

# Louisiana State University Design Standards

## DIVISION 22 – PLUMBING

### 1 REFERENCES

- 1.1 ANSI B31.1 Power Piping
- 1.2 ANSI B31.2 Fuel Gas Piping
- 1.3 ANSI B31.4 Liquid Petroleum Transportation Piping Systems
- 1.4 ANSI B31.9 Building Service Piping
- 1.5 ASME Boiler and Pressure Vessel Code
- 1.6 ASME Sec. 9 Welding and Brazing Qualifications
- 1.7 ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings Class 25, 125, 250 and 800
- 1.8 ASME B16.3 Malleable Iron Threaded Fittings
- 1.9 ASME B16.4 Cast Iron Threaded Fittings Class 125 and 250
- 1.10 ASME B16.18 Cast Bronze Solder-Joint Pressure Fittings
- 1.11 ASME B16.22 Wrought Copper and Bronze Solder-Joint Pressure Fittings
- 1.12 ASME B16.23 Cast Copper Alloy Solder-Joint Drainage Fittings – DWV
- 1.13 ASME B16.26 Cast Bronze Fittings for Flared Copper Tubes
- 1.14 ASME B16.29 Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings – DWV
- 1.15 ASME B16.32 Cast Copper Alloy Solder-Joint Fittings for Solvent Drainage Systems
- 1.16 ASTM A47 Ferritic Malleable Iron Castings
- 1.17 ASTM A53 Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless
- 1.18 ASTM A74 Cast Iron Soil Pipe and Fittings
- 1.19 ASTM A120 Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses
- 1.20 ASTM A234 Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
- 1.21 ASTM B32 Solder Metal
- 1.22 ASTM B42 Seamless Copper Pipe
- 1.23 ASTM B43 Seamless Red Brass Pipe
- 1.24 ASTM B75 Seamless Copper Tube
- 1.25 ASTM B88 -Seamless Copper Water Tube
- 1.26 ASTM B88 -Seamless Cast Iron Soil Pipe and Fittings
- 1.33 ASTM C700 Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
- 1.34 ASTM D1785 Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
- 1.35 ASTM D2235 Solvent Cement for Acrylonitrile - Butadiene - Styrene (ABS) Plastic P
- 1.36 ASTM D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
- 1.37 ASTM D2466 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
- 1.38 ASTM D2513 Thermoplastic Gas Pressure Pipe, Tubing and Fittings
- 1.39 ASTM D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fitti
- 1.40 ASTM D2680 Acrylonitrile-Butadiene-Styrene (ABS) Composite-Sewer Piping

- 1.41 ASTM D2683 - Socket-Type Polyethylene Fillings for Outside Diameter-Controlled Polyethylene Pipe
- 1.42 ASTM D2729 - Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- 1.43 ASTM D2751 - Acrylonitrile-Butadiene-



- 10.1.3.3.1 Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper
- 10.1.3.3.2 Joints: ASTM B32, solder, Grade 50B
- 10.1.3.4 Copper Pipe: ASTM B42
  - 10.1.3.4.1 Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper
  - 10.1.3.4.2 Joints: ASTM B32, solder, Grade 50B
- 10.1.3.5 Brass Pipe: ASTM B43, chrome plated
  - 10.1.3.5.1 Fittings: ASME B16.23, cast bronze, chrome plated.
- 10.1.3.6 Steel Pipe: ASTM A53 Schedule 40, galvanized
  - 10.1.3.6.1 Cast Iron Fittings: ASME B16.4, screwed fittings
  - 10.1.3.6.2 Malleable Iron Fittings: ASME B16.3, screwed type
  - 10.1.3.6.3 Mechanical Grooved Couplings: Malleable iron, galvanized
- 10.1.3.7 ABS Pipe: ASTM D2680 or D2751
  - 10.1.3.7.1 Fittings: ABS
  - 10.1.3.7.2 Joints: ASTM D2235, solvent weld
- 10.1.3.8 PVC Pipe: ASTM D2729
  - 10.1.3.8.1 Fittings: PVC
  - 10.1.3.8.2 Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement

## 10.2 Water Piping

- 10.2.1 Buried beyond 5' of building
  - 10.2.1.1 Cast Iron Pipe: AWWA C151
    - 10.2.1.1.1 Fittings: Ductile or gray iron, standard thickness
    - 10.2.1.1.2 Joints: AWWA C111, rubber gasket with 3/4 inch diameter rods
  - 10.2.1.2 Copper Tubing: ASTM B88, Type L, hard drawn
    - 10.2.1.2.1 Fittings: ASME B16.18, cast bronze or ASTM B16.22 wrought copper and bronze
    - 10.2.1.2

### 10.3 Storm Water Piping

#### 10.3.1 Buried beyond 5' of building

##### 10.3.1.1 Cast Iron Pipe: ASTM A74 service weight

10.3.1.1.1 Fittings: Cast iron

10.3.1.1.2 Joints: ASTM C564, neoprene gasket system or lead and oakum

##### 10.3.1.2 Copper Tube: ASTM B306, DWV

10.3.1.2.1 Fittings: ASME B16.23, cast bronze, or ASME B16.29, wrought copper

10.3.1.2.2 Joints: ASTM B32, solder, Grade 50B

##### 10.3.1.3 Concrete Pipe: ASTM C14

10.3.1.3.1 Fittings: Concrete

10.3.1.3.2 Joints: ASTM C443, rubber gaskets

##### 10.3.1.4 PVC Pipe: ASTM D3033 or D3034, SDR 35. Fittings: PVC. Joints: ASTM F477, elastomeric gaskets

#### 10.3.2 Buried within 5' of building

##### 10.3.2.1 Cast Iron Pipe: ASTM A74 service weight

10.3.2.1.1 Fittings: Cast iron

10.3.2.1.2 Joints: ASTM C564, neoprene gasket system or lead and oakum

##### 10.3.2.2 Cast Iron Pipe: CISPI 301, hub

10.3.2.1.2



10.4.1 Buried beyond 5' of building

10.4.1.1 Polyethylene Pipe: ASTM D2513, SDR 11.5

10.4.1.1.1 Fittings: ASTM D2683 or

10.9.2 Over 2" - Cast iron body and plug, non-lubricated, Teflon packing, flanged or groove ends

10.10 Butterfly Valves

10.10.1 Bronze body, stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, 10 position lever handle

10.10.2 Cast or ductile iron body, chrome plated ductile iron disc, resilient replaceable EPDM seat, grooved, or lug ends, extended neck, 10 position lever handle

10.11 Flow Controls

10.11.1 Construction - Brass or bronze body with union on inlet, and outlet, temperature and pressure test

- 13.6 Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment
- 13.7 Provide clearance for installation of insulation and access to valves and fittings
- 13.8 Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with general contractor and other trades
- 13.9 Establish elevations of buried piping outside the building to ensure minimum specified cover
- 13.10 Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding
- 13.11 Verify weldability of all structural members

Wraee ao intorsgm al02 Td[(13.)5.9 (1)11.1 (1)]T3/TT1 1 Tf0 Tc 0 Tw 2.272 0 Td( )Tj/TT0 1 Tf



- 17.2 Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing
- 17.3 Provide new water service complete with reduced pressure, double check backflow preventer and water meter with by-pass valves,