

SECTION 07210

BUILDING INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Insulation under slabs-on-grade.
 - 2. Perimeter insulation (Foundation wall insulation supporting backfill).
 - 3. Concealed building insulation.
 - 4. Loose-fill building insulation.
 - 5. Foam-in-place insulation.
- B. Related Sections include the following:
 - 1. Division 7 Section " Thermoplastic Membrane Roofing" for insulation specified as part of roofing construction.
 - 2. Division 9 Section "Gypsum Board Assemblies" for provision in metal-framed assemblies of interior acoustical insulation.
 - 3. Division 15 Sections for insulation on ducts, piping, and equipment.
- C. Products furnished, but not installed, under this Section include the following:
 - 1. Rigid insulation installed in z-furring on exterior walls, installed under Division 5 Section "Cold-Formed Metal Framing."
 - 2. Rigid insulation installed in z-furring at interior walls, installed under Division 9 Section "Gypsum Board Assemblies."

1.03 DEFINITIONS

- A. Thermal Resistivity: Where the thermal resistivity of insulation products are designated by "r-values," they represent the reciprocal of thermal conductivity (k-values). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: For each type of product indicated.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for insulation products.

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of Work.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by

UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic 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 before installation time.
 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified.

2.02 INSULATING MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
 1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Insulation under Slabs-On-Grade: Extruded-polystyrene board insulation, ASTM C 578, Type IV, 1.60 lb./cu. ft., unless otherwise indicated, with maximum flame-spread and smoke-developed indices of 75 and 450, respectively:
 1. Products:
 - a. Styrofoam; Dow Chemical Company.
 - b. Foamular 250; Owens Corning.
 - c. Amof foam; Tenneco Building Products.
- C. Perimeter and Rigid Insulation: Extruded-polystyrene board insulation, ASTM C 578, Type IV, 1.60 lb./cu. ft., unless otherwise indicated, with maximum flame-spread and smoke-developed indices of 75 and 450, respectively:
 1. Edges of rigid insulation shall be as follows:
 - a. Provide square edges for insulation installed in z-furring.
 - b. Provide tongue and groove or shiplap edges for stacked insulation.
 2. Products:
 - a. Styrofoam; Dow Chemical Company.
 - b. Foamular 250; Owens Corning.
 - c. Amof foam; Tenneco Building Products.
- D. Unfaced Mineral-Fiber Blanket (Batt) Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from glass; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
 1. Thickness: Provide 6-inch thick batt to lay on gypsum ceiling panels at Parking Level Two.

- 2. Manufacturers:
 - a. CertainTeed Corporation.
 - b. Owens Corning.
 - c. Johns Manville Corporation.

E. Sound Attenuation Insulation: See Section 09260.

F. Foam-In-Place Insulation: On-site foam-in-place insulation shall be Froth-Pac 1.75-25 FS Class 1 foam manufactured by Insta-Foam Products, Inc., or approved equal.

2.03 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.03 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

- 1. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with installation of insulation.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.04 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION

A. On vertical surfaces, set units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.

- 1. Extend insulation to top of footing.

B. Protect below-grade insulation on vertical surfaces from damage during backfilling by applying protection board. Set in adhesive according to insulation manufacturer's written instructions.

C. Protect top surface of horizontal insulation from damage during concrete work by applying protection board.

3.05 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units. Fill voids in thermal envelope not covered by the work of other sections.
- B. Seal joints between rigid insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with foam-in-place insulation.
- C. Exterior Wall Rigid Insulation: Install rigid insulation over wall sheathing coated with air/vapor barrier; fastening insulation with nails or screws and tin washers to provide permanent placement and support of units. Install with tongue edge up or shiplap edges to shed water. Edges and ends of boards shall be placed firmly together, forming a tight seal between units. Fill voids in completed installation with foam-in-place insulation.
- D. Parking Garage Ceiling Insulation: Place insulation in a single layer over suspended gypsum board ceiling, with edges and ends tight to adjacent batt.

3.06 INSTALLATION OF FOAM-IN-PLACE INSULATION

- A. Install foam-in-place insulation sealant to a minimum depth of 1 inch, sealing roof deck flutes and construction cracks and gaps where outside air and cold can infiltrate, providing an airtight building envelope.

3.07 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION