



BUILDING TRUST



SECTION 06 16 13
POLYISO INSULATION SHEATHING

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**** NOTE TO SPECIFIER ** Rmax, A Business Unit of Sika Corporation; provides this specification section to Roof, Wall and Below Grade Insulation.**

This section is based on the products of Rmax, A Business Unit of Sika Corporation, which is headquartered at:

**2075 Midway Road
Lewisville, TX 75056**

Tel: 800-527-0890

Email: rmax@rmax.com

Technical Support Tel: 972-850-3604

Technical Support Email: rmax.technical@us.sika.com

Web: www.rmax.com

[Click Here] for additional information.

The Leader in Building Insulation Solutions Since 1978.

For more than 30 years, Rmax has been creating insulation solutions based on the latest building science. Our full line of high-quality, polyisocyanurate-based roof, wall, and specialty insulation products for commercial, industrial, and residential applications deliver maximum R-Values and minimum environmental impact, with efficiency in installation, cost, and design. As new developments in building science emerge, rest assured that Rmax will remain on the forefront, manufacturing tested, engineered solutions that serve architects, builders, owners, and occupants alike. Our people understand the diverse markets our products are used in. Their integrity and responsiveness work to your advantage. Our manufacturing plants in Dallas, TX, Greer, SC, and Fernley, NV, with sales offices coast-to-coast, stand ready to serve you. As one of the founding organizations behind the Polyisocyanurate Insulation Manufacturers Association (PIMA), Rmax has led the way in introducing environmentally acceptable polyisocyanurate products and solutions for all manner of building applications.

PART 1 GENERAL

1.1 SECTION INCLUDES

**** NOTE TO SPECIFIER ** Delete any sections below not relevant to project; add others as required.**

- A. Aluminum Faced, Coated Glass Mat Faced and Polymeric Faced Insulation:
 - 1. Aluminum faced, polyisocyanurate foam insulating sheathing.
 - a. ECOMAXci FR.
 - b. Thermasheath.
 - 2. Aluminum faced, polyisocyanurate foam interior exposed insulation and insulating sheathing.
 - a. ECOMAXci FR.
 - b. TSX-8510.
 - 3. Polymer coated glass fiber mat faced, polyisocyanurate foam insulating sheathing.

- a. Durasheath.
- 4. Polymeric faced, below, grade polyisocyanurate foam insulation for foundation walls and slab-on-grade insulation.
 - a. Rmax Below Grade.
- B. Board Faced Insulation and Structural Insulation:
 - 1. Fire-retardant-treated nail base insulating sheathing.
 - a. ECOMAXci FR Ply.
 - b. ECOMAXci Ply.
 - 2. Nail base insulating sheathing.
 - a. ThermaBase-CI (TS).
 - b. ThermaBase-CI (DS).
 - 3. Aluminum faced, polyisocyanurate foam insulating structural sheathing.
 - a. Thermasheath-SI.
- C. Accessories:
 - 1. Insulation fastener components.
 - 2. Insulation joint and flashing components.
 - 3. Interior insulation attachment and joint closure system.

1.2 RELATED SECTIONS

**** NOTE TO SPECIFIER ** Delete any sections below not relevant to project; add others as required.**

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 03 41 16 - Precast Concrete Slabs.
- C. Section 04 00 00 - Masonry.
- D. Section 05 40 00 - Cold-Formed Metal Framing.
- E. Section 06 10 00 - Rough Carpentry.
- F. Section 07 10 00 - Dampproofing and Waterproofing
- G. Section 07 27 19 - Plastic Sheet Air Barriers .
- H. Section 07 27 00 - Air Barriers.
- I. Section 07 50 00 - Membrane Roofing.
- J. Section 09 22 16 - Non-Structural Metal Framing.
- K. Section 09 25 23 - Lime Based Plastering.

1.3 REFERENCES

**** NOTE TO SPECIFIER ** Delete references from the list below that are not required by the text of the edited section.**

- A. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 711 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.
 - 2. AAMA 714 - Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings.
- B. American Association of Textile Chemists and Colorists (AATCC):
 - 1. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test.

- C. American National Standards Institute (ANSI):
 - 1. ANSI/SBCA FS 100-2012 - Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies.
- D. ASTM International (ASTM):
 - 1. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
 - 2. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Sandwich Construction.
 - 3. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 4. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - 5. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 6. ASTM C1763 - Standard Test Method for Water Absorption by Immersion of Thermal Insulation Materials.
 - 7. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 8. ASTM D7989 - Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels.
 - 9. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
 - 10. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 11. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
 - 12. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - 13. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
 - 14. ASTM E564 - Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings.
 - 15. ASTM E2126 - Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings.
 - 16. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
 - 17. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
- E. International Code Council (ICC):
 - 1. ICC-ES AC71 - Acceptance Criteria for Foam Plastic Sheathing Panels Used as Weather-resistive Barriers.
- F. National Fire Protection Association (NFPA):
 - 1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
 - 2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- G. Underwriters Laboratories (UL): USA.
 - 1. UL 263 - Fire Tests of Building Construction and Materials.
 - 2. UL 723 - Standard for Test for surface Burning Characteristics of Building Materials.
 - 3. UL 1715 - Fire Test of Interior Finish Material.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

**** NOTE TO SPECIFIER ** Delete individual items below if not required.**

- C. Third-Party Documentation, including Technical Evaluation Reports and Engineering Judgements relative to NFPA Wall Assemblies, including, but not limited to, reference to various cladding types and wall construction.
- D. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 1. Accessories: Include details of all integral panel components and their interface with adjacent materials.
 - 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (102 x 150 mm).
- F. Manufacturer Qualifications: All primary products specified in this section shall be supplied by a single manufacturer with a minimum ten years' experience.
- G. Installer Qualifications: All products listed in this section shall be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

**** NOTE TO SPECIFIER ** Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major types of work on the project.**

- H. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Remodel mock-up area as required to produce acceptable work.
- I. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, foundation/structural system/substrate conditions, and insulation manufacturer's installation instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle products per manufacturer's instructions until ready for installation.

1.6 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Insulation Warranty: At project closeout, provide to Owner an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Rmax, A Business Unit of the Sika Corporation, which is located at: 2075 Midway Rd.; Lewisville, TX 75056; Toll Free Tel: 800-527-0890; Fax: 972-387-4673; Email: [request info \(rmax.technical@us.sika.com\)](mailto:request info (rmax.technical@us.sika.com)); Web: <https://www.rmax.com>
 - 1. Manufacturing Plant Locations: Dallas, TX, Greer, SC, and Fernley, NV, to serve multiple regions.

**** NOTE TO SPECIFIER ** Delete one of the following two paragraphs: coordinate with requirements of Division 1 section on product options and substitutions.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

**** NOTE TO SPECIFIER ** Delete article if not required.**

2.2 ALUMINUM FACED, COATED GLASS MAT FACED AND POLYMERIC FACED INSULATION

**** NOTE TO SPECIFIER ** ECOMAXci FR (replaces TSX-8500) is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded to embossed, glass fiber reinforced aluminum facers on both sides. The exposed side of the board has a heavy embossed 12 mil facer with an aluminum reflective surface and clear coating for limited protection against oxidation. The other side is marked in production to ensure proper installation. Delete if not required.**

- A. Aluminum Faced, Polyisocyanurate Foam Interior Exposed Insulation and Insulating Sheathing: ASTM C1289, Type I, Class 1 and Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to glass fiber reinforced aluminum facers on both sides. Heavy embossed 12 mil facer with aluminum reflective surface on exposed side.
 - 1. Basis of Design: ECOMAXci FR from Rmax, A Business Unit of Sika Corporation.
 - 2. Flame Spread Index and Smoke Contribution Index (Class A) per ASTM E84:
 - a. Flame: 25 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of ECOMAXci FR is less than the value defined as a Class I vapor retarder.**

- 3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is identified below. ECOMAXci FR is more restrictive than required by code.**

- 4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength and delete remaining values.**

- 5. The first option, 20 psi (138 kPa), is standard for ECOMAXci FR of 1 inch (25 mm)

- and greater thickness.
6. ECOMAXci FR is provided at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness, unless specified at greater compressive strength noted below.
 7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
 8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
11. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.0 minimum at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.

**** NOTE TO SPECIFIER ** Delete following if required for interior use only.**

13. Insulation shall be suitable as continuous exterior wall insulation.

**** NOTE TO SPECIFIER ** Delete the following if required for exterior use only.**

14. Insulation shall be determined to be suitable for exposed interior use. Testing to be conducted in accordance with UL 1715 or NFPA 286, as addressed in IBC Section 2603.9 Special Approval; relative to the following:
 - a. Without need for an ignition barrier on walls and ceilings.
 - b. Without need for an ignition or thermal barrier on walls or ceilings within the same building space, conforming to the following:
 - 1) On walls only for insulation thickness of 4.5 inches (114 mm) maximum.
 - 2) On ceilings only for insulation thickness of 12 inches (305 mm) maximum.

**** NOTE TO SPECIFIER ** Exterior Usage in NFPA 285 Wall Assemblies. Delete if not required.**

15. Exterior Usage in NFPA 285 Wall Assemblies:
 - a. Acceptable for inclusion in NFPA 285 exterior wall assemblies, including those that do not include exterior gypsum sheathing.

**** NOTE TO SPECIFIER ** TSX-8510 is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded glass fiber reinforced aluminum facers on both sides. The exposed side of the board has a white modified acrylic coating. The other side is marked in production to ensure proper installation. Delete if not required.**

- B. Aluminum Faced, Polyisocyanurate Foam Interior Exposed Insulation and Insulating Sheathing: ASTM C1289, Type I, Class 1 and Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to glass fiber reinforced aluminum facers on both sides. The exposed side of the board has a white modified acrylic coating.
 1. Basis of Design: TSX-8510 from Rmax, A Business Unit of Sika Corporation.
 2. Flame Spread Index and Smoke Contribution Index (Class A) per ASTM E84:
 - a. Flame: 25 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of TSX-8510 is less than the value defined as a Class I vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. TSX-8510 is more restrictive than required by code.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength and delete remaining values.**

5. The first option, 20 psi (138 kPa), is standard for TSX-8510 of 1 inch (25 mm) and greater thickness.
6. TSX-8510 is provided at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness, unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below is intended to identify the specific R-Values and/or thickness as appropriate to the project, in the specifications or the drawings.
11. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.0 minimum at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.
13. Insulation shall be determined to be suitable for exposed interior use. Testing to be conducted in accordance with UL 1715 or NFPA 286, as addressed in IBC Section 2603.9 Special Approval; relative to the following:
 - a. Without need for an ignition barrier on walls and ceilings.
 - b. Without need for an ignition or thermal barrier on walls or ceilings within the same building space, conforming to the following:
 - 1) On walls only for insulation thickness of 4.5 inches (114 mm) maximum.
 - 2) On ceilings only for insulation thickness of 12 inches (305 mm).

**** NOTE TO SPECIFIER ** Thermasheath is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded to reinforced aluminum facers with clear coating for limited protection against oxidation on each side. Delete if not required.**

- C. Aluminum Faced, Polyisocyanurate Foam Insulating Sheathing: ASTM C1289, Type I, Class 1 and Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to reinforced aluminum facers on both sides.
 1. Basis of Design: Thermasheath from Rmax, A Business Unit of Sika Corporation.
 2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 75 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of Thermasheath is less than the value defined as a Class I vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified. Thermasheath is more restrictive than required by code.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength and delete remaining values.**

5. The first option, 20 psi (138 kPa), is standard for Thermasheath of 1 inch (25 mm) and greater thickness.
6. Thermasheath is provided at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness, unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by

addressing a specific range of Aged R-Values.

10. Second paragraph below is intended to identify the specific R-Values and/or thickness as appropriate to the project, in the specifications or the drawings.
11. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.0 minimum at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.

**** NOTE TO SPECIFIER ** Exterior Usage in NFPA 285 Wall Assemblies: Delete if not required.**

13. Exterior Usage in NFPA 285 Wall Assemblies:
 - a. Acceptable for inclusion in NFPA 285 exterior wall assemblies that include exterior gypsum sheathing.

**** NOTE TO SPECIFIER ** Durasheath is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded to inorganic polymer-coated glass mat facers on each side. Delete if not required.**

- D. Polymer Coated Glass Fiber Mat Faced, Polyisocyanurate Foam Insulating Sheathing: ASTM C1289, Type II, Class 2, rigid, cellular, polyisocyanurate thermal insulation.

1. Basis of Design: Durasheath from Rmax, A Business Unit of Sika Corporation.

**** NOTE TO SPECIFIER ** Durasheath is manufactured to provide a Flame Spread Index of 25 or less at thickness of 1 inch (25 mm) and greater; and 75 or less at thickness of less than 1 inch (25 mm).**

2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 25 or less at thickness of 1 inch (25 mm) or greater; and 75 or less at thickness of less than 1 inch (25 mm).
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 1.5 perm or less relates to the code definition of a Class III vapor retarder. The Water Vapor Permeability of Durasheath is greater than the value defined as a Class III vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 1.5 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified. Durasheath is more restrictive than required by code.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength and delete remaining values.**

5. The first option, 20 psi (138 kPa), is standard for Durasheath of 1 inch (25 mm) and greater thickness.
6. Durasheath is provided at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness, unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below is intended to identify the specific R-Values and/or thickness as appropriate to the project, in the specifications or the drawings.
11. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.3 minimum at thickness of 1.70 inches (43 mm) and R-12.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.

**** NOTE TO SPECIFIER ** Delete following if required for interior use only.**

13. Insulation shall be suitable as continuous exterior wall insulation.

**** NOTE TO SPECIFIER ** Exterior Usage in NFPA 285 Wall Assemblies: Delete if not required.**

14. Exterior Usage in NFPA 285 Wall Assemblies:

- a. Acceptable for inclusion in NFPA 285 exterior wall assemblies that include exterior gypsum sheathing.

**** NOTE TO SPECIFIER ** Rmax® Below Grade is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded to reinforced polymeric facers on each side. Delete if not required.**

- E. Below Grade Polyisocyanurate Foam Insulation: ASTM C1289, Type I, Class 1 and Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to reinforced polymeric facers on both sides.
1. Basis of Design: Rmax Below Grade from Rmax, A Business Unit of Sika Corporation.
 2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 75 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of Rmax® Below Grade is less than the value defined as a Class I vapor retarder.**

- c. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The Water Absorption of 0.3% maximum relates to ASHRAE 90.1 requirement for insulation materials in ground contact, when tested in accordance with ASTM C272.**

3. Water Absorption: Per ASTM C272, 0.3 percent maximum.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. Rmax® Below Grade is more restrictive than required by code.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.
5. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Rmax® Below Grade is manufactured in the following specific thicknesses and related Aged R-Values.**

6. Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.
7. First paragraph below lists all available thicknesses and specific Aged R-Values.
8. Second paragraph below is intended to allow for identification of the specific R-Values and/or thickness as appropriate to the project, in the specifications or the drawings.
9. Aged R-Value per ASTM C518:
 - a. R-5.0 minimum at thickness of 0.75 inch (19 mm).
 - b. R-6.0 minimum at thickness of 1 inch (25 mm).
 - c. R-10.0 minimum at thickness of 1.5 inches (39 mm).
 - d. R-13.1 minimum at thickness of 2 inches (51 mm).
 - e. R-15.3 minimum at thickness of 2.3 inches (58 mm).
 - f. R-20.3 minimum at thickness of 3 inches (76 mm).
10. Required Insulation R-value and Thickness as indicated on the Drawings.

**** NOTE TO SPECIFIER ** Delete article if not required.**

2.3 BOARD FACED INSULATION AND STRUCTURAL INSULATION

**** NOTE TO SPECIFIER ** ECOMAXci FR Ply is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core with glass fiber reinforced aluminum facers on both sides bonded to 5/8 or 3/4 inch (16 or 19 mm) fire-retardant-treated plywood. Delete if not required.**

- A. Fire-Retardant-Treated Nail Base Insulating Sheathing, Consisting of Aluminum Faced, Polyisocyanurate Foam Insulating Sheathing bonded to Fire-Retardant-Treated Plywood: ASTM C1289, Type V with Type I, Class 1 and Class 2, rigid, cellular, polyisocyanurate thermal insulation.
1. Basis of Design: ECOMAXci FR Ply from Rmax, A Business Unit of Sika Corporation.

2. Flame Spread Index and Smoke Contribution Index (Class A) per ASTM E84:
 - a. Flame: 25 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of ECOMAXci FR Ply is less than the value defined as a Class I vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. ECOMAXci FR Ply is more restrictive than required by code. Refer to the product data sheet for specific the value.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength for insulation component and delete remaining values.**

5. The first option, 20 psi (138 kPa), is standard for ECOMAXci FR Ply with insulation component thickness of 1 inch (25 mm) and greater.
6. ECOMAXci FR Ply is provided with insulation component at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
11. Aged R-Value of insulation component per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.0 at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.

**** NOTE TO SPECIFIER ** Exterior Usage in NFPA 285 Wall Assemblies: Delete if not required.**

13. Exterior Usage in NFPA 285 Wall Assemblies:
 - a. Acceptable for inclusion in NFPA 285 exterior wall assemblies, including those that do not include exterior gypsum sheathing.

**** NOTE TO SPECIFIER ** Indicate thickness of Fire-Retardant-Treated Plywood in specifications or on drawings. Delete option not required.**

- b. ECOMAXci FR Ply is available with plywood thickness of 5/8 and 3/4 inch (16 and 19 mm).
 - c. Fire Retardant Treated Plywood conforms to DOC PS 1 or DOC PS 2 and is rated as Exposure 1, often identified as CDX plywood, and will bear the proper identification labels.
 - d. The wood component will provide additional R-Value to that of the insulation component: 5/8 inch (16 mm) plywood provides an additional 0.7 R-Value. 3/4 inch (19 mm) plywood provides an additional 0.9 R-Value.
14. Fire-Retardant-Treated Plywood Thickness:
 - a. Fire-Retardant-Treated Plywood, Exposure 1: 5/8 inch (16 mm).
 - b. Fire-Retardant-Treated Plywood, Exposure 1: 3/4 inch (19 mm).

**** NOTE TO SPECIFIER ** ECOMAXci Ply (replaces ECOBASEci) is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam insulation with inorganic, polymer-coated glass fiber mat facers bonded to 5/8 and 3/4 inch (16 and 19 mm) fire-retardant-treated plywood. Delete if not required.**

B. Fire-Retardant-Treated Nail Base Insulating Sheathing, Consisting of Polymer Coated Glass

Fiber Mat Faced, Polyisocyanurate Foam Insulating Sheathing bonded to Fire-Retardant-Treated Plywood: ASTM C1289, Type V with Type II, Class 2, rigid, cellular polyisocyanurate thermal insulation.

1. Basis of Design: ECOMAXci Ply from Rmax, A Business Unit of Sika Corporation.

**** NOTE TO SPECIFIER ** ECOMAXci Ply is manufactured to provide a Flame Spread Index for the insulation core of 25 or less at thickness of 1 inch (25 mm) and greater; and 75 or less at thickness of less than 1 inch (25 mm). The Flame Spread Index of the Fire-Retardant-Treated Plywood component is 25 or less.**

2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 25 or less for foam insulation component at thickness of 1 inch (25 mm) or greater, and 75 or less for foam insulation component at thickness of less than 1 inch (25 mm).
 - b. Flame: 25 or less for fire-retardant-treated plywood.
 - c. Smoke: 450 or less for foam insulation and fire-retardant-treated plywood.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 1.5 perm or less relates to the code definition of a Class III vapor retarder. The Water Vapor Permeability of ECOMAXci Ply is greater than the value defined as a Class III vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 1.5 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. ECOMAXci Ply is more restrictive than required by code.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength for insulation component and delete remaining values.**

5. The first option, 20 psi (138 kPa), standard for ECOMAXci Ply with insulation component thickness of 1 inch (25 mm) and greater.
6. ECOMAXci Ply is provided with insulation component at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
11. Aged R-Value of insulation component per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), 10.3 minimum at thickness of 1.70 inches (43 mm) and R-12.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.

**** NOTE TO SPECIFIER ** Exterior Usage in NFPA 285 Wall Assemblies: Delete if not required.**

13. Exterior Usage in NFPA 285 Wall Assemblies:
 - a. Acceptable for inclusion in NFPA 285 exterior wall assemblies that include exterior gypsum sheathing.

**** NOTE TO SPECIFIER ** Indicate thickness of Fire-Retardant-Treated Plywood in specifications or on drawings. Delete option not required.**

- b. ECOMAXci Ply is available with plywood thickness of 5/8 and 3/4 inch (16 and 19 mm).
- c. Fire Retardant Treated Plywood conforms to DOC PS 1 or DOC PS 2 and is rated as Exposure 1, often identified as CDX plywood, and will bear the proper identification labels.
- d. The wood component will provide additional R-Value to that of the insulation component: 5/8 inch (16 mm) plywood provides an additional 0.7 R-Value. 3/4

- inch (19 mm) plywood provides an additional 0.9 R-Value.
14. Fire-Retardant-Treated Plywood Thickness:
- Fire-Retardant-Treated Plywood, Exposure 1: 5/8 inch (16 mm).
 - Fire-Retardant-Treated Plywood, Exposure 1: 3/4 inch (19 mm).

**** NOTE TO SPECIFIER ** ThermaBase-CI (TS) is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core bonded to reinforced aluminum facers on both sides bonded to a nailing surface. The standard nailing surface for ThermaBase-CI (TS) is 7/16 inch (11 mm) OSB (APA rated). Alternate nailing surfaces, such as 1/2, 5/8, or 3/4 inch (13, 16 19 mm) OSB or CDX plywood, are available upon request. Refer to the specification for ECOMAXci FR Ply for similar product incorporating fire-retardant-treated plywood. Delete if not required.**

- C. Nail Base Insulating Sheathing, Consisting of Aluminum Faced, Polyisocyanurate Foam Insulating Sheathing bonded to OSB or Plywood: ASTM C1289, Type V with Type I, Class 1 or Class 2, rigid, cellular, polyisocyanurate thermal insulation.
- Basis of Design: ThermaBase-CI (TS) from Rmax, A Business Unit of Sika Corporation.

**** NOTE TO SPECIFIER ** ThermaBase-CI (TS) is manufactured to provide a Flame Spread Index for the insulation core of 25 or less at thickness of 1 inch (25 mm) and greater; and 75 or less at thickness of less than 1 inch (25 mm). The Flame Spread Index of the wood panel component is 75 or less.**

- Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - Flame: 75 or less.
 - Flame: 75 or less for plywood or OSB component.
 - Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of ThermaBase-CI (TS) is less than the value defined as a Class I vapor retarder.**

- Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. ThermaBase-CI (TS) is more restrictive than required by code. Refer to the product data sheet for specific the value.**

- Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength for insulation component and delete remaining values.**

- The first option, 20 psi (138 kPa) standard for ThermaBase-CI (TS) with insulation component thickness of 1 inch (25 mm) and greater.
- ThermaBase-CI (TS) is provided with insulation component at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness unless specified oat greater compressive strength noted below.
- Compressive Strength per ASTM D1621: 20 psi (138 kPa).
- Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

- First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
- Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
- Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10 minimum at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).
- Required Insulation Thickness and R-Value: As indicated on the Drawings.
- Nailable Material and Thickness:

**** NOTE TO SPECIFIER ** Identify Nailable Material and Thickness. Delete options not required.**

14. 7/16-inch (11 mm) thickness OSB is standard with most manufacturers.
15. Wood structural panels of Plywood and OSB conform to DOC PS 1 or DOC PS 2 and are rated as Exposure 1, which in the case of plywood is often identified as CDX plywood and will bear the proper identification labels.
16. The wood component will provide additional R-Value to that of the insulation component: 7/16 and 1/2 inch (11 and 13 mm) OSB or plywood provides an additional 0.6 R-Value. 5/8 inch (16 mm) plywood provides an additional 0.7 R-Value. 3/4 inch (19 mm) plywood provides an additional 0.9 R-Value.
 - a. Oriented-Strand-Board Nominal Thickness: 7/16 inch (11 mm).
 - b. Oriented-Strand-Board Nominal Thickness: 1/2 inch (13 mm).
 - c. Oriented-Strand-Board Nominal Thickness: 5/8 inch (16 mm).
 - d. Oriented-Strand-Board Nominal Thickness: 3/4 inch (19 mm).
 - e. Plywood Nominal Thickness, Exposure 1: 1/2 inch (13 mm).
 - f. Plywood Nominal Thickness, Exposure 1: 5/8 inch (16 mm).
 - g. Plywood Nominal Thickness, Exposure 1: 3/4 inch (19 mm).

**** NOTE TO SPECIFIER ** ThermaBase-CI (DS) is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam core with inorganic polymer-coated glass mat facers on each side bonded to a nailing surface. The standard nailing surface for ThermaBase-CI (DS) is 7/16 inch (11 mm) OSB (APA rated). Alternate nailing surfaces, such as 1/2, 5/8, or 3/4 inch (13, 16, and 19 mm) OSB or CDX plywood, are available upon request. Refer to the specification for ECOMAXci Ply for similar product incorporating fire-retardant-treated plywood. Delete if not required.**

- D. Nail Base Insulating Sheathing, Consisting of Polymer Coated Glass Fiber Mat Faced, Polyisocyanurate Foam Insulation Bonded to OSB or Plywood: ASTM C1289, Type V with Type II, Class 2, rigid, cellular polyisocyanurate thermal insulation.
 1. Basis of Design: ThermaBase-CI (DS) from Rmax, A Business Unit of Sika Corporation.

**** NOTE TO SPECIFIER ** ThermaBase-CI (DS) is manufactured to provide a Flame Spread Index for the insulation core of 25 or less at thickness of 1 inch (25 mm) and greater; and 75 or less at thickness of less than 1 inch (25 mm). The Flame Spread Index of the wood panel component is 75 or less.**

2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 25 or less for foam insulation component at thickness of 1 inch (25 mm) or greater; and 75 or less at thickness of less than 1 inch (25 mm).
 - b. Flame: 75 or less for plywood or OSB component.
 - c. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 1.5 perm or less relates to the code definition of a Class III vapor retarder. The Water Vapor Permeability of ThermaBase-CI (DS) is greater than the value defined as a Class III vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 1.5 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. ThermaBase-CI (DS) is more restrictive than required by code. Refer to the product data sheet for specific the value.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Choose intended compressive strength for insulation component and delete remaining values.**

5. The first option, 20 psi (138 kPa) is standard for ThermaBase-CI (DS) with insulation component thickness of 1 inch (25 mm) and greater.
6. ThermaBase-CI (DS) is provided with insulation component at 16 psi (110 kPa) compressive strength at less than 1 inch (25 mm) thickness unless specified at greater compressive strength noted below.
7. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
8. Compressive Strength per ASTM D1621: 25 psi (172 kPa).

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

9. First paragraph below identifies the Basis of Design properties of the insulation by addressing a specific range of Aged R-Values.
10. Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
11. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10.3 minimum at thickness of 1.70 inches (43 mm) and R-12.1 minimum at thickness of 2 inches (51 mm).
12. Required Insulation Thickness and R-Value: As indicated on the Drawings.
13. Nailable Material and Thickness:

**** NOTE TO SPECIFIER ** Identify Nailable Material and Thickness. Delete options not required.**

14. 7/16-inch (11 mm) thickness OSB is standard with most manufacturers.
15. Wood structural panels of Plywood and OSB conform to DOC PS 1 or DOC PS 2 and are rated as Exposure 1, which in the case of plywood is often identified as CDX plywood and will bear the proper identification labels.
16. The wood component will provide additional R-Value to that of the insulation component: 7/16 and 1/2 inch (11 and 13 mm) OSB or plywood provides an additional 0.6 R-Value. 5/8 inch (16 mm) plywood provides an additional 0.7 R-Value. 3/4 inch (19 mm) plywood provides an additional 0.9 R-Value.
 - a. Oriented-Strand-Board Nominal Thickness: 7/16 inch (11 mm).
 - b. Oriented-Strand-Board Nominal Thickness: 1/2 inch (13 mm).
 - c. Oriented-Strand-Board Nominal Thickness: 5/8 inch (16 mm).
 - d. Oriented-Strand-Board Nominal Thickness: 3/4 inch (19 mm).
 - e. Plywood Nominal Thickness, Exposure 1: 1/2 inch (12.7 mm).
 - f. Plywood Nominal Thickness, Exposure 1: 5/8 inch (15.9 mm).
 - g. Plywood Nominal Thickness, Exposure 1: 3/4 inch (19.1 mm).

**** NOTE TO SPECIFIER ** Thermasheath-SI is a composite product made up of insulation and structural component that is designed to work seamlessly with non-structural Thermasheath. The insulation component is an energy-efficient thermal insulation board composed of a closed-cell polyisocyanurate foam bonded to reflective, reinforced aluminum facers providing a superior physical and thermal properties along with a durable radiant barrier surface. The structural component provides stability for lateral bracing and transverse loads. Delete if not required.**

- E. Aluminum Faced, Polyisocyanurate Foam Insulating Sheathing: ASTM C1289, Type I, Class 1 or Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to reinforced aluminum facers on both sides and structural component bonded to one side.
 1. Basis of Design: Thermasheath-SI from Rmax, A Business Unit of Sika Corporation.

**** NOTE TO SPECIFIER ** Thermasheath-SI is manufactured to provide a Flame Spread Index for the insulation core of 75 or less.**

2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 75 or less.
 - b. Smoke: 450 or less.

**** NOTE TO SPECIFIER ** The Water Vapor Permeability of 0.1 perm or less relates to the code definition of a Class I vapor retarder. The Water Vapor Permeability of Thermasheath-SI is less than the value defined as a Class I vapor retarder.**

3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.

**** NOTE TO SPECIFIER ** The code required value for Air Permeability is specified below. Thermasheath-SI is more restrictive than required by code. Refer to the product data sheet for specific the value.**

4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.

**** NOTE TO SPECIFIER ** Thermasheath-SI is manufactured provided a standard compressive strength of 20 psi (138 kPa), of 1 inch (25 mm) and greater thickness and 16 psi (110 kPa)**

compressive strength at less than 1 inch (25 mm) thickness.

5. Compressive Strength per ASTM D1621:
 - a. At Thickness of 1 inch (25 mm) or Greater: 20 psi (138 kPa).
 - b. At Thickness of Less Than 1 inch (25 mm): 16 psi (110 kPa).

**** NOTE TO SPECIFIER ** Thermasheath-SI is manufactured in the following thicknesses and related R-Values. Identify thickness in specifications or on drawings. Delete options not required.**

**** NOTE TO SPECIFIER ** Multiple methods may be used to identify the required Aged R-Value of the Insulation. Delete paragraphs not required or retain both.**

- c. First paragraph below lists all available thicknesses and identifies the Basis of Design properties of the insulation by addressing the specific Aged R-Values.
 - d. Second paragraph below allows the specific R-Values and/or thickness appropriate to the project, to be identified in the specifications or on the drawings.
6. Aged R-Value per ASTM C518:
 - a. Insulation Thickness and R-Value: 1/2 inch (13 mm) at R-3.2.
 - b. Insulation Thickness and R-Value: 3/4 inch (19 mm) at R-5.0.
 - c. Insulation Thickness and R-Value: 1 inch (25 mm) at R-6.0.
 - d. Insulation Thickness and R-Value: 1-1/4 inch (32 mm) at R-7.8.
7. Required Insulation Thickness and R-Value: As indicated on the Drawings.

2.4 ACCESSORIES

**** NOTE TO SPECIFIER ** Delete accessory options not required.**

A. Insulation Fastener Components:

**** NOTE TO SPECIFIER ** Fasteners for various installations are addressed below.**

1. General - Fasteners for Fastening Polyisocyanurate Wall Insulation to Wood Framing Components, Light Gauge Metal Wall Framing Components and Wood and Metal Roof Decks:
 - a. Steel drill screws, in type and length recommended by insulating sheathing manufacturer for thickness of insulating sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117. Fasteners in contact with fire-retardant-treated wood shall be of suitable material or provided with coating suitable for such use.
 - b. Provide washers or plates if recommended by insulating sheathing manufacturer. Washers shall be compatible with screw fasteners.

**** NOTE TO SPECIFIER ** TRUFAST Walls - Grip-Deck Screws are intended for installation of insulation panels on metal stud framed wall surfaces. Similar fasteners are available from other manufacturers. Delete if not required.**

2. Fasteners for Fastening Polyisocyanurate Wall Insulation to metal stud framed wall surfaces:
 - a. Self-drilling ceramic coated screw.
 - 1) Product: Grip-Deck screws or comparable products as manufactured by TRUFAST Walls or comparable product.

**** NOTE TO SPECIFIER ** Nail Board Fasteners are intended for use in attaching nail base wall and roof panels. Fasteners have a large diameter low profile pancake head configured for 6-lobe internal drive, to provide pull-through resistance without the need for a washer. Three thread and point styles are available, to address attachment to various substrates including wood and metal framing and wood and metal structural decks. Fasteners are available in various lengths, up to 18 inches (457 mm), dependent upon thread and point style. Delete if not required.**

3. Nail Board Fasteners: Engineered for attaching nail base wall and roof panels walls and wall framing and structural roof decks.
 - a. Large-diameter, low profile 5/8 inch (16 mm) diameter head with No. 14 shaft diameter, epoxy e-coat to comply with governing standards for use with treated wood including fire-retardant-treated wood.

- 1) Product: Nail Board Fasteners, as manufactured by TRUFAST Walls, or comparable product.

**** NOTE TO SPECIFIER ** Chose one or more of the three nail board fastener versions below, that is appropriate to the project, and delete remaining versions. Retain all three versions if desired. Delete if not required.**

- b. Thread Style and Point:
 - 1) SIP TP Screws: Thread-point for attaching nail board panels to wood and timber substrates.
 - 2) SIP LD Screws: Light-duty drill point for attaching nail board panels to wood, masonry, concrete, light gauge metal framing of 16 to 20 gauge, and corrugated steel deck substrates.
 - 3) SIP HD Screws: Heavy-duty drill point for attaching nail board panels to 12 to 16 gauge steel substrates.

**** NOTE TO SPECIFIER ** TRUFAST Walls - Thermal-Grip-Insulation Pin fasteners are intended for installation of insulation panels on concrete and masonry wall surfaces and steel studs, utilizing a power-driven pinner tool. Delete if not required.**

4. Fasteners for Fastening Polyisocyanurate Wall Insulation to Concrete or Masonry Wall Surfaces:
 - a. One-piece plastic washer and stem, installed by a power actuated pinner tool, into concrete or masonry surfaces without pre-drilling and 12 to 18 gauge steel studs.
 - 1) Product: Thermal-Grip Insulation Pin as manufactured by TRUFAST Walls. Washer head of 2.25 inch diameter, and anchor lengths of 1 inch to 6 inches.

**** NOTE TO SPECIFIER ** TRUFAST Walls - Thermal-Grip ci prong washers are intended for installation of insulation panels, and when properly installed the fastener and washer do not require additional sealing against air and moisture. Delete if not required.**

5. Washers: Self-sealing for use with Self-drilling screws:
 - a. Self-sealing 2 inches (51 mm) diameter polymer washer, UV stabilized, tested, and approved to provide air and water-resistive seal, in combination with compatible self-drilling screw.
 - 1) Product: Thermal-Grip ci prong washers as manufactured by TRUFAST Walls or comparable product.

**** NOTE TO SPECIFIER ** TRUFAST Walls - Plasti-Grip ci prong washers are intended for installation of insulation panels. These fasteners have a perforated face which is not intended to provide a seal. Delete if not required.**

6. Washers: Perforated washers for use with self-drilling screws:
 - a. Perforated face washers 1.75-inch (44 mm) diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling screw.
 - 1) Product: Plasti-Grip ci prong washers as manufactured by TRUFAST Walls or comparable product.

**** NOTE TO SPECIFIER ** TRUFAST Walls - Grip-Lok hurricane washers are intended for installation of insulation panels. These fasteners have a perforated face which is not intended to provide a seal. Delete if not required.**

7. Washers: Perforated Hurricane/High-Wind washers for use with self-drilling screws:
 - a. Perforated face washers 3.0 inch diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling ceramic coated screw.
 - 1) Product: Grip-Lok hurricane washers as manufactured by TRUFAST Walls or comparable product.

B. Insulation Joint and Flashing Components:

**** NOTE TO SPECIFIER ** Joint and flashing components shall be utilized for their intended use.**

Specific materials are intended for use at static joints, while others may also be intended for use at dynamic joints.

- C. Follow manufacturer's instructions for use and installation. Joint treatment materials are intended for installation on clean dry surfaces. Joint treatment and flashing materials are not intended to bond to the exposed foam core of the insulation. Installation may require the use of primers, to ensure proper adhesion to masonry, or treated wood and similar building components.

1. General - Joint Treatment and Flashing Components:

a. Material Standards:

- 1) AAMA 711: For self-adhered flashing and joint materials.
- 2) AAMA 714: For liquid applied flashing and joint materials.

**** NOTE TO SPECIFIER ** The following products are intended for use with aluminum-faced insulation at static joints between insulation panels, including inside and outside corners: R-SEAL 2000 LF, R-SEAL 3000, R-SEAL 3000W and R-SEAL 6000.**

- 3) R-SEAL Construction Tape is intended for use at static joints between adjacent aluminum faced insulation panels of one-and-two family dwellings.

- 4) Verify ability of materials to bond to the adjacent materials and the potential need for compatible primer, to ensure proper bond.

- b. Components for use at static joints, joining adjacent aluminum faced insulation panels include liquid flashing, adhered joint tape, and adhered flashing and transition tape.

**** NOTE TO SPECIFIER ** The following products are intended for use with aluminum faced insulation, in flashing of static window and wall openings, and static wall penetrations: R-SEAL 2000 LF and R-SEAL 6000. Verify ability of materials to bond to the adjacent materials and the potential need for compatible primers, to ensure proper bond.**

- c. Components for use at static joints, joining aluminum faced insulation and adjacent elements, including window and wall openings and items penetrating the insulation include liquid flashing and adhered flashing and transition tape.

**** NOTE TO SPECIFIER ** The following products are intended for use at dynamic joints at aluminum-faced insulation of 3/4 inch (19 mm) maximum width between aluminum faced insulation board edges and include transitions to adjacent materials: R-SEAL 6000 Flashing and Transition Tape.**

- d. Components for use at dynamic joints at aluminum faced insulation of up to 3/4 inch (19 mm) in width, shall be restricted to the use of flashing and transition tape, or materials and devices specifically designed to allow for dynamic movement.

**** NOTE TO SPECIFIER ** For dynamic joints at aluminum faced insulation of width over 3/4 inch (19 mm); provide specifically designed products or components as appropriate to the installation**

- e. Components for use at dynamic joints over 3/4 inch (19 mm) in width, shall be restricted to the use of materials and devices specifically designed for such joint widths.

**** NOTE TO SPECIFIER ** R-SEAL 2000 LF is a durable one-component, hybrid technology, non-sag, flexible, flashing and water-resistive barrier sealant designed for primerless adhesion to the most substrates found in the building envelope.**

- f. R-SEAL 2000 LF is intended for treatment of stationary joints between aluminum faced insulation components and at inside and outside corners, and as flashing or wall openings and penetrations of insulation surface. Delete if not required.

2. Liquid Flashing for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:

- a. Product: R-SEAL 2000 LF sealant from Rmax, A Business Unit of Sika Corporation or comparable product.

- 1) One-component flexible flashing and water-resistive barrier sealant.

- 2) ASTM C920, Type S, Grade NS, Class 12.5, use NT, G, A, O, M.
- 3) Application Temperature Range: 40 to 104 degrees F (4 to 40 degrees C).
- 4) Service Range: -40 to 170 degrees F (-40 to 77 degrees C).
- 5) Curing Rate:
 - a) Skin Formation Time: 60 to 90 minutes.
 - b) Cure Depth: 0.16 inch (4 mm) in 24 hours.

**** NOTE TO SPECIFIER ** R-SEAL 3000 is a nominal 2 mil high strength dead soft aluminum foil coated with cold-weather acrylic pressure-sensitive adhesive.**

- c) R-SEAL 3000 is intended for joint treatment of both interior and exterior insulation. Delete if not required.
3. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
 - a. Product: R-SEAL 3000 tape from Rmax, A Business Unit of Sika Corporation or comparable product.
 - 1) Dead soft aluminum foil coated with acrylic pressure-sensitive adhesive.
 - 2) Width: 4 inches (102 mm).

**** NOTE TO SPECIFIER ** Retain paragraph above relative to 4 inch wide tape and retain paragraph below relative to 5 inch wide tape if use of 5 inch wide tape may also be necessary.**

- 3) Width: 5 inches (127 mm) for use where coverage is necessary.

**** NOTE TO SPECIFIER ** Retain paragraph below relative to 5 inch wide tape and delete 4 inch option above for projects that must meet the requirement relative to High-Velocity Hurricane Zones.**

- 4) Width: 5 inches (127 mm) for systems involving High-Velocity Hurricane Zones.

**** NOTE TO SPECIFIER ** R-SEAL 3000W is a nominal 2 mil high strength dead soft white aluminum foil coated with cold-weather acrylic pressure-sensitive adhesive.**

- 5) R-SEAL 3000W is intended for joint treatment of interior insulation and is color-matched to TSX-8510. Delete if not required.
4. Joint Sealant Tape for Stationary Joint Treatment of White Finished Foil Faced Polyisocyanurate Insulation:
 - a. Product: R-SEAL 3000W tape from Rmax, A Business Unit of Sika Corporation or comparable product.
 - 1) Dead soft white aluminum foil coated with acrylic pressure-sensitive adhesive.
 - 2) Width 3 inches (76 mm).

**** NOTE TO SPECIFIER ** R-SEAL 6000 is a nominal 35 mil black woven polyethylene membrane with butyl rubber adhesive.**

- 3) R-SEAL 6000 is intended for dynamic joints, including transition to adjacent materials.
 - 4) R-SEAL 6000 is intended for treatment of stationary joints between insulation components at inside and outside corners, and as flashing of wall openings and penetrations of insulation surface. Delete if not required.
5. Flashing and Transition Tape for Joints Subject to Movement and Openings at Foil Faced Polyisocyanurate Insulation, and transition to other building materials.
 - a. Product: R-SEAL 6000 tape from Rmax, A Business Unit of Sika Corporation or comparable product.
 - 1) Polyethylene membrane with butyl rubber adhesive.
 - 2) Width 9 and 12 inches (229 and 305 mm).

**** NOTE TO SPECIFIER ** R-SEAL Construction Tape is a 3 mil white translucent OPP Film with an acrylic pressure-sensitive adhesive and is UV resistant for long term performance.**

- 3) R-SEAL Construction Tape is intended for use at joints between adjacent insulation panels on residential and light commercial construction. Delete

if not required.

6. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation, in Residential and Light Commercial Construction:
 - a. Product: R-SEAL Construction Tape from Rmax, A Business Unit of Sika Corporation or comparable product.
 - 1) White translucent OOP Film with acrylic pressure-sensitive adhesive.
 - 2) Width 3 inches (76 mm).

**** NOTE TO SPECIFIER ** Interior insulation retaining components by Victory Bear, are addressed below. The components provide a finishing touch that is attractive as well as functional, allowing for quick and easy installation over smooth solid wall surfaces, are efficient to work with, while, saving labor during installation, and provide increased energy performance. Suitable for use in metal buildings, wood-framed and concrete construction. Delete if not required.**

- D. Interior Insulation Attachment and Joint Closure System:
 1. General - At Interior Installation of Foil Faced Polyisocyanurate Insulation over interior wall surfaces of buildings, provide in conformance with the following:
 - a. Components to be PVC extrusions, white in color, with flexible edge seal, and perforated fastening leg. Flame Spread Index of 0 and Smoke-Developed Index of 190, per UL 723.

**** NOTE TO SPECIFIER ** The Victory Bear; Flex-Tite insulation clips are intended to be efficient to work with. Their two-component design allows for removal and replacement of the insulation panels if necessary. Delete if not required.**

2. Two-Component System for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
 - a. Two-component system, consisting of male component for attachment to wall or framing surface, and T-shaped female component, to be installed over face of insulation panels, allowing for removal and replacement of insulation panels if necessary.
 - b. Product: Victory Bear; Flex-Tite Clip System or comparable product.

**** NOTE TO SPECIFIER ** The Victory Bear; Quick Clip insulation clips are intended to be efficient to work with. Their design allows for insulation panels to be installed progressively. Delete if not required.**

3. One Component System for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
 - a. One-component system, of size appropriate to the insulation thickness, with flanges for attachment to wall or framing surface; allowing for insulation panels to be installed progressively.
 - b. Product: Victory Bear; Quick Clip System or comparable product.

**** NOTE TO SPECIFIER ** The Victory Bear; Flex-Tite J-Channel provides a finishing touch to the perimeter of insulation. Intended for use in conjunction with the Flex-Tite or Quick Clip Insulation Attachment Systems. Delete if not required.**

4. Perimeter Trim Component for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
 - a. J-Channel of size appropriate to the insulation thickness to be installed; intended to secure and conceal exposed edges of insulation panels.
 - b. Product: Victory Bear; Flex-Tite J-Channel or comparable product.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION, GENERAL

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION