232243 STEAM PIPING INSULATION

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation of insulation on above ground, tunnels and direct buried steam piping 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.

1.2 Submittals

N/A

1.3 Quality Assurance

A. Insulation requirements shall conform to the latest adopted energy conservation code.

B. All pipe and ductwork insulation shall be continuous through walls, partitions, ceiling openings, and sleeves.

Part 2 – PRODUCTS

2.1 Piping

A. Steam Supply and Condensate Lines:

1. Aboveground or in Tunnels:

a. Material: Calcium silicate with a thermal conductivity, k, of 0.5 btu in/hr-ft2-F @ 400 °F mean temperature.

b. Jacket: A layer of 3/4” deadening felt shall be wrapped around the insulation. The felt may be wired in place on straight runs of pipe while felt on the elbows shall be pasted in place with a water-based sealant/coating, equal to Foster Sealfas coating 30-36. Finally, a PVC wrap layer shall be added for keeping the insulation clean.

c. Thickness:

i. For supply piping:

Pipe Size (nominal OD)	Insulation Thickness
0 – 2”	1.5”
2” – 4”	2”

Over 4”	2.5”

ii. For condensate piping: Use 1.5” thick on all pipe sizes.

2. Direct Buried:

a. Premanufactured: Multi-Therm 500 by Perma Pipe. MT-500 consists of the following: steel service pipe, mineral wool insulation, support assembly, 10 gage steel conduit, polyurethane insulation, and a fiberglass reinforced polyester outer jacket.

Part 3 – EXECUTION

3.1 Piping insulation shall not be installed until hydrostatic tests have been successfully completed, witnessed and accepted by JHFRE.

3.2 All fittings, flanges, and unions shall be insulated the same as its corresponding piping.

3.3 Insulation shall continue unbroken through any hangers. The insulation shall rest on shields so as not to overly compress the insulation. Provide insulation protection shields fabricated from galvanized steel at all pipe hangers and supports.

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

3.5 All pipe insulation shall be continuous through walls, partitions, ceiling openings, and sleeves with at least 1’ of continuous insulation on both sides of the penetration.

3.6 Raw edges of insulation shall be sealed to prevent moisture from penetrating the insulation.

3.7 Insulation on all cold surfaces must be applied with a continuous vapor seal. Hangers, supports, etc., that are secured directly to cold surfaces must be insulated and sealed to prevent condensation.

3.8 Special protection shall be considered for insulation subject to abuse, moisture, weather, etc.

3.9 When passing through floors, partitions, roofs and walls, cut sleeves to length for mounting flush with both surfaces. Except when passing through floors of mechanical equipment areas or other wet areas, then extend sleeve 4” above finished floor level.

3.10 All valves 2” and larger shall have removable insulation jackets or comparable removable alternative.