Note to Specifier: Use this section for foil faced polyisocyanurate insulation boards such as EnergyShield, EnergyShield PRO and EnergyShield PRO2 by Atlas Wall CI Board a division of Atlas Roofing Company. Make selections in Part 2 based on whether the project requires an ASTM E84 flame spread rating of 25 or less (Class A), or 75 or less (Class B). EnergyShield is a Class B material used in many “combustible construction” projects such as Type V commercial buildings, multifamily and single family residential construction. EnergyShield PRO and EnergyShield PRO2 are Class A materials meant for commercial applications on Types I – IV wall construction where increased fire resistance and compliance with NFPA 285 is required. Typically, a project will use one type of continuous insulation board on a project. Proper selection will depend on needs such as R-Value per inch, vapor permeance and the desire to have rigid foam board perform additional functions such as air barrier and/or water resistive barrier.

SECTION 072113 – FOIL FACED POLYISOCYANURATE FOAM BOARD INSULATION

1. GENERAL
	* + 1. SECTION INCLUDES
				1. Rigid polyisocyanurate foam board insulation with aluminum facers.
				2. Fasteners, adhesives, and sealants necessary for a complete installation.

Note to Specifier: Carefully and completely edit "WORK SPECIFIED IN OTHER SECTIONS" below to coordinate with other sections being included in the project manual.

* + - 1. WORK SPECIFIED IN OTHER SECTIONS
				1. Division 01 Section 017419, “Construction Waste Management and Disposal,” for proper separation, handling, and disposal of waste materials.
				2. Division 01 Section 018100, “Facility Performance Requirements,” for thermal and air infiltration characteristics for assemblies utilizing rigid polyisocyanurate foam board insulation.
				3. Division 01 Section 018113.13, “Sustainable Design Requirements – LEED for New Construction and Major Renovations,” for commissioning requirements.
				4. Division 01 Section 018113.19, “Sustainable Design Requirements – LEED for Core and Shell Development,” for commissioning requirements.
				5. Division 01 Section 019113, “General Commissioning Requirements,” for commissioning requirements.
				6. Division 03 Section **[insert section number]** for “**[Cast-in-Place] [Architectural Precast]** Concrete” assemblies utilizing rigid polyisocyanurate foam board insulation.
				7. Division 04 Section 042000, “Unit Masonry,” for masonry assemblies utilizing rigid polyisocyanurate foam board insulation.
				8. Division 05 Section 054000, “Cold Formed Metal Framing,” for cold formed metal framing supported wall assemblies utilizing rigid polyisocyanurate foam board insulation.
				9. Division 06 Section 061600, “Sheathing,” for substrate materials for rigid polyisocyanurate board foam insulation.
				10. Division 07 Section 072500, “Weather Barriers” for requirements of weather barriers in conjunction with rigid polyisocyanurate foam board insulation.
				11. Division 07 Section 079200, “Joint Sealants” for requirements of joint sealants in conjunction with rigid polyisocyanurate foam board insulation.
				12. **[Continue as appropriate for the project]**.
			2. SUBMITTALS
				1. Make submittals in accordance with requirements specified in Division 01 Section 013300 “Submittal Procedures.”
				2. Product Test Reports: Submit evaluation reports published by independent laboratory indicating evidence of compliance with specified criteria.
				3. Product Data: Submit product data for each type of product indicated.
				4. Samples: Submit three samples, minimum size 4 inch x 8 inch (101mm x 203 mm).

Note to Specifier: DELETE the following Paragraph and subparagraphs if project requirements do not include LEED. If LEED is included, coordinate selections made below with the LEED requirements for the project.

* + - * 1. LEED Submittals:

Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.

Include statement indicating costs for each product having recycled content.

Product Certificates for Credit MR 5.1 and Credit MR 5.2: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material.

Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

* + - 1. QUALITY ASSURANCE
				1. Surface Burning Characteristics: Mark products with readily identifiable mark from recognizable testing agency indicating compliance with ASTM E84.

Note to Specifier: If specifying EnergyShield Pro or Pro2, retain the first option below and delete the second. If specifying EnergyShield, retain the second option and delete the first.

**[Flame spread 25 or less.]**

**[Flame spread 75 or less.]**

* + - 1. STORAGE AND HANDLING
				1. Comply with Manufacturer’s recommendations for the proper storage and handling of insulation materials.
				2. Store materials off of ground, protected from physical damage, and covered or otherwise shielded from sunlight.
				3. Protect insulation so that insulation does not come in direct contact with rain, snow, or other moisture sources.
1. PRODUCTS
	* + 1. POLYISOCYANURATE RIGID FOAM BOARD INSULATION

NOTES TO SPECIFIER: If specifying EnergyShield and/or EnergyShield PRO, select Type I **Class 1**. If specifying EnergyShield PRO2, select Type I **Class 2**. Note that Class 2 materials have fiberglass fibers added to the core for increased rigidity, reduced shrinkage and enhance fired resistance, but are slightly more expensive.

“EnergyShield PRO” and “EnergyShield PRO2” which are ASTM E 84 Class A and have been NFPA 285 tested for certain assemblies, whereas standard “EnergyShield” is ASTM E84 Class B and has not been NFPA 285 tested. Consult the respective product literature for more information. Prior to selection, verify which of these products is right for your design.

If specifying EnergyShield PRO and/or EnergyShield PRO2 select ASTM E84 Class A. If specifying EnergyShield select Class B.

* + - * 1. Foil Faced Polyisocyanurate Foam Board Insulation: High performance rigid cellular foam board complying with ASTM C1289 **[Type I, Class 1][Type I, Class 2]** consisting of an ASTM E84**[Class A][Class B]** closed cell polyisocyanurate foam core laminated between a coated foil facer on front side of board and a reflective foil facer on the back side of the board.

Note to Specifier: Select one, two, or all three of the options in the following paragraph based on project requirements. If selecting more than one option, clearly indicate on the drawings where each is to be used.

Basis of Design Product: Subject to compliance with the documents, provide **[Atlas Roofing Corporation "Energy Shield][,][and][ Atlas roofing Corporation "Energy Shield Pro"][and][Atlas Roofing Corporation "Energy Shield Pro 2"]** or comparable product**[s]** by one of the following:

Note to Specifier: Since this guide specification includes two types of polyisocyanurate rigid foam boards from Atlas, those that meet ASTM E84 Class A and Class B. The following manufacturers also have competitive equivalents.

Carlisle Coatings and Waterproofing.

Dow.

Hunter Panels.

Note to Specifier: Select the appropriate thickness/R-value for project requirements. Delete those not used. Coordinate with details shown on drawings.

Provide aluminumfaced polyisocyanurate insulation with the following thickness and R-value**:[3/4 inch (19 mm) thick; R-5.0] [1 inch (25 mm) thick; R-6.5] [1.2 inch (31 mm) thick; R-7.5] [1.6 inch (41 mm) thick; R-10.5] [ 2 inch (51 mm) thick; R-13.1] [ 2.5 inch (64 mm) thick; R-16] [3 inch (76 mm) thick; R-19.7] [3.1 inch (79 mm) thick; R-20.2]**.

Facer Materials: Class A durable reflective aluminum facer on each face of insulation.

Note to Specifier: Indicate preference for size of board. If not critical, delete reference to board size and let Contractor choose.

Size:**[4'-0" x 8'-0" (1219 mm x 2438 mm)][and] [4'-0" x 9'-0" (1219 mm x 2743 mm)**].

Size: 8'-0" (2438 mm) x **[16 inch (406 mm)][24inch (610 mm)]** to fit between wall ties.

Note to Specifier: Choose flame spread of 25 if specifying EnergyShield Pro or Pro2, or choose flame spread of 75 if specifying EnergyShield.

Flame Spread and Smoke Developed: Less than **[25][75]** and less than 450, respectively, when tested in accordance with ASTM E 84.

Moisture Vapor Transmission: Less than 0.3 when tested in accordance with ASTM E 96, Desiccant Method.

Compressive Strength:Grade 3 when tested in accordance with ASTM C 1289.

Water Absorption: Less than 1% by volume when tested in accordance with ASTM C 209.

Dimensional Stability: Less than 1% linear change when tested in accordance with ASTM D 2126.

Service Temperatures: -100ºF to + 250ºF (-73ºC to +122ºC)

Potential Heat:12,000 Btu/lb.

Auto-Ignition Temperature: 800ºF

* + - 1. ACCESSORIES

Note to Specifier: Retain adhesive or mechanical fastener installation as appropriate for the intended supporting materials. Generally retain the adhesive installation when insulation is intended to be installed to a flat surface such as CMU or continuous sheathing. If unsure of the best installation method, consult with Manufacturer's representative.

* + - * 1. Insulation Adhesive: High strength, heavy-bodied, thermoplastic rubber adhesive formulated to bond insulation to metal, concrete or masonry surfaces.

Product: Subject to compliance with the requirements, provide one of the following:

AGM Industries GPA-72 Adhesive.

Loctite PL 300 VOC.

BASF Sonneborn Premium Adhesive

Other products approved in writing by the board insulation manufacturer.

Note to Specifier: Generally retain mechanical fastener when insulation is intended to be installed to a stud wall. Consult with Manufacturer's representative for the appropriate fastener for each situation.

* + - * 1. Mechanical Fasteners: Low profile, 2 inch (50 mm) diameter high-density polypropylene washer and screw assembly designed specifically to fasten insulation board to designated substrate.

Product: Subject to compliance with the requirements, provide one of the following.

Rodenhouse, Inc. fasteners as approved in writing by the fastener manufacturer for the intended substrate.

Wind-Lockfasteners as approved in writing by the fastener manufacturer for the intended substrate.

Other products approved in writing by the board insulation manufacturer.

Note to Specifier: Generally retain both Joint Sealant and Expanding Foam Sealant. Depending on the size of gaps between adjacent boards, both may be required.

* + - * 1. Joint Sealant: Single component, non-shrink joint sealants and backings which are compatible with each other and with other materials in the assembly.

Product: Subject to compliance with the requirements, provide one of the following:

Sikaflex-1A and 2C NS

PecoraDynotrol I & II

Sonneborn NP1 & NP

Dow 790, 791, 795

GE Silpruf, Silpruf LM

Pecora 890, 895

Loctite PL 300 Foamboard adhesive.

BASF Sonneborn Premium Adhesive.

Other joint sealant approved in writing by the insulation board manufacturer.

* + - * 1. Expanding Foam Sealant:Single component, non-shrink, Class A polyurethane insulating closed cell foam that is compatible with insulation board; Complies with ASTM E814 Standard Test Method for Fire Tests of Through-Penetration Fire Stops; air and vapor permeance not greater than insulating board.

Product: Subject to compliance with the requirements, provide one of the following:

Dow Great Stuff Pro Gaps & Cracks Insulating Foam Sealant.

FOMO Products, Inc.; Handi-Foam Fireblock Sealant.

Other products approved in writing by the insulation board manufacturer.

Note to Specifier: Always retain tape installation if insulation is to function as air and/or weather barrier.

* + - * 1. Joint Tape: Minimum 2 mil thick x 3 inch (76 mm) wide, high strength aluminum foil coated tape with high temperature acrylic adhesive intended for adhesion to foil substrate.

Product: Subject to compliance with the requirements, provide one of the following:

IPG Cold Weather Aluminum Foil Tape.

Atlas Roofing Corporation WRB Tape.

Other products approved in writing by the insulation board manufacturer.

1. EXECUTION
	* + 1. EXAMINATION
				1. Inspect areas to receive insulation. Ensure that substrates intended for adhesive fastening are clean and free from moisture or other materials that may have a deleterious effect on adhesion. Prepare report identifying conditions that may be detrimental to the performance of the insulation and proceed with installation only after the conditions noted have been properly addressed.
			2. INSTALLATION
				1. General:

Comply with manufacturer's instructions for installation of polyisocyanurate rigid foam board insulation.

Do not install polyisocyanurate rigid foam board insulation that has become soiled, wet, or has not been properly protected from sunlight.

Dry fit polyisocyanurate rigid foam board insulation prior to final installation. Neatly trim board around conduits, pipes, and other items that will penetrate board insulation.

Note to Specifier: Retain adhesive attachment, mechanical attachment, or both depending on the proposed substrate(s).

* + - * 1. Adhesive Attachment:

Apply 3 inch diameter dabs of adhesive spaced no greater than 24 inches (610 mm) on center in both directions. At perimeter edges and at openings, apply additional continuous ribbon of adhesive no greater than 3 inches (76 mm) from edge of board or opening in board.

Before adhesive skims over, align board and press insulation board on to substrate, applying an even, medium pressure to spread adhesive and remove air pockets.

* + - * 1. Mechanical Attachment:

Fasten insulation board to substrate with mechanical anchors, with anchors evenly spaced no greater than 24 inches (610 mm) on center in both directions. At perimeter edges and at openings, install fasteners at maximum 24 inches (610 mm) on center, and no greater than 4 inches (101 mm) from edge of board or opening in board. The washer of a single 1 ¾ inch washer style fastener may be used to bridge adjoining boards.

* + - 1. ACCESSORIES

Note to Specifier: Generally retain both joint sealant and expanding foam sealants.

* + - * 1. Joint Sealant: For joints, gaps, and openings less that ½ inch (13 mm) wide, install continuous bead of joint sealant. Provide backer rod as required to prohibit joint sealant from bonding to a third surface.
				2. Expanding Foam Sealant: For joints, gaps, and openings greater than ½ inch (13 mm) wide, install sealant in a continuous ribbon between adjacent board edges, working sealant in to joint for a full depth bead of sealant.

Note to Specifier: Always retain tape installation if insulation is to function as air and/ or weather barrier.

* + - * 1. Tape: Install tape evenly between adjacent boards in continuous pieces using longest practicable lengths. Where splices are required, provide laps no less than 6 inches (150mm).

Install tape centered over horizontal and vertical joints.

Start taping at lowest condition. Tape horizontal joints first and then vertical joints up the building. Ensure tape is installed in shingle-like fashion and that horizontal seams are taped first where horizontal and vertical tapes intersect.

Firmly roll tape with "J" roller to remove air pockets and to ensure complete attachment of tape to insulation board.

* + - 1. PROTECTION
				1. Protect polyisocyanurate rigid foam board insulation from excess moisture, mechanical damage, and exposure to open flame.
				2. Promptly repair damage caused to insulation in a manner that retains integrity and continuity of insulation and facer materials.
				3. Cover insulation with cladding promptly, but no later than 180 days after installation of insulation.

END OF SECTION