**SECTION 07 22 00**

**CEMENTITIOUS ROOF INSULATION**

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by the following method in Microsoft Word:

 Display the FILE tab on the ribbon, click OPTIONS, then DISPLAY. Select or deselect HIDDEN TEXT.

This guide specification section has been prepared by T. Clear Corporation for use in the preparation of a project specification section covering cementitious insulation as ballast for protected membrane roof system.

The following should be noted in using this specification:

Hypertext links to specific websites are included after manufacturer names and names of organizations whose standards are referenced within the text, to assist in product selection and further research. Hypertext links are contained in parenthesis and shown in blue, e.g.:

 (www.astm.org)

Items requiring user input are enclosed within brackets and included as red text, e.g.:

 Section [09 00 00] [\_\_ \_\_ \_\_.]

Optional paragraphs are separated by an "OR" statement included as red text, e.g.:

\*\*\*\* OR \*\*\*\*

For assistance on the use of the products in this section, contact T. Clear Corporation by calling 800-544-7398, by email at sconfer@tclear.com, or visit their website at [www.tclear.com](http://www.tclear.com).

1. **GENERAL**
	1. SUMMARY
		1. Section Includes:
			1. Cementitious insulation ballast for protected membrane roof system.
		2. Related Requirements:
			1. Division 01 - General Requirements: Administrative, procedural, and temporary work requirements.

Edit the following to include only those sections included in the Project Manual.

* + - 1. Section [07 51 10 - Built-Up Bituminous Roofing.] [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_.]
			2. Section [07 52 00 - Modified Bituminous Membrane Roofing.] [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_.]
			3. Section [07 53 00 - Elastomeric Membrane Roofing.] [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_.]
			4. Section [07 54 00 - Thermoplastic Membrane Roofing.] [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_.]
			5. Section [07 55 00 - Protected Membrane Roofing.] [\_\_ \_\_ \_\_ - \_\_\_\_\_\_\_.]
	1. REFERENCES
		1. ASTM International (ASTM) [(www.astm.org](http://www.astm.org)) C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
	2. ADMINISTRATIVE REQUIREMENTS

Retain the following for a pre-installation conference to review the work of this section prior to installation.

* + 1. Pre-Installation Conference:
			1. Convene at Project site [2] [\_\_] weeks prior to beginning work of this Section.
			2. Attendance: [Architect,] [Owner,] [Contractor,] [Construction Manager,] installer, and related trades.
			3. Review: Project conditions, manufacturer requirements, delivery and storage, staging and sequencing, and protection of completed work.
	1. SUBMITTALS

Retain the following for submittals requiring the Design Professional’s review.

* + 1. Action Submittals:
			1. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories and finishes of system to be installed.
			2. Product Data: Manufacturer's specifications and technical data.
			3. Samples: [4 x 4 [\_\_ x \_\_] inch insulation samples.

Retain the following for submission of submittals for the Owner's record purposes.

* + 1. Informational Submittals:
			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. Field Reports: Reports of field inspections by manufacturer's authorized representative.

Retain the following for extra materials for the Owner’s use.

* + 1. Maintenance Material Submittals: Extra materials in amount of 2 percent of product installed.
	1. QUALITY ASSURANCE

Retain the following if required; edit to suit project requirements.

* + 1. Installer Qualifications: Minimum [\_\_] years experience in work of this Section.
	1. DELIVERY, STORAGE AND HANDLING
		1. Protect materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
		2. Do not store or stack material on roof decks in concentrations in excess of design live loadings.
		3. Do not leave unprotected materials on roof overnight.
		4. Protect insulation from exposure to sunlight and fire ignition.
	2. SITE CONDITIONS
		1. Substrate and ambient air temperature in accordance with manufacturer's requirements.
	3. WARRANTY

Refer to manufacture’s literature for warranty provisions. Coordinate with Field Quality Control under Part 3.

* + 1. Manufacturer’s [Material Only] [Basic] [Total Performance] warranty against defects in materials and workmanship.
1. **PRODUCTS**
	1. MANUFACTURERS
		1. Contract Documents are based on products by T. Clear Corporation, 800-544-7398, email sconfer@tclear.com, [www.tclear.com](http://www.tclear.com).
		2. Substitutions: [Refer to Division 01.] [Not permitted.]
	2. MATERIALS

LIGHTGUARD provides insulation as well as ballast. It is used as the ballast component of a Protected Membrane Roof (PMR) assembly and is suited for new or reroofing use on commercial and industrial buildings. LIGHTGUARD consists of a concrete panel laminated to insulation board. The panels can be installed on top of most types and brands of roof membranes, offering protection from thermal shock, weathering forces and maintenance related foot traffic. LIGHTGUARD and HEAVYGUARD, as part of a PMR, are effective in controlling condensation and dew point location in industrial plants such as paper mills. By insulating the roof assembly and keeping dew point above roof membrane, LIGHTGUARD protects valuable machinery in pulp and paper mills, textile mills and other installations where moisture can cause damage to equipment. LIGHTGUARD is reusable in reroofing and vertical expansion situations. It is free of chlorofluorocarbons (CFCs). HEAVYGUARD is a heavier version of the LIGHTGUARD panel. It is used where high traffic and higher point loading require a thicker concrete-panel component. Delete type not required.

* + 1. Cementitious Board Insulation:
			1. Source: LIGHTGUARD Cementitious Board Insulation by T. Clear Corporation.
			2. Panels: 3/8 inch thick latex modified concrete panel laminated to closed-cell extruded polystyrene insulation board, ASTM C578, Type VI, 40 PSI compressive strength.
			3. Size: 2 x 4 feet x [2-3/8] [3-3/8] inches thick.
			4. Weight: 4.5 PSF.
			5. Color: [Natural gray.] [Red.] [Green.] [Tan.] [Field applied, highly reflective white coating.]
			6. Shape: Flat.
			7. Edges: Tongue-and-groove.

\*\*\*\* OR \*\*\*\*

* + 1. Cementitious Board Insulation:
			1. Source: HEAVYGUARD Cementitious Board Insulation by T. Clear Corporation.
			2. Panels: 15/16 inch thick latex modified concrete panel laminated to closed-cell extruded polystyrene insulation board, ASTM C578, Type VI, 40 PSI compressive strength.
			3. Size: 2 x 4 feet x [2-15/16] [3-15/16] inches thick.
			4. Weight: 11 PSF.
			5. Color: [Natural gray.] [Red.] [Green.] [Tan.] [Field applied, highly reflective white coating.]
			6. Edges: Tongue-and-groove,
			7. R-value: 5.0 per inch of foam.

Delete accessories not required.

* 1. ACCESSORIES
		1. Metal Perimeter Securement and Strapping:
			1. Hickman: Edge-Guard termination fascia and perimeter hold-down system.
			2. Metal Era: Anchor-Tite PMR/Lock Version Fascia System.
			3. Other system approved by manufacturer.
		2. Metal Straps: Minimum 22 gage [Galvalume] [Zincalume] [Stainless steel] [fluoropolymer coated steel] sheet straps.
		3. Fasteners:
			1. For fastening metal perimeter securement to perimeter of roof structure: Fastener appropriate to substrate, following recommendations of fastener manufacturer.
			2. For securing metal straps to cementitious surfaced extruded polystyrene insulation board:
				1. Fabco: Fab-Lok 10- 12 inch.
				2. Olympic Fastening Systems, Inc.: Bulb Tite blind rivet RV6604-8-10.
				3. SFS Intec: TPR or TPR2 for HG Peel Rivet.
				4. Other fasteners approved by panel manufacturer.
1. **EXECUTION**
	1. INSTALLATION
		1. Install in accordance with manufacturer's instructions and approved Shop Drawings.

Edit the following to retain only those products required.

* + 1. Cementitious Surfaced Extruded Polystyrene Insulation (Over Roof Membrane):
			1. Make long joints (length of board) continuous. Stagger side joints.
			2. Fit boards to avoid cracks and openings. Butt sides of boards tightly to adjacent board.
			3. Extend boards to within 1/4 to 1/2 inch of projections.
		2. Perimeter Securement and Metal Strapping Securement:
			1. Install perimeter securement and interior metal straps in accordance with panel manufacturer's instructions.
			2. If conditions exist where written instructions do not clearly apply, obtain direction from manufacturer before proceeding.
		3. Sheet Metal Perimeter Securement:
			1. Install continuously around roof penetrations in maximum 12 foot sections.
			2. Allow for expansion and contraction.
			3. Attach at maximum 12 inches on center.
			4. Attach to first perimeter insulation board that has tongue-and-groove integrity and is minimum 12 inches in width.
			5. Extend minimum 6 inches onto insulation board and attach at maximum 18 inches on center.
		4. Installing Concrete Paver Perimeter Securement:
			1. Install in accordance with manufacturer’s recommendation for roof type.
			2. Adhered membranes: For roofs in 90 MPH wind range, use single row of nominal 2 inch x 8 inch x 16 inch pavers laid with long edge perpendicular to roof perimeter.
			3. Loose-laid membranes and multiple layer foam installations: For roofs in 90 MPH wind range only, use single row of nominal 2 inch x 24 inch x 24 inch or two rows of nominal 2 inch x 8 inch x 16 inch pavers laid with long edge perpendicular to roof perimeter.
			4. Paver placement:
				1. Height of gravel stop or parapet: Extend above paver in all cases
				2. Place pavers in continuous rows, butted together, at perimeters and openings or penetrations greater than 4 feet long.
				3. When 4 foot dimension of board runs parallel to perimeter, place pavers with outside edge centered on perimeter board, covering first board joint.
				4. When 2 foot long dimension of board runs parallel to perimeter, place pavers in from perimeter minimum 12 inches.
		5. Locating Interior Metal Straps for Range 2 Securement:
			1. Install in accordance with manufacturer’s recommendation for roof type.
			2. Place straps running in long direction of boards on second and third row of whole boards in from perimeter.
			3. Place straps running in short direction of insulation boards starting at 3 feet from perimeter and running every 10 feet thereafter along entire roof, to attach interior straps running in long direction of board to metal perimeter securement.
			4. Only first strap at perimeter, running in short direction of boards, must go across entire roof. Other straps proceed only as far as innermost straps running in long direction.
		6. Locating Corner Straps for Range 2 Securement:
			1. Install in accordance with manufacturer’s recommendation for roof type.
			2. Place corner cross braces at each corner.
			3. Fastening straps to cementitious surfaced extruded polystyrene insulation board:
				1. Place fasteners in predrilled holes in insulation board. Drive fasteners perpendicular to plane; do not overdrive.
				2. Locate fasteners maximum 18 inches on center and minimum 3 inches from board edges.
	1. FIELD QUALITY CONTROL

Edit the following as required:

 Material Only Warranty: No inspections are required

 Basic Warranty: One inspection.

 Total Performance Warranty: Three inspections.

* + 1. Manufacturer's Field Services:
			1. Upon request provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of installation.
			2. Number of site visits: [One.] [Three.]
	1. PROTECTION
		1. Protect installed products from damage during construction.

END OF SECTION