Basis of Design

This section applies to waste and storm drain piping located inside and within five feet of the building envelope.

Design Criteria

- Provide minimum 6-inches diameter side sewers.
- Provide gravity waste drains. Do not incorporate sump pumps and sewage pumps into the design without specific approval from Campus Engineering.
- Provide lead-lag sump pumps. Discuss if alarms are required with Campus Engineering.
- Indicate slope of piping on design drawings.
- Provide accessible clean-outs. Provide access doors, wall caps, removable panels, or other approved methods for access for clean-outs recessed in wall cavities.
- Provide accessible piping for laboratories, food preparation area and service area. To allow access, do not locate these areas on a slab-on-grade. If the waste piping for these areas is located above a suspended ceiling, provide accessible piping above the ceiling.
- Independently collect waste and storm water within the building and convey separately to respective sanitary sewer and storm drains outside the building. If no storm drain exists within 200 feet of the building, connect storm water (with required storm retention) to sanitary sewers outside of the building. Design the systems to accommodate future system separation and consult with Campus Engineering.
- Connect all footing drains to the storm drainage system. If connection to the storm drainage system is not practical, the footing drain may be connected to the tunnel drainage system. Do not connect footing drains to an interior sump pump.
- Connect all area drains, yard drains, roof drains, window well drains, etc. to the storm drainage system.
- Provide invert elevations and routing of sanitary sewer and storm pipes leaving the buildings. This allows future connection of waste lines from any point in the basement area.
- Connect drains from transformer vaults with oil-filled transformers and shop areas where oil is present to a City of Seattle-approved oil interceptor, discharging to a sanitary sewer.
- Limit the number of garbage disposals. When garbage disposals are necessary, connect garbage disposal waste piping to a major waste pipe with as few bends as possible. Provide accessible clean-outs in this waste pipe.
- Connect floor drains to the sanitary sewer. Provide 6-inch diameter drains for fire sprinkler system.
- Provide mechanical rooms, pipe trenches, and tunnels with floor drains.
- Provide electronic timer-type trap primers for floor and funnel drains.
- Do not connect flammable or hazardous chemical/liquid storage room floor drains to the sewer systems. Design an alternate drainage system in coordination with the Fire Code or contain in place if allowed.
- Refer to Facilities Services Design Guide – Civil – Earthwork for pipe bedding located under floor slabs.

- Due to the unstable nature of the soils East of Montlake Boulevard NE, it is recommended that all piping below slab on grade be hung from the slab rather than supported by the soil. In addition, coordinate details for pipe installation with the structural engineer on each project because the slab on grade may be a structural slab.

Design Evaluation

The following information is required to evaluate the design:

- Programming Phase: Provide utility connection locations.
- Schematic Design Phase: Provide description of fixture and pipe chases. Preliminary calculations and plumbing legend.
- Design Development Phase: Provide piping plans, design calculations, preliminary inverts and point of connections.
- Construction Document Phase: Provide riser diagrams, pipe sizes, and invert elevations of all sanitary drain lines leaving the building.

Construction Submittals

- Provide standard industry submittal requirements.

Related Sections

- Facilities Services Design Guide – Mechanical - General Requirements
- Facilities Services Design Guide – Mechanical - Plumbing
  - Waste and Drains
  - Acid and Laboratory Wastes
  - Plumbing Pressure Testing
- Facilities Services Design Guide – Mechanical - Piping, Valves & Accessories
- Facilities Services Design Guide – Mechanical - Hangers and Supports
- Facilities Services Design Guide – Mechanical - Pumps
- Facilities Services Design Guide – Mechanical - Motors and VFDs
- Facilities Services Design Guide – Mechanical - Nonstructural Component Seismic Design
- Facilities Services Design Guide – Mechanical - Identification
- Facilities Services Design Guide – Mechanical - Water Treatment and Flushing
- Facilities Services Design Guide – Mechanical - Noise and Vibration Control
- Facilities Services Design Guide – Civil – Earthwork
- Facilities Services Design Guide – Civil – Sanitary Sewer
- Facilities Services Design Guide – Civil – Storm Drainage

Products, Material and Equipment

- See Piping, Valves & Accessories section.

Installation, Fabrication and Construction

- Do not install crosses into waste piping systems.
- Connect to top of pipe and use a $^{1}/_{8}$ bend located for branch connections to food service area waste piping.
- Support waste and drainage piping crossing excavated areas on pre-cast concrete beams. Support concrete beams by the building structure and undisturbed earth.
- Provide full size clean-outs for up to 4 inches. Use 4-inch clean-outs for all piping larger than 4 inches.
- Floor drains: Provide block-outs twice the size of the drain body and infill with non-shrink grout to prevent perimeter cracking at concrete.

END OF DESIGN GUIDE SECTION