

SECTION 15430

PLUMBING SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Plumbing specialty items or components associated with domestic water and drainage systems.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15410 - Plumbing Piping.
4. Section 15440 - Plumbing Fixtures.
5. Section 15450 - Plumbing Equipment.

1.02 REFERENCE

A. Latest American Society of Plumbing Engineers (ASPE) Data Book, Volume 1, Fundamentals of Plumbing Design.

B. Plumbing Drainage Institute (PDI) Standard WH-201.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Roof Drains:

- a. Carefully coordinate location and depth of drains to assure adequate pitch of the drainage area to drain.
- b. Size drains in accordance with ASPE Data Book, Volume 1, Fundamentals of Plumbing Design, Chapter 2, Storm Drainage Systems.
- c. All roof drains connected to storm sewers shall have test-tee clean-outs, at the base on the exterior wall of the building or in the ground immediately outside the building.
- d. Roof and overflow drains shall share the same "pan".
- e. Strainer/dome shall be made of cast iron.
- f. Clean-outs on roof drain systems per section: 708 IPC 2003

2. Floor Drains:

- a. Provide floor drains in shower, toilet rooms, mechanical rooms and other areas as required by building design, such as near reduced-pressure backflow preventers. Non-public toilet rooms with one or two fixtures shall have a floor drain.
- b. Floor sinks are required for indirect drains, and are preferred in mechanical rooms.
- c. Floor drains and floor sinks will have trap primers in accordance per section 1002.4 IPC 2003.

3. Downspouts:

- a. Minimum downspout size to be 4".
- b. Terminate with downspout nozzle.
- c. Coordinate required location of splash blocks under every downspout.

4. Cleanouts:

- a. Select cleanout locations and access for minimum disturbance of occupant functions and building systems operation during cleanout servicing. Ascertain that Architect and University agree with location and appearance.
- b. Specify cleanouts above all urinals (56" AFF on single-stack risers) and lavatory gangs (42" AFF or at least above flood level of lav.) If wall is partially covered with tile, the cleanouts shall be within the tile field or above it, not partially in each.
- c. Specify cleanouts 6" above highest trap on that floor on the main vent of each group of fixtures and in vent stacks for isolated fixtures on each floor.
- d. Design cleanouts full size at base of each stack and at end of each horizontal run. Do not exceed 100 ft. on horizontal runs.
- e. Specify cleanout plugs line-size up to 3", and 4" for line sizes 4" through 6".
- f. Specify wall cleanouts where piping is concealed in walls or non-accessible chases, 42" AFF.
- g. Where cast iron pipe is used, specify cleanouts with cast iron bodies and threaded "ABS" or "Delrin" plugs. Use "Never-Seize" on threads.
- h. Design locations for cleanouts where they will be easily accessible for rodding. Provide sheet note that "cleanouts shall be 2" from finished surface of wall."

5. Hose Bibbs:

- a. Provide hose bibbs with vacuum breakers as required by code and in the following locations:
 - 1) Each mechanical equipment room.
 - 2) Kitchen areas equipped with floor drainage systems.
 - 3) Within 20 feet of furthest point of cooling towers and condensers.
- b. External hose bibbs shall be installed as required by code or to meet landscaping or maintenance needs.
- c. Mounting height to be 42" above floor in equipment rooms.
- d. An isolation valve shall be provided near all hose bibbs to minimize system draining.

6. Shock Arresters for Water:

- a. Give careful attention to the prevention of water hammer in the design of water distribution systems.
- b. Provide shock arresters in accordance with Plumbing Drainage Institute (PDI) Standard WH-201.
- c. Specify mounting as close to the line or quick-closing valve as possible. Remote

- mounting or excessive (over 6") nipple mounting will not be acceptable.
- d. Specify or show on Drawings threaded ball valve between pipe and shock arrester.
 - e. Specify 20" x 20" minimum access panels centered on each shock arrester that is otherwise inaccessible.

7. Reduced-Pressure Backflow Preventer (RPBFP):

Note: Water entry to building shall be located at or above grade so that testing and emergency outflow of water from RPBFP can be drained to grade.

- a. Require listing by USC-University of Southern California and FCCCHR-Foundation for Cross-Connection and Hydraulic Research.
- b. Provide reduced pressure type backflow preventers on all connections between the domestic water system and make-up supplies to any non-potable system, (e.g. Water Heating, Boilers, Cooling Towers, Chiller, Evaporative Coolers, Solar, Etc.).
- c. Specify to anchor backflow preventer in place.
- d. Specify air gap drain assembly for drips and hang and anchor drain tubing rigid and stable to drain receptor.
- e. Specify test and approval by certified tester.
- f. Specify strainer upstream of all backflow preventers.
- g. Specify that height AFF not to exceed 5 feet, and not be above ceilings.
- h. Strainer is required before RPBFP device.
- i. Specify 2" RPBFP device as bypass around all new RPBFP devices on service to buildings. (Sizing is dependant on building use: A larger size may be required. Consult University for approval.)
- j. RPBFP low level alarm shall be above drain in containment tank.
- k. Reduced-pressure backflow-prevention devices on mains need to be installed before PRV station.
- l. Reduced-pressure backflow-prevention devices shall have isolation valves before and after device. Device valves are considered part of device, not isolation valves. Unions shall be used for 1-1/2" and under. Flanges shall be used for 2" and over. All flanges shall have stainless-steel trim.

8. Water Pressure Regulation:

- a. Use self-contained pressure regulating valves with stainless steel seat ring.
- b. Valves to have bronze bodies for 200 psi working pressure.
- c. Average main pressure can be assumed 100 psi and to be reduced to about 60 psi.
- d. Use three valves, two to have capacity each for 40 percent of total load and one valve with capacity of 20 percent. Sum of cross-section areas of PRVs shall match cross-section area of pipe that supplies station.
- e. Reduced pressure for 20 percent valve shall be 68 psi, one of the 40 percent valves set at 64 psi, and the other at 60 psi. Install full size "Y" pattern strainer on inlet side of valve assembly. If strainer is used, install bypass for service.
- f. Install pressure gages, complete with ball valves.
- g. Gage range 0 psi to 200 psi.
- h. Gages to be house side and on service side of each reducing valve inside of each shut-off valve for each P.R.V.
- i. Provide 2" emergency fire-hose hook-up with valve.

9. Temperature and Pressure Relief Valves:

- a. Provide relief valves on all water heaters and pressure vessels per ASME Standard.

10. Trap Primers:

- a. When near a toilet room, provide Sloan trap primers where traps in floor drains may dry out and allow sewer gas to escape into building spaces; for example, toilet rooms

and mechanical rooms or plenums. When not near a toilet room, provide Proset Trap Guard™.

11. Under-lavatory scald protection:

- a. Specify pre-molded insulation covers for drains and water supplies to ADA accessible lavatories.

12. Stop-valves:

- a. Standard brass-stem ¼-turn stops with handle-(no plastic).

13. Emergency showers

- a. Specify that installation shall meet American National Standard Z358.1.

14. Water Meters: To be installed by Colorado Springs Utilities (CSU) Standards

- a. Submeters to be installed for all irrigation water.

LEED: Required for certification.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Floor drains, floor sinks, planter drains, deck drains, garage drains, trench drains, roof drains, downspout nozzles, storm drain expansion joints, cleanout fittings, sanitary vent terminal, and air gap fittings:

Josam
J.R. Smith
Wade
Zurn

- B. Trench Drains-Heavy Duty C.I. Grate and Frame:

J-Mark Foundry

Maclear Manufacturing Co.
Neenah Foundry

C. Sillcocks:

Woodford Model 67 Series, B67 Series

D. Hose Bibbs:

Finished Rooms: Chicago Faucet.
Unfinished & Equipment Rooms: Woodford.

E. Shock Arresters:

Precision Plumbing Products Co. ("P.P.P.").
Zurn
JR Smith
Josam
Wade

F. Reduced Pressure Backflow Preventer (Main):

Note: all backflow devices are to be mounted no higher than 5'-0" AFF.

1. Febco 860 (for high-hazard, e.g., chemicals), 880/880V (for containment within buildings),
2. Wilkins Model 975 X LMS (If alarm is required or desired)
3. Febco 860 are not permitted for 2" and smaller sizes.
4. Specify strainer before RPBF device, brass or epoxy-coated iron
5. Specify 2" RPBF device as bypass around all new RPBF devices on service to buildings. (Sizing is dependant on building use: A larger size may be required. Consult University for approval.)

G. Double Check Assemblies (For Fire Systems):

Febco 850, 870/870V

H. Pressure Vacuum Breakers (For Irrigation):

Febco 765

I. Spill-Resistant Vacuum (For evap. coolers, cooling towere and fume hood clusters):

Breaker Watts 008 QT, Watts 008 QTS

J. Water Pressure Regulation Valve (Only):

Mueller
Watts

K. Temperature and Pressure Relief Valves (Bronze or Brass):

Kunkle
Watts

L. Trap Primers:

Near and within restrooms: Sloan F-72-A1

M. Water Meters (must have remote readout):

Badger, Hersey, Mueller, Symetrix

N. Under-lavatory scald protectors

Skal-Gard, Brocar Trap-Wrap, Truebro Lav-guard or acceptable equal

PART 3 - EXECUTION

3.01 INSTALLATION

- A. In general, for project specifications, remove "Design Requirements in Part 1, Sub-paragraph A, Paragraph 1.03 "System Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.

END OF SECTION