SECTION 07 41 13

STANDING SEAM METAL PANEL ROOFING SYSTEM

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\*\* NOTE TO SPECIFIER \*\*Elevate Commercial Roofing Systems; Roofing, Wall Panels, Rubber Linings.  
This section is based on the products of Elevate Commercial Roofing Systems, which is located at:26 Century Blvd., Suite 205Nashville, TN 37214Toll Free Tel: 800-428-4442Email: [request info (emma.nealy@amrize.com)](https://arcat.com/rfi?action=email&company=Elevate%252BCommercial%252BRoofing%252BSystems&message=RE%253A%2520Spec%2520Question%2520(07410evt)%253A%2520&coid=53946&spec=07410evt&rep=&fax=)  
Web: <https://www.holcimelevate.com/us-en>   
 [ [Click Here](https://arcat.com/company/elevate-commercial-roofing-systems-53946) ] for additional information.  
Elevate is built on 40 years of history - proof that a commitment to the highest quality materials and trusted partnerships withstand the test of time. While our focus continues to be on smart safe and sustainable solutions for our customers, there's so much more on the horizon. We're raising our sights and are ready to help you achieve whatever you can imagine - the sky's the limit.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Standing seam metal roofing system.
  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 55 63 - Vegetated Protected Membrane Roofing and Green Roof Components.
    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 60 00 - Roof Windows and Skylights.
    7. Section 22 14 26.13 - 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.

* + 1. ASTM International (ASTM):
       1. ASTM C158 - Standard Test Methods for Strength of Glass by Flexure (Determination of Modulus of Rupture).
       2. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
       3. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board.
       4. ASTM C473 - Standard Test Methods for Physical Testing of Gypsum Panel Products.
       5. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
       6. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
       7. ASTM D1079 - Standard Terminology Relating to Roofing and Waterproofing.
       8. ASTM C1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
       9. ASTM C1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics
       10. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
       11. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
       12. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
       13. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
       14. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 degrees C.
    2. FM Global: Factory Mutual Corporation.
    3. Underwriters Laboratories (UL):
  1. DEFINITIONS
     1. Definitions in the current editions of ASTM D1079 and NRCA's "The NRCA Roofing Manual: Metal Panel and SPF Roof Systems" apply to work of this Section.
  2. SUBMITTALS
     1. Submit under provisions of Section 01 30 00.
     2. Product Data:
        1. Panel Manufacturer's Printed Data: Technical Data Sheets for products and components of the specified roofing system, including insulation and fasteners.
           1. Comply with specified requirements, and the Manufacturer's requirements and recommendations for the specified system type.
        2. UL or FM Requirements: Where specified, provide documentation showing the roofing system to be installed is UL-Classified or FM-approved, as applicable.
           1. Include data itemizing the components of the classified or approved system.
     3. Installation Instructions: Manufacturer's instructions to installer.
        1. Marked up to show how components are to be installed.
        2. Where instructions allow options, indicate which option is to be used.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
    2. Shop Drawings: Drawings for this project and relevant conditions. Include plans, elevations, sections, details, specified loads, flashings, roof edges, terminations, expansion joints, curbs, penetrations, and drainage. Include interfaces with materials not supplied by metal roof panel manufacturer. Identify each component and its finish.
    3. Copy of Pre-Installation Notice: Proof the Manufacturer's required Pre-Installation Notice (PIN) has been accepted and approved by the Manufacturer.
    4. Specimen warranty.
    5. Closeout Submittals:
       1. Executed warranty.
       2. Maintenance data.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five years documented experience.
     2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up 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: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. The intent of a mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If the mock-up is not acceptable, rebuild the mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before commencement of the Work. Attendees are to include Architect, Contractor and trades involved.
        1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.
        2. Review the Following:
           1. Schedule, responsibilities, critical path items, and approvals.
           2. Installation requirements to achieve the warranty.
           3. Methods and procedures related to roofing installation, including Manufacturer's written instructions.
           4. Finalize construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
           5. Deck substrate conditions and finishes, including flatness and fastening.
           6. Structural loading limitations of roof deck during and after roofing.
           7. Base flashings, roofing details, roof drainage, roof penetrations, equipment curbs, and conditions of other construction affecting roofing system.
           8. Governing regulations and requirements for insurance and certificates.
           9. Temporary protection for roofing system during and after installation.
           10. Roof observation and repair procedures after roofing installation.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver products in Manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.
     2. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     3. Until ready for use, keep materials in their original containers as labeled by the Manufacturer.
     4. Consult panel Manufacturer's instructions, container labels, and Safety Data Sheets (SDS) for specific safety instructions. Keep all adhesives, sealants, primers, and cleaning materials away from all sources of ignition.
     5. Protect from damage due to weather, excessive temperature, and construction operations.
     6. Discard and legally dispose of material that cannot be applied within its stated shelf life.
     7. Store materials clear of ground and moisture with weather protective covering.
     8. Keep combustible materials away from ignition sources.
     9. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck and/or structural overloading.
  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 recommended limits.
  4. WARRANTY
     1. Elevate Red Shield Roofing System Limited Warranty covering roof insulation, underlayment, panels, and system accessories.

\*\* NOTE TO SPECIFIER \*\* Delete years options not required. Systems with warranty durations of 20 years or greater, or wind speed coverage above 55 mph requires additional attachment and detail considerations. Consult the Manufacturer's design guidelines for further information.

* + - 1. Years: 15.
      2. Years: 20.
      3. Years: 25.
      4. Years: 30 year Platinum.
    1. Comply with Manufacturer's required warranty procedures, including notifications, scheduling, and inspections.
    2. Limit of Liability: No dollar limitation (NDL).
    3. Scope of Coverage: Repair leaks in the roofing system caused by the following circumstances.
       1. Ordinary wear and tear.
       2. Normal exposure to the elements.
       3. Manufacturing defect in Elevate materials.
       4. Defective workmanship used to install these materials.
       5. Damage due to winds:

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

* + - * 1. Wind Speed: Up to 55 mph.
        2. Wind Speed: Up to 72 mph.
        3. Wind Speed: Up to 80 mph.
        4. Wind Speed: Up to 90 mph.
        5. Wind Speed: Up to 100 mph.
      1. Not Covered:
         1. Wind speeds above what is warranted.
         2. Damage due to hurricanes or tornadoes.
         3. Hail.
         4. Intentional damage.
         5. Unintentional damage due to normal rooftop inspections, maintenance, or service.
    1. Painted Finish Warranty: Elevate standard Red Shield non-prorated warranty covering durability of painted finish. Includes film integrity, color change, fading, and chalking.
       1. Warranty Period: 35 years commencing on date of substantial completion.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Elevate Commercial Roofing Systems, which is located at:26 Century Blvd., Suite 205Nashville, TN 37214Toll Free Tel: 800-428-4442Email: [request info (emma.nealy@amrize.com)](https://arcat.com/rfi?action=email&company=Elevate%252BCommercial%252BRoofing%252BSystems&message=RE%253A%2520Spec%2520Question%2520(07410evt)%253A%2520&coid=53946&spec=07410evt&rep=&fax=);Web: <https://www.holcimelevate.com/us-en>

\*\* 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.
       1. Submit evidence the proposed substitution complies with the specified requirements.
          1. Roofing systems manufactured by others may be acceptable provided the roofing system is equivalent in materials and warranty conditions and the Manufacturer meets the following qualifications:

Manufacturer must specialize in manufacturing the roofing system provided.

Ten years of experience manufacturing the roofing system provided

Able to provide a no dollar limit, single source roof system warranty backed by corporate assets in excess of one billion dollars.

ISO 9001 certified.

* + - * 1. Able to provide polyisocyanurate insulation produced in own facilities.
    1. Manufacturer of Insulation and Cover Board: Same Manufacturer as roof panel.
  1. STANDING SEAM METAL PANEL ROOFING SYSTEM
     1. Basis of Design: Una-Clad Standing Seam Metal Roof System as manufactured by Elevate.
        1. Roof panels and other components, together forming a watertight assembly.
        2. Comply with applicable local building code requirements.
        3. Roof System Classification: Underwriters Laboratories, Inc. (UL) Class A Fire Hazard.
        4. Roof System Classification: Factory Mutual Corporation (FM) Roof Assembly Classification, FM Data Sheets 1-28 and 1-29.
           1. Meeting minimum requirements of FM 1-60 or 75 or 90 mph wind uplift rating.

\*\* NOTE TO SPECIFIER \*\* Delete standing seam roofing panel option not required.

* + - 1. Available systems:
         1. Standing Seam Roofing Panels: UC-3.
         2. Standing Seam Roofing Panels: UC-4.
         3. Standing Seam Roofing Panels: UC-6.
         4. Standing Seam Roofing Panels: UC-14.
    1. Underlayment: Self-adhering, high temperature underlayment over entire roof.

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

* + 1. Insulation: Non-composite.
       1. Total System R-Value: 25 or greater.
          1. Maximum Board Thickness: 3 inches (76 mm)
          2. Use as many layers as necessary to achieve required R-value.
          3. Stagger joints in adjacent layers.
       2. Base Layer: Polyisocyanurate foam board, non-composite.
          1. Attachment: Mechanical fastening.
       3. Fill Layers: Polyisocyanurate foam board, non-composite.
          1. Attachment: Mechanical fastening.
       4. Top Layer: Polyisocyanurate foam board, non-composite.
          1. Attachment: Mechanical fastening.

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

* + - 1. Cover Board: High Density Polyisocyanurate.
         1. Thickness: 1/2 inch (12.7 mm).
         2. R-Value: 2.5 based on tests from ASTM C158 and ASTM C177.
         3. Attachment: Mechanical fastening.
      2. Cover Board: Gypsum-based.

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

* + - * 1. Thickness: 0.25 inch (6.4 mm).
        2. Thickness: 0.5 inch (12.7 mm).
        3. Thickness: 0.625 inch (15.9 mm).
        4. Attachment: Mechanical fastening.
    1. Insulation: Composite.
       1. Total System R-Value: 25 or greater.
       2. Maximum Board Thickness: 4 inches (101 mm).
          1. Use as many layers as necessary to achieve required R-value.
          2. Stagger joints in adjacent layers.

\*\* NOTE TO SPECIFIER \*\* Base layer is optional. Delete if not required.

* + - 1. Base Layer: Polyisocyanurate foam board, non-composite.
         1. Attachment: Mechanical fastening.
      2. Top Layer: Polyisocyanurate foam board, composite.
         1. Attachment: Mechanical fastening.
    1. Roof Panels: Standing Seam Roofing; roll formed.

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

* + - 1. Fabrication Location: Factory with fixed-based roll-forming equipment.
      2. Fabrication Location: On site. Requires Manufacturer registration and approval of contractor and equipment.

\*\* NOTE TO SPECIFIER \*\* Delete material options not required. Delete thickness and finish options not required.

* + - 1. Material: Aluminum.
         1. Material Thickness: 0.032 inches (0.81 mm).
         2. Material Thickness: 0.040 inches (1.02 mm).
         3. Finish: Anodized.
         4. Finish: Kynar 500/Hylar 5000. Color: Select from UNA-CLAD color chart.
         5. Finish: Mill.
      2. Material: AISI-G90 galvanized steel.
         1. Material Thickness: 26 ga (0.48 mm).
         2. Material Thickness: 24 ga (0.64 mm).
         3. Material Thickness: 22 ga (0.79 mm).
         4. Finish: Kynar 500/Hylar 5000. Color: Select from UNA-CLAD color chart.
         5. Finish: Unpainted.
      3. Material: AZ-50 Hot dipped galvalume.
         1. Material Thickness: 26 ga (0.48 mm).
         2. Material Thickness: 24 ga (0.64 mm).
         3. Material Thickness: 22 ga (0.79 mm).
         4. Finish: Zincalume Plus.
         5. Finish: Kynar 500/Hylar 5000. Color: Select from UNA-CLAD color chart.
      4. Material: Copper.
         1. Material Thickness: 16 oz (0.56 mm).
         2. Material Thickness: 20 oz 0.69 mm).
         3. Finish: Natural.

\*\* NOTE TO SPECIFIER \*\* Delete profile and texture options not required.

* + - 1. Profile: Flat ribs.
      2. Profile: Pencil Ribs.
      3. Profile: Striations.
      4. Texture: Smooth
      5. Texture: Stucco embossed.
    1. Clips: Types and materials required by roof panel Manufacturer for roofing system and warranty to be provided. Use only clips furnished by roof panel Manufacturer.

\*\* NOTE TO SPECIFIER \*\* Delete type and material option not required.

* + - 1. Type: Fixed
         1. Material: Stainless steel.
         2. Material: Galvanized steel.
      2. Type: Floating
         1. Material: Stainless steel.
         2. Material: Galvanized steel.
    1. Fasteners: Materials and size as required by roof panel Manufacturer for roofing system and warranty to be provided. Use only fasteners furnished by roof panel Manufacturer.

\*\* NOTE TO SPECIFIER \*\* Delete material option not required. Stainless steel fasteners are required for 25- and 30-year warranties

* + - 1. Material: Stainless steel.
      2. Material: Galvanized steel.
      3. Fasteners Exposed to Weather: Seal with sealed washers on exterior side of covering to waterproof fastener penetration.
         1. Washer Diameter: 3/8 inch (9.5 mm) minimum for structural connections.
         2. Washer Material: Compatible with screw head.

Gasket Portion of Washers: EPDM, neoprene, other equally durable elastomeric material.

* + - 1. Fasteners Exposed to View: Fastener Head color is to match panel or component in which installed.
    1. Sheet Metal Components Associated with Metal Roof Panels:
       1. Same manufacturer and compatible with roof panels.
       2. Material Thickness: Not less than minimum thickness required by roof panel manufacturer.
       3. Fabricate trim, flashing, and accessories to roofing manufacturer's specified or approved profiles.
       4. Exposed metal components of same finish as panels.
       5. Color: Same as panels.
       6. Formed Sheet Metal Components:
          1. Eaves.
          2. Ridges.
          3. Vented ridges.
          4. Hips.
          5. High eaves.
          6. High eaves, vented.
          7. Valleys.
          8. Rake edges.
          9. Vertical fascias.
          10. Side wall flashings.
          11. Pipe and other penetration flashings, for penetrations over 8 inches (203 mm).
          12. Flashings at interface to other roofing types.
          13. Other flashings.
          14. Copings, parapet covers.
          15. Soffit panels, solid.
          16. Soffit panels, vented.
    2. Self-Adhered Underlayment complying with ASTM D1970: Rubberized waterproof membrane sheet.
       1. Resistance to Direct Exposure: At least 90 days.
       2. Minimum High Temperature Resistance: 230 degrees F (110 degrees C).
       3. Water Vapor Permeance: Less than 0.016 perm (0.09 ng/Pa.s.m2).
       4. Acceptable Product: Clad-Gard SA by Elevate.
    3. Roof Insulation:

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

* + - 1. Polyisocyanurate Board Insulation: Closed cell foam with glass reinforced mat laminated to facers, complying with ASTM C1289 Type II.

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

* + - * 1. Product: Class 1. ISOGARD GL polyiso board insulation.

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

Size, Mechanically Fastened: 48 x 96 inches (1.22 x 2.44 m), nominal.

Size, Adhered: 48 x 48 inches (1.22 x 1.22 m), nominal.

* + - * 1. Product: Class 2. ISOGARD CG polyiso board insulation, mold resistant facer.

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

Size, Mechanically Fastened: 48 x 96 inches (1.22 x 2.44 m), nominal.

Size, Adhered: 48 x 48 inches (1.22 x 1.22 m), nominal.

\*\* NOTE TO SPECIFIER \*\* The following additional product characteristics paragraph applies to both ISOGARD GL and CG.

* + - * 1. Additional Product Characteristics:

Thickness: As indicated on the Drawings.

R-Value (LTTR) per inch (25 mm): Minimum values.

At 40 degrees F (4.4 degrees C): R-Value is 6.2.

At 75 degrees F (23.9 degrees C): R-Value is 5.7.

Compressive Strength: 20 psi (138 kPa).

Ozone Depletion Potential: Zero. No CFC or HCFC blowing agents.

* + - 1. Composite Insulation: Closed cell polyiso foam core laminated to 1/2 inch (13 mm) high density board:
         1. Product: ISOGARD HD Composite Board by Elevate.

Thickness: As indicated on the Drawings.

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

Size, Mechanically Fastened: 48 x 96 inches (1.22 x 2.44 m), nominal.

Size, Adhered: 48 x 48 inches (1.22 x 1.22 m), nominal.

Compressive Strength:

Core: 20 psi (138 kPa).

Board: 80 psi (552 kPa).

Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.

* + 1. Cover Boards:

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

* + - 1. High Density Polyisocyanurate Cover Board. Non-combustible, water-resistant high density, closed cell polyisocyanurate core with coated glass mat facers, complying with ASTM D1623.
         1. Product: ISOGARD HD Cover Board by Elevate

Thickness: 0.5 inches (12.7 mm).

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

Size, Mechanically Fastened: 48 x 96 inches (1.22 x 2.44 m).

Size, Adhered: 48 x 48 inches (1.22 x 1.22 m).

R-Value Based on ASTM C158 and ASTM C177 Tests: 2.5.

Surface Water Absorption: 3 percent or less.

Tested in accordance with ASTM C209.

Compressive Strength: 120 psi (827 kPa).

Tested in accordance with ASTM C1621.

Density: 5 pcf (80 kg/m3).

Tested in accordance with ASTM C1622.

Factory Mutual Approved: For use with FM 1-60 and 1-90 rated roofing assemblies.

Mold Growth Resistance: Passed.

Tested in accordance with ASTM D3273.

* + - 1. Gypsum-Based Cover Board: Non-combustible, water-resistant gypsum core with embedded glass mat facers, complying with ASTM C1177/C1177M, and with the following additional characteristics:

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

* + - * 1. Thickness: 0.25 inches (6.4 mm).
        2. Thickness: 0.5 inches (12.7 mm).
        3. Thickness: 0.625 inches (15.9 mm).
        4. Size, Mechanically Fastened: 48 x 96 inches (1.22 x 2.44 m), nominal.
        5. Size, Adhered: 48 x 48 inches (1.22 x 1.22 m), nominal.
        6. Surface Water Absorption: 2.5 or less. Tested in accordance with ASTM C473.
        7. Surface Burning Characteristics: Tested in accordance with ASTM E84.

Flame Spread: 0.

Smoke Development: 0.

* + - * 1. Non-Combustible. Tested in accordance with ASTM E136.
        2. Factory Mutual. Approved for use with FM 1-60 and 1-90 rated roofing assemblies.

Mold Growth Resistance: Zero growth. Tested in accordance with ASTM D3273 for 4 weeks.

* + - 1. Insulation Fasteners: Type and size as required, and supplied by Elevate Commercial Roofing Systems for the roofing system and warranty specified and provided. No exceptions.
    1. Accessory Materials:
       1. Wood Nailers:
          1. PS 20 dimension lumber, Structural Grade No. 2 Southern Pine, or Douglas Fir.
          2. PS 1, APA Exterior Grade plywood; pressure preservative treated.

Width: 3 inches (76 mm), nominal minimum, or as wide as the nailing flange of the roof accessory to be attached to it.

* + - * 1. Thickness: Same as thickness of roof insulation

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until the substrates have been properly constructed and prepared.
         1. Verify surfaces and site conditions are ready to receive work.
            1. Correct defects in the substrate before commencing with roofing work.
            2. Verify roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
         1. Obtain relevant instructions and maintain copies at project site for duration of installation period.
         2. Verify shop drawings prepared by metal roof panel manufacturer have been approved and are available to installers.
            1. Do not use drawings prepared by others for installation drawings.
         3. Verify the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions.
            1. Start of work constitutes acceptable of project conditions and requirements.
         4. Examine roof substrate to verify it properly slopes to drains.
         5. Confirm roof deck will support installers and their mechanical equipment, and that the deflection will not strain or rupture roof components or deform deck.
         6. Verify wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
      3. A certain amount of waviness called 'oil canning' is inherent in any product manufactured from coiled sheet material. The amount of 'oil canning' can vary due to several factors: uneven substrates, the width of the panel, weather conditions, etc. 'Oil canning' of a panel does not affect its structural integrity and is not sufficient cause for rejection.
   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.
         1. Prepare roof surface so that it is clean, dry, and smooth, and free of sharp edges, fins, roughened surfaces, loose or foreign materials, oil, grease, and other materials that may damage the panels.
         2. Fill surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable to panel Manufacturer.
         3. Seal, grout, or tape deck joints, where needed, to prevent seepage into building.
      3. Do not start work until Pre-Installation Notice has been approved by Manufacturer as confirmation that this project qualifies for a Manufacturer's warranty.
      4. Install roofing only when surfaces are clean, dry, smooth, and free of snow or ice.
         1. Do not apply roofing during inclement weather or when ambient conditions will not allow proper application.
         2. Consult Manufacturer for recommended procedures during cold weather.
         3. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 0F (15 to 25 0C).
   3. INSTALLATION
      1. Install roofing, insulation, flashings, and accessories in accordance with roofing Manufacturer's published instructions and recommendations for the specified roofing system and approved submittals.
         1. Where Manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards.
         2. Comply with federal, state, and local regulations.
         3. Perform work using competent and properly equipped personnel.
      2. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.
      3. Protect from spills and overspray from bitumen, adhesives, sealants, and coatings.
      4. Protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.
      5. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.
      6. Temporary Closures: Are the responsibility of the Applicator. Ensure moisture does not damage any completed section of the new roofing system,
      7. Flashings, Terminations, and Temporary Closures:
         1. Complete as required.
         2. Provide a watertight condition.
      8. Insulation and Cover Board Installation:
         1. Install insulation in configuration using attachment methods specified in PART 2, under Insulation.
         2. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
         3. Lay roof insulation in courses parallel to roof edges.
         4. Neatly and tightly fit insulation to penetrations, projections, and nailers, with gaps not greater than 1/4 inches (6 mm). Fill gaps greater than 1/4 inches (6 mm) with acceptable insulation.
         5. Mechanical Fastening: Using specified fasteners and insulation plates engage fasteners through insulation into deck to depth and in pattern required by Factory Mutual for specified FM Class and panel Manufacturer, whichever is more stringent, if applicable.
      9. Underlayment Installation:
         1. Install underlayment in accordance with manufacturer's instructions.
         2. Install self-adhered underlayment over entire roofing surface.
      10. Roof Panel Installation:
          1. Install the metal roof panel system in accordance with the manufacturer's instructions, installation drawings, and approved shop drawings, so it is weathertight and allows for thermal movement.
          2. Locate space and fasten clips in accordance with roof panel manufacturer's recommendations. For required fasteners, use proper torque settings to obtain controlled uniform compression for a positive seal without rupturing the sealing washers.
          3. Panels must be seamed according to Manufacturer's instructions for the specific panel used.
          4. Do not place utility penetrations through the panel seams.
          5. Do not allow panels or trim to come into contact with dissimilar materials; i.e., copper, lead, graphite, treated lumber, mortar, etc.
             1. Protect from water run-off from these materials.
          6. Perform field cutting of panels and related sheet metal components by means of hand or electric shears. At no time shall a hot/friction saw be used.
          7. Remove protective film immediately after installation.
      11. Flashing and Accessories Installation:
          1. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by panel Manufacturer's recommendations and details.
          2. Flashing at Penetrations: Flash all penetrations passing through the panel; make flashing seals directly to the penetration.
          3. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing.
          4. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2 inch (50 mm) deep, with at least 1 inch (25 mm) clearance from penetration, sloped to shed water.
          5. Structural Steel Tubing: If corner radii are greater than 1/4 inch (6 mm) and longest side of tube does not exceed 12 inch (305 mm), flash as for pipes; otherwise, provide a standard curb with flashing.
          6. Flexible and Moving Penetrations: Provide weathertight gooseneck set in sealant and secured to deck, flashed as recommended by Manufacturer.
   4. 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.
       1. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system Manufacturer specifically to inspect installation for warranty purposes (e.g., not a sales representative).
       2. Perform corrections necessary for issuance of warranty.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturers recommendations.
        1. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
        2. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.
     2. Where construction traffic must continue over finished roof panels, provide durable protection, and replace or repair damaged roofing to original condition.
     3. Prior to Substantial Complete: Touch-up, repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of Manufacturers of components and surfaces.

END OF SECTION