220500 WATER DISTRIBUTION

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation of plumbing piping insulation 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 design and components shall comply with local MD and Baltimore governing codes and regulations.

1.2 Submittals

A. Piping layouts shall be designed to provide organized distribution systems which permit isolation of distinct sections without disruption of the entire building. Provide isolation valves at every major branch and at all unit connections. Provide manual air vents at all high points in the system and drain valves at all low points of the piping system.

1.3 Quality Assurance

A. The industry standard definition of clean is a surface free of mill scale, slag, grease, oil, dirt, and corrosion products. All new piping systems shall be specified to be chemically pre-treated using an agent in compliance with the University's water treatment contractor standards. A certified water treatment contractor shall test the water to ensure that the contaminant levels coming out of the system in the effluent are identical to that of the makeup water source, in accordance with AWWA-C651.

B. Any new/old system shall be specified to be flushed with clean fresh makeup water until the water coming out of the system is identical in content to the water going into the system. This ensures that any chemical agents used are completely rinsed out of the system and any corrosion products, oils, greases, etc. are removed from the system.

C. All new piping shall be specified to be cleaned, flushed, treated and hydrostatically tested to ensure clean, flushed, treated and leak-free construction prior to University acceptance.

Part 2 – PRODUCTS

2.1 Chlorine Injection

A. Any new construction or renovation of a building used for residential occupancy is required to have a chlorine injection system installed. Academic buildings shall be considered for installation, but it is not required.

B. Chlorine injection system is required to have real time monitoring and condition response to chlorine ppm. A bypass shall be installed to allow continued service to the building during system maintenance.

C. MDE permitting is required prior to system installation and ANSI Z358.1 requirements shall be met. Any chlorine storage tank will be double-walled and have a passive venting tube to atmosphere. Delivery tubing will also be double-walled and an eyewash station is required.

2.2 Piping and Specialties

A. All pipes and fixtures shall be sized to supply water to the structure in the quantities and at pressures required in local code. The minimum diameter of water service pipe shall be 3/4".

B. RPZ backflow protection devices must be provided on both the domestic and fire service lines. They must meet ASSE 1013 standards. Bypasses are not allowed. See 221113A for more BFP details.

C. Minimum static pressure for private or public water service shall be 40psi. Maximum static pressure shall be 80psi.

D. Top of pipe shall be a minimum of 36" below grade.

Part 3 – EXECUTION

3.1 Installation

A. Install materials and systems in accordance with manufacturer's instructions, approved submittals and in proper relation with adjacent construction/infrastructure.

B. All installed piping materials and accessories shall be tested for performance & safe chemical composition. A letter certifying the testing results shall be submitted to the Owner.

C. Metallic lined plastic underground warning tape shall be installed above the piping.

3.2 Any new installation or renovation project shall include the option to add an automatic flushing system at the source and distal point of the system.

3.3 Circulation return systems with circuit setters/balancing valves shall be provided for all branches in excess of 20' from the water heater or circulated distribution main.

3.4 Domestic hot water shall be available at each hot water outlet within 15 seconds of the time of operation.

3.5 Dual use water systems shall be considered for any new building and designed per the JHU High Performance and Healthy Building (HPHB) Requirements.