
220500 COMMON WORK RESULTS FOR PLUMBING

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation of common plumbing piping and valves on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

B. All utility interruptions and tie-ins shall be coordinated with JHFRE. Provide 11 working days notification.

1.2 Submittals

A. Upon project completion, all as-built drawings will be delivered to the owner in latest CAD version as well as hard copies books.

B. Contractor shall mount 24" x 36" hard copy project drawings of mechanical room equipment in each mechanical room. Each drawing shall be mounted under plastic, framed, and rigidly affixed to the wall in a conspicuous location.

C. Design calculations shall be furnished at the 35% design stage. Calculations shall be detailed enough to give JHU personnel a good understanding of how the designer arrived at their conclusions. Include projected energy use per year and projected peak flows.

D. Pipe sizes shall be indicated on drawings at each change in direction and at branch takeoffs.

E. Installation of water source shall comply with local codes and the City of Baltimore procedures and standards. All new and modified domestic water piping shall be thoroughly sterilized as described in the Baltimore City Plumbing Code.

1.3 Quality Assurance

A. The designer shall prepare a Life Cycle Cost Analysis to determine equipment selection.

B. Project designs shall be such that the minimum water pressure on the top floor of a building is 20psi at design flow rate at the most remote plumbing fixture.

C. Domestic water shall not be used for the cooling of equipment except for in an emergency back-up configuration.

D. Provide backflow prevention of water piping systems to protect water distribution systems.

E. Provide pressure reducing valves on domestic water mains or branches where pressure in excess of 70psi is expected. Provide a valved bypass, one pipe size smaller than the main size, around the pressure reducing valve.

1.4 Delivery and storage

A. Material deliveries and storage areas to be approved by Owner.

B. Material storage to comply with manufacturer's recommendations.

PART 2 – PRODUCTS

2.1 General

A. Non-metallic below grade piping shall be equipped with metallic tracer wire. All piping shall be marked by warning tape. Warning tape shall be 12" below the surface of the ground and at least 12" above the pipe. Metallic warning tape is an acceptable alternative to tracer wire.

B. Provide valves suitable for a minimum of 150psig and minimum of 200°F.

C. Gate valves shall only be used on domestic water piping 6" or larger.

D. Valves located more than 7' from floor in equipment room areas shall be provided with chain operated sheaves. Extend chains to 5' above floor and keep clear of walking aisles.

E. Where piping is insulated, provide valve operator extensions to suit insulation thickness.

2.2 Valves

A. Check valves

1. Valves sized 2" and smaller shall be MSS SP-80, Class 150, swing check and shall be bronze body, horizontal swing, regrinding type Y-pattern, renewable disc.

2. Valves sized 2-1/2" and larger shall conform to MSS SP-71, Class 150 and shall be iron body, renewable seat and disc, bolted bonnet, horizontal swing, flanged ends.

B. Ball valves shall be 600psig, bronze body, full port, stainless steel ball and stem, 2- or 3-piece construction, screwed ends, TFE seats and seals. Ball valves are acceptable for isolation and balancing in piping 3" and smaller.

C. Butterfly valves shall be high performance type, 200psig bubble tight shutoff, lug body valves suitable for dead end service. Butterfly valves are acceptable for isolation and balancing in piping 4" and larger. All butterfly valves shall be installed with shaft in horizontal position in horizontal runs of piping. Arrange disc to open away from possible sediment buildup.

1. Valves 4"- 6" shall be 150psig, bronze or stainless-steel body, aluminum bronze disc, one-piece stainless-steel shaft, resilient EDPM seats with rigid backing ring, manual lever and lock.

2. Valves 8" and above shall be 150psig, stainless steel body, extended neck, aluminum bronze disc, one-piece stainless-steel shaft, reinforced resilient EDPM seat with rigid backing ring and gear operator.

D. Gate valves shall be 200psig, outside screw and yoke, resilient wedge, epoxy coated interior and exterior, iron body, flange ends.

E. Drain valves shall be bronze ball valve with dust cover, chain and hose thread, minimum 3/4" for lines up to 2-1/2" and a minimum 1-1/2" for lines 3" and over.

F. Balancing valves shall be provided with a locking device to secure the valve in the balanced position. Balancing valves shall not be used for isolation.

2.3 Fittings and unions

A. In new installations or major renovations, pro-press and shark bite style fittings are prohibited behind enclosed walls or above ceilings. In easily accessible areas, these style fittings can be used, but must be pre-approved by JHFRE Engineering Dept.

Part 3 – EXECUTION

3.1 All piping shall be installed with proper pitch and valves to facilitate drainage of the system.

3.2 Electrolysis control between dissimilar materials shall be achieved through the use of dielectric nipples and a non-dielectric union. Dielectric unions shall be avoided whenever possible.

3.3 Use only flanged or threaded valves. Use full port ball valves, when possible, for all applications. Otherwise, use gate valves for shut-off and globe valves for throttling applications.

3.4 No combination valve/strainer assemblies shall be used.

3.5 Any branch line off of a main line requires an isolation valve. Install valves on all lines at locations such that each floor can be isolated independent of main building. Include isolation valves at all terminal equipment to allow service without shutting down a larger area.

3.6 System and equipment drains shall be piped to and firmly secured at a floor drain.

A. Any run of more than 5' across open floor must be protected by a rust-resistant cover.

3.7 Do not install water piping in exterior walls, structural slabs, above ornamental ceilings, transformer vaults, above electrical switchboards, with the exception of fire sprinkler piping. Avoid runs of water piping in unheated areas.

3.8 Provide access panels where maintenance will be required for items behind an enclosed wall or above a ceiling.

3.9 Water piping containing glycol may be buried no less than 24" from top of pipe to grade level.

3.10 All pipes shall be labeled showing full descriptive words and arrows indicating flow direction. Such labels shall be provided on straight runs, at valves, and on passage through walls and floors.

A. Label type, verbiage and coloring shall be approved by JHFRE.

3.11 All valves shall have permanent tags that correlate to the drawings.