SECTION 22 05 23 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate valves.
2. Ball valves.
3. Plug valves.
4. Butterfly valves.
5. Check valves.
6. Chainwheels.

1.2 REFERENCES

A. American Gas Association – AGA

B. International Association of Plumbing & Mechanical Officials – IAPMO

1.3 SUBMITTALS

A. Product Data: Submit manufacturers catalog information with valve data and ratings for each service.

1.4 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61 State of California AB 1953 and California Plumbing Code (C.P.C.) latest approved edition.

1.5 WARRANTY

A. Furnish five year manufacturer warranty.

1.6 EXTRA MATERIALS

A. Furnish two packing kits for each size valve.

PART 2 – PRODUCTS

2.1 GATE VALVES

A. Manufacturers:

1. NIBCO Inc.

2. Crane Co.

3. Milwaukee Valve Company.

B. 2 inches and Smaller: MSS-SP-80 Class 125, bronze body, bronze trim, union bonnet, non-rising stem, hand-wheel, inside screw, solid wedge disc, alloy seat rings, threaded, or soldered or press-fit ends.

C. 2-1/2 inches and Larger: MSSP-SP-80 Class 125, cast iron body, bronze trim, bolted bonnet, non-rising stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

D. Class 150, NRS, Ductile-Iron Gate Valves:

1. Manufacturers:

a. NIBCO Inc.

b. Crane Co.

c. Powell Valves.

2. Description:

a. Standard: MSS SP-70, Type I.

b. CWP Rating: 285 psig.

c. Body Material: ASTM A 395, ductile iron with bolted bonnet.

d. Ends: Flanged.

e. Trim: Bronze.

f. Disc: Solid wedge.

g. Packing and Gasket: Asbestos free.

E. Class 150, OS&Y, Ductile-Iron Gate Valves:

1. Manufacturers:

a. NIBCO Inc.

b. Crane Co.

c. Powell Valves.

2. Description:

a. Standard: MSS SP-70, Type I.

b. CWP Rating: 285 psig.

c. Body Material: ASTM A 395, ductile iron with bolted bonnet.

d. Ends: Flanged.
e. Trim: Bronze.
f. Disc: Solid wedge.
g. Packing and Gasket: Asbestos free.

2.2 BALL VALVES

A. Manufacturers:

1. Milwaukee Valve Company.

2. Crane Co.

3. NIBCO Inc.

B. 2 inches and Smaller: 400 psi WOG two piece bronze body, chrome plated brass ball, full port, Teflon seats, blow-out proof stem, threaded, or soldered or press-fit ends with union, lever handle.

C. 2 inches and Smaller: Class 150, bronze, two or three piece body, type 316 stainless steel ball, full port, Teflon seats, blow-out proof stem, threaded, soldered or press-fit ends with union, lever handle.

D. Class 150, Full-Port Stainless Steel Three-Piece Ball Valves:

1. Description:
   a. Threaded or socket-weld up to 2-inches, with locking mechanism.
   b. WOG Rating: 1000 psig.
   c. Body Design: Split body.
   d. Body Material: Stainless steel ASTM A-351, grade CF8M.
   e. Seats: PTFE.
   f. Stem: Stainless steel ASTM A-276, Type 316.
   g. Ball: Stainless steel, ASTM A-351, GRADE CF8M.
   h. Port: Full.

E. Flanged Class 150, split body, full bore, stainless steel ball valve.

1. Description:
   a. Flanged 2-1/2-inch up to 6-inch, with locking mechanism.
   b. Split body, full bore.
   c. Body Material: Stainless steel A-351 grade CF8M.
   d. Seats: Virgin Teflon.
   e. Stem: A-276, 316SS.
   f. Ball: Stainless steel A-351 grade CF8M.
   g. Port: Full.

2.3 PLUG VALVES

A. Manufacturers:

1. Nordstrom / Flowserve Corporation.

2. DeZURIK Inc.

3. Crane Co.

B. 2 inches and Smaller: MSS SP 78, Class 300, cast iron construction, round port, full pipe area, pressure lubricated, Teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.

C. 2-1/2 inches and Larger: MSS SP 78, Class 300, cast iron construction, round port, full pipe area, pressure lubricated, Teflon packing, flanged ends. Furnish wrench-operated or worm gear-operated.

2.4 BUTTERFLY VALVES

A. Manufacturers:

1. Milwaukee Valve Company.

2. Crane Co.

3. NIBCO Inc.

B. 2-1/2 inches and Larger: Class 150.

1. Body: Cast or ductile iron, wafer lug or grooved ends, stainless steel stem, extended neck.
2. Disc: Nickel-plated ductile iron or Elastomer coated ductile iron.
3. Seat: Resilient replaceable EPDM.
4. Handle and Operator: 10 position lever handle. Furnish gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

2.5 CHECK VALVES

A. Horizontal Swing Check Valves:

1. Manufacturers:
   a. Milwaukee Valve Company.
   b. Crane Co.
   c. NIBCO Inc.
2. 2 inches and Smaller: Class 150, bronze body and cap, bronze seat, Buna-N disc, solder or threaded ends.
3. 2-1/2 inches and Larger: Class 125, cast iron body, bolted cap, bronze or cast iron disc, renewable disc seal and seat, flanged ends.

4. 2-1/2 inches and Larger: Class 125, cast iron body, bronze swing disc, flanged ends, outside lever and weight.

B. Spring Loaded Check Valves:

1. Manufacturers:
   - **a. Milwaukee Valve Company.**
   - **b. Crane Co.**
   - **c. NIBCO Inc.**
2. 2 inches and Smaller: Class 250, bronze body, in-line spring lift check, silent closing, Buna-N disc, integral seat, solder or threaded ends.
3. 2-1/2 inches and Larger: Class 250, wafer style, cast iron body, bronze seat, center-guided bronze disc, stainless steel spring and screws, flanged ends.

2.6 CHAINWHEELS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Babbitt Steam Specialty Co.

2. Roto Hammer Industries.

3. Trumbull Industries.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

C. Install valves with clearance for installation of insulation and allowing access.

D. Provide access where valves and fittings are not accessible.

3.2 VALVE APPLICATIONS

A. Install shutoff and drain valves at required locations.

B. Install ball butterfly or gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

C. Install 3/4 inch gate ball valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

D. Install butterfly or gate valves for throttling, bypass, or manual flow control services.

E. Install spring loaded check valves on discharge side of all water pumps.

F. Install check valves on discharge of all pumps.

G. Install lug end butterfly valves adjacent to equipment when functioning to isolate equipment.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball or gate valves.
2. Throttling Service: Angle valves.
3. Pump-Discharge Check Valves:
    a. NPS 2 and Smaller: Bronze swing check valves with bronze disc.
    b. NPS 2-1/2 and Larger for Domestic Water: Iron swing check valves with lever and weight or with spring or iron, center-guided, resilient-seat check valves.
    c. NPS 2-1/2 and Larger for Sanitary Waste and Storm Drainage: Iron swing check valves with lever and weight or spring.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.
3. For Copper Tubing, NPS 5 and Larger: Flanged ends.
4. For Steel Piping, NPS 2 and Smaller: Threaded ends.
5. For Steel Piping, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.
6. For Steel Piping, NPS 5 and Larger: Flanged ends.

3.4 DOMESTIC, HOT AND COLD WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.
2. Bronze Angle Valves: Class 150, nonmetallic disc.
3. Ball Valves: Three piece, full port, bronze with stainless-steel trim.

4. Bronze Lift Check Valves: Class 125, nonmetallic TFE disc.
5. Bronze Swing Check Valves: Class 150, nonmetallic TFE disc.
6. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Iron Valves, NPS 2-1/2 to NPS 4: May be provided with threaded ends instead of flanged ends.
2. Iron Angle Valves: Class 125.
3. Steel Ball Valves: Class 150, full-port.
4. Ductile-Iron, Single-Flange Butterfly Valves: 200 CWP, EPDM seat, aluminum-bronze disc.
5. Ductile-Iron, Grooved-End Butterfly Valves: 300 CWP.
6. High-Performance Butterfly Valves: Class 150, 285 CWP.
7. Iron Swing Check Valves: Class 125, metal seats.
8. Iron Swing Check Valves with Closure Control: Class 125, lever and weight.
9. Iron, Center-Guided Check Valves: Class 125, globe, resilient seat.
10. Iron, Gate Valves: Class 125, OS&Y.

3.5 SANITARY-WASTE AND STORM-DRAINAGE VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.
2. Ball Valves: Three piece, full port, bronze with stainless-steel trim.
3. Bronze Swing Check Valves: Class 125, nonmetallic disc.
4. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 and Larger:

1. Iron Valves, NPS 2-1/2 to NPS 4: May be provided with threaded ends instead of flanged ends.
2. Steel Ball Valves: Class 150, full port.
3. Iron Swing Check Valves: Class 125, metal seats.
4. Iron Swing Check Valves with Closure Control: Class 125, lever and weight.
5. Iron Gate Valves: Class 125, OS&Y.
6. Lubricated Plug Valves: Class 125, regular gland, threaded or flanged.

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