PART 1 - GENERAL

1.1 SUMMARY

A. Section includes valves for building services piping.
B. Valve handle extensions that allow for continuous insulation thickness shall be provided for all valves on insulation piping.
C. Provide isolation valves at automatic control valves.
D. Provide strainer ahead of all globe or cage-trim control valves.
E. Provide bypass globe valve around steam and HTHW control valves.
F. Provide shut-off valves on supply and return at each floor’s main branch off of building risers in accessible, marked locations.
G. Provide drain valves (ball) at all equipment connections and at all low points in the piping system to allow for complete drainage. Drain connections shall have full-size threaded hose end with cap/plug. For piping up to 4-inches, provide minimum ¾-inch valves. For piping between 4 and 10 inches, provide minimum 1-1/2 - inch valves. For piping greater than 10-inches, provide 2-inch valves.
H. Plug valves, both lubricated and non-lubricated types, are not acceptable for HVAC system applications.

PART 2 - PRODUCTS

2.1 GATE VALVES

A. Up through 2 inches: Class 125, bronze body, bronze trim, rising stem, hand-wheel, inside screw, solid wedge disc, solder ends.
   1. HTHW Service: OS & Y, steel body, threaded or socket weld ends, Class 600.
B. 2-1/2 inches and Larger: Class 125, iron body, bronze trim, outside screw and yoke, hand-wheel, solid wedge disc, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.
   1. HTHW Service: OS & Y. steel body, flanged or welded ends; Class 300.


2.2 GLOBE VALVES

A. Up to and including 2 inches: Class 250, bronze body, bronze trim, hand-wheel, bronze disc, threaded ends. Use Teflon discs where piped fluid requires it.

B. 2-1/2 inches and Larger: Class 300 iron body, bronze trim, hand-wheel, outside screw and yoke, renewable bronze plug-type disc, renewable seat, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor. The pressure class of the valves shall equal to or greater than the rating of the piping system into which it is installed.

C. All globe valves shall have gland followers.

2.3 BALL VALVES

A. Construction, 2 inches and Smaller: Class 250 minimum or as required for service, bronze, two piece body, chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, and lever handle with balancing stops. Where ends are soldered, provide union for ease of disassembly or replacement.

B. Low Pressure Steam (≤ 15 Psig), low pressure condensate and all other normal non-corrosive services, ball valves shall be:

1. Body Bronze
2. Body Style Standard Port
3. Trim 316 Stainless Steel Ball & Stem.
5. Seat Working P/T 300 psig@250°F Minimum
6. Body Working P/T 300 psig@300°F Minimum
7. WOG Rating 300 psig Minimum
8. Steam Rating 150 psig Minimum.
9. Manufacturers: Apollo, Lance, Jamesbury, Watts

C. Ball Valves, High Pressure Steam (>15 PSI) Shall Be:

1. Body Carbon or 316 Stainless Steel
2. Body Style Standard Port, butt or socket welded
3. Trim 316 Stainless Steel Ball & Stem.
4. Seat High Temp. RTFE, double seal
5. Seat Working P/T 100 psig@450°F Minimum
6. Body Working P/T 750 psig @100°F Minimum
7. ROG Rating 400 psig Minimum.
8. Steam Rating 100 psig@450°F Minimum
9. Manufacturers: Apollo, Lance, Jamesbury, Watts
2.4 BUTTERFLY VALVES

A. General Service: Construction 2-1/2 inches and larger: 200 psi CWP, cast or ductile iron body. Nickel-plated ductile iron disc, resilient replaceable EPDM seat, wafer ends, extended neck, infinite position lever handle with memory stop.

B. CHW, CW and MTHW Service: High-performance. Construction: Lug-style carbon steel body, 316 stainless steel eccentric disc, offset 17-4 stainless steel shaft and filled PTFE soft seat, Class 150 (CHW) and Class 300 (MTHW). Manufacturers: Flowseal, Bray, Neles-Jamesbury, DeZurik, Posi-Seal, or Milwaukee.


D. Furnish gear operators for valves 8 inches and larger, and chain-wheel operators for valves mounted over 8 feet above floor.

2.5 FLOW CONTROLS

A. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet, blow-down/back-flush drain.

B. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control.

2.6 SWING CHECK VALVES

A. Up To and Including 2 inches (80 mm):
   1. Class 125 minimum or as required for service, bronze body and cap, bronze swing disc with rubber seat, solder ends.
   2. HTHW Service: Class 600, steel body. Threaded ends.
   3. Steam Service: Class 300, malleable iron with stainless-steel 20 mesh strainer

B. 2-1/2 inches and Larger:
   1. Class 250 minimum or as required for service, iron body, bronze swing disc, renewable disc seal and seat, flanged ends.
   2. HTHW Service: Class 300, steel body, flanged ends.
2.7 SPRING LOADED CHECK VALVES
A. Construction: Class 250 minimum or as required for service, iron body, bronze trim, stainless steel springs, bronze disc, Buna N seals, wafer style ends.

2.8 WATER PRESSURE REDUCING VALVES
A. Up to 2 inches:
B. Over 2 inches:
   1. Construction: MSS SP-85, cast iron body, bronze fitted, elastomeric diaphragm and seat disc, flanged.

2.9 RELIEF VALVES
A. Construction: Bronze body, Teflon seat, steel stem and springs, automatic, direct pressure actuated.
B. Construction: Bronze body, Teflon seat, steel stem and springs, automatic, direct pressure actuated at maximum 60 psi, UL listed for fuel oil, capacities certified and labeled.
C. Construction: Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated temperature relief for water service maximum 210 °F, capacity certified and labeled.

PART 3 – EXECUTION
3.1 APPLICATIONS
A. Use Ball valves for shut-off service 2-inches and under on chilled, condenser and hot water systems. Over 2-inches, use High-performance butterfly valves.
B. Use Ball valves for shut-off service on steam systems.
C. Use Spring-loaded silent check valves on all pump discharges where triple-duty valves are not used.
D. Do not use triple-duty valves when pumps have variable-speed drives.
E. Steam relief valve vent lines shall terminate outside of building.
END OF SECTION