SECTION 07 54 23

THERMOPLASTIC-POLYOLEFIN ROOFING

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\*\* NOTE TO SPECIFIER \*\* IKO Roofing - Commercial; Single Ply Roofing System Solutions.  
This section is based on the products of IKO Roofing - Commercial, which is located at:6 Denny Rd., Suite 200Wilmington, DE 19809Tel: 302-516-0561Email: [request info (carol.perkins@iko.com)](https://arcat.com/rfi?action=email&company=IKO%252BRoofing%252B-%252BCommercial&message=RE%253A%2520Spec%2520Question%2520(07540ino)%253A%2520&coid=49251&spec=07540ino&rep=&fax=)  
Web: <https://www.iko.com/innovi>   
 [ [Click Here](https://arcat.com/company/iko-roofing-commercial-49251) ] for additional information.  
As a leader in commercial roofing products, IKO offers exceptional benefits. Launching the new IKO InnoviTPO single-ply roofing systems exemplifies IKO's founders' core values, entrepreneurial spirit, and commitment to quality. This holistic dedication to excellence brings new meaning to performance innovation. IKO InnoviTPO is manufactured in a leading-edge manufacturing facility designed to result in net zero wastage of the TPO product itself. Our TPO membranes have exceptional durability and longevity, and are designed to meet or exceed ASTM standards for weathering resistance. IKO InnoviTPO is produced without any chlorines or halogenated compounds in the formulation and can provide for LEED design credits. IKO offers a complete line of compatible roofing accessories, so the entire system can qualify for appropriate Diamond Shield limited warranties.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. TPO Roofing:
       1. Adhered system.
       2. Induction welded system.
       3. Mechanically Attached roofing system.
    2. Roofing System Components:
       1. Roofing membrane manufacturer's requirements for specified warranty.
       2. Preparation of roofing substrates.
       3. Wood nailers for roofing attachment.
       4. Vapor barrier.
       5. Insulation.
       6. Cover boards.
       7. Metal roof edging and copings.
       8. Flashings.
       9. Walkway pads.
       10. Roofing accessories.
       11. Items required to install complete weatherproof roofing systems.
  1. RELATED SECTIONS

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

* + 1. Section 06 10 00 - Rough Carpentry.
    2. Section 07 22 00 - Roof and Deck Insulation.
    3. Section 07 62 00 - Sheet Metal Flashing and Trim.
    4. Section 07 71 00 - Roof Specialties.
    5. Section 07 72 00 - Roof Accessories.
    6. Section 08 62 00 - Unit Skylights.
    7. Section 22 10 00 - Plumbing Piping and Roof Drains.
  1. REFERENCES

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

* + 1. ASTM International (ASTM):
       1. ASTM C 1177/C 1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
       2. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
       3. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
       4. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
       5. ASTM D 1004 - Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
       6. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
       7. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
       8. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
       9. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C.
    2. Canadian Unlimited Liability Corporation:
       1. CAN/ULC S-704.1 Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
    3. American National Standards Institute (ANSI):
       1. ANSI/SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.
    4. FM Global:
       1. FM 1-28 - Design Wind Loads; Factory Mutual System.
       2. FM 1-29 - Roof Deck Securement and Above Deck Roof Components; Factory Mutual System.
    5. Voluntary Product Standards:
       1. PS 1 - Construction and Industrial Plywood.
       2. PS 20 - American Softwood Lumber Standard.
    6. Underwriters Laboratories (UL).
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00.
     2. Applicator Approval Verification: Submit letter or certificate from manufacturer verifying applicator is approved to install roofing system for warranty type and term specified.
     3. Product Data:

\*\* NOTE TO SPECIFIER \*\* Delete documentation for FM approved systems if not required.

* + - 1. Manufacturer's data sheets on each roofing system component to be used, including insulation, fasteners, plates, and all accessories to demonstrate compliance with this specification, clearly indicating which installation options will be used.
      2. Documentation substantiating system to be installed is UL Classified, including data for individual roofing system components.
      3. Documentation substantiating system to be installed is FM approved, including data for individual roofing system components.
      4. Preparation instructions and recommendations.
      5. Storage and handling requirements and recommendations.
      6. Installation instructions and typical installation methods.
    1. Verification Samples: Two representative units of each product used.
    2. Shop Drawings: Include manufacturer's standard details of materials, construction, and finish complying with requirements for warranty type and term specified. Include details of adjacent construction.
    3. Warranty Application: Submit copy of manufacturer's accepted and approved Warranty Application for project.
    4. Sample Warranty: Submit sample of manufacturer's warranty of type and term indicated in this specification prior to starting work.
    5. Executed Warranty: Submit manufacturer's executed warranty for project upon substantial completion of the work.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five years documented experience.
     2. Applicator Qualifications: Roofing installer must have the following:
        1. Current IKO Approved Applicator status.
        2. At least five years' experience in installing TPO roofing systems.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.
  2. PRE-INSTALLATION CONFERENCE
     1. Before commencing work, schedule and attend meeting to review proper installation of specified roofing system and requirements to achieve warranty.
        1. Invite Architect, Roof Consultant, General Contractor, and any other parties directly influencing the quality of roofing work or affected by the performance of roofing work.
     2. Provide reasonable notice of meeting schedule in advance.
  3. DELIVERY, STORAGE, AND HANDLING
     1. Delivery roofing products to job site in manufacturer's original containers, dry, undamaged, with seals and labels intact and legible.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
     3. Keep combustible materials away from ignition sources.
  4. PROJECT CONDITIONS
     1. Maintain environmental temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  5. WARRANTY
     1. Manufacturer's standard limited warranty unless otherwise indicated.
     2. Installed roofing system must comply with all warranty procedures required by manufacturer, including warranty application and inspection procedures.
     3. IKO Diamond Shield Limited Warranty: Covers membrane, roof insulation, and roofing accessories.

\*\* NOTE TO SPECIFIER \*\* Delete duration and wind speed options not required.

* + - 1. Duration: 5 year.
      2. Duration: 10 year.
      3. Duration: 15 year.
      4. Duration: 20 year.
      5. Duration: 25 year.
      6. Duration: 30 year.
      7. Repair Roofing System Linkd Caused By:
         1. Manufacturing defect.
         2. Defective workmanship used to install materials.
         3. Ordinary wear and tear of roofing components.
         4. Damage Due to Wind Speed Up To: 55 mph.
         5. Damage Due to Wind Speed Up To: 72 mph.
         6. Damage Due to Wind Speed Up To: 80 mph.
         7. Damage Due to Wind Speed Up To: 90 mph.
         8. Damage Due to Wind Speed Up To: 100 mph.
      8. Not Covered:
         1. Wind speeds higher than those designated.
         2. Damage due to hurricanes or tornadoes.
         3. Hail.
         4. Unintentional damage due to normal rooftop inspections, maintenance, or service.
         5. Products not provided by the manufacturer, unless where written approval of the manufacturer is provided.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: IKO Roofing - Commercial, which is located at:6 Denny Rd., Suite 200Wilmington, DE 19809Tel: 302-516-0561Email: [request info (carol.perkins@iko.com)](https://arcat.com/rfi?action=email&company=IKO%252BRoofing%252B-%252BCommercial&message=RE%253A%2520Spec%2520Question%2520(07540ino)%253A%2520&coid=49251&spec=07540ino&rep=&fax=);Web: <https://www.iko.com/innovi>

\*\* 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 the provisions of Section 01 60 00.

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

* 1. TPO ADHERED ROOFING SYSTEM
     1. Basis of Design: TPO Adhered Membrane Roofing System as manufactured and supplied by IKO Innovi.
        1. Membrane: ASTM D 6878. Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer with polyester weft inserted reinforcement.
        2. Performance and Design Requirements:
           1. Standards Compliance: UL Listed; FM Approved.
           2. Puncture Resistance: FTM 101C Method 2031. 265 lbf (1174 N), minimum.

\*\* NOTE TO SPECIFIER \*\* Delete SRI option not required.

* + - * 1. Initial Solar Reflective Index (SRI): White: 94, minimum.
        2. Initial Solar Reflective Index (SRI): Grey: 66, minimum.

\*\* NOTE TO SPECIFIER \*\* Delete thickness option not required.

* + - 1. Membrane Thickness (Nominal): 45 mil (1.14 mm).
      2. Membrane Thickness (Nominal): 60 mil (1.52 mm).
      3. Membrane Thickness (Nominal): 80 mil (2.03 mm).

\*\* NOTE TO SPECIFIER \*\* Delete color option not required.

* + - 1. Exposed Face Color: White.
      2. Exposed Face Color: Grey.
      3. Attachment: Fully adhered with manufacturer's recommended fasteners and plates.
      4. Seams: Heat welded per manufacturer's instructions.
      5. Maximum TPO Sheet Width: 12 ft (305 mm).
      6. Accessories: As recommended by the manufacturer for application indicated, compatible with membrane roofing system.
      7. Volatile Organic Compounds: Meeting VOC content limits of authorities having jurisdiction.
      8. Reinforced Sheet Flashing: Manufacturer's scrim reinforced membrane in same thickness and color as membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      9. Non-reinforced Sheet Flashing: Manufacturer's unsupported membrane flashing in same color as membrane.
         1. Basis of Design: InnoviFlash TPO Unsupported Flashing.
      10. Insulation Adhesive: Manufacturer's two-component Low-VOC (Less than 5 g/L) urethane adhesive formulated to adhere roofing insulation to substrates.
          1. Basis of Design: IKO Millennium Insulation Adhesive.
      11. Membrane Adhesive: Manufacturer's solvent based, Low VOC solvent based, or water based bonding adhesive formulated to adhere membrane and flashings to substrates.

\*\* NOTE TO SPECIFIER \*\* Delete basis if design option not required.

* + - * 1. Basis of Design: InnoviBond TPO Membrane Adhesive LVOC.
        2. Basis of Design: InnoviBond TPO Membrane Adhesive.
        3. Basis of Design: InnoviBond TPO Membrane Adhesive SPR (Sprayable).
      1. Primer: One-part penetrating primer.

\*\* NOTE TO SPECIFIER \*\* Delete option not required.

* + - * 1. Basis of Design: InnoviPrime TPO Primer.
        2. Basis of Design: InnoviPrime TPO Primer LVOC.
      1. Slip Sheet: Manufacturer's 45 mil TPO Membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      2. Membrane Flashings: Manufacturer's standard corner, curb, sealant pocket, pipe boot, scupper, joint covers, cover strips, and other TPO flashings for warranty term specified.
         1. Basis of Design: InnoviFlash TPO products.
      3. Metal Termination Bars: Manufacturer's standard All-Purpose (AP) or Heavy Duty (HD) predrilled stainless-steel or aluminum bars, with manufacturer's recommended anchors.
         1. Basis of Design: InnoviFast Termination Bars, substrate, and warranty appropriate.
      4. Fasteners and Plates: Manufacturer's standard fasteners and plates for fastening manufacturer's membrane, insulation, cover board, termination bar, batten bar to substrate.
         1. Basis of Design: InnoviFast Fasteners and Plates, appropriate to substrate and warranty.
      5. Miscellaneous Roofing Accessories: Provide Manufacturer's accessories required for full installation, appropriate to substrate, system, and warranty.

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

* + - * 1. Basis of Design: InnoviSeal.
        2. Basis of Design: InnoviPrime.
        3. Basis of Design: InnoviBoot.
        4. Basis of Design: InnoviFlash.
        5. Basis of Design: InnoviBond.
        6. Basis of Design: InnoviTape.
      1. TPO Coated Metal: Manufacturer's TPO coated metal, installer-formed to terminate roof at structure perimeter, included in single-source roofing system warranty.
         1. Basis of Design: InnoviEdge TPO Coated Metal.
      2. Edge Metal Flashings: Manufacturer's preformed edge metal flashings, appropriate to edge conditions and roof drainage indicated.

\*\* NOTE TO SPECIFIER \*\* Delete option not required. Edge metal system by others may be allowed. Contact the manufacturer to verify acceptable products and manufacturers.

* + - * 1. Basis of Design: InnoviEdge Drip Edge.
        2. Basis of Design: InnoviEdge Gravel Stop.
        3. Basis of Design: InnoviEdge Coping.
      1. Flexible Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer.
         1. Basis of Design: InnoviStep TPO Walkway Pad.
      2. Cover Board: High-Density Polyisocyanurate: ASTM C 1289, Type II, Class 4, Grade 3, high-density polyisocyanurate, bonded to mineral-surfaced, fiber glass reinforced facers.
         1. Basis of Design: IKOTherm CoverShield.

Compressive Strength: 0 psi minimum.

Thickness: 1/2 inch (13 mm).

R-value: 2.5 minimum.

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.

* + - 1. Gypsum Board: ASTM C 1177, Heavy duty coated glass-mat facer, water-resistant gypsum substrate for fully adhered roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck Prime by Georgia Pacific.
        2. Basis of Design: Securock Ultralight Coated Glass Mat Roof Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
      1. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive
         1. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      2. Roof Insulation: Preformed polyisocyanurate roof insulation boards complying with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated, in multiple layers:

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compressive strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Insulation.
        2. Basis of Design: IKOTherm Polyisocyanurate Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by code.
        6. MinimumBoard Thickness: As shown on the Drawing.
        7. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.

Minimum Long-Term Thermal Resistance: 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C).

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.

* + - * 1. Non-organic Coated Glass Facer Polyisocyanurate Foam Insulation.
        2. Basis of Design: IKOTherm III Polyisocyanurate Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by code.
        6. Minimum Board Thickness: As shown on the Drawings.
        7. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.

Minimum Long-Term Thermal Resistance: 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C).

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.

* + - 1. Tapered Insulation: Factory-tapered insulation boards, saddles, crickets, tapered edge strips, and other insulation shapes indicated for sloping to drain, per slope directions indicated.

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compressive strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Tapered Insulation:
        2. Basis of Design: IKOTherm Tapered Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        6. Boards: 4 x 4 ft (1219 x 129 mm) are required for adhesive attachment.
        7. Non-organic Coated Glass Facer Polyisocyanurate Foam Tapered Insulation:
        8. Basis of design: IKOTherm III Tapered Insulation.
        9. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        10. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        11. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        12. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      1. Wood Nailers: Comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry."

\*\* NOTE TO SPECIFIER \*\* Delete vapor retarder option not required.

* + - 1. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP.
      2. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; sand surfaced; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP Sand.
      3. Asphalt Primer: ASTM D 41. Basis of Design: IKO S.A.M. Adhesive.
      4. Thermal Barrier: Gypsum Board: ASTM C 1177, Heavy duty coated glass-mat facer, water-resistant gypsum substrate for fully adhered roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck by Georgia Pacific.
        2. Basis of Design: SecuRock Gypsum-Fiber Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
        6. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: x 4 ft (219 x 1219 mm) are required for adhesive attachment.

* 1. TPO INDUCTION WELDED ROOFING SYSTEM
     1. Basis of Design: Induction Welded Membrane Roofing System as manufactured and supplied by IKO Innovi.
        1. Membrane: ASTM D 6878. Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer membrane with polyester weft inserted reinforcement.
        2. Performance and Design Requirements:
           1. Standards Compliance: UL Listed; FM Approved.
           2. Puncture Resistance: FTM 101C Method 2031. 265 lbf (1174 N), minimum.

\*\* NOTE TO SPECIFIER \*\* Delete SRI option not required.

* + - * 1. Initial Solar Reflective Index (SRI): White: 94, minimum.
        2. Initial Solar Reflective Index (SRI): Grey: 66, minimum.

\*\* NOTE TO SPECIFIER \*\* Delete option not required.

* + - 1. Membrane Thickness (Nominal): 60 mil (1.52 mm).
      2. Membrane Thickness (Nominal): 80 mil (2.03 mm).

\*\* NOTE TO SPECIFIER \*\* Delete color option not required.

* + - 1. Exposed Face Color: White.
      2. Exposed Face Color: Grey.
      3. Attachment: Induction welded with specialty manufactured plates and appropriate type and length fasteners.
      4. Seams: Heat welded per manufacturer's instructions.
      5. Maximum TPO Sheet Width: 12 ft (305 mm).
      6. Accessories: As recommended by the manufacturer for application indicated, and compatible with membrane roofing system.
      7. Volatile Organic Compounds: Meeting VOC content limits of authorities having jurisdiction.
      8. Reinforced Sheet Flashing: Manufacturer's scrim reinforced membrane in same thickness and color as sheet membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      9. Non-reinforced Sheet Flashing: Manufacturer's unsupported membrane flashing in same color as sheet membrane.
         1. Basis of Design: InnoviFlash TPO Unsupported Flashing.
      10. Insulation Adhesive: Manufacturer's two-component Low-VOC (Less than 5 g/L) urethane adhesive formulated to adhere roofing insulation to substrates.
          1. Basis of Design: IKO Millennium Insulation Adhesive.
      11. Membrane Adhesive: Manufacturer's solvent based, Low VOC solvent based, or water based bonding adhesive formulated to adhere membrane and flashings to substrates.

\*\* NOTE TO SPECIFIER \*\* Delete adhesive option not required.

* + - * 1. Basis of Design: InnoviBond TPO Membrane Adhesive LVOC.
        2. Basis of Design: InnoviBond TPO Membrane Adhesive.
        3. Basis of Design: InnoviBond TPO Membrane Adhesive SPR (Sprayable).
      1. Primer: One-part penetrating primer.

\*\* NOTE TO SPECIFIER \*\* Delete primer option not required.

* + - * 1. Basis of Design: InnoviPrime TPO Primer.
        2. Basis of Design: InnoviPrime TPO Primer-LVOC.
      1. Slip Sheet: Manufacturer's 45-mil TPO Membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      2. Membrane Flashings: Manufacturer's standard corner, curb, sealant pocket, pipe boot, scupper, joint covers, cover strips, and various other TPO flashings appropriate to the warranty term specified herein.
         1. Basis of Design: InnoviFlash TPO products.
      3. Metal Termination Bars: Manufacturer's standard All-Purpose (AP) or Heavy Duty (HD) predrilled stainless-steel or aluminum bars, with manufacturer's recommended anchors.
         1. Basis of Design: InnoviFast Termination Bars, substrate and warranty appropriate.
      4. Fasteners & Plates: Manufacturer's induction weld plates for membrane attachment, and appropriate fasteners and plates designed for fastening manufacturer's membrane.
         1. Basis of Design: InnoviWeld Plates, and InnoviFast Fasteners and Plates, as appropriate to substrate and warranty.
         2. InnoviWeld Plates must be attached using InnoviFast Heavy Duty (HD) number 15 fasteners.
      5. Miscellaneous Roofing Accessories: Provide Manufacturer's accessories required for full installation, as appropriate to substrate, system, and warranty.

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

* + - * 1. Basis of Design: InnoviSeal.
        2. Basis of Design: InnoviPrime.
        3. Basis of Design: InnoviBoot.
        4. Basis of Design: InnoviFlash.
        5. Basis of Design: InnoviBond.
        6. Basis of Design: InnoviTape.
      1. TPO Coated Metal: Manufacturer's TPO coated metal, installer-formed to terminate roof at structure perimeter, included in single-source roofing system warranty.
         1. Basis of Design: InnoviEdge TPO Coated Metal.
      2. Edge Metal Flashings: Manufacturer's preformed edge metal flashings, appropriate to edge conditions and roof drainage plan.

\*\* NOTE TO SPECIFIER \*\* Delete options not required. Edge metal system by others may be allowed. Contact the manufacturer to verify acceptable products and manufacturers.

* + - * 1. Basis of Design: InnoviEdge Drip Edge.
        2. Basis of Design: InnoviEdge Gravel Stop.
        3. Basis of Design: InnoviEdge Coping.
      1. Flexible Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer.
         1. Basis of Design: InnoviStep TPO Walkway Pad.
      2. Cover Board: High-Density Polyisocyanurate: ASTM C 1289, Type II, Class 4, Grade 3, high-density polyisocyanurate bonded to mineral-surfaced, fiber glass reinforced facers.
         1. Basis of Design: IKOTherm CoverShield.

Compressive Strength: 0 psi minimum.

Thickness: 1/2 inch (13 mm).

R-value: 2.5 minimum.

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.

* + - 1. Gypsum Board: ASTM C 1177, Coated glass-mat facer, water-resistant gypsum substrate for mechanically attached roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck by Georgia Pacific.
        2. Basis of Design: Securock Gypsum-Fiber Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
      1. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive
         1. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      2. Roof Insulation: Preformed polyisocyanurate roof insulation boards complying with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated, in multiple layers:

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compressive strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Insulation.
        2. Basis of Design: IKOTherm Polyisocyanurate Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by applicable code.
        6. Minimum Board Thickness: As shown on the Drawings.
        7. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.

Minimum Long-Term Thermal Resistance: 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C).

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.

* + - * 1. Non-organic Coated Glass Facer Polyisocyanurate Foam Insulation.
        2. Basis of Design: IKOTherm III Polyisocyanurate Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by applicable code.
        6. Minimum board thickness: As shown on the Drawings.
        7. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.

Minimum Long-Term Thermal Resistance: 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C).

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: 4 x 4 (1219 x 1219) are required for adhesive attachment.

* + - 1. Tapered Insulation: Factory-tapered insulation boards, saddles, crickets, tapered edge strips, and other insulation shapes indicated for sloping to drain, per slope directions indicated.

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compressive strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Tapered Insulation:
        2. Basis of Design: IKOTherm Polyisocyanurate Tapered Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        6. Boards: 4 x 4 (1219 x 1219) are required for adhesive attachment.
        7. Non-organic Coated Glass Facer Polyisocyanurate Foam Tapered Insulation:
        8. Basis of design: IKOTherm III Tapered Insulation.
        9. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289
        10. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        11. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        12. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      1. Wood Nailers: Comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry."

\*\* NOTE TO SPECIFIER \*\* Delete vapor retarder option not required.

* + - 1. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP.
      2. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; sand surfaced; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP Sand.
      3. Asphalt Primer: ASTM D 41.
         1. Basis of Design: IKO S.A.M. Adhesive.
      4. Thermal Barrier: Gypsum Board: ASTM C 1177, Heavy duty coated glass-mat facer, water-resistant gypsum substrate for fully adhered roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck by Georgia Pacific
        2. Basis of Design: SecuRock Gypsum-Fiber Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
        6. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        7. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
  1. TPO MECHANICALLY ATTACHED ROOFING SYSTEM
     1. Basis of Design: TPO Adhered Membrane Roofing System; as manufactured and supplied by IKO Innovi.
        1. Membrane: ASTM D 6878. Flexible, heat weldable sheet composed of thermoplastic polyolefin polymer membrane with polyester weft inserted reinforcement.
        2. Performance and Design Requirements:
           1. Standards Compliance: UL Listed; FM Approved.
           2. Puncture Resistance: FTM 101C Method 2031.265 lbf (1174 N), minimum.

\*\* NOTE TO SPECIFIER \*\* Delete SRI option not required.

* + - * 1. Initial Solar Reflective Index (SRI): White: 94, minimum.
        2. Initial Solar Reflective Index (SRI): Grey: 66, minimum.

\*\* NOTE TO SPECIFIER \*\* Delete thickness option not required.

* + - 1. Membrane Thickness (Nominal): 45 mil (1.14 mm).
      2. Membrane Thickness (Nominal): 60 mil (1.52 mm).
      3. Membrane Thickness (Nominal): 80 mil (2.03 mm).

\*\* NOTE TO SPECIFIER \*\* Delete color option not required.

* + - 1. Exposed Face Color: White.
      2. Exposed Face Color: Grey.
      3. Attachment: Mechanically attached with manufacturer's recommended fasteners and seam plates.
      4. Seams: Heat welded per manufacturer's instructions.

\*\* NOTE TO SPECIFIER \*\* Delete option not required.

* + - 1. Maximum TPO Sheet Width: 30 Year: 8 feet.
      2. Maximum TPO Sheet Width: 25 Year: 10 feet.
      3. Maximum TPO Sheet Width: 20 Year: 10 feet.
      4. Maximum TPO Sheet Width: 15 Year: 10 feet.
      5. Maximum TPO Sheet Width: 10 Year: 10 feet.
      6. Maximum TPO Sheet Width: 5 Year: 10 feet.
      7. Accessories: As recommended by the manufacturer for application indicated, and compatible with membrane roofing system.

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

* + - 1. Volatile Organic Compounds: Meeting VOC content limits of authorities having jurisdiction.
      2. Reinforced Sheet Flashing: Manufacturer's scrim reinforced membrane in same thickness and color as sheet membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      3. Non-reinforced Sheet Flashing: Manufacturer's unsupported membrane flashing in same color as sheet membrane.
         1. Basis of Design: InnoviFlash TPO Unsupported Flashing.
      4. Insulation Adhesive: Manufacturer's two-component Low-VOC (less than 5 g/L) urethane adhesive formulated to adhere roofing insulation to acceptable substrates.
         1. Basis of Design: IKO Millennium Insulation Adhesive.
      5. Membrane Adhesive: Manufacturer's solvent based, Low VOC solvent based, or water based bonding adhesive formulated to adhere membrane and flashings to acceptable substrates.

\*\* NOTE TO SPECIFIER \*\* Delete adhesive options not required.

* + - * 1. Basis of Design: InnoviBond TPO Membrane Adhesive LVOC.
        2. Basis of Design: InnoviBond TPO Membrane Adhesive.
        3. Basis of Design: InnoviBond TPO Membrane Adhesive SPR (Sprayable).
      1. Primer: One-part penetrating primer solution to enhance the adhesion of roofing membranes and flashings.

\*\* NOTE TO SPECIFIER \*\* Delete primer option not required.

* + - * 1. Basis of Design: InnoviPrime TPO Primer.
        2. Basis of Design: InnoviPrime TPO Primer-LVOC.
      1. Slip Sheet: Manufacturer's 45 mil TPO Membrane.
         1. Basis of Design: IKO Innovi TPO Membrane.
      2. Membrane Flashings: Manufacturer's standard corner, curb, sealant pocket, pipe boot, scupper, joint covers, cover strips, and various other TPO flashings appropriate to the warranty term specified herein.
         1. Basis of Design: InnoviFlash TPO products.
      3. Metal Termination Bars: Manufacturer's standard All-Purpose (AP) or Heavy Duty (HD) predrilled stainless-steel or aluminum bars, with appropriate anchors by manufacturer.
         1. Basis of Design: InnoviFast Termination Bars, substrate and warranty appropriate.
      4. Fasteners and Plates: Manufacturer's standard fasteners and plates for fastening manufacturer's membrane, insulation, cover board, termination bar, batten bar to substrate.
         1. Basis of Design: InnoviFast Fasteners and Plates, as appropriate to substrate and warranty.
      5. Miscellaneous Roofing Accessories: Manufacturer's accessories required for full installation, as appropriate to substrate, system, and warranty.

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

* + - * 1. Basis of Design: InnoviSeal.
        2. Basis of Design: InnoviPrime.
        3. Basis of Design: InnoviBoot.
        4. Basis of Design: InnoviFlash.
        5. Basis of Design: InnoviBond.
        6. Basis of Design: InnoviTape.
      1. TPO Coated Metal: Manufacturer's TPO coated metal, installer-formed to terminate roof at structure perimeter, included in single-source roofing system warranty.
         1. Basis of Design: InnoviEdge TPO Coated Metal.
      2. Edge Metal Flashings: Manufacturer's preformed edge metal flashings, appropriate to edge conditions and roof drainage plan.

\*\* NOTE TO SPECIFIER \*\* Delete options not required. Edge metal system by others may be allowed. Contact the manufacturer to verify acceptable products and manufacturers.

* + - * 1. Basis of Design: InnoviEdge Drip Edge.
        2. Basis of Design: InnoviEdge Gravel Stop.
        3. Basis of Design: InnoviEdge Coping.
      1. Flexible Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer.
         1. Basis of Design: InnoviStep TPO Walkway Pad.
      2. Cover Board: High-Density Polyisocyanurate: ASTM C 1289, Type II, Class 4, Grade 3, high-density polyisocyanurate, bonded to mineral-surfaced, fiber glass reinforced facers.
         1. Basis of Design: IKOTherm CoverShield.

Compressive Strength: 0 psi minimum.

Thickness: 1/2 inch (13 mm).

R-value: 2.5 minimum.

Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

* + - 1. Gypsum Board: ASTM C 1177, Coated glass-mat facer, water-resistant gypsum substrate for mechanically attached roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck by Georgia Pacific.
        2. Basis of Design: SecuRock Gypsum Fiber Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
      1. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive
         1. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      2. Roof Insulation: Preformed polyisocyanurate roof insulation boards complying with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated, in multiple layers:

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compressive strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Insulation.
        2. Basis of Design: IKOTherm Polyisocyanurate Foam Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by applicable code.
        6. Minimum board thickness: As shown on the Drawings.
        7. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.
        8. Minimum Long-Term Thermal Resistance (LTTR): 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C)
        9. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        10. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
        11. Non-organic Coated Glass Facer Polyisocyanurate Foam Insulation.
        12. Basis of Design: IKOTherm III Polyisocyanurate Insulation.
        13. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        14. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        15. Minimum Total Insulation Package R-value: As shown on the Drawings and as required by applicable code.
        16. Minimum board thickness: As shown on the Drawings.
        17. Provide insulation package in multiple layers, with maximum thickness per layer as shown on the Drawings.
        18. Minimum Long-Term Thermal Resistance (LTTR): 5.7 per inch determined in accordance with CAN/ULC S770 at 75 degrees F (24 degrees C)
        19. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        20. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      1. Tapered Insulation: Factory-tapered insulation boards, saddles, crickets, tapered edge strips, and other insulation shapes indicated for sloping to drain, per slope directions indicated.

\*\* NOTE TO SPECIFIER \*\* Delete insulation and compression strength options not required.

* + - * 1. Standard Glass-Reinforced Facer Polyisocyanurate Foam Tapered Insulation:
        2. Basis of Design: IKOTherm Tapered Insulation.
        3. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        4. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        5. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        6. Boards: 4 x 4 ft (1219 x 129 mm) are required for adhesive attachment.
        7. Non-organic Coated Glass Facer Polyisocyanurate Foam Tapered Insulation:
        8. Basis of design: IKOTherm III Tapered Insulation.
        9. Compressive Strength: 20 psi per CAN/ULC S 704 and ASTM C 1289.
        10. Compressive Strength: 25 psi per CAN/ULC S 704 and ASTM C 1289.
        11. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.
        12. Boards: 4 x 4 ft (1219 x 1219 mm) are required for adhesive attachment.
      1. Wood Nailers: Comply with requirements in Division 06 Section "Miscellaneous Rough Carpentry."

\*\* NOTE TO SPECIFIER \*\* Delete vapor retarder option not required.

* + - 1. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP.
      2. Self-Adhered SBS Vapor Retarder: ASTM D 6163, Grade S, Type I, glass-fiber-reinforced, SBS-modified asphalt sheet; sand surfaced; suitable for application method specified.
         1. Basis of Design: IKO Modified Vapour Protector MVP Sand.
      3. Asphalt Primer: ASTM D 41. Basis of Design: IKO S.A.M. Adhesive.
      4. Thermal Barrier: Gypsum Board: ASTM C 1177, Heavy duty coated glass-mat facer, water-resistant gypsum substrate for fully adhered roof applications.

\*\* NOTE TO SPECIFIER \*\* Delete gypsum board and thickness options not required.

* + - * 1. Basis of Design: DensDeck by Georgia Pacific.
        2. Basis of Design: SecuRock Gypsum-Fiber Board by USG.
        3. Thickness: 1/4 inch (6 mm).
        4. Thickness: 1/2 inch (13 mm).
        5. Thickness: 5/8 inch (16 mm).
        6. Attachment: Mechanically fastened. Adhered with IKO Millennium Insulation Adhesive.

Boards: x 4 ft (219 x 1219 mm) are required for adhesive attachment.

1. EXECUTION
   1. GENERAL
      1. Applicator must submit a Warranty Application to manufacturer as notification that project requires manufacturer's warranty.
      2. Comply with applicable federal, state, and local regulations.
      3. Consult manufacturer's instructions, Product Data Sheets, product labels, and Safety Data Sheets (SDS) for specific safety instructions. Keep adhesives, sealants, primers, and cleaning materials away from sources of ignition.
      4. Temporary closures and night seals are the responsibility of the applicator. All temporary enclosure measures must be fully completed to provide a watertight condition, including completion of flashings and terminations.
      5. Applicator will take appropriate measures to protect adjacent construction, property, vehicles, and persons from damage related to roofing work, and repair or restore damage caused by their roofing work, including but not limited to:
         1. Protection from spills and overspray from bitumen, adhesives, sealants, and coatings.
         2. Protection of metal, glass, plastic, and painted surfaces within the range of wind-borne overspray.
      6. Keep materials in their original containers as labeled by the Manufacturer until ready for use.
   2. EXAMINATION
      1. Do not begin installation until the substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
   3. 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.
   4. INSTALLATION
      1. Commencement of work by the Contractor constitutes acknowledgement that this specification may be satisfactorily executed under the project conditions, and they have met all pre-work requirements for warranty of the completed roofing system by the manufacturer.

\*\* NOTE TO SPECIFIER \*\* Delete roofing system components not required.

* + 1. Install all specified roofing system components according to manufacturer's published instructions, approved submittals, warranty requirements, and recommendations for specified roofing system in proper relationship with adjacent construction.
       1. Components include but are not limited to the following:
          1. Vapor barrier.
          2. Insulation and coverboard.
          3. Membrane.
          4. Edge securements.
          5. Flashing.
          6. Accessories.
          7. Drainage components.
          8. Walkway pads.
       2. Where manufacturer provides no instructions or recommendations, follow best practices and industry standards.
  1. FIELD QUALITY CONTROL
     1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
    2. Inspections by Manufacturer: Inspection of the roofing system for warranty purposes by an IKO Field Service Technician; Technician will issue a punch list indicating items to be corrected prior to issuance of manufacturer's warranty.
    3. Roofing applicator will perform all corrections necessary for issuance of warranty.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturer's recommendations.
     2. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
     3. Touch-up, repair or replace damaged products before Substantial Completion.
     4. Repair or replace building components and finished surfaces damaged or defaced due to roofing work; comply with recommendations of manufacturers of non-roofing components and surfaces.
     5. Remove all leftover materials, trash, debris, equipment from project site and surrounding areas.
     6. Protect all completed areas of work from all traffic, including traffic by other trades.
  2. ONGOING CONSTRUCTION TRAFFIC AFTER ROOFING INSTALLATION
     1. Where construction traffic must continue over finished TPO membrane, provide protection according to manufacturer's recommendation, and replace or repair any damaged roofing to original condition.

END OF SECTION