok JB Series is not AIS
Apollo	8/14/23	1/4"-1"	AIS unavailable	Apollo 60A Series is not AIS
Crane	10/11/23	1/8"-2"	AIS unavailable	Crane 88 is not AIS
Powell	10/16/23	1/4"-1"	No response	Figure No. 180 – No Response
Lunkenheimer	10/16/23	1/8"-1"	No response	Figure No. 906-BS or No. 907-BS – No response

SFWS is unable to locate a known source for these products.

Please grant an availability-based project-specific waiver for these items.

Sincerely,

George Andrecht
Project Manager

Globe/Needle Valves

Specification Section 15115

SECTION 15115
GATE, GLOBE, AND ANGLE VALVES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Gate, globe, angle, plug disc and plain hose valves, and yard hydrants.
- B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C515 - Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Services.
 - 2. C 550 - Protective Interior Coatings for Valves and Hydrants.
- B. ASTM International (ASTM):
 - 1. B98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.

1.03 SUBMITTALS

- A. Submit as specified in Section 01340 - Shop Drawings, Product Data and Samples.
- B. Product data: As specified in Section 15110 - Common Work Results for Valves.
- C. Commissioning submittals: For valves larger than 16 inches:
 - 1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

- A. Provide warranty as specified in Section 01740 - Warranties and Bonds.
- B. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of valves comply in accordance with all provisions of AWWA C550.

PART 2 PRODUCTS

~~**2.01 GATE VALVES**~~

- A. Gate valves aboveground:
 - 1. Valves less than 3 inches in size for clean water and air service:
 - a. Manufacturers: One of the following or equal:
 - 1) Crane, Figure 431.

REV	DATE	BY	DESCRIPTION
1	09-08-23	RB/AS	RFI-0013

- 2) Jenkins, Figure 47.
- 3) Lunkenheimer Co., Figure 2151.
- b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
 - 2) Manufacturer's standard bronze, solid wedge disc, rising stem, screwed end, Class 150 pounds.
2. Valves 3 inches in size and larger:
 - a. Manufacturers: One of the following or equal:
 - 1) M&H/Kennedy Valve Co.
 - 2) Mueller.
 - 3) American Flow Control, Series 2500.
 - b. Design:
 - 1) Size, material, configuration: Indicated on the Drawings.
 - 2) Resilient wedge type in accordance with AWWA C515.
 - 3) Flange, iron body, and bonnet rated for 200 pound working pressure.
 - a) Provide o-ring seal between valve body and bonnet.
 - 4) Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.
 - 5) Bronze stem with double or triple o-ring or braided packing stem seals.
 - 6) Rising stem configuration with handwheel diameter sized to allow opening of valve with no more than a 40-pound pull.
 - 7) Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.
- B. Gate valves underground:
 1. Manufacturers: One of the following or equal:
 - a. M&H/Kennedy Valve Co.
 - b. Mueller Co.
 - c. American Flow Control.
 2. Design:
 - a. Size, material, configuration: Indicated on the Drawings.
 - b. Resilient wedge type in accordance with AWWA C515.
 - c. Stem:
 - 1) Iron body, resilient seat, non-rising stem, double o-ring stem seal.
 - 2) Rising stem configuration with handwheel diameter sized to allow opening of valve with no more than a 40-pound pull.
 - d. Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.
 - e. Bronze stem with double or triple o-ring or braided packing stem seals.
 - f. Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.
 - g. Valve operator: Provide standard AWWA 2-inch operating nut, matching valve key, and valve box for operating stem.
- C. Steam and condensate gate valves:
 1. Valves 3 inches and smaller in size:
 - a. Manufacturers: One of the following or equal:
 - 1) Crane, No. 428.
 - 2) Jenkins, Figure 47U.
 - 3) Lunkenheimer Co., Figure 2127.

- b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
 - 2) Bronze, screwed, rising stem, solid wedge, screwed bonnet, suitable for service under pressures equal to and less than 125 pounds per square inch gauge, steam working pressure (SWP).
- 2. Valves larger than 3 inches in size:
 - a. Manufacturers: One of the following or equal:
 - 1) Crane No. 465-1/2.
 - 2) Jenkins, Figure 651C.
 - 3) Lunkenheimer Co., Figure 1430.
 - b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
 - 2) Suitable for service under pressures equal to and less than 125 pounds per square inch gauge, steam working pressure (SWP), flanged, iron body, bronze mounted, solid wedge, outside screw and yoke (OS&Y).
- D. Knife gate valves:
 - 1. Manufacturers: One of the following or equal:
 - a. DeZurik SPX, KGL.
 - b. ITT Fabri-Valve, C37.
 - 2. Design:
 - a. Size and configuration: Indicated on the Drawings.
 - b. Suitable for service under pressures equal to and less than 150 pounds per square inch gauge.
 - c. Full round port, metal seated, raised face design.
 - d. Flanged wafer design drilled and tapped to ASME Class 125/150 standard.
 - e. Rounded gate with beveled edge, finish-ground to 32 RMS, maximum, on both sides.
 - f. Body to incorporate guides and jams to assist in seating.
 - g. Materials:
 - 1) Body: Cast or ductile iron or cast steel, with Type 316 stainless steel lining or cast Type 316 stainless steel.
 - 2) Wetted components (including gate): Type 316 stainless steel.
 - 3) Yoke sleeve: Acid resisting bronze or aluminum bronze.
 - 4) Packing: PTFE.
 - h. Outside screw and yoke (OS&Y) with handwheel operator.

2.02 GLOBE AND ANGLE VALVES

- A. General purpose globe and angle valves:
 - 1. Valves 3 inches and smaller:
 - a. Manufacturers: One of the following or equal:
 - 1) Except in welded steel piping:
 - a) Kitz, Model 03
 - b) Hattersley, Figure 13
 - c) Crane, No. 1 Globe or No. 2 Angle.
 - d) Lunkenheimer Co. Figure No. 2140 Globe or No. 2141 Angle.
 - 2) In Welded steel piping:
 - a) Crane, No. 351.

- b) Lunkenheimer Co., Figure No. 1123; or equal with flanged ends.
- b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
 - 2) Valve: Class 125 threaded ends, rated for 250 degrees Fahrenheit at pressure of 170 pounds per square inch.
- 2. Valves larger than 3 inches:
 - a. Manufacturers: One of the following or equal:
 - 1) Crane, No. 351.
 - 2) Lunkenheimer Co., Figure No. 1123.
 - b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
- 3. Plug disc globe valves: for throttling or for severe service.
 - a. Manufacturers: One of the following or equal:
 - 1) Crane, No. 212P or No. 384P.
 - 2) Lunkenheimer Co., 72-PS or 73-PS1.
 - b. Design:
 - 1) Size and configuration: Indicated on the Drawings.
 - 2) Material: Iron body stainless steel trimmed plug type seat and disc.

2.03 NEEDLE VALVES

- A. Manufacturers: One of the following or equal:
 - 1. Powell, Figure No. 180.
 - 2. Lunkenheimer Co., Figure No. 906-BS or No. 907-BS.
 - 3. Crane No. 88 or No. 89.
- B. Design:
 - 1. Size and configuration: Indicated on the Drawings.

~~2.04 HOSE VALVES AND YARD HYDRANTS~~

- A. Hose valves:
 - 1. Manufacturers:
 - a. Globe threaded valve: One of the following or equal:
 - 1) Crane, No. 7TF.
 - 2) Stockham, Figure No. B22T.
 - b. Angle threaded valve: One of the following or equal:
 - 1) Crane, No. 17TF.
 - 2) Stockham, Figure No. B222T.
 - 2. Design:
 - a. Size and configuration: Indicated on the Drawings.
 - b. Valve: Globe or angle valve with threaded ends.
 - c. Disc: Renewable, made of Teflon or Buna-N.
 - d. Threaded ends rated for a pressure of 200 pounds per square inch.
- B. Freezeless yard hydrant:
 - 1. Manufacturers: One of the following or equal:
 - a. Kupferle Foundry Co.
 - 1) #1 Total Eclipse Yard Hydrant - 3/4-inch and 1 inch.
 - b. Murdock Company:
 - 1) #M-75 - 3/4-inch or #M100 - 1 inch.

- c. Zurn Company:
 - 1) #1385 - 3/4-inch or 1 inch.
- 2. Design:
 - a. Self-draining, non-freezing, compression type.
 - 1) Inlet connection size: Indicated on the Drawings.
 - 2) Outlet connection size: Indicated on the Drawings.
 - 3) Materials:
 - a) Exterior casing pipe material: Indicated on the Drawings.
 - b) Interior operating rod material: Indicated on the Drawings.
 - c) Casing guard material: Indicated on the Drawings.
 - d) Principal interior operating parts material: brass and/or bronze and removable from yard hydrant for servicing without excavation.
 - 4) Provide 4 Spoke, Ball Wheel Handle operated.
- C. Freezeless post hydrants:
 - 1. Manufacturers: The following or equal:
 - a. Kupferle Foundry Co.:
 - 1) #2 Eclipse Post Hydrant.
 - b. Mueller Co.:
 - 1) #A-411 Post Hydrant.
 - c. Murdock Co.:
 - 1) #M-200 Post Hydrant.
 - 2. Design:
 - a. Self-draining, non-freezing, compression type with a 2-3/16-inch valve opening.
 - b. Inlet connection size: Indicated on the Drawings.
 - c. Outlet connection size: Indicated on the Drawings.
 - d. Materials:
 - 1) Exterior casing pipe material: Indicated on the Drawings.
 - 2) Interior operating rod material: Indicated on the Drawings.
 - 3) Top stock material: Indicated on the Drawings.
 - 4) Principal interior operating parts material: Brass and/or bronze and removable from hydrant for servicing without excavation.
 - e. Provide 1-1/2-inch pentagon operating nut operated by a hydrant wrench or 10-inch hand wheel:
 - 1) Manufacturers: The following or equal:
 - a) Kupferle Foundry Co.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Mount yard hydrants on minimum 1-inch supply pipe or size indicated on the Drawings.
- B. Mount post hydrants on minimum 2-inch supply pipe or size indicated on the Drawings.

- C. Set yard and post hydrants in 4 cubic feet of 3/4-inch minimum crushed stone surrounding valve body to allow for proper drainage.
 - 1. Install in accordance with AWWA recommendations for hydrants.

3.02 FIELD APPLIED COATING OF VALVE EXTERIOR

- A. Match color and be compatible with manufacturer's coating system and as specified in Section 09960 - High-Performance Coatings.
 - 1. When shop applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
 - 2. When shop applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

3.03 COMMISSIONING

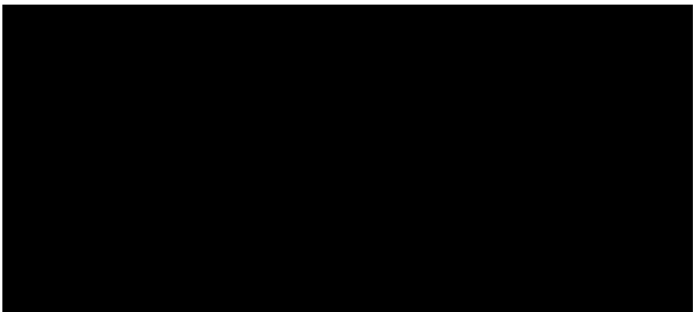
- A. As specified in Section 01756 - Commissioning and this Section.
- B. Manufacturer services: For valves larger than 16-inches.
 - 1. Provide certificates:
 - a. Manufacturer's Certificate of Installation and Functionality Compliance.
- C. Functional testing:
 - 1. Valves:
 - a. Test witnessing: Witnessed.
 - b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

Small Bore 150# Threaded Fittings

**Supplier Request for Availability
Waiver**

March 12, 2024



RE: Request for Waiver for Non-AIS Component in the Sunnyvale Existing Plant Rehabilitation Project / UY-21-04

To: Bryce Moody,
Walsh Construction
9915 Mira Mesa Blvd, Suite 230
San Diego, CA 92131

Project: **City of Sunnyvale Existing Plant Rehabilitation Project / UY-21-04**

[Redacted] is the supplier responsible for the products listed below for this project.
[Redacted] is requesting an AIS waiver for the products listed below required on the City of Sunnyvale Existing Plant Rehabilitation Project / UY-21-04 Project:

***NOTE: Section 15286 All listed Valves do not meet AIS.**

Spec. #	Qty	Size	Product Description	Non-AIS Mfg. - Delivery
15286	See list below	0.5"	T316 STAINLESS STEEL SMALL BORE 150# THREADED FITTINGS	Ta Chen, Energy Metals, Allied Group Delivery Stock to 3 Weeks

[Redacted] as conducted a thorough online & materials network research exercise to identify possible domestic resources that produce the products to meet the project's technical provisions and with AIS certification within the Sunnyvale Existing Rehabilitation Construction Schedule with the following findings:

1. There are no manufacturers producing AIS 150# small bore-stainless steel threaded fittings 1/2" to 2" size in the United States in sufficient and reasonable available quantities.
2. The quantities requested are too low to justify production runs in AIS.
 - (100) 150# Threaded 90 Deg Elbows (1/2" to 2") \$5.26/ea
 - (10) 150# Threaded Tees (1/2" to 2") \$6.34/ea
 - (30) 150# Threaded Bushings (1/2" to 2") \$2.80/ea
 - (60) 150# Threaded Unions (1/2" to 2") \$11.72/ea

Each Manufacturer listed below was contacted by SFWS personnel to request AIS product quotations. SFWS research included the following response data:

Spec. #	Qty	Size	Product Description	Mfg. Contacted & Response
15286	See List	1/4"-2"	<i>Stainless Steel Pipe and Tubing Products include 316SS</i>	See list below
Ta Chen Ryan Valdez	03/2024	1/2"-1-1/2"	AIS 150# threaded fittings unavailable in those sizes	Quantities are too low to produce and demand is so low it is not economical. The availability of import does not justify producing AIS versions.
Energy Metals Tiffany Tolentino	03/2024	1/2"-3"	AIS 150# threaded fittings unavailable in those sizes	Quantities are too low to produce and demand is so low it is not economical. The availability of import does not justify producing AIS versions.

Small Bore 150# Threaded Fittings

Specification 15286

SECTION 15286

STAINLESS STEEL PIPE AND TUBING

GENERAL

1.01 SU

- A. Includes: Stainless steel piping and tubing.

1.02 RE ES

- A. American Society of Mechanical Engineers (ASME):

1. B16 - Flanges and Flanged Fittings: NPS 1/2 through 24.
2. B16 - Welded Fittings, Socket-Welded and Threaded.
3. B31 - Process Piping.
4. B36 - Seamless Steel Pipe.

- B. ASTM International (ASTM):

1. A182 - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Flange Fittings, and Valves and Parts for High-Temperature Service.
2. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature Pressure Service and Other Special Purpose Applications.
3. A194 - Standard Specification for Carbon and Alloy Steel Nuts and Bolts for High Pressure or High Temperature Service, or Both.
4. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
5. A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
6. A276 - Standard Specification for Stainless Steel Bars and Shapes.
7. A312 - Standard Specification for Seamless and Heavily Cold Worked Austenitic Stainless Steel Pipes.
8. A351 - Standard Specification for Cast Austenitic, for Pressure-Containing Parts.
9. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
10. A403 - Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings.
11. A743 - Standard Specification for Castings, Iron-Chromium-Iron-Chromium-Nickel, Corrosion Resistant, for General Service.
12. A774 - Standard Specification for As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Services at Low Temperatures.
13. A778 - Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products.

STAINLESS STEEL PIPE AND TUBING

14. A790 - Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe.
15. A928 - Standard Specification for Ferritic/Austenitic (Duplex) Stainless Steel Pipe Electric Fusion Welded with Addition of Filler Metal.
16. A967 - Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.
17. - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and

1.03 DESIGN ELEMENTS

- A. Piping: Lay out and fabricate piping systems with piping sections as long as possible, while minimizing shipping, so that joints are minimized.
 1. Piping design: The drawing indicated on the Drawings illustrates piping layout and does not indicate the location of every joint and flexible coupling. Flexible couplings will be needed to connect piping sections fabricated in the shop.
 2. Add joint design: Add joint design to maximize the use of flexible couplings in a manner that achieves intent of individual piping sections.
- B. Shop fabrication: Fabricate piping sections in the shop and pickle and passivate at point of manufacture.
- C. Field assembly:
 1. Field welding is prohibited.

1.04 SUBMITTALS

- A. Submit as specified in Section 01340 - Drawings, Product Data and Samples.
- B. Product data: As specified in Section - Common Work Results for General Piping.
- C. Shop drawings:
 1. Detailed layout drawings:
 - a. Dimensions and alignment of pipes.
 - b. Location of valves, fittings, and appurtenances.
 - c. Location of field joints.
 - d. Location of pipe hangers and supports.
 - e. Connections to equipment and structures.
 - f. Location and details of shop welds.
 2. Thickness and dimensions of fittings and gaskets.
 3. Photographs, drawings, and descriptions of pipe, fittings, and pickling and passivating procedures.
 4. Material specifications for pipe, gaskets, fittings, and couplings.
 5. Data on joint types and components used in the system including flanged joints, grooved joint couplings and screwed joints.

PART 2 PRODUCTS

2.01 STAINLESS STEEL PIPE

A. General:

1. Pipe sizes specified in the Specifications and indicated on the Drawings are nominal.

B. Wall thickness:

1. As specified in Section 15052 - Common Work Results for General Piping.
2. Piping 3 inches in nominal diameter and greater:
 - a. For general service applications with pressures less than 250 pounds per square inch gauge, pipe diameter 24-inches or less, minimum wall thickness corresponding to Schedule 10S.
 - b. For dual media filter backwash air header, minimum wall thickness corresponding to Schedule 10S.

C. Piping material and manufacturing:

1. Comply with the requirements outlined in the following table:

Service	Stainless Steel Grade	Pipe Manufacturing Process
Piping 3 inches in nominal diameter and larger	Type 316L stainless steel in accordance with ASTM A240	Type 316L in accordance with ASTM A778
Piping less than 3 inches in nominal diameter	Type 316L stainless steel in accordance with ASTM A240	Type 316L in accordance with ASTM A312

D. Fittings for piping 3 inches in nominal diameter and greater:

1. Material: In accordance with ASTM A240 stainless steel, grade to match the pipe.
2. Manufacturing standard: In accordance with ASTM A774.
3. Wall thickness of fitting: In accordance with ASME B36.19 for the schedule of pipe specified.
4. End configuration: As needed to comply with specified type of joint.
5. Dimensional standards:
 - a. Fittings with weld ends: In accordance with ASME B16.11.
 - b. Fittings with flanged ends: In accordance with ASME B16.5, Class 150.

E. Fittings for piping less than 3 inches in diameter:

1. Material: In accordance with ASTM A240 stainless steel, grade to match the pipe.
2. Manufacturing standard: In accordance with ASTM A403, Class WP.
3. Wall thickness and dimensions of fitting: In accordance with ASME B16.11 and as required for the schedule of pipe specified.
4. End configuration: As needed to comply with specified type of joint.
5. Forgings in accordance with ASTM A182, or barstock in accordance with ASTM A276. Match forging or barstock material to the piping materials.

STAINLESS STEEL PIPE AND TUBING

Piping joints:

Joint types, piping greater than 2 inches in diameter, general:

- a. Where type of joint is specifically indicated on the Drawings or specified, design and shop-fabricate piping sections utilizing type of joint illustrated or scheduled.
Where type of joint is not specifically indicated on the Drawings or as specified in Section 15052 - Common Work Results for General Piping, design and shop-fabricate piping sections utilizing any of the following joint types:
Welded joints.
Flanged joints.
- 3) Grooved joints.
- c. Joint and pipe appurtenances:
 - 1) Flanged valves and flanged pipe appurtenances in stainless steel piping systems with flanged ends.
 - 2) Shop fabricate piping sections to make connections with flanged valves and pipe appurtenances using flanged coupling or flanged joints.
 - a) Flexible and flanged coupling adapters: Provide construction with materials matching the piping system conforming to requirements as specified in Section - Pipe Couplings and External Joint Restraints.

2. Welded joints:

- a. Pipe 12 inches and larger diameter: Automatically weld joints using gas tungsten-arc process.
- b. Piping 4 inches through 12 inches diameter: Double butt welded joints.
- c. Piping less than 4 inches in diameter: Single butt-welded joints.
- d. Mark each weld with a symbol that identifies the welder.

3. Flanged joints: Conforming to the requirements in accordance with ASME B16.5, Class 150.

4. Grooved joints:

- a. Pressure less than 500 pounds per square inch:
 - 1) Cut grooves from Schedule 40 or heavier schedule pipe sections used for pipe ends:
 - 1) Tapered inside diameter to transition to lighter schedule pipe. Inside diameter of the lighter pipe.
- c. Butt welds connecting pipes of different diameters that leave an abrupt change in inside diameter are not allowed.
- d. Couplings:
 - 1) Rigid type, cast from ductile iron, Victaulic Style Equal.
 - 2) Type 316 (Grade CF-8M) stainless steel in accordance with ASTM A351, A743, and A744.
 - a) Bolts: Stainless steel in accordance with A193, Group 2, Condition CW.
 - b) Nuts: Stainless steel.
 - c) Manufacturers: One of the following or equal:
 - (1) Piedmont Pacific Corp.
 - (2) Victaulic Style 489 Rigid Coupling.

Gaskets:

1. Aeration air service: As specified in Section 15286 - Common Work Results for General Piping.
2. All other service applications: EPDM, nitrile, or other materials compatible with the process fluid.

H.

Flanges:

bolts and nuts: Type 316 stainless steel in accordance with ASTM A193 heavy hex head.

Flange bolt length such that after installation, end of bolt projects 1/8-inch to 1/4-inch beyond outer face of nut.

Nuts: In accordance with ASTM A194 heavy hex pattern.

I.

Fabrication

Requirements:

1. Welding: In accordance with ASME B31.3.
2. Weld sequence:
 - a. Full penetration on welds, free of oxidation, crevices, pits and cracks, and weld ripples.
 - b. Provide weld crowns of 1/16 inch with tolerance of plus 1/16 inch and minus 1/32 inch.
 - c. Where internal welds are not accessible, use gas tungsten-arc welding procedures with gas purge.
 - d. Where internal welds are accessible, weld seams inside and outside using shielded metal-arc procedures.
3. Dual media filter backwash pipe shall be fabricated in sections that can fit through 30-inch access manhole plenum as indicated on the Drawings.

J.

Cleaning (pickling) and passivation:

1. Following shop fabrication of pipe, straight spools, fittings, and other separate fabricated pieces.
2. Clean (pickle) and passivate in accordance with ASTM A380 or A967.
 - a. If degreasing is required before cleaning (pickling) treatments with citric acid, remove scale or iron oxide, if permissible.
 - 1) However, these treatments must be performed by inorganic cleaners such as nitric acid/hydrofluoric acid.
 - b. Passivation treatments with citric acid are allowed.
3. Finish requirements: Remove free iron, heat-affected zones, weld scale, and other impurities, and obtain a passive finished surface.

2.02 SOURCE QUALITY CONTROL

- A. Visually inspect pipe for welding defects such as crevices, pipe protrusions, and oxidation deposits.
- B. Provide written certification that the pipe as supplied are in accordance with ASTM A778. Supplemental testing is not required.

STAINLESS STEEL PIPE AND TUBING

Provide written certification that the fittings as supplied are in accordance with ASTM A774.

1. Supplementary testing is not required.

Thoroughly clean any equipment before use in cleaning or fabrication of stainless steel

- E. segregate location of stainless steel piping from fabrication of any other materials.
- F. site:
 - 1. Seal all flanges and pipe ends by encapsulating in dense foam.
 - 2. Secure elements to pallets with nylon straps. Use of metallic straps is prohibited.
 - 3. Cap end of piping, pipe spools, fittings, and valves with non-metallic plugs.
 - 4. Load pallet so that tube, piping, pipe spools, fittings, or valves bear the weight of pallet.
 - 5. Notify Engineer when deliveries arrive so Engineer may inspect the shipping conditions.
 - 6. Engineer may reject shipment due to improper shipping methods or damage during shipment.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install piping in such a manner as to minimize strain to connected equipment.
- B. Slope horizontal lines so that they can be drained completely.
- C. Provide valve drains at low points in piping system.
- D. Install eccentric reducers where necessary to facilitate draining of piping system.
- E. Provide access for inspection and flushing of piping system to remove sediment, deposits, and debris.

3.02 FIELD ASSEMBLY OF SHOP-FABRICATED PIPING SECTION

- A. Join shop-fabricated piping sections together using backing couplings, flanged coupling adapters, grooved couplings, or other acceptable methods.

FIELD QUALITY CONTROL

Test piping to pressure and by method as specified in Section 15286 - Common results for General Piping.

pressure testing is accomplished with water:

Use only potable quality water.

b. Piping Thoroughly drained and dried or placed immediately into service.

B. Visually inspect for welding defects such as crevices, pits, cracks, protrusions, and oxidations.

3.04 PROTECTION

A. Preserve appearance of stainless steel piping by providing suitable protection during handling and installation and until final acceptance of the Work.

1. Use handling methods and equipment to prevent damage to the coating, include the use of wide canvas covers and wide padded skids.

2. Do not use bare cables, chains, hooks, metal bars, or narrow skids.

3. Store stainless steel piping and fittings separate from any other piping or metals. Storage in contact with ground or outdoors is prohibited. Provide protection from bad weather.

4. Protect stainless steel piping and fittings from carbon steel projections (when grinding carbon steel assemblies in proximity) and carbon steel contamination (do not contact stainless steel with carbon steel wire brush or other carbon steel tool).

END OF SECTION