THIS GUIDE SPECIFICATION DOCUMENT IS INTENDED FOR:

BEMO’s **ACCURE** Metal Wall Panel System.

THESE SPECIFICATIONS WERE CURRENT AT THE TIME OF PUBLICATION BUT ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTICE.

THIS GUIDE SPECIFICATION IS WRITTEN ACCORDING TO THE CONSTRUCTION SPECIFICATIONS INSTITUTE (CSI) FORMATS, INCLUDING MASTER FORMAT, SECTION FORMAT, AND PAGE FORMAT.

CAREFULLY REVIEW AND EDIT THIS SECTION TO MEET THE REQUIREMENTS OF THE PROJECT, LOCAL BUILDING CODE AND AUTHORITIES HAVING JURISDICTION. COORDINATE THIS SECTION WITH OTHER SPECIFICATION SECTIONS AND DRAWINGS.

DELETE ALL "SPECIFIER NOTES" IN BLUE FONT WHEN EDITING THIS SECTION.

TO REVEAL SPECIFIER NOTES, CLICK ON THE SHOW/HIDE TAB ¶.

Edit document to suit project specific requirements and specifier practice.

Text edits are required at sections shown in red font.

Remove unused optional text in final version of the specification document

SECTION 07 42 13 – METAL WALL PANELS

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY.

Modify as necessary

* + - * 1. Work described in this section includes single-skin, labyrinth-joint metal cladding panels for rainscreen-principle wall system, complete with sub-structural metal framing, perimeter and penetration flashing, and closures.
        2. Related work specified elsewhere:

Division 05: Steel studs, girts, and furring.

Division 06: Gypsum sheathing, wood sheathing, rough carpentry.

Division 07: Flashing and sheet metal, water resistive air barriers, thermal insulation, joint sealants.

* + - 1. DEFINITIONS
         1. American Architectural Manufacturer Association (AAMA):

AAMA 509-09: Voluntary Test and Classification Method for Drained and Back Ventilated Rain Screen Wall Cladding Systems.

AAMA 508-07: Voluntary Test and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.

AAMA 621-96: Voluntary/Standard Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates

AAMA 2605-11: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

* + - * 1. American Iron and Steel Institute (AISI):

S100-07: 2007 Edition of the North American Specification for the Design of Cold-Formed Steel Structural Members.

* + - * 1. American Society for Testing and Materials (ASTM):

A240-12: Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications.

A653-03: Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

A755–03: Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.

A792-03: Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

B69-08: Standard Specification for Rolled Zinc.

B209-02a: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B370-11e1: Standard Specification for Copper Sheet and Strip for Building Construction.

D968-05e1: Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasion.

E330-02(2010): Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

E1886-02: Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

E1996-09 Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

* + - * 1. European Norm (EN):

EN988 (1996): Specifications for Zinc and Zinc Alloy Rolled Flat Products for Building.

* + - * 1. National Association of Architectural Metal Manufacturers (NAAMM)

Metal Finishes Manual for Architectural and Metal Products.

* + - * 1. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

Architectural Sheet Metal Manual, 6th edition.

* + - 1. DESIGN AND PERFORMANCE CRITERIA.
         1. General Performance: Metal wall panel assemblies shall be furnished and installed without failure due to defective manufacture, fabrication, installation, or other defects in construction.
         2. Rainscreen Wall System Performance Rating. The metal wall panel assemblies, and the substructural furring/framing system supporting the panels shall be tested in accordance with AAMA 509 and achieve the following performance results:

Water Infiltration: The water infiltration performance of the metal wall panel assembly shall not exceed the classification of W-1.

Back Ventilation: The air ventilation performance of the rainscreen cavity air space shall have a minimum classification of V-4.

* + - * 1. Rainscreen Wall System Performance Rating. The metal wall panel assemblies, and the substructural furring/framing system supporting the panels shall be tested in accordance with AAMA 508-07 and achieve the following performance results: PASS.
        2. Thermal Expansion and Contraction.

Completed metal wall panel and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, or reducing performance ability.

The design temperature differential shall be not less than 220 degrees Fahrenheit.

Interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.

The following paragraph provides for negative wind pressure resistance criterion in accordance with the ASTM E330 testing standard. Testing has been conducted on the ACCURE panel system for aluminum materials of 0.040” minimum thickness. When specifying other materials or thicknesses outside of this range, please delete the following paragraph.

* + - * 1. Uniform Wind Load Capacity.

Installed wall system shall withstand negative wind pressures complying with the following criteria.

Design Code: ASCE 7-05, Method 2 for Components and Cladding.

Safety Factor: The metal panel system shall be tested to proof load of 1.5 times the design service load condition, as required by the ASTM E330 method.

Select the negative wind pressure design factors that are applicable to this project. Please contact BEMO for guidance in selecting appropriate factors and pressures for this specific project.

Category [I] [II] [III] [IV] Building with an Importance Factor of [0.77] [1.00] [1.15].

Wind Speed:       mph.

Exposure Category: [B] [C] [D]**.**.

Height at Top of Wall System: \_\_\_\_\_\_ feet.

Minimum Building Width: \_\_\_\_\_\_ feet.

Roof Pitch (Above Wall System): \_\_\_\_\_\_ inches per foot.

Wall Area Negative Wind Pressure:

Zone 4 - Field of Wall:  + \_\_\_\_\_\_ psf and - \_\_\_\_\_\_ psf.

Zone 5 - Wall Edges: + \_\_\_\_\_\_ psf and - \_\_\_\_\_\_ psf.

The “a” dimension used to determine the width (measured from the corner of the building) of wall zone 5 shall be \_\_\_\_\_\_ feet.

The ultimate capacity of the panel system shall be determined based on performance testing in accordance with ASTM E330. The system shall be tested to a proof load that shall be 1.5 times the allowable design service load.

* + - 1. SUBMITTALS.
         1. General, Rainscreen Wall Assembly Components: Complete submittals shall be made jointly and simultaneously for all components of the Rainscreen wall assembly, including:

Exterior wall sheathing board, if applicable;

Air and water resistive barrier;

Vapor retarders and/or barriers, if applicable;

Rainscreen wall continuous exterior insulation;

Metal rainscreen wall cladding panels and subframing components;

All other trim, flashing, sealants, and components necessary for a complete rainscreen wall assembly as required by these specifications.

* + - * 1. Shop drawings.

Show complete rain screen wall system with air and water barrier(s), vapor retarder (if applicable), continuous exterior insulation, subframing system, metal cladding panels, ventilation components, flashings and accessories in elevation, sections, and details. Include metal thicknesses and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work.

All components shall be integrated into a single comprehensive and compete shop drawing set prepared by the metal cladding system manufacturer.

Shop drawings shall identify each product and component by manufacturer, product name, and thickness, size, style, or other uniquely distinguishing characteristics.

Shop drawings shall be signed and sealed by a Professional Engineer or Registered Architect authorized to practice in the jurisdiction of the project location.

* + - * 1. Warranty: Provide unexecuted specimen warranty documents for each warranty as required in specification article 1.10.
        2. Design Test Reports.

Submit copies of design test reports for each of the performance testing standards listed in specification article 1.4.

Test reports shall be performed by independent, accredited testing laboratories, and shall bear the seal of a registered professional engineer.

* + - * 1. Samples.

Submit sample of panel section, at least 6" x 6" showing seam profile, and also a sample of color selected.

Submit sample field applied sealants and all other system components.

* + - 1. QUALITY CRITERIA/INSTALLER QUALIFICATIONS.
         1. Engage an experienced metal wall panel contractor (erector) to install wall panel system who has a minimum of three (3) years experience specializing in the installation of Rainscreen metal wall systems.
         2. Contractor must be certified by manufacturer specified as a supplier of the metal wall system and obtain written certification from manufacturer that installer is approved for installation of the specified system.
         3. Successful contractor must obtain all components of Rainscreen wall system from a single manufacturer. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.
         4. Fabricator/Installer shall submit work experience and evidence of adequate financial responsibility. Architect reserves the right to inspect fabrication facilities in determining qualifications.
      2. DELIVERY, STORAGE, AND HANDLING.
         1. Inspect materials upon delivery.
         2. Handle materials to prevent damage.
         3. Store materials off ground providing for drainage; under cover providing for air circulation and preventing direct UV exposure; and protected from any debris.
      3. PROJECT CONDITIONS
         1. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal wall panel work to be performed according to manufacturer's written instructions and warranty requirements.

For natural (unpainted) panel materials, remove any protective films from the exposed surface of panels only after a complete elevation has been full installed.

Delete the following section if a material other than United Zinc is selected for the panel.

Rolled zinc materials may only be formed and installed in weather conditions that insure that the primary metal temperature (PMT) is 50 degrees Fahrenheit or greater.

* + - * 1. Field Measurements: Verify actual dimensions of construction contiguous with metal wall panels by field measurements before fabrication.
      1. COORDINATION
         1. Coordinate sizes and locations of windows, doors, and wall penetrations with actual equipment provided.

Modify the following paragraph to indicate the scope of this project.

* + - * 1. Coordinate metal wall cladding system with wall sheathing, masonry, air and water resistive barriers, thermal insulation, rain drainage work, flashing, trim, and construction of other adjoining work to provide a leak proof, secure, and noncorrosive installation.
      1. WARRANTIES
         1. Special Manufacturer's Rainscreen Wall Assembly Warranty: The metal wall cladding system must be approved for use in the Rainscreen wall assembly in conjunction with the air and water resistive barrier and exterior continuous insulation system; the use the of specified metal wall cladding system shall not nullify any manufacturers’ warranties required elsewhere in this specification. In particular, the use of the specified, substitute, or alternate metal wall cladding panel system shall be certified prior to bid by the air and water resistive barrier manufacturer as acceptable for furnishing the warranty required of the air and water resistive barrier manufacturer.
         2. The Manufacturer shall furnish the following warranties for materials and finishes:

Exterior metal cladding system Manufacturer’s 10 year warranty against defective materials and fabrication.

Retain the following paragraph if specifying prefinished Galvanized or Aluminum panel materials.

Exterior metal cladding system Manufacturer’s 20 year warranty for performance of prefinished finishes. The finish warranty shall provide coverage for the following:

Fade Resistance: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit no more than a 5 “delta E” rating for color change from original color standard.

Chalk Resistance: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit a chalk rating of 8 or less, in accordance with ASTM D4214, Method A.

Film Integrity: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall not chip, peel, crack, or blister as a result of defective coatings, improper preparation of the substrate, improper application of the coatings, or improper curing of the coating system.

Retain the following paragraph if Post-painted Aluminum panel materials are specified.

Exterior metal cladding system Manufacturer’s warranty for performance of Post-painted aluminum finishes. The finish warranty shall provide coverage for the following:

Fade Resistance: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit no more than a 5 “delta E” rating for color change from original color standard.

Chalk Resistance: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall exhibit a chalk rating of 8 or less, in accordance with ASTM D4214, Method A.

Gloss Retention: For a period of 10-years from date of first exposure to UV or weathering, the post-painted material finishes shall retain at least 50% of original Specular Gloss, as measured in accordance with ASTM D523.

Film Integrity: For a period of 20-years from date of first exposure to UV or weathering, the post-painted material finishes shall not chip, peel, crack, or blister as a result of defective coatings, improper preparation of the substrate, improper application of the coatings, or improper curing of the coating system.

* + - * 1. Installer's 3 year warranty covering wall panel system installation and watertightness.
        2. Warranties shall commence on date of substantial completion.

1. PRODUCTS
   * + 1. PANEL MATERIALS
          1. Painted, metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.

Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 70 percent.

[22] [20] gauge, Zinc-Coated (Galvanized) Steel Sheet, as per ASTM A653: G90 (Z275) coating designation; structural quality, grade 40 ksi (275 MPa).

Stucco embossed material is generally NOT preferred for prefinished sheet steel materials. When specifying embossed material, there is always a risk of the process resulting in micro-fracture of the coating, which can lead to premature failure of the coating and corrosion of the substrate.

Texture: [Smooth] [Stucco Embossed] surface.

Exposed Coil-Coated Finish:

2-Coat Fluoropolymer finish in accordance with AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers’ approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.

Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.

Select one of the following 4 color choices:

Color shall be BEMO’s \_\_\_\_\_\_.

Color shall be selected from BEMO’s Standard Colors.

Color: Custom color selected by architect.

Color shall be: \_\_\_\_\_\_.

Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

* + - * 1. Clear acrylic coated, metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755/A755M.

Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 70 percent.

[22] [20] gauge, 55% Aluminum-Zinc alloy coated Steel Sheet, as per ASTM A792: AZ55 (AZ165) coating designation; with a nominal .04 mil (0.010 mm) dry film thickness of a clear organic polymer top film; structural quality, grade 50 ksi (340 MPa).

Stucco embossed material is generally NOT preferred for coated sheet steel materials. When specifying embossed material, there is always a risk of the process resulting in micro-fracture of the coating, which can lead to premature failure of the coating and corrosion of the substrate.

Texture: [Smooth] [Stucco Embossed] surface.

* + - * 1. [Painted] [Mill Finish] Aluminum Sheet.

Recycle Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 45 percent.

[0.040”] [0.050”] [0.063”] [0.080”] aluminum alloy 3003, 3004, 3005, or 3105 with H14 or H24 heat treatment, as per ASTM B209/209M.

Stucco embossed material is generally NOT preferred for prefinished aluminum sheet materials. When specifying embossed material, there is always a risk of the process resulting in micro-fracture of the coating, which can lead to premature failure of the coating and corrosion of the substrate.

Texture**:** [Smooth] [Stucco Embossed] surface.

Select only ONE of the following three Sections to specify the surface finish and color of the aluminum panel materials.

If Specifying Prefinished or Post-Painted Materials, Delete the following Section. Note that mill finish aluminum is prone to pitting (corrosion of the aluminum) and water staining (corrosive contaminants deposited on the aluminum surface), especially in marine environments. Protective coating systems, such as Prefinished and Post-applied paint systems are recommended for the optimum service life and aesthetic appeal of the system.

Mill Finish Aluminum: The exposed and unexposed sheet surfaces shall be bare as furnished by the mill.

If Specifying Mill Finish or Post-Painted Materials, Delete the following Section. Note that the Prefinished Materials specified in the following section are not available for 0.080” material thickness. Prefinished painted materials are generally more economical and readily available, but color selection is generally limited to a manufacturer’s in-stock selection of colors and, on thicker sheet materials, prefinished painted materials may be more prone to slight cosmetic crazing of the paint coating at sharply formed bends.

Prefinished Painted Aluminum:

Exposed Surfaces: 2-Coat Fluoropolymer finish in accordance with AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers’ approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.

Exposed surface coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.

Select one of the following 4 color choices:

Color shall be BEMO’s \_\_\_\_\_\_.

Color shall be selected from BEMO’s Standard Colors

Color: Custom color selected by architect.

Color shall be: \_\_\_\_\_\_.

Retain the following section to specify the finish of the reverse side of the prefinished materials:

Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

If Specifying Mill Finish or Prefinished Materials, Delete the following Section. Note that the Post-painted Materials are most commonly specified for thicker aluminum materials, such as 0.060” and 0.080” material thickness, or for applications where a custom or non-stock color selection for a small amount of material is not economical for Prefinished coil stock. Since Post-painted materials are coated after all forming is complete, there is virtually no instance of crazing of the finish with post-painted materials.

Post-Painted Aluminum

Exposed Surfaces: 2-Coat Fluoropolymer finish in accordance with AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Coating manufacturer’s approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers’ written instructions.

Exposed surface coating system shall provide nominal 1.2 mil (0.030 mm) dry film thickness, consisting of primer and color coat.

Select one of the following 2 color choices. For post-painted finishes, virtually any color selection is available. Bright colors, mica or metallic flake finishes, coatings which simulate anodized finishes, and other exotic colors and finishes may require additional coats of paint, specialized resins and/or pigments, or other non-standard processes; these features can impact the cost of the system.

Color: Custom color selected by architect.

Color shall be: \_\_\_\_\_\_.

Retain the following section to specify the finish of the reverse side of the post-painted materials:

Concealed Finish: The unexposed sheet surfaces shall be bare as furnished by the mill. Overspray of primer and/or top coat(s) will not will not affect the use or performance of the unexposed surface of the material.

* + - * 1. Rolled Zinc Sheet

Alloy shall be architectural titanium zinc alloy mill finish or preweathered, and shall be according to EN 988 & ASTM B69.

Alloy shall based on electrolytically zinc with a purity of min. 99.995 % Zn (Z1 according to EN 1179) with small additions of the alloy elements copper, titanium and aluminium.

Material thickness [0.8 mm] [1.0 mm] [1.2 mm] [1.5 mm].

Texture**:** [Smooth] [TextureMatte micro-roller embossed] surface.

Finish on exposed surfaces: Natural or Preweathered [Neo] [Noir] [Nuance Blue] [Nuance Red] [Nunance Green].

Finish on Unexposed Surfaces.

Baked-on plastisol coating with 4.5 mil minimum total dry film thickness (TDF).

Unexposed surfaces shall be capable of meeting or exceeding the performance requirement for abrasion resistance as specified in Article 1.4.

* + - * 1. [Bare] [Coated] Copper Sheet.

[16 oz.] [20 oz.] [24 oz.] per square foot copper sheet [(before any coatings or finishes)], H01 or H02 temper, as per ASTM B370.

Texture: Smooth.

Finish on exposed and unexposed surfaces: [mill finish] [tin-zinc alloy coated].

* + - * 1. Stainless Steel Sheet.

[22] [20] gauge, Stainless Steel Sheet, as per ASTM A240.

Type 304L stainless steel is a general purpose stainless steel suitable for exposed use in most climates with minimum corrosive contaminants. Type 316L should be considered for more aggressive environments including marine climates. Other grades of stainless, such as austenitic alloy T321 or duplex alloy 2205 may be considered for especially severe environments. Ferritic and Martensitic alloys, such as T409, T410, and T430 should be avoided, as pitting and rust staining may become excessive for exposed weathering applications.

Grade and Alloy: Austenitic Type [316L] [304L], fully annealed.

Exposed Surface Finish: [2B cold-rolled finish.] [No. 3 polished finish.] [TextureMatte roller-textured finish, with the following exposed surface characteristics:]

Retain the following two sections ONLY if TextureMatte exposed surface finish is selected above.

Spectral Gloss: less than 30% at 86 degrees.

Surface Roughness: Ra of approximately 100.

Unexposed Surface Finish: Smooth surface, as delivered from the mill.

* + - * 1. Sealants:

Sealant Tape: Non-curing, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1-inch- (13-mm-) wide and 1/16-inch- (3-mm-) thick.

Exposed Sealant: ASTM C 920; elastomeric tripolymer, polyurethane, or other advanced polymer sealant; of type, grade, class, and use classifications required to seal joints in metal wall panels and remain weathertight; and as recommended in writing by metal wall panel manufacturer.

Concealed Sealant: ASTM C 1311: Butyl-Based, Solvent-Release, One-Part Sealant.

* + - 1. METAL SUBFRAMING
         1. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, ASTM A 653, G90 (Z275) hot-dip galvanized

Retain any of the paragraphs below as required. Generally, the Accure rainscreen panel system is installed with horizontal hat-shaped vented girts as subframing. Revise to suit specific project conditions.

* + - * 1. Horizontal Hat-shaped Vented Girts:

Dimensions:

Nominal Thickness: 0.043-inch (18 gauge) (1.1-mm) nominal thickness.

Depth: 1-inch (22 mm) nominal.

Top flange: 2-1/2 inches (63.5 mm) nominal.

Bottom Flanges: 1-3/8 inches (35 mm) nominal with 1/4 inch (6 mm) holes punched at 8” on center in each flange.

Free air flow: The vented girt shall not restrict chimney effect air convection in the vertical direction. The vented girt webs shall have slotted holes providing for 31% free air flow and weep holes for water drainage.

Drainage: Web segments of vented girt shall be formed such that when installed in the horizontal orientation the web segments are inclined at least 15 degrees from horizontal to promote drainage and prevent retention of standing water.

* + - * 1. Vertical Channel-shaped Strut:

Dimensions:

Nominal Thickness: 0.054-inch (16 gauge) (1.4-mm) nominal thickness.

Depth: 1-1/2 inches (38 mm) nominal.

Front Flange: 1-13/16 inches (46 mm) nominal, with 1-1/2 inches (38 mm) diameter holes punched at 8” on center.

Rear Flange: 4 inches (102 mm) nominal with 1/4 inch (6 mm) holes punched at 8” on center and aligned with holes in the front flange.

* + - * 1. Fasteners for Metal Subraming: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten miscellaneous metal subframing members through insulation and sheathing boards into structural wall framing or substrates.
      1. CONCEALED CLIP – REVEAL JOINT METAL WALL PANELS
         1. General: Provide factory-formed metal wall panels designed to be field assembled by interlocking seams and incorporating concealed fasteners.
         2. Concealed clip, longitudinal lap-seam panel with labyrinth-joint and reveal on four sides.

Panel shall be **BEMO ACCURE** Wall system as manufactured by BEMO USA Corporation, 1755 N. 48th Street, Mesa, AZ 85205 Tel 877-530-BEMO (2366) or 480-545-7900; [www.bemousa.com](http://www.bemousa.com).

Alternate manufacturers are subject to full compliance with specification requirements, and shall be submitted for approval as follows.

Manufacturers not listed above must submit for approval, ten (10) days prior to bid date, the following: Manufacturer's literature; certification of testing in accordance with specification requirements and sections 1.4 and 1.5; sample warranties in accordance with specification section 1.10; installer qualifications in accordance with specification section 1.6, and a list of five (5) similar projects in size and scope of work..

No substitutions will be permitted after the bid date of this project.

Retain one of the following five paragraphs to specify the appropriate material type and sheet thickness for this project.

Material: Metallic-coated Steel sheet, [22 gauge (0.75 mm)] [20 gauge (0.89 mm)] thick. See 2.1 for finishes and color selection.

Material: Aluminum sheet, [0.040 inch (1.02 mm)] [0.050 inch (1.27 mm)] [0.063 inch (1.60 mm)] [0.080 inch (0.2.0 mm)] thick. See 2.1 for finishes and color selection.

Material: Zinc sheet, [0.032 inch (0.8 mm)] [0.039 inch (1.0 mm)] [0.047 inch (1.2 mm)] [0.059 inch (1.5 mm)] thick. See 2.1 for finishes and color selection.

Material: Copper sheet, [16 ounce: 0.022 inch (0.56 mm)] [20 ounce: 0.027 inch (0.70 mm)] [24 ounce: 0.032 inch (0.80 mm)] thick. See 2.1 for finishes and color selection.

Material: Stainless Steel sheet, [22 gauge (0.75 mm)] [20 gauge (0.89 mm)] thick. See 2.1 for finishes and color selection.

Characteristics.

Fabrication: Panels shall be factory formed from specified metal.

The standard profile shall be flat pans with reveal joints on all four sides.

Panel orientation: [Horizontal] [Vertical].

The actual coverage width of the Accure panel is from reveal to reveal. To provide adequate panel flatness, refer to panel module chart for appropriate aluminum thickness.

Configuration (Horizontal): Panel shall be [Specify: 8-inches- (203-mm-) up to 30-inches- (406-mm-)] high nominal by [Specify: 12-inches- (305-mm-) up to 144-inches- (3658-mm-)] long nominal, with interlocking seams incorporating concealed fasteners.

Configuration (Vertical): Panel shall be [Specify: 8-inches- (203-mm-) up to 24-inches- (406-mm-)] long nominal by [Specify: 12-inches- (305-mm-) up to 72-inches- (1829-mm-)] high nominal, with interlocking seams incorporating concealed fasteners.

Panel Depth (Concealed Leg Height): 1 1/4 inch (32 mm), nominal.

Reveal Joint: Panel seams shall join such that adjacent panels form vertical and horizontal reveal joints [1-inch- (25-mm-)] wide.

Horizontal reveal joints shall be aligned from panel to panel, as shown on drawings.

Vertical reveal joints shall be [staggered] [aligned] from panel to panel, as shown on drawings.

End Folds: Panel ends shall be factory notched by automatic mechanical press equipment to form end tabs of 1 inch (25 mm) nominal length. The end tabs shall be factory folded 90 degrees to produce a “box pan” effect and allow for reveal joints on all four sides of the panel. Vertically oriented panels to have a double end fold.

The following section may be optionally retained for improved flatness of panel and to reduce the effects of oil canning.

Backer Board: Factory adhere a 5/8-inch- (15-mm-) thick extruded polystyrene foam backer board in the panel cavity for improved panel flatness.

* + - 1. ACCESSORIES
         1. Wall Panel Accessories: Provide components approved by panel manufacturer and as required for a complete metal wall panel assembly including trim, corner units, closures, clips, flashings, sealants, gaskets, fillers, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

Select galvanized steel clips for zinc panel materials; stainless steel clips are recommended for aluminum panel materials, and stainless steel clips are required for copper panel materials.

Anchor Clips: Clips shall be 18 gauge [galvanized] [stainless] steel designed to allow thermal movement of the panel in each direction along the longitudinal dimension.

Gutter Splice at Vertical Reveal: At the vertical reveal joint, a sheet metal gutter splice shall be provided in the same material type and finish as the metal cladding panels for all visible space at the reveal joint. Gutter splice material thickness shall be as recommended by manufacturer based on panel height.

Corner Units: Provide factory fabricated mitered corner units of the same profile(s) as specified. Corner units shall be furnished for outside and inside corner conditions.

Ventilation strips shall be provided at top of wall panels, window sills, and transitions between metal panels and other exterior finish materials to allow for air exhaust at top of wall cavity. Vent strips shall be internally baffled to prevent wind driven rain from freely entering the wall cavity.

Ventilation strips shall be provided at base of wall panels, window head, and transitions between metal panels and other exterior finish materials to allow for air intake and water weep holes at bottom of wall cavity.

* + - * 1. Flashing and Trim: Formed from same material, finish, and gauge as wall panels. Provide flashing and trim as required to provide finished appearance. Locations include, but are not limited to, head, sill, corners, jambs, framed openings, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.
        2. Gutters: Formed from same material as wall panels. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 10-foot- (3-m-) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced per SMACNA’s recommendation based on gauge and stretch-out, fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match [metal wall panels] [metal roof panels] [roof fascia and rake trim].

Gutter Hangers: External gutter supports shall be 2-inch- (50-mm-) wide x ¼-inch- (6-mm-) thick formed aluminum, and shall be spaced at no greater than 36” (0.9m) on center. External supports shall be post-painted with a matching full-strength 70 percent PVDF finish and warranted by the panel manufacturer for same term as specified for material finishes.

Gutter Straps: Internal gutter straps shall be 1-inch- (25-mm-) wide x 1/8-inch- (3-mm-) thick formed aluminum, and shall be spaced at no greater than 36” (0.9m) on center. Internal straps shall be post-painted with a matching full-strength 70 percent PVDF finish and warranted by the panel manufacturer for same term as specified for material finishes.

* + - * 1. Downspouts: Formed from same material as wall panels. Fabricate in 10-foot- (3-m-) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual". Finish downspouts to match gutters.

Downspout Brackets: Where detailed, surface mounted downspout protection guards shall be fabricated from ¼-inch- (6-mm-) thick formed aluminum, and shall be post-painted with a matching full-strength 70 percent PVDF finish and warranted by the panel manufacturer for same term as specified for material finishes.

* + - 1. FABRICATION
         1. Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
         2. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
         3. Form flashing components from full single width sheet in minimum 10’-0” (3 m) sections. Provide mitered trim corners, joined using closed end pop rivets and butyl-based, solvent released one-part sealant.
         4. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

Sealed Joints: Form nonexpanding but movable joints in metal to accommodate butyl-based sealant to comply with SMACNA standards.

Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

* + - 1. FINISHES
         1. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
         2. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
         3. Prevent unpainted metals from contact with oils or solvents, including fingerprints, which may cause staining of the natural finishes.
         4. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast. Note that some variation is anticipated and acceptable when natural (unpainted) material finishes are specified.

1. PREPERATION & EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of the Work.

Retain one or both of first two paragraphs below.

* + - * 1. Examine primary and secondary wall framing to verify that girts, studs, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal wall panel manufacturer.
        2. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
        3. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.

Retain paragraph below if required.

* + - * 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
        2. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. PREPARATION
         1. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
         2. Establish straight, side and crosswise benchmarks
         3. All walls shall be checked for square and straightness. Inside and outside corners may not be plumb; set a true line for the corner flashing with string line.
         4. Measure the wall lengthwise to confirm panel lengths and verify clearances for thermal movement.
      2. METAL SUBFRAMING INSTALLATION
         1. Install metal subframing directly over continuous thermal insulation. Metal subframing shall attach to the structural wall elements with screw fasteners. Metal subframing shall be spaced as necessary to accommodate the required clip spacing for the metal cladding panels.
         2. Attachments shall be as recommended by the metal claddings system manufacturer’s approved shop drawings.
      3. METAL WALL PANEL INSTALLATION
         1. All details will be shown on in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.

The specifier should customize this section to illustrate the intended scope of work for this project.

* + - * 1. Directly over the completed wall substrate, fasten the top flange of the panel to the metal subframing using panel clips. All panels clips will be fastened into the metal subframing as indicated on the metal cladding panel manufacturer’s approved shop drawings.
        2. Installation of Wall Panels: Wall panels can be installed by starting from one end and working towards the opposite end (vertical orientation), or from the bottom of wall working towards the top of the wall (horizontal orientation).
        3. Metal wall panels and trim must be installed only in accordance with the manufacturer’s recommendation for acceptable temperature range.
        4. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
        5. Limit exposed fasteners to extent indicated on contract drawings.
        6. Seal laps and joints in accordance with metal cladding panel system manufacturer's product data.
        7. Coordinate flashing and sheet metal work to provide weathertight conditions at wall terminations. Fabricate and install in accordance with standards of SMACNA Manual.
        8. Provide for temperature expansion/contraction movement of panels at wall penetrations and wall mounted equipment in accordance with system manufacturer's product data and design calculations.
        9. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
        10. At joints in linear sheet metal items, other than metal cladding panels which are intended to provide ventilation, set sheet metal items in two 1/4-inch- (6-mm-) beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
        11. Remove damaged work and replace with new, undamaged components.
        12. Touch up exposed fasteners using paint furnished by the panel manufacturer and matching exposed panel surface finish.
        13. Clean exposed surfaces of wall panels and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.
      1. ERECTION TOLERANCES
         1. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) at location lines as indicated and within 1/16-inch (1.5-mm) offset of adjoining faces and of alignment of matching profiles.
      2. FIELD QUALITY CONTROL

Retain first paragraph below for assemblies requiring weathertight warranty.

* + - * 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal wall panel installation, including accessories. Report results in writing.
        2. Remove and replace applications of metal wall panels where inspections indicate that they do not comply with specified requirements.
        3. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
      1. CLEANING
         1. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.
         2. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113