SECTION 22 05 23
GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes the requirements for general-duty valves for domestic water and sewer systems.

1.2 RELATED WORK

A. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.

B. Manufacturer's Literature and Data:

1. Valves.
2. Backflow Preventers.

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):A536-84(R 2004) Standard Specification for Ductile Iron Castings

C. American Society of Sanitary Engineering (ASSE)

ASSE 1013-05.....Reduced Pressure Principle Backflow Preventers and Reduced Pressure Fire Protection Principle Backflow Preventers

D. International Code Council (ICC)

IPC-06 (R 2007).....International Plumbing Code

E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):

SP-25-98.....Standard Marking System for Valves, Fittings, Flanges and UnionsSP-67-02a (R 2004) Butterfly Valve of the Single flange Type (Lug Wafer)

SP-70-06.....Cast Iron Gate Valves, Flanged and Threaded Ends.

SP-72-99.....Ball Valves With Flanged or Butt Welding For General Purpose

SP-80-03.....Bronze Gate, Globe, Angle and Check Valves.

SP-110-96.....Ball Valve Threaded, Socket Welding, Solder Joint, Grooved and Flared Ends

1.5 DELIVERY, STORAGE, AND HANDLING

A. Valves shall be prepared for shipping as follows:
   1. Protect internal parts against rust and corrosion.
   2. Protect threads, flange faces, grooves, and weld ends.
   3. Set angle, gate, and globe valves closed to prevent rattling.
   4. Set ball and plug valves open to minimize exposure of functional surfaces
   5. Set butterfly valves closed or slightly open.
   6. Block check valves in either closed or open position.

B. Valves shall be prepared for storage as follows:
   1. Maintain valve end protection.
   2. Store valves indoors and maintain at higher than ambient dew point temperature.

C. A sling shall be used for large valves. The sling shall be rigged to avoid damage to exposed parts. Hand wheels or stems shall not be used as lifting or rigging points.

1.6 ITEMS TO BE RETAINED BY OWNER.

A. Existing pressure reducing valves to be replaced shall be turned over to the Owner.

PART 2 - PRODUCTS

2.1 VALVES

A. Asbestos packing and gaskets are prohibited.

B. Shut-off:
   c. 100 mm (DN100) (4 inches) and larger:
      1) Class 125, OS&Y, Cast Iron Gate Valve. The gate valve shall meet MSS-SP-70 type I standard. The gate valve shall have a CWP rating of 1380 kPa (200 psig). The valve materials shall meet ASTM A 126, grey iron with bolted bonnet, flanged ends, bronze trim, and solid wedge disc. The gate valve shall be

gear operated for sizes under 200 mms or DN200 (8 inches) and crank operated for sizes 200 mms or DN200 (8 inches) and above

2.2 BACKFLOW PREVENTERS

A. Reduced pressure backflow preventers shall be installed as indicated on the drawings.

C. The reduced pressure principle backflow prevention assembly shall be ASSE listed 1013 with full port OS&Y gate valves and an integral relief monitor switch. The main body and access cover shall be epoxy coated duct iron conforming to ASTM A536 grade 4. The seat ring and check valve shall be Noryl (NSF listed). The stem shall be stainless steel conforming to ASTM A276. The seat disc elastomer shall be EPDM. The checks and the relief valve shall be accessible for maintenance without removing the device from the line. An epoxy coated wye type strainer with flanged connections shall be installed on the inlet.

2.3 WATER PRESSURE REDUCING VALVE AND CONNECTIONS

A. Pressure Reducing Valves shall be identified as Model 90G-01BPVYSKCXHI, as manufactured by Cla-Val Company or approved equal by Watts or Danfoss.

Cla-Val is represented by Harper International Inc.

Tel 800-551-2733

B. The pressure reducing valve (PRV) shall be capable of keeping the outlet pressure constant from zero flow to maximum flow (infinite rangeability). No low flow chatter or hunting will be acceptable. The valves shall be field adjusted in a manner so the 3″ valve acts as the lead PRV. The 8″ PRV shall automatically begin to open under high flow conditions to maintain satisfactory downstream pressure levels. The 8″ valve shall also automatically go closed when the downstream demand has declined to a point where the 3″ valve is capable of maintaining design pressure.

C. The valve shall be a hydraulically operated, diaphragm actuated, and have a globe pattern. The main valve shall consist of three major components: the body with seat installed; the cover with bearings installed and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper

portion of the valve separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls. All necessary repairs shall be possible without removing the main valve from the line.

D. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer, forming a tight seal against a single removable seat insert. O'ring type discs (circular or quad type) are NOT acceptable as the main sealing surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy unicast design capable of withstanding opening and closing force. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

E. The pressure reducing pilot shall be a normally open, direct acting, adjustable, spring loaded diaphragm valve, designed to close when downstream pressure rises. The valve body shall be all bronze with stainless steel trim. This valve shall include a round buna-N diaphragm, retained by eight machine screws. The rubber disc that seals against the stainless steel seat shall be compression molded into a brass disc retainer. The disc retainer shall have machined threads to attach to a cast bronze yoke. The yoke shall be attached to the diaphragm, with torque compensation, and will convert differential force (spring load vs. outlet pressure) into linear motion. This design will ensure smooth transition while the valve modulates to match the corresponding pressure changes. The pilot system shall also include a fixed restriction device, a self-cleaning strainer. The valve shall also be fitted with a position indicating sight glass.

F. The valve body shall be constructed of cast ductile iron ASTM A-536 and fitted with stainless steel trim, T303 or T316. The valves shall have flanged ends, 150ASA class that conform to ANSI B16.24, and shall be listed for a maximum working pressure of 225 psi. All wetted ferrous parts shall be epoxy coated by the fusion bonding process. Painted on epoxies are not acceptable. The pilot system shall be fitted with copper tubing and brass fittings.

G. The Pressure Reducing Valves shall be identified as Model 90G-01BPVYSKCXHI, manufactured by Cla-Val Company and represented by Harper International Inc. (Tel 800-551-2733).The Pressure Reducing Valves described herein shall include a manufacturer’s warranty the valve to be free of defects in material and workmanship for a period of three years from date of shipment. A Cla-Val factory representative

shall be present for start-up service, inspection and any necessary adjustments.

H. The regulator shall have a tap for pressure gauge.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Valve interior shall be examined for cleanliness, freedom from foreign matter, and corrosion. Special packing materials shall be removed, such as blocks, used to prevent disc movement during shipping and handling.

B. Valves shall be operated in positions from fully open to fully closed. Guides and seats shall be examined and made accessible by such operations.

C. Threads on valve and mating pipe shall be examined for form and cleanliness.

D. Mating flange faces shall be examined for conditions that might cause leakage. Bolting shall be checked for proper size, length, and material. Gaskets shall be verified for proper size and that its material composition is suitable for service and free from defects and damage.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Valves shall be located for easy access and shall be provide with separate support. Valves shall be accessible with access doors when installed inside partitions or above hard ceilings.

C. Valves shall be installed in horizontal piping with stem at or above center of pipe

D. Valves shall be installed in a position to allow full stem movement.

E. Check valves shall be installed for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.

3.3 ADJUSTING

A. Valve packing shall be adjusted or replaced after piping systems have been tested and put into service but before final adjusting and

balancing. Replace valves shall be replaced if persistent leaking occurs.

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