SECTION 07 22 16 - Roof Board Insulation

ROOF AND DECK INSULATION

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\*\* NOTE TO SPECIFIER \*\* Insulfoam, a Carlisle Company; Roof and Deck Insulation products.  
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This section is based on the products of Insulfoam, a Carlisle Company, which is located at:  
19727 57th Avenue East  
Puyallup, WA 98387  
Toll Free: 800-248-5995  
Phone: 253-271-3056  
Fax: 253-271-3265  
Web Site: www.insulfoam.com  
E-mail: [info@insulfoam.com](mailto:info@insulfoam.com)  
[click Here] for additional information   
Insulfoam one of the most respected names in polystyrene-based construction products is now even better. In May of 2007, Carlisle Construction Materials, a company known for its single-ply roof systems and waterproofing products, further broadened its product offering by acquiring Insulfoam, the largest manufacturer of expanded polystyrene (EPS) in North America. The Insulfoam acquisition confirms Carlisle's overall commitment to architects, building owners and contractors who want to promote and utilize energy-efficient construction products.  
This specification includes Roofing Insulation that helps reduce overall energy consumption, creates improved comfort for the building's occupants and provides an excellent substrate for a new or retrofit roofing system. These products are extremely lightweight and offer remarkable physical properties, including excellent moisture resistance, long term non-degenerative thermal properties and extreme resilience. Insulfoam's EPS is also environmentally friendly and 100% recyclable, containing no HCFC's or formaldehyde and can contribute toward LEED® credit requirements.  
Insulfoam Roofing Insulations are eligible for inclusion in many membrane manufacturers' total system warranties. Contact Insulfoam for a list of membrane manufacturers with which Insulfoam is a partner.  
  
See our SpecWizard: [Click Here](http://www.arcat.com/specwizard/07220ins/index.htm)

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Flat polystyrene board Insulation.
    2. Tapered polystyrene Insulation.
    3. Roof underlayment.
    4. Metal roof Insulation.
    5. Flat Composite Insulation.
    6. Tapered Composite Insulation
  1. RELATED SECTIONS

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

* + 1. Section 05 30 00 - Metal Decking.
    2. Section 06 11 00 - Wood Framing.
    3. Section 06 15 00 - Wood Decking.
    4. Section 07 25 00 - WeatherBarriers.
    5. Section 07 26 00 - Vapor Retarders.
    6. Section 07 51 16 - Built-Up Coal Tar Roofing.
    7. Section 07 51 00 - Built-Up Bituminous Roofing.
    8. Section 07 53 29 - Polyisobutylene Roofing.
    9. Section 07 54 23 - Thermoplastic-Polyolefin Roofing.
    10. Section 07 52 00 - Modified Bituminous Membrane Roofing.
    11. Section 07 70 00 - Roof and Wall Specialties and Accessories.
  1. REFERENCES

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

* + 1. ASTM C 177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
    2. ASTM C 203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
    3. ASTM C 272 - Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
    4. ASTM C 303 - Standard Test Method for Dimensions and Density of Preformed Block and Board-Type Thermal Insulation.
    5. ASTM C 518 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
    6. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
    7. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.
    8. ASTM D 828 - Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus.
    9. ASTM D 1621 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
    10. ASTM D 2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
    11. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
    12. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
    13. Factory Mutual Research Corporation Approval Guide (current edition). Contact manufacturer for approval standard and number.
    14. UL 263 - Fire Tests of Building Construction and Materials.
    15. UL 580 - Tests for Uplift Resistance of Roof Assemblies
    16. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
    17. UL 1256 - Fire Test of Roof Deck Constructions.
    18. US Green Building Council.
  1. SYSTEM DESCRIPTION

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required for the project.

* + 1. Performance Requirements:
       1. UL Assemblies:
          1. Component of Class A Roof System - UL 790.
          2. Hourly Rated P series roof assemblies (UL 263 foam core only) P225, P230, P231, P235, P238, P246, P250, P251, P253, P254, P255, P259, P261, P262, P264, P269, P302, P404, P410, P411, P501, P503, P508, P509, P510, P511, P513, P514, P515, P519, P520, P521, P525, P527, P529, P 701, P708, P710, P713, P717, P719, P724, P731, P735, P739, P801, P803, P810, P814, P815, P825, P828, P902, P904, P905, P909, P910, P912, P913, P915, P916, P919, P920, P921, P922, P923, P925, P928, P929, P930, P936.
          3. UL 580 Tests for Uplift Resistance of Roof Assemblies RATING?????
       2. Factory Mutual:
          1. FM Insulated Metal Decks - Single Ply Roof Cover and 1-60 and 1-90 windstorm classification.
          2. FM Insulated Metal Decks - Bituminous Roof Cover and 1-60 and 1-90 windstorm classification.
          3. FM Insulated Concrete or Gypsum Decks - Bituminous Roof Cover and 1-60 and 1-90 windstorm classification.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. 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.
     3. Shop Drawings: Roof plan showing, slope, layout of boards and fastening patterns.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + 1. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
       1. Product Data for Credit MR 2.1 and 2.2: For products being recycled, documentation of total weight of project waste diverted from landfill.
       2. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post consumer and preconsumer recycled content
          1. Include statement indicating costs for each product having recycled content.
       3. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
          1. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
    2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
    3. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Manufacturer with a minimum of 5 years documented experience in the manufacture of products specifed.
     2. Installer Qualifications: Installer shall be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.

\*\* 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 different types of work on the project.

* + 1. 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. Refinish mock-up area as required to produce acceptable work.
    2. Pre-installation Meeting:
       1. Conduct pre-installation meeting at the project site with the installer, Architect, Owner, the insulation manufacturer and the roof manufacturer and any other persons directly involved with the performance of the work to verify project requirements, structural system/substrate conditions, and the roofing manufacturer and insulation manufacturer's installation instructions.
       2. Record conference discussions to include decisions, agreements and open issues and furnish copies of recorded discussions to each attending party. The primary purpose of the meeting is to review foreseeable methods and procedures related to roofing work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in manufacturer's unopened packaging with identification labels or markings intact until ready for installation.
     2. Products shall be placed on pallets or raised platforms and fully supported in storage and prevented from contact with the ground until ready for installation.
     3. Store in a protected area and protect against exposure to rain, water, dirt, mud, and other residue that may affect performance. Cover stored products with breathable protective wraps.
     4. Loose insulation material should be weighted down to prevent wind blow-off or damage.
  2. SEQUENCING
     1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  3. PROJECT CONDITIONS
     1. 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 absolute limits.
     2. Do not install insulation on roof deck when water of any type is present. Do not apply roofing materials when substrate is damp or wet or when proper adhesive temperature cannot be maintained.
  4. COORDINATION
     1. Coordinate work with installation of roof covering and associated roof penetrations and counter flashings installed by other sections as work of this section proceeds.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Insulfoam, a Carlisle Company, which is located at: 19727 57th Ave. E.; Puyallup, WA 98387; Toll Free Tel: 800-248-5995; Tel: 253-271-3056; Fax: 253-271-3265; Email: [request info (info@insulfoam.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=Insulfoam,+a+Carlisle+Company&coid=34935&rep=&fax=253-271-3265&message=RE:%20Spec%20Question%20(07220ins):%20%20&mf=); Web: [www.insulfoam.com](http://www.insulfoam.com)

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

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Select roof and deck insulation required from the following paragraphs and delete those not required. Coordinate with the requirements of the roof manufacturer's specifications and the applicable building code for the performance required. Consult with manufacturer for additional information.

* 1. ROOF AND DECK INSULATION

\*\* NOTE TO SPECIFIER \*\* InsulFoam is well-suited for single ply roof applications that employ mechanically fastened or ballasted TPO, PVC, EPDM and CSPE, as well as low-sloped built-up, modified bitumen and fully adhered single ply roofs that incorporate cover boards or slip sheets. Please consult local building codes and membrane manufacturers for system requirements.

* + 1. Flat Board Insulation Unfaced: Insulfoam flat, unfaced, rigid, closed cell, expanded polystyrene (EPS) boards, UL certified, complying with ASTM C 578:

\*\* NOTE TO SPECIFIER \*\* Select one of the following Type paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - 1. InsulFoam I, Unfaced, Nominal Density 1.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .240 @ 40 degrees.

C .260 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.17 @ 40 degrees.

R 3.85 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 10 psi.
        2. Flexural Strength, ASTM C 203: Minimum 25 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 5.0 perms.
        5. Water Absorption, ASTM C 272: Maximum 4 percent.
        6. Capillarity: None.
        7. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        8. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        9. Direct To Metal Deck in accordance with NER 631.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. InsulFoam VIII, Unfaced, Nominal Density 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .235 @ 40 degrees.

C .255 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.25 @ 40 degrees.

R 3.92 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 13 psi.
        2. Flexural Strength, ASTM C 203: Minimum 30 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. InsulFoam II, Unfaced, Nominal Density 1.5 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .220 @ 40 degrees.

C .240 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.55 @ 40 degrees.

R 4.17 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 15 psi.
        2. Flexural Strength, ASTM C 203: Minimum 35 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. InsulFoam IX, Unfaced, Nominal Density 2.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .210 @ 40 degrees.

C .230 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.76 @ 40 degrees.

R 4.35 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 25 psi.
        2. Flexural Strength, ASTM C 203: Minimum 50 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.0 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. InsulFoam XIV, Unfaced, Nominal Density 2.50 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .206 @ 40 degrees.

C .222 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.85 @ 40 degrees.

R 4.50 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 40 psi.
        2. Flexural Strength, ASTM C 203: Minimum 60 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. InsulFoam XV, Unfaced, Nominal Density 3.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .198@ 40 degrees.

C .217@ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 5.05 @ 40 degrees.

R 4.60 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 60 psi.
        2. Flexural Strength, ASTM C 203: Minimum 75 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Size:

\*\* NOTE TO SPECIFIER \*\* Select one of the following size paragraphs and delete those not required.

* + - * 1. 4 foot by 4 foot sheets.
        2. 4 foot by 8 foot sheets.
      1. Thickness:

\*\* NOTE TO SPECIFIER \*\* Select one of the following thickness paragraphs and delete those not required. Unfaced board is available in 1/4 inch to 40 inch thicknesses. Consult with manufacturer for additional information.

* + - * 1. Minimum thickness of \_\_\_\_\_\_\_ inches.
        2. Minimum R value of \_\_\_\_\_\_.
        3. Thickness as indicated on the Drawings.

\*\* NOTE TO SPECIFIER \*\* Select the following optional treatment paragraph if required and delete if not required.

* + - 1. Special Treatments: Mold and insect resistant.

\*\* NOTE TO SPECIFIER \*\* Tapered InsulFoam is well-suited for single ply roof applications that employ ballasted, mechanically fastened TPO, PVC, EPDM and CSPE with a slip sheet, as well as low-sloped built-up, modified bitumen and fully adhered single ply roofs that incorporate cover boards. Consult local building codes and membrane manufacturers for system requirements.

* + 1. Tapered Insulation Unfaced: Tapered Insulfoam, unfaced, rigid, closed cell, expanded polystyrene (EPS) board, UL Certified, complying with ASTM C 578.

\*\* NOTE TO SPECIFIER \*\* Select one of the following Type paragraphs and delete those not required. Coordinate with Physical Properties paragraphs below. Consult with manufacturer for additional information.

* + - 1. Tapered InsulFoam I, Unfaced, Nominal Density: 1.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.
         2. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.17 @ 40 degrees.

R 3.85 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 10 psi.
        2. Flexural Strength, ASTM C 203: Minimum 25 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 5.0 perms.
        5. Water Absorption, ASTM C 272: Maximum 4.0 percent.
        6. Capillarity: None.
        7. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        8. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        9. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Tapered InsulFoam VIII, Unfaced, Nominal Density: 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .235 @ 40 degrees.

C .255 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.25 @ 40 degrees.

R 3.92 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 13 psi.
        2. Flexural Strength, ASTM C 203: Minimum 30 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Tapered InsulFoam II, Unfaced, Nominal Density: 1.5 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .220 @ 40 degrees.

C .240 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.55 @ 40 degrees.

R 4.17 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 15 psi.
        2. Flexural Strength, ASTM C 203: Minimum 35 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Tapered InsulFoam IX, Unfaced, Nominal Density: 2.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .210 @ 40 degrees.

C .230 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.76 @ 40 degrees.

R 4.35 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 25 psi.
        2. Flexural Strength, ASTM C 203: Minimum 50 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.0 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Tapered InsulFoam XIV, Unfaced, Nominal Density: 2.50 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .206 @ 40 degrees.

C .222 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.85 @ 40 degrees.

R 4.50 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 40 psi.
        2. Flexural Strength, ASTM C 203: Minimum 60 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Tapered InsulFoam XV, Unfaced, Nominal Density: 3.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .198 @ 40 degrees.

C .217 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 5.05 @ 40 degrees.

R 4.60 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 60 psi.
        2. Flexural Strength, ASTM C 203: Minimum 75 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 2.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
        8. Direct To Metal Deck in accordance with NER 631.

\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Size:

\*\* NOTE TO SPECIFIER \*\* Select one of the following size paragraphs and delete those not required.

* + - * 1. 4 foot by 4 foot sheets.
        2. 4 foot by 8 foot sheets.
      1. Thickness:

\*\* NOTE TO SPECIFIER \*\* Select one of the following thickness paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - * 1. Minimum thickness of \_\_\_\_\_\_\_ inches.
        2. Thickness required to achieve an R value of \_\_\_\_\_\_.
        3. Thickness as indicated on the Drawings.
        4. Average R value of \_\_\_\_\_\_.
      1. Taper:

\*\* NOTE TO SPECIFIER \*\* Select one of the following taper paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - * 1. Minimum slope as indicated on the Drawings.
        2. Crickets or saddles as indicated on the Drawings.
        3. Minimum Tapered Slope:

1/16 inch Per Foot Slope.

1/8 inch Per Foot Slope.

3/16 inch Per Foot Slope.

1/4 inch Per Foot Slope.

1/2 inch Per Foot Slope.

* + - * 1. Minimum Crickets or Saddles:

1/8 inch Per Foot Slope.

1/4 inch Per Foot Slope.

1/2 inch Per Foot Slope.

\*\* NOTE TO SPECIFIER \*\* R-Tech Roof Underlayment is ideal in re-cover applications, and is well-suited for single ply roof applications that employ mechanically fastened or ballasted TPO, PVC, EPDM and CSPE membranes. Verify compatibility with membrane. R-Tech is available in Board and Fanfold configurations. Consult with manufacturer for additional information.

* + 1. Roof Underlayment: Insulfoam R-Tech Fanfold Roof Underlayment, expanded polystyrene (EPS) board, UL Certified, complying with ASTM C 578 with factory laminated polymeric facers.

\*\* NOTE TO SPECIFIER \*\* Select one of the following Type paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - 1. Insulfoam R-Tech Fanfold Roof Underlayment VIII, Nominal Density 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .235 @ 40 degrees.

C .255 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.25 @ 40 degrees.

R 3.92 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 13 psi.
        2. Flexural Strength, ASTM C 203: Minimum 30 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Insulfoam R-Tech Fanfold Roof Underlayment II, Nominal Density 1.5 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .220 @ 40 degrees.

C .240 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.55 @ 40 degrees.

R 4.17 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 15 psi.
        2. Flexural Strength, ASTM C 203: Minimum 35 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent Allowable.
      1. Fanfold Size/Thickness:

\*\* NOTE TO SPECIFIER \*\* Select one of the following size/thickness paragraphs and delete those not required.

* + - * 1. Thickness of 3/8 inch 4 foot by 50 foot fanfold bundle. Covers 200 SF.
        2. Thickness of 1/2 inch 4 foot by 50 foot fanfold bundle. Covers 200 SF.
        3. Thickness of 3/4 inch 4 foot by 24 foot fanfold bundle. Covers 96 SF.
      1. Facing:

\*\* NOTE TO SPECIFIER \*\* Select one of the following facer paragraphs and delete the one not required.

* + - * 1. RS-Roofing Silver.
        2. RW-Roofing White.

\*\* NOTE TO SPECIFIER \*\* InsulFoam SP is designed for low slope roof applications that employ mechanically fastened or ballasted TPO, PVC, EPDM and CSPE as well as low slope, built-up, modified bitumen and fully adhered single ply roofs that incorporate cover boards or slip sheets. Consult applicable building codes and membrane manufacturers for system requirements.

* + 1. Flat Board Faced: InsulFoam SP VIII rigid, closed cell, expanded polystyrene (EPS) boards, UL certified, complying with ASTM C 578; one side of board with factory laminated fiberglass facer:
       1. InsulFoam SP VIII; Nominal Density 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
          1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .235 @ 40 degrees.

C .255 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.25 @ 40 degrees.

R 3.92 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 13 psi.
        2. Flexural Strength, ASTM C 203: Minimum 30 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.
      1. Size: 4 foot by 8 foot.
      2. Thickness:

\*\* NOTE TO SPECIFIER \*\* Select one of the following thickness paragraphs and delete the not one required. The available thickness range from 1-1/2 to 6 inches. Consult with manufacturer for additional information.

* + - * 1. Minimum thickness of \_\_\_\_\_\_\_ inch.
        2. Thickness required to achieve an R value of \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Select one of the following two paragraphs and delete the one not required.

* + - 1. Provide 2 layer staggered system.
      2. Provide single layer system.

\*\* NOTE TO SPECIFIER \*\* InsulFoam FL is for use over standing seam metal roof systems that are to be re-covered with new roof systems. InsulFoam FL can be taper-cut or square-cut to fit in the bottom of the metal roof system's flutes. InsulFoam FL can also be profile-cut to match the shape of the existing metal roof. Consult local building codes and the new roof system manufacturer for system requirements.

* + 1. Metal Roof Void Fill Insulation Unfaced: InsulFoam FL (Flute Fill) fits into the metal roof deck flutes. Rigid, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578.

\*\* NOTE TO SPECIFIER \*\* Select one of the following Type paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - 1. InsulFoam FL I. Nominal Density: 1.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .240 @ 40 degrees.

C .260 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.17 @ 40 degrees.

R 3.85 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 10 psi.
        2. Flexural Strength, ASTM C 203: Minimum 25 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 5.0 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent allowable.
      1. InsulFoam FL VIII. Nominal Density: 1.25 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177

C .235 @ 40 degrees.

C .255 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177

R 4.25 @ 40 degrees.

R 3.92 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 13 psi.
        2. Flexural Strength, ASTM C 203: Minimum 30 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent allowable.
      1. InsulFoam FL II. Nominal Density: 1.5 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
         1. C-Value (Conductance) BTU/(hr/ft2/degrees F) per inch as tested in accordance with ASTM C 518 or ASTM C 177.

C .220 @ 40 degrees.

C .240 @ 75 degrees.

* + - * 1. R-Value Thermal Resistance (hr/ft2/degrees F) /BTU per inch as tested in accordance with ASTM C 518 or ASTM C 177.

R 4.55 @ 40 degrees.

R 4.17 @ 75 degrees.

* + - * 1. Compressive Strength, ASTM D 1621: Minimum 15 psi.
        2. Flexural Strength, ASTM C 203: Minimum 35 psi.
        3. Dimensional Stability, ASTM D 2126: Maximum 2 percent.
        4. Water Vapor Permeance, ASTM E 96: Maximum 3.5 perms.
        5. Capillarity: None.
        6. Flame Spread as tested in accordance with ASTM E 84: Less than 20.
        7. Smoke Developed as tested in accordance with ASTM E 84: 150 to 300.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + - * 1. LEED Recycle Content: 15 Percent allowable.

\*\* NOTE TO SPECIFIER \*\* Select one of the following shape/size paragraphs and delete those not required. InsulFoam FL can be taper-cut or square-cut to fit in the bottom of the metal roof system's flutes and can also be profile-cut to match the shape of the existing metal roof. Note that the maximum length of flute fill is 96 inches. Consult with manufacturer for additional information.

* + - 1. Shape/Size: Thickness as required to fill the flute.
         1. Beveled/Taper Cut.
         2. Square Cut.
         3. Shape/size as indicated.
         4. Provide in largest practical lengths for project.

\*\* NOTE TO SPECIFIER \*\* InsulFoam HD Composite is acceptable for single ply roof applications that employ mechanically fastened, ballasted or adhered EPDM, TPO, PVC or CSPE membranes, as well as low-sloped built-up and modified bitumen membrane systems. InsulFoam HD Composite can also be used as an underlayment for metal roofing systems. InsulFoam HD Composite is not a structural panel, and is suitable only for installation over fully supported structural decks. Consult with manufacturer for additional information.

* + 1. Composite Insulation, Flat: Insulfoam HD Composite, flat, rigid, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578 with factory laminated 1/2 inch HD board.
       1. Insulfoam HD. Nominal 1.0 Pcf as tested in accordance with ASTM C 303.
       2. Thickness:
          1. Minimum thickness of 1-1/2 inches.
       3. Size:

\*\* NOTE TO SPECIFIER \*\* Select one of the following size paragraphs and delete the one not required.

* + - * 1. 4 foot by 4 foot sheets.
        2. 4 foot by 8 foot sheets.
    1. Composite Insulation, Tapered: Tapered Insulfoam HD Composite, tapered, closed cell, expanded polystyrene (EPS) board, complying with ASTM C 578 with factory laminated 1/2 inch HD board.
       1. Insulfoam HD. Nominal 1.0 Pcf as tested in accordance with ASTM C 303. Physical properties as follows:
       2. Size:

\*\* NOTE TO SPECIFIER \*\* Select one of the following size paragraphs and delete the one not required.

* + - * 1. 4 foot by 4 foot sheets.
        2. 4 foot by 8 foot sheets.
      1. Thickness:

\*\* NOTE TO SPECIFIER \*\* Select one of the following thickness paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - * 1. Minimum thickness of \_\_\_\_\_\_\_ inches.
        2. Thickness required to achieve an R value of \_\_\_\_\_\_.
        3. Thickness as indicated on the Drawings.
        4. Average R value of \_\_\_\_\_\_.
      1. Taper:

\*\* NOTE TO SPECIFIER \*\* Select one of the following taper paragraphs and delete those not required. Consult with manufacturer for additional information.

* + - * 1. Minimum slope as indicated on the Drawings.
        2. Crickets or saddles as indicated on the Drawings.
        3. Minimum Tapered Slope:

1/16 inch Per Foot Slope

1/8 inch Per Foot Slope

3/16 inch Per Foot Slope

1/4 inch Per Foot Slope

1/2 inch Per Foot Slope

* + - * 1. Minimum Crickets or Saddles:

1/8 inch Per Foot Slope

1/4 inch Per Foot Slope

1/2 inch Per Foot Slope

* 1. ACCESSORlES
     1. Insulation Adhesives: As approved roofing system manufacturer and Insulfoam.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and free of foreign material that will damage insulation installation.
      3. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents, and other roof accessories are secured properly and installed in conformance with drawings and submittals.
      4. Verify that deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.
      5. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
      3. Asphalt, coal tar base, oil base or plastic roof cements, and resaturated roof products shall not be used in direct contact with unfaced EPS insulation..

\*\* NOTE TO SPECIFIER \*\* Select deck type(s) required and delete those not required. Concrete, plywood, or flat sheet-metal surface: Plywood must be exterior grade with an A or B finish side up and with no joints gapped greater than 1/4 inch (6 mm). Thickness, structural grade, fastening, and fire resistance requirements should meet the requirements and recommendations of applicable building codes.

* + 1. Concrete Deck:
       1. Concrete shall be cured, and prepared smooth with dust removed.
       2. Concrete shall be dry, flat, clean, smooth, free of sharp edges and suitable for acceptance of insulation.
    2. Plywood Deck:
       1. Plywood must be exterior grade with an A or B finish side up and with no joints gapped greater than 1/4 inch (6 mm).
       2. Deck shall be dry, flat, clean, smooth, free of sharp edges and suitable for acceptance of approved fully adhered membrane.

\*\* NOTE TO SPECIFIER \*\* Determine the condition of the existing roof. Significantly deteriorated decking must be repaired or replaced, as appropriate. Wet materials (containing free moisture that would evaporate if exposed to atmosphere) must be found and replaced.

* + 1. Reroofing Over Existing Roof:
       1. Condition of the existing roof must be appropriate to insulation and roof manufacturer's specifications for reroofing application. Significantly deteriorated decking must be repaired or replaced, as appropriate. Wet materials containing free moisture that would evaporate if exposed to atmosphere must be found and replaced.
       2. Surface shall be dry, smooth and even, blisters cut, and loose aggregate removed.
       3. Installation of approved insulation or cover board shall comply with manufacturer's standards.
       4. Appropriate fastener shall be used to anchor the membrane to the deck at perimeters and penetrations in accordance with building code and performance requirements.

\*\* NOTE TO SPECIFIER \*\* The incorporation of a vapor barrier or retarder within the roofing assembly is highly recommended when the project is located in Zones 1, 2 or 3 of the United States. EPS insulation is not intended to substitute for a vapor barrier. Vapor barrier or retarder when used shall have a perm rating of 0.5 or less as determined by ASTM E 96.

* + 1. Apply vapor barrier and or retarder, as specified by the Architect or required by the local building code, to decking prior to installation of insulation.

\*\* NOTE TO SPECIFIER \*\* Insulfoam Roofing Insulations are eligible for inclusion in many membrane manufacturers' total system warranties. Contact Insulfoam for a list of membrane manufacturers with which Insulfoam is a partner.

* 1. INSTALLATION
     1. Install specified insulation in accordance with the insulation manufacturer's Insulfoam Roofing Manual, the roofing manufacturer's, latest printed instructions and as required by governing codes and Owner's insurance carrier requirements.
     2. Do not leave installed insulation exposed to weather. Cover and waterproof immediately after installation.
     3. Seal exposed insulation joints at the end of each day. Remove seal when work resumes.
     4. Remove installed insulation that has become wet or damaged and replace with new solid and dry insulation material.
     5. Install multi-layer tapered insulation systems to provide slopes indicated on the Drawings. Provide crickets and saddles as indicated and required.

\*\* NOTE TO SPECIFIER \*\* Select one of the following three installation system paragraphs for the roof system required and delete the ones not required. Edit each system as required by the governing codes and Owners insurance requirements. Coordinate with the requirements of the roof system manufacturer and the insulation manufacturer's Insulfoam Roofing Manual.

* + 1. Built-Up, Asphalt, Coal Tar and Modified Bitumen Systems:

\*\* NOTE TO SPECIFIER \*\* Select the installation method or combination of methods required from the following three paragraphs and delete those not required. Coordinate with the requirements of the roof system manufacturer and edit as required.

* + - 1. Secure each insulation panel to the roof deck with Factory Mutual approved fasteners and plates (appropriate to the deck type).
      2. Adhere maximum 4 foot by 4 foot (1220 mm by 1220 mm) panels of insulation to a prepared concrete deck with FM approved cold adhesive.
      3. Butt edges and stagger joints of adjacent panels.

\*\* NOTE TO SPECIFIER \*\* The following three paragraphs apply to multi-layer systems only select the method required and delete those not required. Delete if not required.

* + - 1. Multi-layer systems: Adhere subsequent layers with FM approved cold adhesive.
      2. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
      3. Secure separator sheet over entire surface of the insulation overlapping edges a minimum of 2 inches.
      4. Install the roof covering according to the roof manufacturer's specifications.
    1. Single-Ply Systems Ballasted Single-Ply Systems:
       1. Each insulation panel is loosely laid on the roof deck.
       2. Butt edges and stagger joints of adjacent panels.
       3. Install the roof covering according to the roof manufacturer's specifications.
    2. Mechanically Attached Single-Ply Systems:
       1. Each insulation panel must be secured to the roof deck with approved fasteners and plates (appropriate to the deck type).
       2. Butt edges and stagger joints of adjacent panels.
       3. Install the roof covering according to the roof manufacturer's specifications.
    3. Fully Adhered Single-Ply Systems:

\*\* NOTE TO SPECIFIER \*\* Select the installation method or combination of methods required from the following three paragraphs and delete those not required. Coordinate with the requirements of the roof system manufacturer and edit as required.

* + - 1. Secure each insulation panel to the roof deck with approved fasteners and plates (appropriate to the deck type).
      2. Adhere maximum 4 foot by 4 foot (1220 mm by 1220 mm) panels of insulation to a prepared deck with cold adhesive.
      3. Butt edges and stagger joints of adjacent panels.

\*\* NOTE TO SPECIFIER \*\* The following three paragraphs apply to multi-layer systems only select the method required and delete those not required. Delete if not required.

* + - 1. Multi-layer systems: Adhere subsequent layers with FM approved cold adhesive.
      2. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
      3. Install the roof covering according to the roof manufacturer's specifications.
  1. CLEANING
     1. Remove trash and construction debris from insulation before application of roofing membrane.
  2. PROTECTION
     1. Protect installed products until completion of project.
     2. Protect installed insulation traffic by use of protective covering materials during and after installation.
     3. Cover the top and edges of unfinished roof panel work to protect it from the weather and to prevent accumulation of water in the cores of the panels. Only apply enough insulation per day that can be covered by roofing.
     4. Do not leave panels exposed to moisture. Wet panels shall be removed or allowed to completely dry prior to application of vapor barrier and/or roof covering.
     5. Repair or replace damaged products before Substantial Completion.

END OF SECTION