PHYSICAL FACILITIES
2020 Consultant’s Handbook
Division 33 Utilities
6301 Steam and Condensate Valves

1 General
1.1 Materials and installations shall be in accordance with the following industry and association standards.
- ASME B16.5 Pipe Flanges and Flanged Fittings
- ASME B16.20 Metallic Gaskets for Pipe Flanges
- ASME B16.34 Valves – Flanged, Threaded & Welding End
- ASME B31.1 Power Piping Code
- ASTM Materials
- AWS Welding

1.2 Valve Design Conditions:
1.2.1 Valves shall be same size as pipe.
1.2.2 All valves shall open counterclockwise.
1.2.3 All main line, branch line and isolation valves on steam and condensate systems shall be gate valves.
1.2.4 Globe valves shall only be used for warm-up bypass lines and where specifically instructed by Utilities Engineering.
1.2.5 Ball valves shall be used for blow-down on drip legs and strainers.
1.2.6 All instrument connections, drains, etc. shall be gate valves unless otherwise instructed by Utilities Engineering.
1.2.7 Consult Utilities Engineering if an application is believed to be outside of these conditions.

2 Gate Valves ½” to 2”
2.1 ASME B16.34 Class 800, ASTM A105 Forged Steel Gate Valve, Union or Bolted Bonnet, Conventional Port, Rising Inside Screw Stem, Solid Wedge Disc, Hard Faced Seats, Spiral Wound Gasket Between Body and Bonnet, Socket Weld Ends.

Note: ASME B16.34 does not specifically list Class 800 valves, however it does allow interpolation between classes, and Class 800 has become an industry standard for valves 2” and smaller. These valves meet all the requirements of ASME B16.34 and have a pressure rating between Class 600 and Class 900.
2.2 Packing gland shall be single-threaded-nut style.

3 Gate Valves 3” to 18”
3.1 Gate valves shall be designed to seal with flow in either direction.
3.2 ASME B16.34 Class 300, ASTM A216 Grade WCB Cast Steel Gate Valve, Bolted Bonnet, OS & Y, Flexible Disc, Hard Faced Disc and Seats, Butt Weld, Chain operator where noted.

Exception: 6” – 18” Low Pressure Steam (LPS) & Condensate (LPSR) systems may utilize the following valve.
3.3 ASME B16.34 Class 150, ASTM A216 Grade WCB Cast Steel Gate Valve, Bolted Bonnet, OS & Y, Flexible Disc, Hard Faced Disc and Seats, Butt Weld, Chain operator where noted.

3.4 If there are clearance concerns in project design consult with Utilities Engineering.

4 Butterfly Valves 3” to 18”
4.1 Butterfly valves shall be triple offset design providing bi-directional bubble-tight seal.
4.2 ASME B16.34 Class 300 Triple Offset Butterfly Valve, Bolted Bonnet, Metal-to-Metal Seats, Butt Weld, Quarter-Turn Operator.

Exception: 6” – 18” Low Pressure Steam (LPS) systems may utilize a Class 150 valve.

5 Globe Valves ½” to 2”
5.1 ASME B16.34 Class 300, ASTM A105 Forged Steel Globe Valve, rising stem, bolted or union bonnet, inside screw stem (ISS), plug type, hard faced, SS trim, socket weld ends

6 Check Valves ½” to 2”
6.1 ASME B16.34 Class 300, ASTM A105 Forged Steel Check Valve, swing type, bolted cap, hard faced, ring joint bonnet gasket, socket weld ends

7 Ball Valves ½” to 2”
7.1 ASME B16.34 Class 300, ASTM A216 Grade WCB, Cast Steel Ball Valve, chrome plated steel ball, reinforced TFE packing, bearing and seats, blow-out proof stem, gland nut, zinc plated
lever, socket weld ends

8 Three-Way Test Valves for Steam Traps
½” to 2”

8.1 High pressure (HPS), medium pressure steam (MPS), and trapped condensate (TC) systems utilize the following valve and LP traps.

8.2 ASME B16.34 Class 300, ASTM A216 Grade WCB, Three-Way Cast Steel Ball Valve, Chrome plated steel ball, reinforced TFE packing, bearing and seats, blow-out proof stem, gland nut, zinc plated lever, socket weld ends

9 Installation Guidelines

9.1 All valves on buried lines shall be installed in a valve pit.

9.2 All valves shall be fully closed and fully opened twice by hand before installation. Any valve that is not operable by hand shall not be accepted and not installed.

9.3 After installation all valves shall be left in the open position.