# GENERAL

## SECTION INCLUDES

### Pipe and pipe fittings for:

#### Interior steam, condensate, and blowdown piping.

### Valves

## REFERENCE SECTION 23 05 00 FOR THE FOLLOWING:

### References.

### Submittals.

### Project record documents.

#### Record actual locations of valves.

### Operation and maintenance data.

### Qualifications.

### Delivery, storage and handling.

## SYSTEM DESCRIPTION

### Where more than one piping system material is specified, ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

### Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.

### Use non‑conducting dielectric connections whenever jointing dissimilar metals.

### Provide pipe hangers and supports in accordance with ASTM B31.9 and MSS SP69 unless indicated otherwise.

### Use gate or ball as shown on plans.

## REGULATORY REQUIREMENTS

### Conform to ASME B31.9 code for installation of piping system.

### Welding Materials and Procedures: Conform to ASME SEC 9 and applicable state and local labor regulations.

### Provide certificate of compliance from authority having jurisdiction indicating approval of welders.

## ENVIRONMENTAL REQUIREMENTS

### Do not install underground piping when bedding is wet or frozen.

# PRODUCTS

## STEAM PIPING AND STEAM VENTS

### Steel Pipe: ASTM A53, Schedule 40, Grade B seamless, black.

#### Fittings: ASTM B16.3, Class 150, Schedule 40, cast iron, threaded (2” and smaller); ASTM A234, ANSI B16.9, butt welding carbon steel fittings, Schedule 40, standard weight (2-1/2” and larger). All elbows shall be long radius type unless otherwise noted.

#### Joints: Threaded (2” and smaller), or AWS D1.1, welded (2-1/2” and larger).

## STEAM CONDENSATE PIPING

### Steel Pipe: ASTM A53, Schedule 80, Type B seamless, black.

#### Fittings: ASTM B16.3, Class 150 extra heavy weight, malleable iron; ASTM A234 forged steel welding type fittings class 125, extra heavy weight.

#### Joints: Threaded (2” and smaller), or AWS D1.1, welded (2-1/2” and larger).

## BLOWDOWN PIPING

### Steel Pipe: ASTM A53, Schedule 80, Type B seamless, black.

#### Fittings: ASTM B16.3, Class 150 extra heavy weight, malleable iron; ASTM A234 forged steel welding type fittings class 125, extra heavy weight.

#### Joints: Threaded (2” and smaller), or AWS D1.1, welded (2-1/2” and larger).

## UNIONS, FLANGES, AND COUPLINGS

### Unions for Pipe 2 Inches and Under:

#### Ferrous Piping: 150 psig malleable iron, threaded.

### Flanges for Pipe Over 2 Inches:

#### Ferrous Piping: 150 psig forged steel, slip‑on.

#### Provide flange gaskets suitable for steam pressure class.

### Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

## BALL VALVES

### Up To and Including 1-1/2 Inches:

#### Carbon steel three piece body, 150 psi saturated steam, pressure-balanced stainless steel full port ball, stainless steel trim and hardware, teflon seats and packing, lever handle with locking stops, socket weld ends, Apollo 83A-240 or equivalent. Add valve stem extensions to all valves that will be installed in insulated piping systems.

## GATE VALVES

### Up To and Including 2 Inches:

#### Bronze body, bronze trim, union bonnet, rising stem, lockshield stem handwheel, inside screw with backseating stem, solid wedge disc, alloy seat rings, solder or threaded ends, union on one end, Class 150. Add valve stem extensions to all valves that will be installed in insulated piping systems.

### Over 2 Inches:

#### Iron body, bronze trim, bolted bonnet, outside stem and yoke, handwheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged or grooved ends, Class 150.

#### Chainwheel: On valves 4” and larger and installed higher than 8-feet above finished floor ,provide sprocket rim, brackets, and chain compatible with valve. Add valve stem extensions to all valves that will be installed in insulated piping systems.

## SWING CHECK VALVES

### Up To and Including 2 Inches:

#### Bronze body, bronze trim, bronze rotating swing disc, with composition disc, solder or threaded ends.

### Over 2 Inches:

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

## SPRING LOADED CHECK VALVES

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

# EXECUTION

## PREPARATION

### Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

### Remove scale and dirt on inside and outside before assembly.

### Prepare piping connections to equipment with flanges or unions.

### Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

## INSTALLATION

### Install in accordance with manufacturer's instructions.

### Install steam and condensate piping in accordance with ASME B31.9.

### Route piping in orderly manner, parallel to building structure, and maintain gradient.

### Install piping to conserve building space, and not interfere with use of space.

### Group piping whenever practical at common elevations.

### Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

### Refer to Section 23 05 29 and Section 23 05 48 for installation of supports and hangers.

### Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings. Refer to Section 23 07 19.

### Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain bottom of pipe level.

### Install unions on both sides of each control valve and on one side of all other valves. Install unions at final connections to each piece of equipment. Unions are not required at flanged valves or equipment.

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

### Install chainwheel operators on valves 4” and larger that are installed 8-feet above finished floor or greater. Extend chain down to maximum 5-feet above finished floor.

### Drip legs shall be the same size as the line to which they are connecting (for pipe sizes 4” and under). For pipe sizes 6” and greater, drip legs shall be ½ the size of the line to which they are connecting, but no less than 4”.

### Steam pipe connections shall be made to the top of the supply pipe to which they are connecting. Use 45-degree elbows in lieu of 90-degree elbows where possible. Install shutoff valve at connection to main.

## SYSTEM FLUSHING, FILLING, PRESSURE TESTING AND CLEANING

### Flush, fill, pressure test and clean all new steam systems and parts of existing systems which have been altered, extended or repaired. Cleaning procedure shall include the use of a degreasing agent.

### Flush and fill systems. Clean strainers.

### Pressure Test Procedure:

#### Submit copy of Pipe Pressure Test Log provided in section 23 05 00 for each section of piping tested. Refer to 23 05 00 for general pipe pressure testing requirements (i.e., test pressure gages, inspections, etc.).

#### Leave joints including welds uninsulated and exposed for examination during the test.

#### Provide temporary restraints for expansion joints which cannot sustain the reactions due to test pressure. If temporary restraints are not practical, isolate expansion joints from testing.

#### Isolate equipment that is not to be subjected to the test pressure from the piping. If a valve is used to isolate the equipment, its closure shall be capable of sealing against the test pressure without damage to the valve. Flanged joints at which blinds are inserted to isolate equipment need not be tested.

#### Install relief valve set at a pressure no more than 1/3 higher than the test pressure, to protect against damage by expansion of liquid or other source of overpressure during the test.

#### Subject piping system to a hydrostatic test pressure in which at every point in the system is not less than 125 psig. The test pressure shall not exceed the maximum pressure for any vessel, pump, valve, or other component in the system under test.

#### After the hydrostatic test pressure has been applied for at least 12 hours, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components as appropriate, and repeat hydrostatic test until there are no leaks.

### Clean systems. Refer to Section 23 25 00 for cleaning procedure.

END OF SECTION 23 22 13