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

<table>
<thead>
<tr>
<th>Service</th>
<th>Size</th>
<th>Pipe Material</th>
<th>Fittings</th>
<th>Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Water (above grade)</td>
<td>Up to 2&quot;</td>
<td>Copper Type “L” seamless Hard Drawn</td>
<td>Wrought Copper or Cast Brass</td>
<td>Non lead bearing solder</td>
</tr>
<tr>
<td></td>
<td>21/2 &quot; and larger</td>
<td>Copper Type “L” seamless Hard Drawn</td>
<td>Wrought Copper</td>
<td>15% Silver Brazed</td>
</tr>
<tr>
<td>Domestic Water (below grade)</td>
<td>All</td>
<td>Copper Type “K” seamless Hard Drawn</td>
<td>Wrought Copper</td>
<td>15% Silver Brazed</td>
</tr>
<tr>
<td>Low pressure Natural Gas (above grade)</td>
<td>Up to 2&quot;</td>
<td>Schedule 40 Black Steel</td>
<td>Steel</td>
<td>Threaded</td>
</tr>
<tr>
<td></td>
<td>21/2 &quot; and Larger</td>
<td>Schedule 40 Black Steel</td>
<td>Black steel</td>
<td>Beveled Weld</td>
</tr>
<tr>
<td>Low Pressure Natural Gas (Below grade)</td>
<td>All</td>
<td>Same as above grade with sealed coating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainage/Vent Piping (except Lab waste)</td>
<td>All</td>
<td>Cast Iron Service weight</td>
<td>Cast</td>
<td>Hubless with Husky SD 2000 assemblies or UA approved equal</td>
</tr>
<tr>
<td>Sanitary Sewer/Waste below Grade</td>
<td>All</td>
<td>Cast Iron Service weight</td>
<td>Cast Iron</td>
<td>Hubless with Husky SD 4000 assemblies</td>
</tr>
<tr>
<td></td>
<td>PVC schedule 40</td>
<td>PVC sch 40 DWV</td>
<td>Solvent weld</td>
<td></td>
</tr>
<tr>
<td>Sanitary Sewer/Waste Above Grade</td>
<td>All</td>
<td>Cast Iron Service weight</td>
<td>Cast Iron</td>
<td>Hubless with Husky SD 4000 assemblies</td>
</tr>
<tr>
<td>Laboratory Waste/Vent</td>
<td>All</td>
<td>Polypropylene</td>
<td>Polypropylene DWV</td>
<td>Fusion welded</td>
</tr>
<tr>
<td></td>
<td>CPVC schedule 40</td>
<td>CPVC DWV</td>
<td>Solvent Welded</td>
<td></td>
</tr>
</tbody>
</table>
### 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: 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 drain pipe 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 ¼” per foot (2 percent).
- 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.
- Anti-siphon, pressure type vacuum breakers 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