HIGH PRESSURE (125) PSIG STEAM
MEDIUM PRESSURE (45) PSIG STEAM
LOW PRESSURE (15) PSIG STEAM

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DESIGN REQUIREMENTS

REFERENCE ELECTRICAL SECTION FOR ELECTRICAL INFORMATION

STEAM

Piping

Piping is sch.40, ERW (Electric Resistance Weld), black, steel pipe.
Piping two-inch (2") and smaller is threaded or welded.
Piping two-and-one-half-inch (2-1/2") and larger is welded only.

Valves

300#, flanged, gate, cast steel with rising stem (OS&Y).
Valves two-and-one-half-inch (2-1/2") and larger are 300#, flanged. HIGH PREFORMANCE
butterfly valves, lug-type, with manual gear operator and handwheel.
Valves in buildings are operated from floor areas.
Valves are positioned horizontally with valve stem along the horizontal as needed. Valves are provided with chain-wheel operators when handwheel are over 6 ft. from the floor.
No ladders, platforms, scaffolds, etc. are required to operate valves.

Flanges

Flanges are 300#, steel, with raised-face, weld neck

Pipe Fittings

3000# forged steel, threaded.
Fittings two-and-one-half-inch (2-1/2") and larger are sch.40, steel, welded only. All small branch connections shall be made with forged “O-Let” reinforced type fittings.

Fasteners

Bolts are grade-five, cadmium-plated, hex-head. Certification of grade-five quality required in writing.

Nuts are grade-five, cadmium-plated, hex, extra-heavy. Certification of grade-five quality required in writing.

Gaskets

Gaskets are one-sixteenth-inch (1/16") thick, Flange gaskets cover flange mating surface from flange ID to inside of bolt circle.

Gaskets are not treated with any anti-seize compound or similar product.

CONDENSATE

Piping

Piping is sch.80, A-106 seamless ERW (Electric Resistance Weld), black, steel pipe.

Piping two-inch (2") and smaller is threaded or welded.

Piping two-and-one-half-inch (2-1/2") and larger is welded only.

Valves

Valves two-inch (2") and smaller are 150#, Valves two-and-one-half-inch (2-1/2") and larger are high performaance.

Butterfly valves, 150#, lug-type, metal seated, with manual gear operator and handwheel.

Valves in buildings are operated from floor areas.

Valves are positioned with the stem in the horizontal direction.

Valves are provided with chain-wheel operators when handwheels are greater than 6 ft. from floor.

No ladders, platforms, scaffolds, etc. are required to operate valves.

Flanges

Flanges are 150#, steel, with raised-face, weld neck.

Flanges two-inch (2") and smaller are threaded.

Pipe Fittings

Fittings two-inch (2") and smaller 3000# forged steel, threaded;

Fittings two-and-one-half-inch (2-1/2") and larger are sch.80 welded only.

All small branch connections shall be made with forged “O-Let reinforced type fittings not stub in.

Fasteners

Bolts are grade-five, cadmium-plated, hex-head.

Nuts are grade-five, cadmium-hex, extra-heavy.

Gaskets

Gaskets are one-sixteenth-inch (1/16") thick, Flange gaskets cover flange mating surface from flange ID to inside of bolt circle.

Gaskets are not treated with any anti-seize compound or similar product.

STEAM TRAPPING

Collecting leg

Collecting legs meet University design, which meets or exceeds current ASHRAE recommendations. All components are welded.

Collecting legs diameters are to match main diameter up to 4". For all collecting legs on mains above 4", collection diameter shall be the next smaller commercial size pipe.

Collecting legs are minimum 240" long, as measured from center of horizontal pipe, to bottom of weld cap.

Collecting legs are sch.80 pipe, with sch.80 weld cap.

Collecting legs include one (1) two-inch (2-") 3000# thread-o-let for purge valve.

Collecting lets include one (1) three-quarter-inch (3/4") 3000# thread-o-let for steam trap assembly of thread-o-lets are six-inches (6") from bottom of sch.80 weld cap, unless otherwise specified.

Collection Legs shall be provided no greater than 400 ft. apart for a single sloped run.

Steam trap assembly (Typical)

Components of typical steam trap assembly, *in direction of flow*, are:

Steel Y" strainer, with blowdown valving.

Thermodynamic steam trap

swing check valve, brass-seated union,

valves in accordance with condensate valves described above.

All pipe fittings in accordance with condensate valves described above.

All trap discharges into condensate return shall be positioned to discharge at the center of the flow area and in the direction of the flow not perpendicular through the use of a elbow-o-let fitting at the heal of an elbow and internal diffusion stainless steel pipe.

Pipe size is minimum three-quarter-inch (3/4").

Exception: When steam trap required is smaller than three-quarter-inch (3/40"),

One (1) reducing fitting and one (1) reduced pipe size nipple is used on the inlet and outlet of the steam trap. All other components will be three-quarter-inch (3/4") pipe size minimum.

PRESSURE REDUCING STATIONS

Pressure Reducing Valves (PRV)

Pressure reducing valves two-inch (2") and smaller are threaded, air operated, steel, flanged.
Pressure reducing valves two-and-one-half-inch (2-1/2") and larger are flanged, steel, air operated.
Packless Construction, S.S. Wetted parts. 100.1
Externally air loaded
All building steam service shall provide redundant PRVS sized at 100% capacity.
Sensing line to be rigid and located per manufacturers recommendations.

Valves

Shutoff valves are installed at the inlet and outlet of each PRV for isolation purposes, including single PRV applications.
Inlet shutoff valve size is equal to supply piping size upstream of reducer.
Outlet shutoff valve size is equal to discharge piping size downstream from reducer. Valves shall be in accordance with steam valve described above.

Strainers

One Y type strainer is installed immediately adjacent to PRV inlet.
Strainers two-inch (2") and smaller are threaded or flanged, 300# cast steel.
Strainers two-and-one-half-inch (2-1/2") and larger are flanged, 300# cast steel.
Strainer mesh is suitable for steam service.
Each strainer shall be piped with a blowoff valve w/ a closure cap.

Reducers

Pipe size reducing fittings are eccentric at the PRV inlet (piping is straight on bottom).
Pipe size reducing fittings are eccentric or concentric at the PRV outlet.

Steam trapping and blowdowns

One typical steam trap assembly and one strainer blowdown is provided on the strainer blowdown port.

Steam trap assembly is connected to a vented flash tank, and is not connected to any high pressure condensate main.

Blowdown piping terminates at a floor drain or other drain so that strainer blowdown operation does not result in water on the floor.

Check valve selection, and location to be per manufacturers installation requirements for secondary piping.

Steam Bypass Line is not required.

Gauges

Gauges are rated for steam service and are installed with siphon tubes.

Gauge assemblies are installed in three-quarter-inch (3/4") 3000# thread-o-lets.

High and low pressure gauge connections are within five-feet (5) of the PRV.

High pressure gauges are 4-1/2" face minimum, 1/4" bottom mount, 0-200psi.

Meduim pressure gauges are 4-1/2" face minimum, 1/4" bottom mount, 060psi.

PREFERRED MANUFACTURERS

Bolts and Nuts

Lake Erie **(NO ALTERNATES ARE ACCEPTABLE)**

Gaskets

Garlock (Gylon, Fawn type, #3500)**(NO ALTERNATES ARE ACCEPTABLE)**

Gate Valves

Cast Steel- Velan, Stockham, Williams

Butterfly Valves High Performance Lug Type only-

Jamesbury, Dezurick, Watts

Steam Reducing Valves
Air Loaded only- Leslie

Steam Separators
Sarco, Mueller, Yarway

Steam Traps
Thermodynamic type- Sarco TD52*12”L preferred if this selection fits application and capactiy, Armstrong, Yarway
Bucket type- Sarco, Armstrong, Hoffman
Float and Thermostatic type- Sarco, Armstrong, Hoffman

Pipe Unions
Single or Double-seated brass only- Dart, Stockham, Ward

Thermometers
Ashcroft or March-Trerice

DO'S AND DON'TS

DO'S: N/A

DON'TS: Do not substitute alternate bolts and nuts
No cast bronze or cast iron shall be used in steam service

-- END OF SECTION --