

SECTION M-5

INSULATION

The requirements of Section ME-1 apply to all work hereunder.

1. GENERAL

- a. All tests shall be completed before insulation is applied.
b. Do not store materials in building until it is enclosed and dry.
c. Where insulation must be installed before building is enclosed provide polyethylene film cover for protection.
d. Insulation must be continuous through all sleeves and openings.
e. Clean and dry all surfaces to be insulated of loose scale, dirt, oil, water and other foreign matter.
f. Insulate completely all metal surfaces of piping, ductwork and equipment other than hangers as delineated under Extent of Insulation.
g. Surface finishes shall present a tight smooth appearance.
h. Permit expansion and contraction without causing damage to insulation or surface finish.
i. Surface finish shall be extended to protect all surfaces, ends and raw edges of insulation.
j. Canvas covering shall be flame and mildew proof.
k. Vapor barriers must be continuous and uninterrupted throughout the system where specified.

1. Piping

- (1) Insulate all valves, strainers and fittings. For the purposes of this specification, fittings include unions and flanges. Use premolded material where available.
(2) Insulate valves up to and including bonnets, except for chilled water valves which shall be insulated over packing nuts in a manner to permit removal for adjustment and repacking.
(3) Insulate strainers in a manner to permit removal of the basket without disturbing the insulation of the strainer.
(4) Fill hollow interior of protection saddles with insulating cement.
(5) Insulate air separation chambers as specified for fittings.

m. Ductwork

- (1) Insulation shall cover all standing seams and metal surfaces.
(2) Staples shall be corrosion resistant steel, outward clinching, and sealed to maintain vapor barrier.
(3) Insulation not required on ducts with internal lining.

n. Equipment

- (1) Cut or score insulation to fit shape and contour of equipment.
(2) Stagger joints.
(3) Provide permanently fastened angles or plates, where required to support insulation.
(4) Apply insulation on access openings and cover plates as separate sections, with insulation cut back for access to boltheads and other fasteners.
(5) Do not cover nameplates. Cut back the insulation and line edges with 24 gauge galvanized steel.

2. ADHESIVES, MASTICS, COATINGS

a. Materials

Table with columns: Adhesives, Beni Foster or Insul-Coastic, Type 1, 2, 3, Mastic, Coating. Lists various material types and their corresponding product codes.

b. Use of materials in above schedule shall be further restricted for duct insulation to those which are UL listed in accordance with the requirements of NFPA Bulletin 90A.

c. Apply materials at the rate of coverage and in manner recommended by the Manufacturer.

3. MATERIALS AND APPLICATION

a. Type A

- (1) Insulation - Sectional molded glass fiber. Minimum density: 3.5 lb. per cu. ft.
(2) Factory applied jacket - White, flame retardant vapor barrier jacket of .001" aluminum foil laminated to kraft paper reinforced with glass fibers.
(3) Application
(a) Pipe - Fit insulation to pipe, staggering longitudinal joints. Seal longitudinal joint overlaps and 4 inch wide sealing strips of vapor barrier jacket material applied on circumferential joints with Type 1 adhesive on self sealing laps.
(b) Fittings and Valves - Apply fabricated or premolded fitting covers equal in thickness and density to adjoining pipe insulation. Seal with a 1/16" thick coat of Type 1 mastic. Imbed a layer of 6 oz. canvas in the mastic and after the initial coat has dried apply an additional 1/16" coat of mastic.
(4) Surface Finish
(a) Pipe - Standard Duty, concealed and exposed - no additional finish required.
(b) Fittings and Valves - Standard Duty - No additional finish required.
(5) Approved Manufacturers - Owens Corning, Gustin-Bacon, Johns-Manville and Pittsburgh Plate Glass.

b. Type E

- (1) Insulation - Flexible glass fiber blanket. Minimum density: 1 lb. per cu. ft.
(2) Factory applied jacket - Minimum .001" aluminum foil reinforced with glass fiber bonded to flame resistant kraft paper.
(3) Application - Cement insulation to duct with Type 1 adhesive applied in 6" wide strips on 12" centers except horizontal ducts which shall have adhesive applied to their entire underside. Butt insulation joints with the reinforced foil face extending 2" beyond the insulation for lagging and seal flap with Type 1 adhesive. Staples may be used to assist in securing insulation.
(4) Approved Manufacturers - Johns-Manville, Owens-Corning, Pittsburgh Plate Glass, and Gustin-Bacon.

c. Type G

- (1) Insulation - Rigid glass fiber unfaced board. Minimum density: 3.5 lb. per cu. ft.
(2) Field applied jacket - White, flame retardant vapor barrier jacket of .001" aluminum foil laminated to kraft paper reinforced with glass fibers.
(3) Application - Secure insulation to duct with pins welded or adhered to duct on 12" to 18" centers, minimum of two rows per side. Cut side pieces of insulation to lap top and bottom. Apply Type 1 adhesive to entire underside of horizontal ducts. Secure 1-1/2" diameter fiber or tin coated metal disk to pins. Protect outer corners of insulation with 2" x 2" aluminum angles under the vapor barrier jacket.
(4) Surface finish - Apply a full coat of Type 1 adhesive over entire surface. Apply jacketing material with 2" laps sealed with vapor barrier adhesive. Surface shall be smooth and not punctured.
(5) Approved Manufacturers - Johns-Manville, Owens-Corning, Pittsburgh Plate Glass, and Gustin-Bacon.

d. Type K

- (1) Insulation - Rigid mineral fiber board. Minimum density: 6 lb. per cu. ft.
(2) Factory applied jacket - White, flame retardant vapor barrier jacket.
(3) Application - Secure insulation to equipment with Type 1 adhesive and 1/2" wide No. 20 gauge galvanized steel bands on maximum 9" centers. Seal joints and punctures with Type 1 mastic.
(4) Surface Finish - Apply 1" mesh galvanized wire netting securely fastened and pulled tight on all surface. Apply 1/2" thickness insulating cement to provide hard smooth finish.
(5) Approved Manufacturers - Johns-Manville, Owens-Corning.

e. Type L

- (1) Insulation - Armaflex flexible foamed plastic sheet.
(2) Enclosure - 18 gauge galvanized steel.
(3) Application - Line enclosure with sheet insulation. Fasten to equipment with bolts and provide lifting handles for removal without damage to insulation or enclosure. Submit details of enclosure design for Engineer's approval before fabrication.

f. Type M

- (1) Insulation - Flexible glass fiber blanket. Minimum density: 1 lb. per cu. ft.
(2) Application - Wrap entire surface with two layers of insulation secured with twine.
(3) Surface Finish - Apply 2" wide, pressure sensitive, vapor barrier tape over insulation. Finish with two coats of Type 1 coating with white 20 x 20 glass cloth between coats.
(4) Approved Manufacturers - Pittsburgh Plate Glass, Gustin-Bacon, Owens-Corning, Johns-Manville.

g. Type N

- (1) Insulation - Molded block or board of hydrous calcium silicate combined with asbestos fiber. Minimum density: 10 lb. per cu. ft.
(2) Application - Secure insulation to equipment with Type 3 adhesive and 1/2" wide No. 20 gauge galvanized steel bands on maximum 9" centers.
(3) Surface Finish - Apply 1" mesh galvanized wire netting securely fastened and pulled tight on all surfaces. Use corner beads on all edges. Apply 1/2" thickness insulating cement to provide hard smooth finish.
(4) Approved Manufacturers - Baldwin-Ehret-Hill, Inc., Johns-Manville, Owens-Corning, Ruberoid.

4. INSTALLATION SCHEDULE

a. Piping

Table with columns: Material, Type, Thickness. Lists piping materials like domestic cold water, horizontal portions of rain leaders, etc., with their types and thicknesses.

b. Ductwork

- (1) Concealed E 2"
(2) Exposed rectangular G 1"

c. Equipment

- (1) Expansion tank for chilled water system K 2"
(2) Water chiller components:
Evaporator shell K 2"
Evaporator water boxes L 1"
Economizer float chamber L 1"
Feet K 1"
Suction Piping K 2"
Cold gas connection to motor K 1"
Motor on water cooled models K 1"
(3) Chilled water pumps M 2"

5. EXTENT OF INSULATION

a. Piping

- (1) Insulate as designated in Installation Schedule.

b. Ductwork

- (1) Insulate the following:
(a) All supply ductwork
(b) All return ductwork in Penthouse

NOTE: Supply ductwork does not include the plenums on the Moduline Diffusers

c. Equipment

- (1) Insulate as designated in Installation Schedule.

SECTION M-6

PLUMBING

The requirements of Section ME-1 apply to all work hereunder.

1. PLUMBING FIXTURES

- a. Crane, Eljer, Kohler, Rheem-Richmond or American Standard equal to specified American Standard numbers. Brass and accessories - Crane, Eljer, Kohler, Standard, Chicago or Speakman.
b. Provide chromium plated brass fittings, exposed piping, escutcheons, etc., at fixtures.
c. Provide all fixtures with stops placed in an accessible location.
d. Provide rubber concussion washers between vitreous fixtures and supporting brackets.
e. Provide supports for all lavatories, etc., to meet Engineer's approval. Where fixtures are supported from slag block walls, provide a No. 10 USSG steel plate on opposite side of wall and through bolt hangers and brackets to plate. Where opposite side of walls is exposed to view, place bolts in core of blocks and then fill cores with cement. Where fixtures are supported on metal stud walls provide No. 10 gauge steel plate attached to at least two studs.
f. Flush valves - self closing, non-hold open, quiet, to perform satisfactorily when subjected to inlet water pressure varying from 15 to 75 psig.
g. Seats shall be Church, Olsonite or Benecke equal to Church figure number listed below.
h. Fixtures shall be:
P-1 - Water Closet
P-2 - Urinal
P-3 - Service Sink
P-4 - Counter Top Sinks
P-5 - Water Mixer

- F2222 Madera, vitreous china, syphon jet, elongated bowl, floor mounted, 1-1/2" top spud, fitted with: Sloan-Royal 110FVQ Church 395-C white plastic seat
Standard F-6500 WASHBROOK vitreous china washout with extended shields, integral flush spreader, 3/4" top spud, outlet connection 2" threaded inside, Sloan Royal 186QV flush valve and Zurn ZS-1222 carrier.
P7705, cast iron, acid resisting enamel, 24" x 20", with stainless steel rim guard bolted to rim, fitted with: R-5075 double faucet with integral stops P-7798 or P-7783 trap standard to wall or floor as required.
These sinks will be furnished and set under another section of the specifications. Under this section make connections to water and waste, including traps and stops.
Two Standard HB95340 screwdriver stops and one aerator outlet will be mounted as detailed on drawings.

2. HOT WATER RECIRCULATION PUMP (No. 5)

- Provide Bell and Gossett of 1/2" equal to Figure No. 100, bronze body and impeller. The pump shall be installed as scheduled on drawings. A filter shall be a N.P.S. 1/2" diameter with a final pressure drop of 0.6" w.g. Each consist of the following three elements:
a. Provide Zurn, Josam or equivalent with Part No. 100 scheduled below. The pump shall be installed on all floor drains in finished rooms and black iron water meters on all floor drains. Provide flashing drains on all floor drains penetrating waterproofing from 0" to 2" water and be furnished with static pressure taps. Mount gauge to Drain Type, Area, No.

3. DRAINS

- a. Provide permanent fire-retardant roof of 18 gauge 2400 Bized steel with open backing. Not holes on all four sides. The media retention shall consist of 5/32" diameter zinc-plated fastener assembly. Entrance shall be welded a 1/2" x 1/4" wire mesh. The media cartridge shall be 21415C. The minimum pressure drop shall be 2.0" w.g. The media cartridge shall be 21415C. The media cartridge shall be 21415C. The media cartridge shall be 21415C.
\* For type 1 drain provide trap, flush valve and water supply. Install priming valves higher than floor level which drains into traps to minimize HYDRATE blow-off.
a. Zurn of Josam equal to Zurn 1480 exposed process proof 3/4" for pedestal lavatory. Zurn 1480, 1 1/2" x 1 1/2" x 1 1/2" optional manufacturers: Furr 102A, Continental.
5. HOSE BIBBS
a. Standard or Crane equal to Standard R-7234 or R-7235 as required. The bibb shall be of American Standard Unit size arranged for horizontal airflow as shown on the plans. Optional manufacturers: Buffalo, Zurn, Josam, etc.
6. SHOCK ABSORBERS
a. Zurn 1700 located on end of line to flush valves.
7. BACKWATER VALVES
a. Josam or equivalent Zurn No. 1090 for 1/2" N.P.S.
8. DRINKING WATER COOLER
a. Sunroc Model SR-C stainless steel, semi-recessed, self contained, water cooled. Capacity 5 gph cooled from 80°F to 50°F. Apron color shall be selected by Architect.

REVISIONS

Table with columns: NO., DATE, ITEM, REF. for tracking revisions.

Professional Engineer seal for Michael J. Bell, State of Maryland, License No. 116.

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SPECIFICATIONS

Table with columns: JOB NO., SCALE, DATE, LAST REV. and a large 'ME 5' stamp.