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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets (); delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies extruded polystyrene insulation for roof and deck applications marketed under the trade name FOAMULAR and manufactured by Owens Corning. FOAMULAR, FOAMULAR DURAPINK Rigid Foam Insulation, FOAMULAR DURAPINK PLUS Rigid Foam Insulation and FOAMULAR Tapered Roofing Systems are registered trademarks of Owens Corning. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 07220
ROOF & DECK INSULATION
(ROOF RECOVERY BOARD INSULATION)

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Extruded polystyrene insulation for roof and deck applications.
 - 1. Types: Types of extruded polystyrene insulation include:
 - a. FOAMULAR DURAPINK Rigid Insulation.
 - b. FOAMULAR DURAPINK PLUS Rigid Insulation.
 - 2. Applications: Applications of extruded polystyrene insulation include:
 - a. Roof recovery rigid foam insulation applications.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
 - 1. Roofing: Division 7 Roofing Sections.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This Article does not require compliance with standard but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number,



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title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

- B. American Society for Testing & Materials (ASTM):
 - 1. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide extruded polystyrene insulation which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this Article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- E. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified herein.
 - 2. Record Documents: Project record documents for installed materials in accordance with Division 1 Closeout Submittals (Project Record Documents) Section.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate below Article with Division 1 Quality Assurance Section.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

Specifier Note: Retain paragraph below to suit project requirements; otherwise, delete paragraph below.

- a. Certificate: When requested, submit certificate indicating qualifications.
- 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

- B. Regulatory Requirements: (Specify applicable requirements of regulatory agencies.).

Specifier Note: Building Codes. Edit paragraph below to suit project. Current data on building code requirements and product compliance may be obtained from Owens Corning technical support specialists. Installation must comply with the requirements of all applicable local, state and national code jurisdictions. For code compliance, see the following reports: California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S; Factory Mutual approved; Underwriters Laboratories, Inc., Classification Certificate U-197; ICBO Evaluation Report #3628; BOCA Research Report 96-24; SBCCI PST & ESI 9727.

1. Building Code: (Specify applicable requirements of building code to suit project requirements.).

Specifier Note: Approvals: Edit paragraph below to suit project. Current data on approvals and product compliance may be obtained from Owens Corning technical support specialists. For code compliance, see the following reports: California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S; Factory Mutual Approved; Underwriters Laboratories, Inc., Classification Certificate U-197; ICBO Evaluation Report #3628; BOCA Research Report 96-24; SBCCI PST & ESI 9727.

2. Approvals: (Specify applicable requirements for approvals to suit project requirements.).

Specifier Note: Coordinate paragraph below with Division 1 Project Management and Coordination (Project Meetings) Section.

- C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

Specifier Note: Article below should include special and unique requirements. Coordinate Article below with Division 1 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.
1. Handle and store product according to Owens Corning recommendations. Materials should be delivered in their original unopened units, stored off the ground, protected from direct sunlight with a light colored opaque polyethylene film and ventilated to prevent excessive temperature. Damaged or deteriorated materials should be removed from the premises.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements/Conditions: Substrate and ambient air temperature shall be in accordance with manufacturer's requirements.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.



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Specifier Note: Warranty: It is the responsibility of the contractor to install FOAMULAR in accordance with Owens Corning's published recommendations. The presence of an Owens Corning representative at the jobsite does not relieve the contractor from the responsibility to follow these instructions. Owens Corning is not responsible for any liability resulting from a failure to follow these instructions. The manufacturer offers a warranty on retention of R-value over time. The manufacturer's liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to the manufacturer within 30 days from the date it was, or reasonably should have been, discovered. Further information on warranty conditions, duration and remedies may be obtained from Owens Corning.

- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

- 1. Warranty Period: (Specify term.) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 ROOF AND DECK (RECOVERY BOARD) INSULATION

Specifier Note: Technical Services: Owens Corning supplies preliminary design assistance, aids in the preparation of submittal packages in both new and retrofit applications.

- A. Manufacturer: Owens Corning.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

- 1. Contact: One Owens Corning Parkway, Toledo, OH 43659; Telephone: (800) 438-7465, (800) GET-PINK; Fax: (419) 438-7465; website: www.owenscorning.com.

Specifier Note: Owens Corning FOAMULAR below is made with the patented Hydrovac manufacturing process which gives it an impermeable skin on both sides. This skin and the closed cell structure of the board are the reasons why it retains both its ability to insulate and its compressive strength and integrity in use. Limitations: Construction should be evaluated by a qualified design professional for the necessity of providing vapor retarders to avoid condensation and subsequent damage to the structure. (See current ASHRAE Handbook of Fundamentals for more information.) Provisions should be made to protect the insulation from excessive exposure to direct sunlight by covering the insulation as soon as possible. Some plastic or oil based adhesives and many solvent laden mastics are not compatible with polystyrene based rigid foam insulation. Roofs exposed to chemical discharge need special consideration. (Contact Owens Corning for information.) Thermal barriers are not required over concrete roof decks, wood decks or when the original roof is left in place. Note that thermal barrier boards or cover boards may still be needed when designing hourly fire resistance or class A, B or C rated roofing systems. Consult applicable systems directories from Underwriters Laboratories, Inc., or the Factory Mutual System. Some roof membranes, such as PVC, require use of DURAPINK PLUS that has a slip sheet facer.

- B. Proprietary Product(s)/System(s): FOAMULAR Extruded Polystyrene Roof and Deck Insulation.

Specifier Note: DURAPINK and DURAPINK PLUS: This roofing recovery board provides new economy and durability for worn-out commercial roofs, saving the trouble and expense of removing the old roof, adding insulation and moisture protection to the new one. Roofing recovery is an increasingly popular means of reroofing for aged and trouble plagued roofs. The decision to recover a roof is based on 2 compelling reasons: the cost involved in tearing off the old roof and the cost of disposing of the

discarded debris, both of which can be significant. To meet the needs of roof recovery applications, Owens Corning developed DURAPINK and DURAPINK PLUS roofing recovery boards, extruded polystyrene roofing products for use with single ply membranes. DURAPINK and DURAPINK PLUS roofing recovery boards work without overlaid protection, ballast or pavers. Not all roofs are suitable for recover. See SPRI Guidelines for details. Important characteristics of DURAPINK recovery board include: Closed cell structure means DURAPINK and DURAPINK PLUS roofing recovery board resists damaging effects of moisture; DURAPINK PLUS is for use with PVC membranes; lightweight, yet durable, for ease of hoisting and installation; competitively priced with other recovery boards; available in 1/2", 3/4" and 1" (12.7, 19.1 and 25.4 mm) thickness; 48" x 96" (1219 x 2438 mm) width boards; an approved component in UL Class A, B and C single ply recovery applications; retains 100% of its compressive strength even after soaking; will stand up better to the abuse of roof traffic.

1. FOAMULAR DURAPINK Rigid Foam Insulation: Extruded polystyrene closed cell foam panel with continuous skins on face and back surfaces, 25, 18 psi (172, 124 kPa) minimum compressive strength in accordance with ASTM D2126.
 - a. Thickness: (Specify thickness from manufacturer's available thicknesses).
 - b. Size: (Specify size from manufacturer's available sizes or size as indicated on drawings).
 - c. Edges: Square.
2. FOAMULAR DURAPINK PLUS Rigid Foam Insulation: Extruded polystyrene closed cell foam panel with polyester on top and polyethylene facer on bottom of board, 25, 18 psi (172, 124 kPa) minimum compressive strength in accordance with ASTM D2126.
 - a. Thickness: (Specify thickness from manufacturer's available thicknesses).
 - b. Size: (Specify size from manufacturer's available sizes or size as indicated on drawings).
 - c. Edges: Square.
- C. Material Standard: Provide FOAMULAR insulation products complying with ASTM C578 standards for Type X and Type IV, Type V, Type VI and Type VII materials.

Specifier Note: Paragraph below lists properties for Owens Corning FOAMULAR Insulation. Revise paragraph below for other insulation products specified herein.

- D. Product(s) Testing: Provide extruded polystyrene insulation complying with the following properties:
 1. Flexural Strength (ASTM C203): 60 - 140 psi (413 - 965 kPa) minimum.
 2. Water Absorption (ASTM C272): 0.05 - 0.10% by volume maximum.
 3. Thermal Conductivity k-value at 75 degrees F (24 degrees C) (ASTM C518): 0.2.
 4. Thermal Conductivity k-value at 40 degrees F (4 degrees C) (ASTM C518): 0.18.
 5. Compressive Strength (ASTM D1621): 18 - 100 psi (124 - 689 kPa) minimum.
 6. Dimensional Stability (ASTM D2126): 2% linear change maximum.
 7. Oxygen Index (ASTM D2863): 24 minimum.
 8. Flamespread (ASTM E84): 5.
 9. Smoke Developed (ASTM E84): 45 - 175.
 10. Water Vapor Permeance (ASTM E96): 1.1 perm max.

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.



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2.03 ACCESSORIES

- A. General: Provide accessory materials, as needed.

2.04 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.

2.05 SOURCE QUALITY

- A. Source Quality: Obtain extruded insulation materials from a single manufacturer.

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 PREPARATION

- A. Surface Preparation: (Specify applicable product preparation requirements.).

Specifier Note: Coordinate Article below with manufacturer's recommended installation details and requirements. Installation recommendations vary depending on product, application and specific design requirements. Complete installation recommendations are available from the manufacturer.

3.04 INSTALLATION

Specifier Note: Edit paragraph below to suit project requirements. Coordinate below with roofing system specified in other sections, such as built-up roofing, bituminous membrane roofing, single-ply roofing and protected membrane roofing.

- A. Recovery Insulation Installation: Coordinate installation of recovery insulation with roofing system specified in other sections. Comply with recovery insulation manufacturer's and roofing system manufacturer's installation requirements.
 1. Install one layer of recovery insulation for specified roofing system in thickness indicated on drawings.
 2. Trim recovery insulation at roof drains and other penetrations in a flush surface.
 3. Install recovery insulation with long joints of recovery insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards.
- B. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related products installation.

3.05 FIELD QUALITY REQUIREMENTS

- A. Site Tests (Installation and Post-Installation Testing): (Specify applicable test requirements to be performed during and/or after product installation.).

Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service not required.

B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

1. Site Visits: (Specify number and duration of periodic site visits).

3.06 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.07 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION

