

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.

April 4, 2024

Mr. Forrest Petrich, P.E.
Environmental Engineer
U.S. Environmental Protection Agency
WIFIA/Technical Branch

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

Subject: Request for Waiver of AIS Provisions for 14 inch ANSI Class 300 Plunger Valve for the Pure Water San Diego Program Phase 1: North City Project Water Infrastructure Finance and Innovations Act (WIFIA) Project No. N17125CA

Dear Mr. Petrich:

The City of San Diego (City) is requesting a product-specific project waiver of AIS provisions be issued for the Pure Water San Diego Program Phase 1: North City Project due to lack of availability for:

- 14-inch ANSI Class 300 Plunger Valve

In accordance with the United States Environmental Protection Agency (USEPA) memorandum, *Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014*, the information required for a waiver to be processed is included below and in the attached documents.

The City believes the State has received other waiver requests for the materials described in the waiver request, for comparable projects. We look forward to hearing from you soon regarding your approval of this waiver request. Please feel free to contact me at (619) 318-2658 if you have any questions or need additional information on this project.

Sincerely,



Jeff Soriano, P.E.
Senior Civil Engineer
Strategic Capital Projects Department

Mr. Petrich
April 4, 2024

cc: Richard Fernandez, Senior Civil Engineer, Strategic Capital Projects Department
Robert Hanna, Associate Engineer, Strategic Capital Projects Department
Natalie Rios, Associate Engineer, Strategic Capital Projects Department
Sam Tadros, Senior Civil Engineer, Civil, Public Utilities Department
Doran Aviati, Associate Engineer, Civil, Public Utilities Department
Steve Cheung, SRF Loan Program, Steve.Cheung@Waterboards.ca.gov
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WIFIA_portfolio@epa.gov

Mr. Petrich
April 4, 2024

Program Background

The San Diego Pure Water San Diego Program Phase 1: North City Project will clean recycled water to produce 30 million gallons per day(mgd) of high-quality purified water, reducing the City's dependence on imported water. The Pure Water San Diego Phase 1 program will provide nearly one-half of San Diego's water supply locally by 2035. The Pure Water Program will include a system of treatment facilities, pump stations, and pipelines to be constructed in multiple phases and will offer a cost-effective investment for San Diego's water demand.

The Project is funded by a loan through WIFIA and the State Water Resources Control Board under the California Water State Revolving Fund (CASRF) program. The Consolidated Appropriations Act of 2014 includes an "American Iron and Steel" (AIS) provision that requires recipients of CASRF assistance to use iron and steel products produced in the United States.

The Project is an important step toward securing a local, drought-resilient water supply for San Diegans for generations to come. Construction of major water infrastructure including pipelines, pump stations, and treatment facilities is taking place in the Morena, Bay Park, Clairemont, University City, Miramar, and Scripps Ranch communities.

The Pure Water Brine/Centrates Pipeline is a 11.3 mile long pipeline that provides conveyance for brine reject water being produced at the proposed Advanced Water Treatment Facility (AWTF) and centrate discharge from the existing City of San Diego Metro Bio-solids Facility. The Pure Water Brine/Centrates pipeline conveys flow from the San Diego North City Water Reclamation Plant (NCWRP) to the North Mission Valley Inceptor (NMVI) located near Friars Road west of Napa Street in Mission Valley. The pipeline profile traverses from an initial elevation of 13-feet at the pressure reducing valves located Custer Street near Sherman Street to a terminus elevation of 352-feet at the NCWRP. The pipeline passes through two canyon sections the first being San Clemente Canyon and the second being Rose Canyon forming sag points in the profile.

The installation of the 14-inch plunger valve is an integral part of the conveyance system that will supply water to the residents of San Diego. If the plunger valves fail to operate, disposal of Brine and Centrates will be performed by discharging into the Metropolitan Sewer System upstream of the Morena Pump Station eliminating the City's ability to utilize a vast portion of wastewater intended for water recycling and use as a raw water source.

A detailed justification for the use of foreign construction materials

The proposed valves for this project are required to have the ability of reducing 445 feet of static head, when the system is at zero flow rate and 337 feet of head when the system is at maximum flow of 9,600 gpm with the ability to allow for an increased to a peak flow rate of 10,000 gpm without cavitating. Based on hydraulic modeling of the pipeline, the Design Team identified that a VAG Plunger Valve, model number LH, will provide the required head loss needed in the brine-centrate system to reduce the maximum pressure in the system from about 160 psi to about 3 psi downstream of the proposed pressure reducing vault. Therefore the plunger valve manufacturer included in the contract documents is VAG Armaturen GmbH or equal. VAG is located in Mannheim, Germany where the plunger valve is manufactured and therefore this product does not meet AIS requirements. Additionally, there is no "or equal" manufacturer available that meets AIS requirements.

Mr. Petrich
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Item	Material Specification
14-inch ANSI Class 300 Plunger Valve	Technical Specification Section 40 05 67 Pressure Relief Valve

The Prime Contractor, Sukut, contacted the various manufacturers (see Table 1 for manufacturers) about the availability of the specified products. None of the manufacturers contacted could domestically source the products described in this request in accordance with the contract documents or project duration.

Table 1: List of Manufacturers

14 inch Plunger Valve
VAG Valve and Manufacturing Corp.
AV-TEK Water Management

General

Table 2: Summary of Products/Quantities/Sizes/Price

Line Item			Unit \$	Total \$ (minimum)
Qty (minimum)	Units	Description		
3	EA	14" Plunger Valve (epoxy coated)	\$ [REDACTED]	\$ [REDACTED]
TOTAL				\$ [REDACTED]

1. Description of the foreign and domestic construction materials
 - a. Refer to Table above
2. Unit of measure
 - a. Refer to Table above
3. Quantity
 - a. Refer to Table above
4. Price
 - a. Refer to Table above
5. Time of Delivery or Availability
 - a. The estimated delivery time for plunger valve is 6 to 8 weeks after an approved submittal.
6. Location of the construction project
 - a. 5191 Pacific Highway, San Diego CA 92109
7. Name and Address of the proposed supplier

Mr. Petrich
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- a. VAG USA LLC – 234 Clay Ave, Mars, PA 16046
8. Project schedule and “need by” date
 - a. The product material being requested in this waiver is needed on site for installation by July 2024.

Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials

1. Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of domestic construction materials for which the waiver is sought. See Exhibit B

Following a comprehensive review by Sukut Construction, Sukut Construction has confirmed that there are no domestically produced 14-inch plunger valves meeting the minimum specifications and project timeline. Although alternative domestically manufactured plunger valves have been proposed by Sukut Construction, the City of San Diego and associates found proposed substitutions to fall short of the minimum requirements specified for this project.

2. The technical specification for the plunger valve is included in Exhibit C Technical Specification Section 40 05 67 Pressure Relief Valve

Attachments:

- Exhibit A-Plan Sheet Drawings
- Exhibit B- Letters from Plunger Valve manufacturers
- Exhibit C- Technical Specification Section 40 05 67 Pressure Relief Valve

Exhibit A

Exhibit B



STATEMENT OF AIS COMPLIANCE ON PLUNGER VALVES

3/1/2024

Company Name: Av-Tek Valves, Inc.

Company Address: 755 W 1000 N, Suite 150; Logan, UT 84321

Subject: American Iron and Steel (AIS) Certification for:
Morena Conveyance South and Middle

It is my belief and understanding that no manufacturers currently make a Plunger Valve that meets all of the AIS Requirements as mandated by Section 746 of Title VII of the Consolidated Appropriations Act of 2017 (Division A - Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2017) and subsequent statutes mandating domestic preference.

Furthermore, Av-Tek's VRX Plunger Valves are Manufactured in Europe, with final assembly, actuation and testing being completed by our automation team in Logan, Utah. Although significant value is added in the US, it is not sufficient to certify these valves as AIS Compliant.

Therefore, it is our opinion that no manufacturers can currently meet the AIS requirements for this project.

Sincerely,

Wade Esplin
Area Sales Manager
wade@AvTekValves.com
(208) 258-1500



March 21, 2024

SUKUT Construction
4010 W. Chandler Ave
Santa Ana, CA 92704

Attention: Cheyne Walsh
Project: Morena

RE: AIS compliance response in regard to our RIKO Plunger Valves.

Dear Cheyne,

We are happy to provide this information in support of the VAG RIKO Plunger control valve.

VAG was founded in 1872 and has a 150 year history of providing engineered valve solutions for water, dams, and hydropower applications. VAG RIKO Plunger valves are well known for functionality, quality, durability and long lifetime, even under the toughest operating conditions.

The VAG RIKO Plunger Valve offers several unique features including:

- Externally controlled control valve with annular flow cross-section for the continuous regulation of high pressure differences and flow rates.
- Long service life as the bearings do not come into contact with the medium.
- Wear-resistant, corrosion- and infiltration-proof guide rails due to hard-facing. This ensures low operating forces and prevents jamming of the piston.
- Suitable for use in water treatment, water distribution, in dams, power plants, industry and in pressure management.

The VAG RIKO is produced at our factory in Mannheim, Germany (and supported by our US sales in service organization based in Mars, PA).

Note that to the best of our knowledge plunger valves or similar control valve products are not produced domestically by any valve supplier.

I hope this information is complete and meets your requirements. Please contact me if you have any questions.

Sincerely,

VAG Group

A handwritten signature in black ink, appearing to read 'Brian S. Pippin'.

Brian S. Pippin
Sr. Project Manager – Customized Products

Exhibit C

SECTION 40 05 67

PRESSURE RELIEF VALVE

PART 1 GENERAL

1.01 Description

- A. Furnish horizontal in-line 12-inch ANSI Class 300 Plunger Valve complete with electric motor actuator.

1.02 Related Work Specified Elsewhere

- A. SSP Section 210- Paint and Protective Coatings
- B. SSP Section 212– Water and Sewer System Valves and Appurtenances

1.03 Valve shall conform to the following Codes and Standards

- A. American National Standards Institute (ANSI)
 - B1.20.1 Pipe Threads, General Purpose (Inch)
 - B16.5 Steel Pipe Flanges and Flanged Fittings
- B. American Society for Testing and Materials (ASTM)
 - A216 Specification for Steel Castings, Alloy, Specially Heat-Treated, for Pressure-Containing Parts, Suitable for High-Temperature Service.
 - A536 Specification for Common Requirements for Iron Castings for General Industrial Use.
 - A743 Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application
- C. American Iron and Steel Institute (AISI) AISI 304 Austenitic Stainless Steel (maximum percent: 0.08C, 2.0 Mn, 1.0 Si, 18-20 Cr, 8-10.5 Ni), AISI 316 Austenitic Stainless Steel, AISI 420 Martensitic Stainless Steel (minimum percent: 0.15C, maximum percent: 1.0 Mn, 1.0 Si, 12-14 Cr, 0.0 Ni,)
- D. European (EN or DIN) standards equivalent to referenced American standards; subject to Engineer approval.
- E. Purchaser Furnished Data:
Operating Conditions, design criteria, process criteria, and facility drawings shall be provided to allow the manufacturer to properly design customize Plunger Valve performance.

1.04 Submittals

- A. Submittals shall be in accordance with the general provisions.
- B. Submittals shall be made to the designated representative of the City of San Diego, as indicated on the solicitation.
- C. Submit Manufacturer's data and descriptive literature written in the English language and in US Imperial units. Include catalog data, preliminary performance testing procedures, quality control procedures, calculations, detailed construction sheets showing all valve parts and descriptions of materials of construction with and applicable to USA material specifications, such as AISI, ANSI, ASTM, AWWA, American Society of Automotive Engineers (SAE) or the Copper Development Association (CDA). Identify each valve by tag number to which the catalog data and detail sheets pertain.
- D. Furnish for approval prior to release to manufacture, factory developed production drawings that clearly show in US imperial units, valve dimensions, laying lengths, port sizes, component parts and materials of construction. Provide graphical factory generated computer modeling results for both estimated noise levels in decibels and outlet discharge jet lengths for all flows in 10 percent increments through the complete stroke of the valve.
- E. Furnish for approval prior to release to manufacture, shop assembly drawings that clearly show dimensions and orientation of valve actuators as installed on the valves. Provide valve actuator safety verification through the complete stroke specifically noting values for both break torque under maximum differential as well as maximum dynamic torque. Use the ratio of actuator output torque over valve input torque for validation. Valve Manufacturers compliance shall be factory signed and dated.
- F. Furnish for approval prior to release to manufacture, all shop coating and lining.
- G. During manufacture, furnish 4 copies of signed and dated valve manufacturers mil thickness and holiday free coating and lining test reports. Describe test results and repair procedures for each valve. Do not ship valves to project site until the reports have been approved by the Engineer and accepted by the City of San Diego.
- H. Prior to shipping, furnish for approval four signed and dated copies of valve manufacturers factory shop hydrostatic test reports, performance test reports and any other required test reports. Test reports shall show all

relevant test parameters of the valve and actuator assembly as tested in the Manufacturer's facility and shall indicate valve orientation, flow rate, and inlet/outlet pressures as a minimum.

- I. Submit current quality assurance program certificate of compliance with proposal.
- J. Submit American Iron and Steel Institute (AISI) certification per P.L. 113-76, Consolidated Appropriations Act, 2014, Section 436, for all items specified herein.

1.05 Substitution

- A. Where Plunger Valves are shown or specified in project specifications or plans, no Contractor may substitute any other style of valve.

1.06 Quality Assurance

- A. The Manufacturer shall be ISO 9001 and ISO 14001 Certified.
- B. Shop Testing:

Plunger Valves shall be shop tested prior to shipment in accordance with the following minimum standards:

- 1. Leakage Test: Plunger Valves shall be qualitatively tested to 1.1 times valve pressure rating to identify drip tight closure of valve seat, seal leaks and other problems in the assembly process in both flow directions.
- 2. Hydrostatic Test: Plunger Valves shall be hydrostatically tested to withstand 1.5 times of the valve's maximum design operating pressure rating to identify drip tight body enclosure.
- 3. A Functional Test: Plunger Valves shall be tested for proper functionality. The test procedure shall consist of three (3) complete open/close cycles of operation with the valve actuator settings in place (limit switches, torque switches, position switches, etc.).
- 4. The valve Manufacturer shall submit six copies of certified shop test reports that shall include all appropriate information including: hand wheel rotation direction, valve full stroke calibration data, pressure settings, operating times and visual inspection notes.

1.07 Experience

- A. The valve manufacturer shall have experience in the production and sales of plunger valves. The valve Manufacturer shall also have installed plunger valves in the United States that have been in operation. Valve manufacturer shall provide complete documentation to meet this requirement, including contact names and telephone and fax numbers that can verify field installations. Acceptance of the validity of submitted documentation is solely at the discretion of the client.
- B. The valve manufacturer shall provide 24 hour manufacturers response for any field service requirement. Approved service agents, Licensee(s), or representatives of the manufacturer shall be permitted as long as the valve manufacturer is present. The valve manufacturer shall be responsible for its authorized agents and licensees. A detailed manufacturers signed service call write up, inclusive of photo-documentation, shall be provided without exception, by the valve manufacturer. The valve manufacturer shall be required to know and keep data files on all work performed, modifications and remediation as well as the agents performing the work. This data shall be permanently kept with the manufacturer regardless of licensee.

1.08 National Sanitation Foundation (NSF) Standard 61 Annex-G

- A. The entire plunger valve must have verifiable Certification of Compliance with the NSF 61 Annex G - Drinking Water System Components Standard. Certifications shall accompany submittals.

PART 2 PRODUCTS

2.01 Plunger Valve Performance Requirements

- A. Performance: The Plunger Valve shall be designed to operate smoothly throughout the specified flow range shown on contract drawing 40067-09-D without damaging cavitation, excessive noise, or excessive vibration. It shall not need vanes to prevent cavitation.
- B. Noise: Operating noise levels shall not exceed 95 decibels (dBA) at a distance of three (3) feet from the valve at the normal flow point. Material stresses shall not exceed 1/5 of the ultimate or 1/3 of the yield strength of the material. Flow rate as a function of pressure drop across the valve shall be linear to within 3-8%.

2.02 Plunger Valve Operating Requirements

- A. Valve Assembly Components: Each Plunger Valve assembly shall consist of a flanged short conical inlet section having an internal cone to divert the water flow into the annular cross sectional area of the valve body.

- B. An oval body section with an inner annular chamber shall be formed by the body shell. The plunger shall utilize an internal slider-crank mechanism driven by a 90 degree AWWA worm gear.
- C. The plunger shall move in an axial flow direction to increase or decrease the annular cross section open to the flow medium. The medium will flow around the plunger from the outer annular chamber to the inner chamber to control and regulate flow.
- D. The seals of the plunger valve shall allow the valve to be drip and bubble tight in both flow directions for the long term and without the need for premature seal replacement. The outside of the plunger shall seat against a quad-o-ring sealing ring. The quad-o-ring shall deflect and seal in both axial directions. The quad o-ring will provide the best available design for modulating service in the prevention of twist, roll and point loading of the plunger seal. The seal shall be insensitive to debris. The elastomeric profile sealing ring shall seat leak tight at the downstream end of the plunger. The elastomeric profile sealing ring shall be mechanically retained in the downstream flange of the valve body by a stainless steel seat ring. Valve shall be provided with a dry body shaft bore to prevent corrosion of the uncoated shaft bore. The valve operating shaft shall have five o-ring seals; two on the shaft at the crank mechanism and three on the shaft at the gear box. The o-ring seals shall maintain a drip tight seal regardless of modulation cycles or inactivity.
- E. To prevent possible dislodging over the valves life and or during prolonged modulation or transmitted pipeline vibration, the push rod linkages shall be mechanically retained with split pins. In addition, the control linkage and complete crank mechanism shall be either completely machined or investment casted. Exposed rough casting which could hide defects are not allowed.
- F. Valves shall be provided with 4 integral feet per each 180 degree circumference. There shall be 4 total lifting lugs, one per each foot. The four lifting lugs shall be factory drilled and taped. They shall be sufficiently broad in placement to assist with rigging of an unbalanced load.
- G. The valve shall function properly and without issue within any 180 degree flange rotation and the actuator with a left or right installation orientation.

2.03 Plunger Valve Design Features

- A. Plunger Valve must be a single piece body designed to avoid flow disturbance, corrosion between uncoated body sections and possible leakage. Valves bodies shall not be two or three piece and shall not have

flange to flange body connections. The Plunger Valve shall feature a continuously increasing annular cross section and resulting linear increase of flow velocity to the full open position without producing damaging cavitation.

- B. The plunger shall be seated against the upstream quad-o ring and an elastomeric seat located in body downstream flange with the valve in the closed position. The elastomeric seat shall be properly kept in position in a groove in the body and the downstream stainless steel seat ring shall secure the elastomeric profile sealing ring from displacement. The profile seat ring shall not be penetrated by fasteners, exposed to the flow stream in the open position and shall not be subject to cold flow of the elastomer.
- C. The Plunger Valve assembly shall axially recess in the upstream direction to increase flow.
- D. Plunger Valve design shall feature axial stroke movements, upstream and downstream, guided in the internal body by a rugged crank and push rod mechanism of stainless steel. The crank and push rod mechanism shall have an industry standard 90° angle of rotation stroke from open to close matching the travel for AWWA waterworks quarter turn valves. The provided actuator shall include a mechanical stop in the open and closed positions which will prevent attempts of actuator to hyper extend the plunger or place undesired stresses on the internal linkage system. The plunger shall slide and be contained in the axial position by guide rails. To prevent possible corrosion between the guide rails and the valve body, the guide rails shall be completely fused to the valve body in an overlay weld process to prevent any gaps or corrosion pathways. Guide rails which are riveted or bolted to the valve body are not acceptable for long-term operability and corrosion protection. The guide rails shall be bronze and shall be positioned around the plunger in an uneven quantity to reduce the potential for damaging harmonic vibration, clogging or excessive wear. The guide rails shall be low to no lead and very low zinc content to prevent dezincification (see Materials of Construction chart).
- E. The movement of the plunger shall be controlled by means of a self-locking quarter turn, 90 degree AWWA worm gear. AWWA worm gear shall come equipped with externally adjustable mechanical stops to limit valve travel in both the open and closed positions. The valve stroke shall equal 90 degrees plus or minus 2 degrees, whereby the mechanical stops of the worm gear shall be engaged before the full extension or retraction of the plunger. In no instance shall the full output torque of actuator be allowed to be transmitted to the valve at its end of travel, either open or closed, without engaging the travel stops of the worm gear first. The AWWA worm gear unit shall be operated by a hand wheel floorstand.

- F. The design of the annular throat cross section, open to flow, shall ensure precise flow control over the complete open to close stroke of the plunger.
- G. The proposed valve actuator shall operate in accordance with the manufacturer's requirements.
- H. The Plunger Valve must be easy to maintain, as such it shall have the profile sealing ring in the downstream flange. A mechanic shall not have to reach inside the valve to perform seat replacement. The profile sealing ring shall be interchangeable without dismantling the valve from the pipeline.
- I. Connections: Valve end connections shall be provided by ANSI standard pattern flanges for the size and pressure rating specified.
- J. The valve body shall come equipped with a threaded tapped plug suitable for draining the valve body cavity should maintenance or inspection be required and/or for installation of a pressure gauge.
- K. Plunger Valve shall come equipped with a valve support consisting of a separate footplate and valve baseplate. Valve footplate shall be anchored in valve pedestal to prevent endue movement during a seismic event.

2.04 Material Requirements

A. Principal Component Parts Materials of Construction

Item	Material	Specification
Valve Body	Ductile Iron	ASTM A536, GR. 60,40,18
Plunger	Stainless Steel	AISI 316
Regulating cylinder	Stainless Steel	AISI 316
Shaft Bushing	Bronze	ASTM C90800/ CuSn12
Crank shaft	Stainless Steel	AISI 420 –solid core, no chrome plating
Crank mechanism	Stainless Steel	AISI 316
Seat / Retaining ring	Stainless Steel	AISI 316
Plunger guide rails	Aluminum Bronze Welded Overlay	CuAl8 (lead <0.0020% Zinc < 0.008%
Quad-sealing-ring	EPDM hardness A:80, (=/- 5). Elongation >200%, Tensile >12 N/mm, Elasticity >25%	
Profile sealing ring	EPDM (only)	

Shaft O-Rings	EPDM	
Worm Gearbox	Housing: Ductile Iron Worm wheel: Stainless Steel	GGG-40 GGG-60 10088-3

- B. All studs, bolts, washers, and nuts in contact with water shall be Type 316 stainless steel. Seat and seat ring retainers shall be Allen or hex head fasteners. Slotted screw fasteners shall not be used.
- C. All materials of moving components in contact with each other shall be of dissimilar hardness to prevent galling. The valve shall be moved through an open-close-open cycle three (3) times after final assembly and prior to shipment to ensure this requirement.
- D. Use coating System #2 - Submerged Metal, Domestic Sewage: Epoxy per SSP 210.3.7 - Painting and Coating as well as the noted herein.
- E. The valve manufacturer coating process shall include post preparation and coating application assurances of targeted performance. The manufacturer shall utilize and incorporate a QC process that includes Coating thickness Testing, Holiday Free Testing, Cross Linkage Testing, Impact Resistance Testing, Coating Adhesion Testing and Cathodic Disbonding Testing. The Quality Compliance testing shall remain on record with the manufacturer and available for review and approval.
- F. The valve shall be blast coated to near white metal. The blast cleaned body shall be then thoroughly cleaned to remove all dust, grease, oil or other negative adhesion potentials. It shall meet the coating manufacturers recommended duration for humidity and temperature and at coating application. Coating shall take place within 12 hours of the blast cleaning process.
- H. The applied coatings shall be tested and signed and dated-verified holiday free with a dry film thickness of a minimum of 16 mils DFT.

2.05 Flanges

- A. For design pressure up to 300 pounds per square inch (psi), use AWWA Class D iron flanges or use ANSI B16.5, Class 250 steel flanges.

- B. Facing: Flanges of all classes shall be flat faced; without projection or raised face. Per manufacturer's design, a serrated concentric finish having with at least four (4) grooves (3 grooves/inch) finish shall be used to aid in gasket retention. The cutting tool employed shall have an approximate 0.06 in (1.52 mm) or larger radius. The resultant surface finish shall have a 250 to 500µin. (6.35 to 12.7 µm) roughness.

2.06 Flanged Expansion Outlet Hood

- A. The flanged expansion outlet shall be mounted directly downstream flange of the plunger valve.
- B. The flanged expansion outlet shall be manufactured out of ASTM A283 with welded internal support ribs. It shall be sized and of an appropriate thickness to prevent vibration. It shall wholly supported by the downstream plunger valve flange. It shall be coated to a minimum of 16 mils DFT.

2.07 Plunger Valve Manufacturer

Plunger Valve manufacturer shall be:

VAG Armaturen GmbH
Carl-Reuther-Str. 1
68305 Mannheim, Germany
North American Factory Contact:
VAG/GA USA (724)776-1020

Or Equal.

PART 3 EXECUTION

3.01 Installation

- A. Valve installation shall be in strict accordance with the Manufacturer's printed recommendations and the Contract Documents. Uncrated valve handling shall utilize all four lifting eyes.
- B. Four (4) hard bound copies and one (1) CD of the Operation and Maintenance Manual shall be provided with the valve. The manuals shall include installation instructions, maintenance procedures and operation parameters.

3.02 Workmanship

- A. Valves shall be free from manufacturing defects and shall be manufactured in a workman like manner.

- B. Grease and scale shall be completely cleaned from the valve prior to painting per Society for Protective Coatings (SSPC) standards.
- C. Valves shall be manufactured under the direction of a registered professional engineer.
- D. All ductile iron components shall be coated strictly to the coating manufacturers guidelines. A certificate of compliance with the purchaser's material specifications and the Manufacturer's quality assurance program shall be furnished with each valve.
- E. Valves shall be factory "Ocean Crated" to prevent damage in transit. Crating shall fully enclose the valve and actuator.

3.03 Field Testing and Performance

- A. The valve manufacturer shall furnish all required start-up assistance and inspection of valve after installation at the City of San Diego's facility. Representatives, Licensee(s) and authorized service agents of the valve manufacturer shall not perform any work inclusive of but not limited to, start up and testing, operating the valve without the valve manufacturer's on site presence. The valve manufacturer shall be wholly responsible for any work performed by its Licensee or their authorized agents.
- B. Valves shall be field leak tested by the Contractor to the specified operating pressure in the closed position and shall not leak. Field leakage relevant to the Plunger Valve shall be corrected by the valve Manufacturer at the valve Manufacturer's expense. Field leakage test results shall be certified by the City of San Diego's Engineer or an appointee of the City of San Diego, Manufacturer's onsite representative and Contractor.
- C. Plunger Valves shall be subjected to onsite performance testing as part of the commissioning activities in accordance with a written performance test plan. The valve shall be field verified and subjected to variable flow conditions from closed to full open.
- D. The plunger valve operator shall maintain a fixed flow rate.
- E. Upon completion of the field testing, the test results and acceptable functioning shall be documented and signed and dated the valve manufacturer. Representatives, Licensee or other stake holders may accompany start up but shall not be an acceptable substitute for the valve manufacturer's presence or documented sign off.

3.04 Warranty

- A. The plunger valve Manufacturer shall warrant its products, including actuators incorporated in the work, to be free from defects in materials, workmanship and performance for a period of five years from the date of receipt. Upon notice by the City of San Diego, any damage or defect found during the warranty period shall be promptly repaired or replaced by the valve Manufacturer at no cost to the City of San Diego. Where a valve is for sale via a Licensee of the valve manufacturer/ the Licensor, and as this agreement is subject to dissolution and or termination to the potential detriment of the City of San Diego, both the Licensee and the valve Manufacturer, Licensor, shall be wholly responsible for the warranty. The warranty claim and resolution shall be severable and actionable to both Licensee and Licensor. Warranty claims and resolution will not need to be exhausted through the Licensee and shall remain in effect for the total duration of the warranty period to the Licensor. Performed actions of authorized agents of the Licensee shall constitute actions of the valve manufacturer and shall be the responsibility of the valve Manufacturer/Licensor. This warranty shall be in effect regardless of the contract between the contracted entity/Licensee and the Licensor.

END OF SECTION