

SECTION 07210 - ROOF INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnish and install all roof insulation and related items for single-ply membrane roof systems.

1.2 SCHEDULE OF INSULATION TYPES

<u>Roof Area</u>	<u>Insulation Layer(s)</u>	<u>R-Value</u>	<u>Type</u>	<u>Method of Attachment</u>
Canopy Roofs cyanurate	1 layer	R-9.0	Polyisocyanurate-(FM I-90)	Mechanically-attached
Drainage Crickets	As required	As required	Polyisocyanurate min. slope 1/4"/foot	Mechanically attached 1" min at low point w/ tapered reducer strip of wood fiberboard

1.3 SUBMITTALS

- A. All submittals are to be in conformity to Section 01300.
- B. If the insulation is supplied through a different manufacturer than the roofing membrane system manufacturer, then the insulation manufacturer shall submit a written warranty covering the value of the insulation materials and installation. The warranty shall state the insulation will retain 80% of its established aged thermal and dimensional values for a period of twenty years commencing from the date of substantial project completion.

1.4 GENERAL REQUIREMENTS

- A. Weather: Work shall be performed only during dry weather and applied to dry surfaces. Manufacturer's recommendation and requirements for type of weather application shall be followed.
- B. Inspection: Architect reserves the right to inspect and reject defective and improperly installed insulation.
- C. Relation with Work of Other Trades: All items of other trades that are connected to or affect the insulation work shall be properly coordinated so as not to affect warranty(s).
- D. Insulation fasteners and disc shall have Factory Mutual and manufacturer's approval for the system specified.
- E. Mechanically attached insulation installation shall be in accordance with Factory Mutual I-90 windstorm roof system classification.
- F. All roofing work shall be the responsibility of a single Roofing Subcontractor, and all materials and methods shall be approved by the manufacturer of the roofing membrane and accepted by the Designer.
 - 1. Assembly and individual components shall comply with FM Global requirements.
- G. Comply with roofing covering requirements of the local building code, FM and UL recommendations and requirements.
- H. Insulation shall be stored at least four inches above the ground and roof on pallets. On the roof, pallets shall have a layer of 1" polystyrene under their entire area.
- I. Stored insulation shall be completely covered at all times with "breathable" tarps. Factory applied packaging in and of itself is not acceptable and shall be randomly cut to alleviate condensation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Insulation shall be polyisocyanurate. The polyisocyanurate insulation shall have a minimum aged "R" value of R-19.1 and a minimum thickness of 3.1 inches. Provide 1-1/2-inch thick at canopies. Insulation shall be closed-cell polyisocyanurate core integrally bonded to asphalt/fiber-glass facing, Grade 2, 20 psi minimum. The insulation shall have a minimum aged "R" value as indicated in accordance with CAN/ULC S770. Insulation board size shall be 4 foot by 8 foot.
- B. All insulation must be acceptable as a suitable substrate by the membrane manufacturer and Factory Mutual.
- C. Insulation around perimeter edges and crickets shall be prefabricated tapered system of approved closed-cell-foam polyisocyanurate as specified above. Minimum slope shall be 1/4" per foot.
 - 1. Crickets shall taper 1/2 inch per foot.
- D. All fasteners for insulation shall be Carlisle InsulFast Screws meeting corrosion-resistance requirements as described in Factory Mutual Approval Standard 4470 dated April 1986 (Class 1). Plates shall be provided by the fastener manufacturer to be used with the proposed fastener. Plates and fasteners shall be approved by Factory Mutual and the membrane manufacturer for use with the proposed system. Fasteners shall be a minimum number 14 size wire.

PART 3 - EXECUTION

3.1 QUALITY CONTROL

- A. Insulation shall be installed over a clean, dry and properly prepared roof surface acceptable to the membrane manufacturer, Roofing Contractor and Architect.
- B. All installed insulation shall be completely covered with the finished roofing system each day.
- C. All insulation must be fully protected from precipitation and condensation damage at all times.
- D. Insulation shall be stored covered with waterproof "breathable" tarps in a manner acceptable to the manufacturer and the Designer. Manufacturer's shrink wrap is not acceptable as a waterproof tarp. If stored on the roof, insulation shall be placed on pallets at least 4" high with a 1" buffer of EPS board underneath to prevent puncturing of the roof membrane. Insulation shall not be stored in low areas and shall be stored so as not to overstress the structure.
- E. Care shall be taken so as not to damage the roof structure, deck and roofing system or individual components during material stocking operations.

3.2 WORKMANSHIP

- A. The insulation shall be neatly cut to fit around roof penetrations and projections.
- B. Ends and sides of insulation boards on exposed steel deck shall be supported by the top flute of the deck with a minimum of 1" of bearing area.
- C. No piece of insulation shall be less than two square feet after cutting to fit.
- D. The top surface of the insulation shall be flush with the top surface of the wood blocking within a tolerance of +0" and -1/16" with respect to blocking.

- E. Polyisocyanurate insulation for mechanically attached TPO shall be mechanically attached to the roof deck at a rate of 1 fastener per 6.4 square feet (5 fasteners per 4'x 8' board), in a Factory Mutual I-90 windstorm classification approved pattern, with a minimum 1" penetration through lower-most section of deck without cupping the disc or breaking the insulation or its facer.
- F. Where more than one layer of insulation is installed, stagger joints of succeeding layers from first layer, a minimum of 12" in each direction.
- G. In no case shall there be less than 2 fasteners per piece of insulation.
- H. Screws shall be installed utilizing automatic, positive clutch disengaged and adjustable nosepiece.
- I. Fasteners which require pre-drilling shall be drilled to a minimum depth as recommended by the fastener manufacturer or required by Factory Mutual to permit full seating of the fastener into the plate.
- J. All tapered polyisocyanurate insulation shall be mechanically attached using same procedures as A-I above.

END OF SECTION 07210