DIVISION 15 - MECHANICAL

Section 15410 - Plumbing Piping And Specialties

Introduction

Piping and specialties associated with plumbing systems including:

DOMESTIC WATER SYSTEMS, SANITARY SEWER AND WASTE PIPING SYSTEMS, LABORATORY WASTE SYSTEMS, NATURAL GAS

Part 1 - General

- Refer to 15050 for common piping materials and methods.
- Single stack waste vent systems (sovent) shall not be designed into any facility.
- Refer to meter requirements (attachment to Section 15970).
- Refer to section 15990 For testing requirements.

Part 2 - Products

Pipe Schedule

Service	Size	Pipe Material	Fittings	Joints
Domestic Water (above grade)	Up to 2"	Copper Type "L" seamless Hard Drawn	Wrought Copper or Cast Brass	Non lead bearing solder
	2 ½" and larger	Copper Type "L" seamless Hard Drawn	Wrought Copper	15% Silver Brazed
Domestic Water (below grade)	All	Copper Type "K" seamless Hard Drawn	Wrought Copper	15% Silver Brazed
Low pressure Natural Gas (above grade)	Up to 2"	Schedule 40 Black Steel	Black Steel	Threaded
	2 ½" and Larger	Schedule 40 Black Steel	Black steel	Beveled Weld
Low Pressure Natural Gas (Below grade)	All	Same as above grade with sealed coating		
Drainage/Vent Piping (except Lab waste)	All	Epoxy coated Cast Iron Service weight	Epoxy coated Cast Iron	Hubless with Husky HD 2000 assemblies or UA approved equal
Sanitary Sewer/Waste below Grade	All	Epoxy coated Cast Iron Service weight	Epoxy coated Cast Iron	Hubless with Husky SD 4000 assemblies
		PVC schedule 40	PVC sch 40 DWV	Solvent weld
Sanitary Sewer/Waste Above Grade	All	Epoxy coated Cast Iron Service weight	Epoxy coated Cast Iron	Hubless with Husky SD 4000 assemblies
Laboratory Waste/Vent	All	Polypropylene	Polypropylene DWV	Fusion welded
		CPVC schedule 40	CPVC DWV	Solvent Welded

Service	Size	Pipe Material	Fittings	Joints
High Temperature waste (autoclave cage wash, etc.)	All	Duriron	Duriron DWV	Mechanical Joint

- Back Flow Prevention: Backflow prevention standards will be equal to or greater than USC's Foundation for Cross-Connection Control and Hydraulic Research Manual #9, or the newest edition printed.
- Hose Bibbs: Anti back flow Keyless in public areas.
- Wall Hydrant: Automatic-draining, anti-backflow type. Provide one operating key.
- Floor Drains: Cast iron body. Floor drains for use as area drains in exterior slab on grade shall be furnished with anchor flange. . Airgap fittings shall be cast iron or cast bronze, with fixed air gap, inlet for drainpipe or tube, and threaded or spigot outlet. Provide seepage flange at all floor drains in suspended slabs. Provide inline trap protection at all floor drains.(Proset trap guard or equal)
- Floor sinks: Acid resistant enamel coated cast iron. Strainer/grating shall be chosen appropriate for service.
- Roof Drains and Overflow Drains: Cast iron roof drain with cast metal dome strainer.
- Roof Flashing Assemblies: Construct of four pound per square foot lead (min. of 24" x 24" cut for drain and clamped at collar).

Part 3 - Execution

- Excavation for buried piping shall be graded to provide a smooth foundation throughout length of piping. Bedding with clean sand to indicated level. Dig bell holes at each pipe joint to relieve protrusions of loads and to ensure continuous bearing of pipe barrel on foundation.
- Install sanitary building drain piping at a minimum slope of 1/4” per foot (2 percent). For renovation projects connecting to existing piping/inverts, a minimum 1/4" slope shall be utilized wherever possible, but installations may reduce the slope up to a 1/8” (1 percent) in the sections where it is necessary. Notify UFS Project Manager and Engineer when (and where) slopes below 1/4" are required.
- For natural gas piping, provide dirt leg at each point of connection to equipment.
- Install cleanouts in drain piping as required by the plumbing code and at each sewer main change in direction of 90°, at minimum intervals of 50 feet for piping 4 inches and smaller and 100 foot minimum intervals for larger piping. Install cleanouts at the base of each vertical soil or waste stack. Exterior cleanouts shall be two-way.
- Extend wall cleanouts out to finished wall.
- Reduced pressure backflow preventers shall be installed at service into building, and at connections between potable and non-potable water systems.
- Reduced pressure backflow Preventer shall be installed at connection to irrigation systems.
- Install laboratory waste piping in an accessible pipeway.
- Island Venting is not to be used for laboratory waste.
- Install strainer on building potable water supply after building shut-off and prior to backflow preventor.
- Install ball valves with hose end threads for system drains.

- Water hammer arrestors to be sized according to number of fixture units and installed on all branches with quick closing devices (e.g. flush valves, solenoid valves, etc.). Quantity and location of arrestors shall be shown on the design drawings and follow Standard PDI WH 201.
- Provide floor drains for all wet areas. Floor sinks shall be used for indirect waste only. Floor sinks shall be installed with rim above finished floor.
- Ball valves to be threaded ends with downstream union.
- Top of floor drain grate shall be the lowest point on the floor and shall readily drain the entire floor.

End of Section 15410