Basis of Design

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

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 Engineering Services.
- Provide lead-lag sump pumps. Discuss if alarms are required with Engineering Services.
- 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.
- Independently collect waste and storm water within the building and convey separately to respective sanitary sewer and storm drains outside the building. Investigate alternate side sewer designs to explore feasibility of eliminating backwater valve where required by code. When elimination of the backwater valve is impractical, then compare the costs of failure of one backwater valve versus installation of two redundant backwater valves in series.
- 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.
- Provide 6-inch diameter drains with 36-inch high standpipe for the fire sprinkler system drain termination.
- Provide 6-inch diameter drains with standpipe as high as practical for pressure relief valve terminations.
- 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.
Show the location of cleanouts on the mechanical and architectural drawings.

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.

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.
- Specify full size clean-outs for up to 4 inches. Use 4-inch clean-outs for all piping larger than 4 inches.
- Floor drains: Slope floors to floor drains. Specify block-outs twice the size of the drain body and infill with non-shrink grout to prevent perimeter cracking at concrete.