

## SECTION 15310 - FIRE PROTECTION PIPING

### City of San Diego, CWP Guidelines

#### PART 1 -- GENERAL

##### 1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing pipe materials, fittings, and valves for fire protection systems.

##### 1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

- 1. Section 15020 Pipe Support
- 2. Section 15330 Wet-Pipe Sprinkler System
- 3. Section 15365 Halon Agent Extinguishing System
- 4. Section 15375 Standpipe and Hose
- 5. Section 15380 Fire Pumps

##### 1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:

- 1. Uniform Fire Code
- 2. National Electrical Code

##### 1.4 SPECIFICATIONS AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

- 1. ANSI/ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
- 2. ANSI/ASME B16.3 Malleable Iron Threaded Fittings, Class 150 and 300
- 3. ANSI/ASME B16.4 Cast Iron Threaded Fittings, Class 125 and 250
- 4. ANSI/ASME B16.5 Pipe Flanges and Flanged Fittings
- 5. ANSI/ASME B16.9 Factory-made Wrought Steel Buttwelding Fittings
- 6. ANSI/ASME B16.11 Forged Steel Fittings, Socket-welding and Threading
- 7. ANSI/ASME B16.18 Cast Copper Alloy Solder-Joint Pressure Fittings

8. ANSI/ASME B16.22 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
9. ANSI/ASME B16.25 Buttwelding Ends
10. ANSI/ASME B36.10 Welded and Seamless Wrought Steel Pipe
11. ANSI/ASME Section 9 Welding and Brazing Qualifications
12. ANSI/ASME A135 Electric-Resistance-Welded Steel Pipe
13. ANSI/ASTM A47 Malleable Iron Castings
14. ANSI/ASTM B32 Solder Metal
15. ANSI/AWS A5.8 Brazing Filler Metal
16. ANSI/AWWA C110 Ductile Iron and Gray Iron Fittings
17. ANSI/AWWA C151 Ductile Iron Pipe, Centrifugally Cast
18. ASTM A53 Pipe, Steel, Black and Hot-Dipped, Zinc-coated Welded and Seamless
19. ASTM A120 Pipe, Steel, Black and Hot-Dipped, Zinc-coated (Galvanized) Welded and Seamless, for Ordinary Uses
20. ASTM A234 Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
21. ASTM B75 Seamless Copper Tube
22. ASTM B88 Seamless Copper Water Tube
23. ASTM B251 General Requirements for Wrought Seamless Copper and Copper-Alloy Tube
24. AWS D10.9 Specifications for Qualification of Welding Procedures and Welders for Piping and Tubing
25. NFPA 13 Installation of Sprinkler Systems
26. NFPA 14 Standpipe and Hose Systems

#### 1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Shop drawings indicating pipe materials used, jointing methods, supports, and floor and wall penetration seals.
2. Valve data and ratings.

## 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. **Delivery of Materials:** Products shall be delivered in original, unbroken packages, containers, or bundles bearing the name of the manufacturer.
- B. **Storage:** Products shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.
- C. **Coating:** Temporary protective coating shall be provided on cast iron and steel valves.

## PART 2 -- PRODUCTS

2.1 GENERAL: Valves shall bear [UL] [FM] [ ] label or marking and shall include manufacturer's name and pressure rating marked on valve body.

### 2.2 PIPE AND TUBE

- A. Pipe and tube shall comply with the following:
  - 1. Steel Pipe: [ASTM A53;] [ASTM A120;] [ANSI/ASTM A135;] [ANSI/ASME B36.10;] [black;] [galvanized;] [Schedule [ ]].
  - 2. Copper Tube: ASTM [B75;] [B88] [B251;] Schedule [ ].
  - 3. Iron Pipe: [ANSI/AWWA C151, ductile iron.] [ ].

### 2.3 PIPE FITTINGS

- A. Pipe fittings shall comply with the following:
  - 1. Steel Fittings: [ANSI/ASME B16.9, wrought steel, buttwelded.] [ANSI/ASME B16.25, buttweld ends.] [ASTM A234, wrought carbon steel and alloy steel.] [ANSI/ASME B16.5, steel flanges and fittings.] [ANSI/ASME B16.11, forged steel socket welded and threaded.]
  - 2. Cast Iron Fittings: ANSI/ASME [B16.1, flanges and fittings.] [B16.4, screwed fittings.]
  - 3. Malleable Iron Fittings: [ANSI/ASME B16.3, screwed type.] [ANSI/ASTM A47.]
  - 4. Copper Fittings: ANSI/ASME [B16.18, cast bronze, solder joint, pressure] [B16.22, wrought copper and bronze, solder joint, pressure] type.
  - 5. Ductile Iron Fittings; ANSI/AWWA C110.

### 2.4 JOINT MATERIAL

- A. Joint materials shall comply with the following:
  - 1. Solder: ANSI/ASTM B32, 95/5 alloy.
  - 2. Brazing: ANSI/AWS A5.8.

## 2.5 UNIONS, FLANGES, AND COUPLINGS

A. Unions, flanges and couplings shall comply with the following:

1. Unions: 150 psi malleable iron for threaded ferrous piping.
2. Flanges: 150 psi forged steel slip-on flanges for ferrous piping.
3. Mechanical Grooved Couplings: Malleable iron housing clamps designed to engage and lock and to permit angular deflection, contraction, and expansion; "C" shaped composition sealing gasket, steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

B. Pipe and appurtenances shall be supported In accordance with Section 15020.

## 2.6 GATE VALVES

A. Gate valves shall comply with the following:

1. Bronze, rising stem, inside screw, solid wedge.
2. Iron body, bronze trim, rising stem, OS&Y, solid wedge.

## 2.7 GLOBE [OR ANGLE] VALVES

A. Globe (or angle) valves shall comply with the following:

1. Bronze, rising stem, inside screw, renewable composition disc.
2. Iron body, bronze trim, rising stem, OS&Y, renewable composition disc.

## 2.8 CHECK VALVES

A. Check valves shall comply with the following:

1. Bronze, swing disc.
2. Iron body, bronze trim, swing disc, renewable disc and seat.
3. Iron body, bronze trim, spring loaded, renewable composition disc.

## 2.9 BUTTERFLY VALVES

A. Butterfly valves shall comply with the following:

1. Iron body, [bronze] [stainless steel] disc and stem [extended for insulation,] resilient replaceable liner seat.

## 2.10 DRAIN VALVES

A. Drain valves shall comply with the following:

1. Bronze compression stop with nipple and cap or hose thread.
2. Brass ball valve with cap and chain [3/4] [ ] inch hose thread.

## 2.11 VALVE OPERATORS

### A. Valve operators shall comply with the following:

1. For gate, globe [or angle,] and drain valves: handwheel.
2. For butterfly valves: gear operators for sizes [8] [ ] inches and larger; smaller sizes, level lock handle with toothed plate.
3. For valves located more than [7] [ ] feet from floor in equipment room areas: endless chain operated sheaves with chains extended [5] [ ] feet above floor and secured clear of walkways.

## 2.12 VALVE CONNECTIONS

### A. Valve connections shall comply with the following:

1. Valve connections shall match pipe joints and pipe sizes.
2. For copper tube, threaded solder adapters shall be provided for connection to valve.
3. Butterfly valves shall be provided with tapped lug body when used for isolating service.

## **PART 3 -- EXECUTION**

### 3.1 INSTALLATION

- A. Products shall be installed in accordance with the manufacturer's written installation instructions.
- B. Welders shall be certified in accordance with [ANSI/ASME Section 9.] [AWS D10.9.]

### 3.2 PREPARATION

- A. Pipe and tube ends shall be reamed to full inside diameter.
- B. Burrs shall be removed and plain ferrous pipe shall be beveled.
- C. Scale and foreign material, inside and outside, shall be removed before assembly.

### 3.3 INSTALLATION - PIPE

- A. Screw joint steel piping shall be installed up to and including [1-1/2] [ ] inch diameter; screw or weld [2] [ ] inch diameter piping; weld piping [2-1/2] [ ] diameter and larger, including branch connections.

[B. Mechanical grooved joints may be used instead of threaded or welded joints.]

- C. Screw joints shall be die-cut with full cut standard taper pipe threads with red lead and linseed oil or other non-toxic joint compound applied to male threads only.
- D. Threaded ends shall be coated with pipe lubricant compound.
- E. In steel piping, main sized saddle branch connections or direct connection of branch lines to mains is permitted if main is one pipe size larger than the branch for up to 6-inch mains and if main is two pipe sizes larger than branch for 8-inch and larger mains. Branch pipes shall not be projected inside the main pipe.
- F. Copper tubes shall be [brazed] [soldered].
- G. Piping shall be installed in accordance with [NFPA 13 for sprinkler systems] [.] [and] [NFPA 14 for standpipe and hose systems.]
- H. Building structural members shall not be penetrated unless indicated.
- I. Sleeves shall be installed when penetrating [footings] [floors] [and] [walls.]
- J. Pipe and sleeve penetrations shall be scaled to achieve fire resistance equivalent to fire separation required.

#### 3.4 INSTALLATION - VALVES

- A. Valves shall be installed with stems upright or horizontal, not inverted.
- B. Gate valves shall be installed for shut-off or isolating service.
- [C. Where approved, butterfly valves may be used instead of gate valves.]
- D. Drain valves shall be installed at main shut-off valves, low points of piping and apparatus.

\*\* END OF SECTION \*\*