

230500 Common Work Results For HVAC

Sections Included In This Standard:

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(All Division 23 items are generally considered to be located within buildings and extend to a maximum distance of 5' outside of the building.)

1.1 PIPES AND PIPE FITTINGS

- A. GENERAL: All piping systems shall be cleaned, tested, and accepted by PPD prior to being placed in service.
- B. FERROUS PIPE AND FITTINGS: Iron pipe installed in a corrosive area shall be wrapped in a plastic approved for underground applications.
- C. NO HUB COUPLING: All sanitary or storm drain piping connections inside any new & existing building construction where new drain piping will be installed shall be of the 4 band clamp design such as the "Anaco/Husky" manufactured type.
- D. GROOVED FITTINGS, VALVES, AND COUPLINGS: Shall be the product of a single manufacturer and approved for its specific application. Fittings, valves, and couplings must be consistent throughout, with no mismatching of manufacturers.

- 1. Acceptable Manufacturers: Victaulic, Tyco/Grinnell

1.2 PIPING SPECIALTIES

Dielectric nipples shall be used at all junctions of dissimilar metal piping, but as close as possible to the unit it serves. Provide isolation valves upstream, within 12" of dielectric nipples.

1.3 VALVES

- A. CHILLED, CONDENSER, AND HEATING HOT WATER:
 - 1. Gate Valves:
 - a) Up to 2": Bronze, rising stem with split wedge gate.
 - b) 2^{1/2}" and Above: Iron, rising stem.
 - c) Acceptable Manufacturers: Dezurik, Nibco, Stockham, Bray.
 - 2. Check Valves
 - a) Up to 2": Bronze, swing type.
 - b) 2^{1/2}" and Above: Iron, spring-loaded (non-slam), swing type.

3. Balancing Valves

- a) Up to 2": Bronze body.
- b) 2¹/₂" and Above: Iron body.
- c) All Chilled, Heating Hot Water and Condenser Water Balancing Valves: Shall be installed in all Chilled Water, Heating Hot Water and Condenser Water piping and are to be Industrial grade or greater. Settings for all balancing valves shall be permanently marked and not with felt pen.

4. Triple Duty Valves: Triple duty (check, balancing, shut-off) valves are not acceptable for chilled water, heating hot water, and condenser water applications.

(The University's experience has been that these types of valves do not work in a dual pump installation with a variable speed drive. The check valves will not seat and stop the flow. This causes the pump not running to rotate backwards, which can damage the impeller.)

5. Ball Valves: (Preferred where appropriate, and shall be as follows:)

- a) Full port.
- b) Stainless Steel ball and trim.
- c) Plastic for DI water.
- d) Blow-out proof stem.
- e) At the Health Science Center only ball valves will be used for pipe 2.5" and less.

B. STEAM

1. Pressure Reducing Valves:

- a) Lab or Equipment Steam - Up to 1": Union connection, non-pilot operated with stainless steel trim.
- b) Up to 2": Cast iron body, union connection, pilot operated, with stainless steel trim.
- c) 2 1/2" and Above: Carbon steel body, flanged pattern, pilot operated, single seated, and stainless steel trim.
- e) Acceptable Manufacture: Fisher

2. Gate and Ball Valves:

- a) Up to 2": Bronze, rising stem with split wedge gate.
- b) 2 1/2" and Above: Iron, rising stem.
- c) All Steam Gate Valves: All gate valve used on steam lines shall be listed for steam use.

1.4 **METERING**

A. GENERAL

1. University Policy: It is the policy of the University that all utilities be metered. Utilities include electricity, potable (domestic) water, chilled water, steam, and irrigation. All new buildings and renovations shall include installation of permanent metering of all utilities.
2. Temporary Utilities: All utilities consumed during construction shall be metered and paid for with project funds. The Builder shall be billed for consumption, unless specifically stated otherwise in writing and approved by PPD Utility Services Metering Department. No utilities shall be consumed by any Builder unless specifically permitted in writing by the Physical Plant Utility Services Metering Department.
3. Meter Installations: All meter installations shall meet the requirements of the manufacturer. Shut-off valves shall be installed upstream and downstream of meters.

B. WATER METERING: Refer to Section 250000 for all metering requirements.

1.5 **MECHANICAL ROOMS**

- A. STANDARDIZATION OF FLOOR PLAN: All mechanical rooms in new or renovated buildings shall have the same basic floor plan (equipment layout), as practical. Vertical alignment of mechanical rooms within new buildings is preferred, where practical.
- B. PIPING AND COMPONENT DIAGRAM: All mechanical rooms shall be designed to facilitate the installation of components in a serviceable manner. Complete piping and component diagrams shall be included in the construction documents to verify that the design intent is constructible and maintainable.
- C. COORDINATION DRAWINGS: The Builder shall submit coordination drawings assuring that the various components the Builder intends to install in mechanical rooms will result in a serviceable installation. These drawings shall be provided to the Physical Plant Division for review.
- D. SERVICEABILITY: Clearances suggested by manufacturers for equipment maintenance, removal, or replacement shall be indicated on the coordination drawings and accommodated by the layout. Larger and heavier components that may require future removal or replacement shall be identified on coordination drawings and a clear path identified to the building exterior. Door sizes, lifting supports, and other pertinent information shall be identified on coordination drawings. All components (cleanouts, shut-off valves, floor drains, pumps, etc.) shall have at least 24" to 36" of radial room around them to allow for maintenance access. All equipment access shall be provided within the equipment room.
- E. PRODUCT SUBMITTALS: It is recommended that a copy of the mechanical and electrical submittals be provided to PPD Systems, not for contract compliance-related approval, but to allow PPD Systems to become familiar with the products to be maintained.
- F. FREIGHT ELEVATOR: Mechanical rooms above the second floor shall have access to a freight elevator. Penthouses shall have access to a freight elevator or a roof-mounted winch rated for the heaviest piece of removable equipment.

- G. FLOOR DRAINS: Provide drains and drain piping that is adequately sized to accommodate water volume when testing as well as normal service loads in all mechanical rooms.

1.6 ISOLATION VALVES

- A. Provide isolation valves at the beginning of each branch piping takeoff in vertical CHW, HHW, DHW, DCW, and Gas piping risers.
- B. Provide isolation valves for each CHW, HHW, DHW, DCW, and Gas riser. Location of riser isolation valves will be directly after the riser takeoff from the main piping within the building and readily accessible for operating.
- C. Provide isolation valves on both the supply and return pipes in each application for "A" and "B".

1.7 BUILDING COMMISSIONING; INDOOR AIR QUALITY (IAQ)

Refer to Appendix F for the University's policy on Indoor Environmental Quality Commissioning and the associated requirements and procedures.

END OF SECTION