

**SECTION 07 22 16
ROOF BOARD INSULATION**

PART 1 - GENERAL

1.01 SCOPE:

- A. Provide all of the labor, materials, equipment, and services required to furnish and install the roof board insulation.

1.02 QUALITY ASSURANCE:

- A. Single source responsibility for insulation products: Obtain each type of building insulation from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Work associated with roof deck insulation including (but not limited to) membrane roofing and flashing shall be performed by and be the responsibility of a single installer. Coordinate with:
 - 1. Section 07 41 13, Metal Roof Panels.
 - 2. Section 07 53 23, Elastomeric Sheet Roofing.
- C. The rated R-value shall be clearly identified by an identification mark applied by the manufacturer to each piece of building envelope insulation.
- D. Standards: Comply with all pertinent standards specified in the contract documents, including those listed below. If the building code references a specific edition or revision of an individual standard, then comply with that edition or revision. Otherwise, comply with the latest published edition or revision available on the date the Contractor submits its price proposal to the Owner.
 - 1. *The NRCA Roofing and Waterproofing Manual*, National Roofing Contractors Association
 - 2. Manufacturer's published specifications, product data sheets, application instructions, and technical bulletins.
 - 3. *Annual Book of ASTM Standards*, ASTM International
- E. Qualifications of Installers: Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section. In acceptance or rejection of the work, the Owner will make no allowance for lack of skill on the part of the workers.
- F. Roofing Inspections: Make all required notifications and secure all required inspections by the Manufacturer of the approved materials to facilitate issuance of the specified roof warranty.
- G. U.L. Listing: Provide materials bearing Underwriters Laboratories (U.L.) marking on bundle, package, or container indicating that materials have been produced under U.L.'s classification and follow-up service.
- H. Wind uplift: Finished application shall be accordance with the standards of Factory Mutual (FM) 1-90 (roof system shall withstand 90 lbs psf of wind uplift tested pressure).

1.03 SUBMITTALS:

- A. Prior to fabrication, submit to the Architect for review the following:
 - 1. Manufacturer's literature fully and completely describing each product and its proper method of installation for this Project.
 - 2. Physical sample of each product named herein that the Contractor proposes to provide to the Project.
 - 3. Test data and calculations proving that the insulation in the thickness and number of layers to be installed will, in fact, meet the required "U" or "R" value.
 - 4. Manufacturer's certification that product facer is compatible with roofing membrane.
 - 5. Shop drawings: Insulation and cant thickness and layout. Coordinate with:
 - a. Section 07 41 13, Metal Roof Panels.
 - b. Section 07 53 23, Elastomeric Sheet Roofing.

1.04 DELIVERY, STORAGE, AND HANDLING:

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources.
 - 1. Store inside and in a dry location. If inside storage is not available, insulation shall be kept dry and protected with waterproof, breathable covering (such as a tarpaulin. Stack above the roof or ground surface. Do not rely on factory packaging as job site protection from the elements.
 - 2. Comply with manufacturer's recommendations for handling, storage, and protection during installation.
- B. Additionally protect insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.01 ROOF DECK INSULATION - POLYISOCYANURATE BOARD:

- A. Polyisocyanurate foam insulation board with fiberglass facers.
 - 1. Closed-cell, polyisocyanurate foam core with factory-laminated fiberglass facers conforming to ASTM specification C1289, Type II, Class 1, Grade 3.
 - a. Foam core shall have a rated flame spread of 75 or less in accordance with ASTM E84.
 - 2. Facers shall be inorganic and of type compatible with adhered single ply membrane roof material, and thereby avoiding use of recover board.
 - 3. Roof board insulation shall adhere to:
 - a. UL 1256
 - b. FM 4450
 - c. IBC 2603, latest edition.
 - 4. Minimum compressive strength: 25 psi in accordance with ASTM C1289.
 - 5. Minimum density: 1.5 pcf.
 - 6. R-value at 40 deg. F: 6.0 for 1" of thickness.
 - 7. Provide both flat and tapered board.
 - 8. Provide in multiple layers to conform to required thickness and/or R-value.
 - 9. Minimum thickness: 4".

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS:

- A. Installation shall be in accordance with the Contract Documents, the approved submittals, and the manufacturer's current, written instructions.
- B. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drain.
- C. Verify roof openings penetrating elements through roof are solidly set, reglets are in place. Verify deck is supported and secured.
- D. Do not apply to damp, frozen, dirty, dusty, or deck surfaces unacceptable to manufacturer and applicator.
- E. Beginning installation means acceptance of substrate.
- F. Provide tapered units for crickets. Taper and board thickness shall be as necessitated to achieve required slope.
- G. In addition to locations indicated, provide crickets at HVAC roof curbs 4' or more in width.
- H. Do not install any more insulation than can be covered by finished roofing in one day and made watertight. At the end of the day, do not leave the underlayment and the insulation exposed to the elements.
- I. Discard and do not install damaged panels including, but not limited to, wet, damp, cracked, frayed, deformed, cupped, and bowed boards. Do not score boards to alleviate board cupping.

3.02 INSTALLATION OVER METAL DECK:

- A. Verify that flutes are dry and clean.
- B. Roof deck insulation:
 - 1. Mechanically attached:
 - a. Loose lay insulation board. Lay boards with moderate contact without forcing joints. Cut insulation to fit neatly to perimeter blocking and protrusions. Install in layers as recommended by roof insulation manufacturer to achieve thickness and slope required. Stagger end joints in adjoining panels; stagger joints in each layer with those of layer below. Butt each panel to adjoining panels.
 - b. If insulation board does not have facer that is compatible with roof membrane, cover entire area with recover board.
 - c. Perimeter, corners and field: Unless otherwise approved by the Owner, the standard mechanical attachment of insulation shall be 1 fastener and insulation plate per every 2 sq ft.
 - d. Mechanically attach through all layers to substrate utilizing the manufacturer's fasteners and plates with a minimum of 16 fasteners per 4' x 8' sheet of insulation.
 - e. Fasteners shall penetrate a maximum of 1" below the roof deck surface.
 - f. Completed installation shall not void the roof system warranty.

3.03 PROTECTION OF INSTALLED ROOF INSULATION MATERIAL:

- A. Protect installed product from weather that might cause damage and the finish surface from damage during the progress of construction. Maintain this protection throughout the installation of the roofing and flashing materials. Do not deform or otherwise damage the roof insulation during entire roofing applications sequences. Deformed or damaged materials will be removed and new materials shall be installed.
- B. During the installation period and prior to the installation of the roofing membrane, protect the deck underneath the roof insulation from adverse weather or from water penetrating into the area.

3.04 INSPECTION:

- A. Upon completion of the installation, visually inspect each insulated area and verify that all insulation is complete and properly installed.
- B. The Owner will inspect all areas as progress for payment, to be coordinated at the pre-construction conference.

- END OF SECTION -