SECTION 23 05 23

GENERAL-DUTY VALVES FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes valves for building services piping.

1.2 REFERENCES


B. ASME B16.3 (American Society of Mechanical Engineers) - Malleable Iron Threaded Fittings.

C. AWS (American Welding Society) - Welding and Brazing Qualifications.

D. MSS SP-67 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Butterfly Valves.

E. MSS SP-71 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Cast Iron Swing Check Valves, Flanged and Threaded Ends.

F. MSS SP-78 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Cast Iron Plug Valves, Flanged and Threaded Ends.

G. MSS SP-80 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Bronze Gate, Globe, Angle and Check Valves.


I. MSS SP-110 (Manufacturers Standardization Society of the Valve and Fittings Industry) - Ball Valves Threaded, Socket-Welding, Solder

1.3 SUBMITTALS

A. Section 01 33 00: Submittal Procedures.
1.4 CLOSEOUT SUBMITTALS

A. Section 01 77 00 – Closeout Procedures.

B. Project Record Documents: Record actual locations of valves.

C. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes and laws as well as the Stanford University Facilities Design and Construction Standards and all Stanford University Contract documents.

B. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store and protect equipment.

B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Store and protect equipment.

B. Do not install valves underground when bedding is wet or frozen.
1.9 WARRANTY

A. Section 01 77 00 – Closeout Procedures: Product warranties and product bonds.

B. Provide five year manufacturer warranty for valves excluding packing.

1.10 EXTRA MATERIALS

A. Section 01 77 00 – Closeout Procedures: Spare parts and maintenance products.

B. Supply two packing kits for each size valve.

PART 2 - PRODUCTS

2.1 GATE VALVES

A. Up To and Including 2 inches:

   1. Construction: Bronze body, bronze trim, screwed union bonnet, rising stem, solid wedge disc, alloy seat rings, threaded ends.

B. Over 2 inches:

   1. Construction: Iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends.

2.2 GLOBE OR ANGLE VALVES

A. Up To and Including 2 inches:

   1. Construction: Bronze body, bronze trim, screwed bonnet, rising stem and hand-wheel, renewable composition disc and bronze seat or renewable plug disc and stainless steel seat ring, threaded ends.

B. Over 2 inches:

   1. Construction: Iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, rotating plug-type disc with renewable seat ring and disc, flanged ends.
2.3 BALL VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze two piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, threaded ends with union.

B. Over 2 inches:

1. Construction: Steel and iron body, nickel or chrome plated steel body, steel stem, Buna-N seals.

2.4 PLUG VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze tapered plug, full port opening, non-lubricated, Teflon packing, threaded ends.

2. Operator: One plug valve wrench for every ten plug-valves with a minimum of one wrench.

B. Over 2 inches:

1. Construction: Cast iron body and plug, full port opening, pressure lubricated, teflon packing, flanged ends.

2. Operator: Each plug valve with a wrench with setscrew.

2.5 BUTTERFLY VALVES

A. Body: Cast or ductile iron with resilient replaceable EPDM seat, wafer or lug ends, extended neck.

B. Disc: Chrome plated ductile iron.

C. Operator: Infinite position lever handle with memory stop.

2.6 SWING CHECK VALVES

A. Up To and Including 2 inches:

1. Construction: Bronze body, bronze trim, bronze rotating swing disc, with composition disc, threaded ends.
B. Over 2 inches:

1. Construction: Iron body, bronze trim, bronze or bronze faced rotating swing disc, renewable disc and seat, flanged ends.

2.7 SPRING LOADED CHECK VALVES

A. Construction: Iron body, bronze trim, split plate, hinged with stainless steel spring, resilient seal bonded to body, wafer or threaded lug ends.

2.8 FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe 2 inches and Under:

1. Ferrous Piping: 150 psig malleable iron, threaded.
2. Copper Pipe: Bronze, soldered joints.

B. Flanges for Pipe Over 2 inches:

1. Ferrous Piping: 150 psig forged steel, slip-on.
2. Copper Piping: Bronze.

C. Gaskets: 1/16-inch thick pre-formed neoprene.

D. Grooved and Shouldered Pipe End Couplings:

1. Housing Clamps: Malleable iron, galvanized outdoors, to engage and lock designed to permit some angular deflection, contraction, and expansion.
2. Sealing Gasket: C-shape elastomer composition for operating temperature range from -30 degrees F to 230 degrees F.

E. Accessories: Steel bolts, nuts, and washers.

F. Connections: Brass transitions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify Piping System is ready for installation.
3.2 INSTALLATION

A. Provide brass transitions wherever jointing dissimilar metals.

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

C. Use grooved mechanical couplings and fasteners only in accessible locations.

D. Install unions downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.

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

F. Install globe, ball, or butterfly valves for throttling, bypass, or manual flow control services.

G. Provide spring loaded check valves on discharge of water pumps.

H. Provide plug valves in natural or propane gas systems for shut-off service.

I. Provide flow controls in water re-circulating systems where indicated.

J. Use butterfly valves in heating, chilled and condenser water systems interchangeably with gate and globe valves.

K. Use only butterfly valves in chilled and condenser water systems for throttling and isolation service.

L. Use lug end butterfly valves to isolate equipment.

M. Use all bronze valves for fuel oil service.

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

3.3 INTERFACE WITH OTHER PRODUCTS

A. Conform to applicable piping specification for hangers and insulation.

END OF SECTION