

## **PART 1 – GENERAL**

These standards apply to the installation of sanitary, waste and storm piping system within the building and to a point five (5) feet outside the building.

### **1.01 DESIGN CRITERIA**

#### **A. Drawings and Specifications:**

1. Include drain schedules and locations.
2. Include riser diagrams (Waste and Vent) and show Waste Drainage Fixture Units (DFU) for each pipe section shown on the diagrams.
3. Include riser diagrams (Storm) and show roof area (in square feet) served for each pipe section shown on the diagrams.
4. Indicate invert elevations of all sanitary waste piping and storm drain piping leaving the building and at existing piping being connected.
5. Show acceptable slope for all piping.  
Indicate where piping is from and routing to for all piping on drawings.

#### **B. Design:**

1. Piping: Main sanitary waste and storm piping system should be sized with 10 to 15-percent extra capacity at peak flow conditions. Vertical Mains serving public restrooms with more than ten fixtures shall be six inches minimum. Service Sinks, Floor Drains, Floor Sinks and buried waste shall be 2” minimum if serving no more than one fixture and 4 inch minimum for up to three fixtures – buried mains shall be six inches minimum. Rain water leader should be 4-inch minimum.
2. Concealed plumbing components shall have access doors indicated on drawings.
3. Grading: Provide a minimum grade of 1/4-inch per foot Where minimum 1/4-inch per foot slope cannot be achieved, alert F&I to discuss options.
4. Install main vertical sanitary waste stacks with provisions for expansion and extend full size to roof line as vents.
5. Provide above grade drains with seepage pan. Where installed in slabs with waterproof membrane, provide with clamping collar. Provide adapters on drains suitable for anchoring to construction. Trap and vent all drains.

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6. Trap Primers: Install automatic trap primers at all floor drain and floor sink locations, and other fixtures subject to infrequent use. Trap primer piping below grade shall be copper type K.
  7. Floor drains shall connect to the sanitary waste.
  8. Kitchens, Restrooms or similar type usage: Provide 40 mil thick waterproof membrane extended up minimum 4" at perimeter walls. For renovation areas, provide minimum 5 feet by 5 feet 40 mil membrane at floor drain.
  9. Mechanical Rooms, pipe trenches, tunnels and other areas with piping shall be equipped with floor drains.
  10. Provide cleanouts at a maximum distance of every 50 feet and install at all locations required by code and to permit cleaning of all sewer piping. Provide cleanouts full size of pipe, but not larger than 4-inch. Close cleanout openings with brass screw plugs. Where cleanouts occur in floor, install a brass ferrule complete with a screwed brass cover, flush with floor.
  11. All above-grade pipes, valves, clean outs, particularly waste piping must be accessible for maintenance. Where recessed in wall cavities provide removable access panels or other approved methods for access.
  12. Invert elevations of all sanitary sewer lines leaving the buildings shall be of sufficient depth to permit future connection of a waste line from any point in the lowest level of the building.
  13. Food service and kitchen waste shall be collected separately from sanitary building waste and routed through a Port of Seattle approved grease interceptor (in accordance with UPC Appendix H).
  14. Crosses shall not be used in waste piping.
  15. All area drains, yard drains, window well drains and the like shall be connected to the storm sewer drain system unless located on the ramp or AOA areas served by the IWS system, then they will be connected to the IWS system.
  16. Footings shall have footing drains connected to the storm sewer drain system. Footing drains shall not be connected to an interior sump pump.
  17. Testing Requirements: Subject all work to hydrostatic test of 10-foot head of water. Obtain approval for all work or portions of work as tested, in writing, prior to covering or concealment in any manner. Owner shall witness testing. Document hydrostatic test results (including pipe segments tested, date of test,

name of testing company, etc.) and submit an electronic copy with closeout documents.

18. Do not use plastic pipe (ABS, CPVC, PE, PVC) within the building envelope or air admittance valves.

## **PART 2 - PRODUCTS**

### **2.01 PIPE AND FITTINGS - UNDERGROUND**

#### A. Sanitary Waste & Vent

1. Standard weight cement mortar lined zinc coated Ductile Iron Hub and Spigot with asphaltic topcoat. Pipe shall conform to ANSI/AWWA C151/A21.5 and asphaltic outer coating to ANSI/AWWA C151/A21.51. Joints shall conform to ANSI/AWWA C111/A21.11, cement mortar linings to ANSI/AWWA C104/A21.4 and fittings to AWWA C153 or C110.

#### B. Kitchen Waste & Vent

1. Standard weight epoxy-lined and epoxy coated cast iron hub and spigot.

### **2.02 PIPE AND FITTINGS - ABOVEGROUND**

#### A. Sanitary Waste & Vent

1. Standard weight hubless cast iron per CISPI 301, long pattern cast iron fittings. Couplings shall be clamp All Hi-TORQ 125 .024 inch type 304 stainless steel housing with neoprene rubber sleeve gasket and type 304 stainless steel clamps heavy duty CISPI 310 shielded stainless steel couplings. ASTM C1540 assembly of type 304 stainless steel shield 0.15" thick minimum, stainless steel fasteners, type 304 stainless steel bands and rubber sleeve with integral center pipe stop in conformance with ASTM C564. Couplings shall have 4 bands for pipe up to 4" and 6 bands for pipes over 4". Anaco Husky SD-4000, Mission Rubber HW Series, Tyler Wide Body Series, or approved equal.

#### B. Kitchen Waste & Vent (all waste from kitchens, food prep, concessions areas)

1. Manufacturers: Blucher, Josam, or equal.
2. Pipe shall be schedule 20 AISI Type 304 or 316 stainless steel with manufacturer's stainless steel fittings and EPDM seals. Type 304 welded stainless pipe is also acceptable.

- C. Copper Drainage Tube: Type DWV, ASTM B306 Copper Tube. Type DWV wrought copper drainage fittings ANSI B16.29, Cast bronze drainage fittings (DWV), ANSI B16.23.
- D. Indirect Waste (condensate drains from cooling coils): Type DWV, ASTM B306 Copper Tube. Type DWV wrought copper drainage fittings ANSI B16.29, 95-percent tin, 5-percent antimony solder.
- E. Reduced Pressure Principle Backflow Preventers (RPBP):  
Drain shall be adequately oversized to hold complete volume of pressurized water downstream from the device. In lieu of the manufacturer's air gap, provide an air gap fitting at least 3 standard pipe size increments larger than the service pipe or provide an adequately sized "washing machine" type deep funnel drain. Pipe air gap to nearest floor drain or floor sink.

### **2.03 CLEANOUTS**

- A. Manufacturers: J.R. Smith, Zurn, Josam, Wade or approved equal.
- B. Grade Cleanout: Cast iron with countersunk closure plug. Provide access cover for areas subjected to traffic.
- C. Floor Cleanout (General): Bronze plug and polished nickel bronze round top.
- D. Floor Cleanout (Terrazzo or similar poured Floors): Cast iron with round adjustable nickel bronze top.
- E. Floor Cleanout (Heavy Duty): Enameled cast iron cleanout with round adjustable cast iron top with non-tilt tractor cover, bronze top.  
Wall Cleanout: Bronze taper thread plug, stainless steel cover.

### **2.04 VANDAL-PROOF FLASHING ASSEMBLY**

Comply with roofing manufacturer and warranty requirements. No lead is allowed.

### **2.05 PIPING FLASHING (EXCEPT FOR PLUMBING VENTS THROUGH ROOF)**

- A. Manufacturer: Portal Plus, ASI, Oatey  
Flat Roof: EPDM or neoprene pipe boot. No lead is allowed.

**2.06 ROOF DRAINS AND DISCHARGE NOZZLES**

- A. Manufacturers: Wade, Zurn, J.R. Smith
- B. Roof Drain (flat roof): Cast iron body with combined flashing clamp and gravel stop, cast iron dome and under deck clamp. Nominal flange diameter 15-1/4 inches.
- C. Overflow Roof Drain (flat roof): Cast iron body with combined flashing clamp, 2-inch water dam and gravel stop, cast iron dome, and under deck clamp. Nominal flange diameter 15-1/4 inches.
- D. Overflow Rain Leader Discharge Nozzle: Nickel bronze body and flange.

**2.07 GREASE INTERCEPTOR**

- A. See F&I Civil Design Standards.

END OF SECTION