SECTION 220523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.
3. Iron, single-flange butterfly valves.
4. Bronze swing check valves.
5. Iron swing check valves.
6. Bronze gate valves.
7. Iron gate valves.
8. Bronze globe valves.
9. Iron globe valves.

B. Related Sections:

1. Division 22 plumbing piping Sections for specialty valves applicable to those Sections only.
2. Division 22 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
3. Division 33 water distribution piping Sections for general-duty and specialty valves for site construction piping.

1.2 SUBMITTALS

A. Product Data: For each type of valve indicated.

1.3 QUALITY ASSURANCE

A. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

B. NSF Compliance: NSF 61 for valve materials for potable-water service.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures, 200 psi CWP minimum.

C. Valve Sizes: Same as upstream piping unless otherwise indicated.

D. Valve Actuator Types:

1. Gear Actuator: For quarter-turn valves NPS 8 and larger.
2. Handwheel: For valves other than quarter-turn types.
3. Lever Handle: For quarter-turn valves NPS 6 and smaller, except plug valves.
4. Wrench: For plug valves with square heads.
5. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.

E. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Gate Valves: With rising stem.
2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
3. Butterfly Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

F. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.
2. Solder Joint: With sockets according to ASME B16.18.
3. Threaded: With threads according to ASME B1.20.1.
4. Bronze Valves: NPS 2 and smaller with threaded or solder ends, unless otherwise indicated.
5. Ferrous Valves: NPS 2-1/2 and larger with flanged ends, unless otherwise indicated.

G. Valve Bypass and Drain Connections: MSS SP-45.

## 2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Crane Valves.
b. Crane Co.; Crane Valve Group; Jenkins Valves.
c. Hammond Valve.
d. Milwaukee Valve Company.
e. NIBCO INC.
f. Red-White Valve Corporation.
g. Conbraco Industries, Inc.; Apollo Valves.
h. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
i. ASCO
j. Equal products as prior approved.

2.3 BALL VALVES

A. MSS SP-110, Class 150 Ball Valves, 1/2-Inch to 4-Inch: Rated for 150 psi saturated steam pressure, 400 psi WOG pressure; 2-piece construction; with bronze body conforming to ASTM B 62, standard or conventional port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout proof stem, extended stem for insulated systems, and vinyl-covered steel handle.

2.4 BUTTERFLY VALVES

A. MSS SP-67, Type I, rated bubbletight at 200 psi for tight shutoff, with disc and lining suitable for potable water, unless otherwise indicated. Butterfly valves shall have ductile or cast iron body, bronze floating type disc, EPT seat, 416 stainless steel dry journal type stems, bronze bearings. Bodies shall be full lug type with extended necks adequate for the appropriate insulation thickness. Operators shall be 10 position positive lock lever type in sizes 4" to 6", and worm gear operators for 8" and above

2.5 GATE VALVES

A. Gate Valves, 2-Inch and Smaller: MSS SP-80; Class 150, body and union bonnet of ASTM B 62 cast bronze; with threaded ends or solder ends, solid disc, copper-silicon alloy stem, brass packing gland, "Teflon" impregnated packing, and malleable iron handwheel.

B. Gate Valves, 2-1/2-Inch and Larger: MSS SP-70; Class 125 iron body, bronze mounted, with body and bonnet conforming to ASTM A 126 Class B; outside screw and yoke, with flanged ends, "Teflon" impregnated packing, and two-piece backing gland assembly.

2.6 GLOBE VALVES

A. Globe Valves, 2-inch and Smaller MSS SP-80; Class 125; body and screwed bonnet of ASTM B62 cast bronze; with threaded or solder ends, brass of replaceable composition disc, copper-silicon alloy stem, brass packing gland, "Teflon" impregnated packing, and malleable iron handwheel. Provide Class 150 valves meeting the above where system pressure requires.

B. Globe Valves 2-1/2 inch and Larger MSS SP-85; Class 125 iron body and bolted bonnet conforming to ASTM A 126, Class B; with outside screw and yoke, bronze mounted, flanged ends, and "Teflon" impregnated packing, and two-piece packing gland assembly.

2.7 CHECK VALVES

A. Swing Check Valves, 2-Inch and Smaller MSS SP-80; Class 125, cast-bronze body and cap conforming to ASTM B 62; with horizontal swing, Y-pattern, and bronze disc; and having threaded or solder ends. Provide Class 150 valves meeting the above specifications, with threaded end connections, where system pressure requires or where Class 125 is not available.

B. Swing Check Valves, 2-1/2 Inch and Larger MSS SP-71; Class 125, cast iron body and bolted cap conforming to ASTM A 126, Class B; horizontal swing, and bronze disc or cast-iron disc with bronze disc ring; and flanged ends.

C. Wafer Check Valves Class 125, 200 psi WOG, cast-iron body with replaceable bronze seat, and non-slam design lapped and balanced twin bronze flappers and stainless steel trim and torsion spring. Provide valves designed to open and close at approximately one foot differential pressure.

2.8 BALANCING VALVES (CIRCUIT SETTER)

A. Calibrated Balancing Valves, NPS 2 and Smaller: Bronze body, brass ball type, 125-psig working pressure, 250 deg F maximum operating temperature, and having threaded or soldered ends. Valves shall have calibrated orifice or venturi, connections for portable differential pressure meter with integral seals, and be equipped with a memory stop to retain set position. Valve shall be rated for shutoff service.

B. Calibrated Balancing Valves, NPS 2-1/2 and Larger: Cast-iron or steel body, ball type, 125-psig working pressure, 250 deg F maximum operating temperature, and having flanged or grooved connections. Valves shall have calibrated orifice or venturi; connections for portable differential pressure meter with integral seals, and be equipped with a memory stop to retain set position. Valve shall be rated for shutoff service.

2.9 SOLENOID VALVES

A. Actuated shutoff valves shall be lead free 3-piece, full port bronze ball valve with 115 volt electric actuator mounted with carbon steel mounted bracket that operates in the normally closed position. Valve shall be NSF/ANSI 61-G and NSF 372 with RPTFE seats and MPTFE seals rated for 600 psi CWP, 150 psi SWP. Valves shall be factory mounted with actuator. Actuator shall have anodized die cast aluminum housing, fiberglass reinforced nylon cover, with nitrile gasket and seals covering all penetration points in housing and cover. The actuator shall be NEMA 4, 4X with 12-position pre-wired terminal strip included for standard connections, built-in thermal overload protection, limit switches with 11 amp rating at 115 VAC, and high visibility valve position indicator. Actuator shall have a 25% duty cycle below 110 degrees F. Valves shall be equal to Apollo 82LF14501. Actuator shall be equal to Apollo AE60010 115 volt.

PART 3 - EXECUTION

3.1 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. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

## 3.2 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

## 3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

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

1. Shutoff Service: Ball, butterfly, or gate valves.
2. Throttling Service: Globe or ball valves.
3. Balancing Service: Circuit setter.
4. Pump Discharge: Spring-loaded, lift-disc or wafer check valves.

## 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 125, bronze disc.
3. Ball Valves: Two piece, regular port, brass or bronze with bronze trim.
4. Bronze Swing Check Valves: Class 125, bronze disc.
5. Bronze Gate Valves: Class 125, RS.
6. Bronze Globe Valves: Class 125, bronze disc.

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

1. Iron Valves, NPS 2-1/2 to NPS 4: flanged ends
2. Iron Swing Check Valves: Class 125, metal seats.
3. Iron Gate Valves: Class 125, OS&Y.
4. Iron Globe Valves: Class 125.

END OF SECTION 220523