Design Standard
Facility Water Distribution Piping

Purpose:

Plumbing piping materials are an essential element of plumbing systems. This design standard has the purpose of creating a consistent application of plumbing piping material requirements throughout the East Side Union High School District, therefore achieving a standard of quality for maintenance and reliability throughout all renovation and new building projects.

Design Standard:

Design and specify work to include materials, installation and testing of pipe, tubing and fittings for complete and operable systems.

- Above ground soil, waste and vent piping within buildings, including soil stacks, vent stacks, horizontal branches, traps, cleanouts, and connections to fixtures and drains.
- Underground building drain piping including mains, branches, traps, cleanouts, connections to fixtures and drains, and connections to stacks, terminating at connection to sanitary sewers 5 feet outside foundation wall.
- Storm building drain piping from conductor piping and area drains to storm sewers 5 feet outside foundation wall.
- Domestic cold water piping.
- Domestic hot water piping.
- Domestic re-circulating water piping.
- Reclaimed water piping within buildings to 5 feet outside foundation wall.
- Schedules:

Pipe Service	Location	Material
Potable hot, cold and hot recirculation water, reclaimed water.	Above ground	Copper: L
Potable hot, cold, and hot recirculation water,	Below ground	Copper: K
Reclaimed water	Below ground	Schedule 40 PVC
Soil and waste, drainage	Above ground	CISP: No hub or service weight
Soil and waste, drainage	Below ground	CISP: No hub or service weight

Pipe Service	Location	Material
Vents	Above and below ground	CISP: No hub
Storm drains	Above ground	CISP: No hub or service weight
Storm drains	Below ground	CISP: No hub or service weight

- Steel Pipe:
  - ASTM A-53-84a, Electric Resistance Welded or Seamless, Grade B: Black, unless otherwise indicated, Schedule as specified.
  - ASTM A-135-84, Grade B: Black, unless otherwise indicated, Schedule as specified.
- Copper Tube:
  - Temper: Provide hard drawn temper.
  - Water Service: ASTM B-88, type as indicated for each service.
  - Drain, Waste, and Vent (DWV): ASTM B-306.
- Cast Iron Pipe:
  - ASTM A74, Hub-and-Spigot, service weight.
  - CISPI 301-75 Hubless (No-Hub), including coupling assembly.
- Welding Materials: Comply with Section 2-C of ASME Boiler Code, as applicable.
- Tin-Antimony Soldering Materials: ASTM B13.
- Copper-Brazed: Make brazed joints for copper tubing and fittings with code approved brazing filler alloys meeting ASTM and AWS standards and listings. Filler alloys of BCuP2 classification (e.g., "Phos-O" or "Fos-Copper") may not be used to make joints between copper tubing and cast brass or bronze fittings. Installations conform to accepted published procedures, i.e., CPC Installation Standard 3-75 and CDA Publications. Use of steel wool for cleaning tube and fittings is prohibited.
- Unions: Provide unions at all threaded connections to equipment, regulators, and controls that may have to be removed or replaced and at all points where necessary for the disassembly of piping for maintenance. Detail piping and unions to allow removal of equipment without springing pipe.
  - Steel Pipe Union: 150 PSI malleable iron, brass to iron seat, ground joint, black or galvanized to match pipe.
  - Copper Pipe Union: 200 PSI working pressure. Bronze body, solder or grooved ends. Pipes 2 inches and under use ground joint, pipes 2-1/2 inches and larger use flanged face or grooved ends.
  - Insulating Unions: 250 PSI working pressure. Pipe ends and material to match piping. Electric current below 1 percent of galvanic current. Gasket material as recommended by manufacturer. Epco or approved equal

- Escutcheons:
  - Brass material, chrome plated finish. Size sufficient to cover pipe openings through wall, floor or ceiling. Set screw or spring to secure to pipe. Coordinate opening sizes.
- Sleeves: Provide sleeves on pipes passing through concrete or masonry construction. Extend sleeve 1 inch above finished floor. Caulk pipes passing through floor with non-shrinking grout or approved caulking compound. Provide "Link-Seal" sleeve sealing system for slab on grade or exterior wall penetrations. Caulk/seal piping and ductwork passing through fire rated building assembly with UL rated assemblies. Provide fire-rated assemblies per AHJ requirements.
- Corrosion Control: Underground Steel Piping Corrosion Protection: Factory wrap un-insulated underground steel piping systems with protective coating composed of a coal-tar saturated wrapping tape over a 20 mil thick coal-tar epoxy coating, equivalent to "Republic X-Tru-Coat." Wrap joints spirally with a minimum overlap of 1/2 tape width. Extend wrap not less than 3 inches above grade. Extensions of existing piping systems will match the type of piping installed, to ensure the integrity of the corrosion protection and eliminate the need for ancillary corrosion protection systems such as cathodic devices which require long-term maintenance programs.
- Pipe Tests:
  - Make test before pipes are concealed.
  - Fill system and remove air from system at least 24 hours before test begins.
  - Correct leaks in screwed fittings by remaking the joint. Cut out leaks in welded joints and reweld; caulking is not permitted.
  - Apply test pressure with no visible leaks and no appreciable drop after the test pump has been disconnected.

Approved Manufacturers:

Not Applicable

Substitutes Allowed:

Not Applicable

Associated Design Standards and Construction Specifications

- Division 22 Plumbing Design Standards and Construction Specifications

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