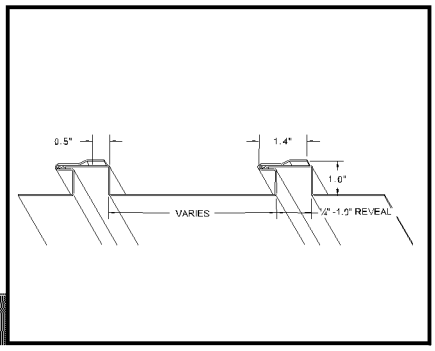
TECHNICAL INFORMATION SHEET

Firestone BUILDING PRODUCTS

UNA-CLAD™ UC-501

Item Description
Reveal Flush Panel



Product Information

Description:

Firestone UNA-CLAD UC-501 Reveal Flush Panel is a factory-formed, interlocking, architectural metal panel designed for soffit and fascia applications. The UC-501 Reveal Flush Panel offers the design professional a flat appearance with an aesthetically pleasing reveal by utilizing an interlocking leg and concealed fastening system. The panel is available in a wide variety of materials and finishes including Kynar™ coated G-90 Galvanized Steel, Galvalume (PA) and Aluminum, Copper, and Zinc.

Method of Application:

1. A smooth, solid substrate of plywood or OSB, or a substructure of min. 22 ga (0.79 mm), ⅞" (22 mm) hat channels is recommended for the Firestone UC-501 metal flush panel.
2. The application of a Firestone approved underlayment prior to panel installation is recommended.
3. Firestone UC-501 panels must be installed in a sequential order.

Storage:

- Firestone metal panels should be stored in a well ventilated, dry place where no moisture can contact them. Moisture (from rain, snow, condensation, etc.) trapped between layers of material may cause water stains or white rust, which can affect the service life of the material and will detract from its appearance.
- If outdoor storage cannot be avoided, protect the panels with a ventilated canvas or waterproof paper cover. Do not use plastic, which can cause condensation. Keep the material off the ground in an inclined position with an insulator such as wood. Protective film may degrade or become brittle with long term exposure to direct sunlight.

Precautions:

- Aluminum is recommended for soffit applications.
- Oil canning is not a cause for rejection.
- Heavier gauges, narrower widths, striations, and embossing minimize oil canning.
- Sealant for end laps and lap joints shall be non-drying, non-toxic, and non-shrinking with a serviceable temperature of -60 °F to 212 °F. (-51 to 100 °C)
- Quality, long-life butyl sealants work best as a gasket sandwiched between two pieces of metal. Non-acetic cured silicone color matching sealants are recommended when voids must be filled. Sealants are not a substitute for proper assembly and workmanship.
- Exercise caution when lifting, moving, transporting, storing or handling Firestone metal to avoid possible physical damage.
- Refer to Safety Data Sheets (SDS) for safety information.
- Immediately remove protective film after installation.

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LEED® Information:

Post Consumer Recycled Content: 0%
Post Industrial Recycled Content: 0%
Manufacturing Location: Anoka, MN College Park, GA Las Vegas, NV Warren, MI

*NOTE: LEED® is a registered trademark of the U.S. Green Building Council.

Typical Information

Property	Value
Panel Type:	Flush with Reveal Joint
Panel Interlock:	Interlocking Joint
Tapered Panels:	No
Minimum Slope:	N/A
Radiused:	No
Stiffening Ribs:	Optional
Striations:	Optional as UC-501V
Standard Panel Surface:	Smooth
Optional Panel Surface:	Stucco Embossed (MN Only)
Substrate:	Solid Substrate or Hat Channels
Panel Width:	12" - 20" (304.8 mm - 508 mm)
Optimal Face Width w/1" Reveal:	11" & 19" (279.4 mm & 482.6 mm)
Panel Depth:	1" (25.4 mm)
Minimum Panel Length:	36" (914.4 mm)
Maximum Panel Length	576"* (14.63 m)

Technical Information

Property	Value
Fire Rating:	UL Class A Rated Assemblies, UL 263, UL 790
Hail Impact Rating:	Class 4, UL 2218

*Contact your Firestone Building Systems Advisor for special consideration on panels over 180" (4570 mm).

NOTE: Testing not applicable for all substrates, materials, and dimensions. All systems with test lightings must be installed in accordance with the assembly tested. Refer to Firestone Website for available code listings.

OPTIONAL VENTING PATTERN

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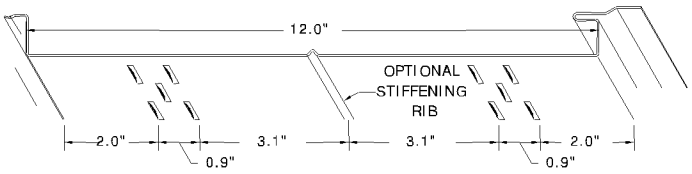

Venting pattern on .040" aluminum varies from pattern shown. Contact Roof Solutions for further information.

MATERIAL & THICKNESS	METAL SPECIFICATION	AVAILABLE FINISHES
ALUMINUM 0.032" (0.81 mm) 0.040" (1.02 mm)	Base Metal: Aluminum Minimum Yield: 21 KSI (145 MPa) Thermal Expansion: 12.6 x 10^{-6} in/in/ °F (22.2 m/m.K x 10^{-6}) Mod. Of Elasticity: 10.0 x 10^{3} x KSI (68.9 MPa)	Anodized Kynar 500®/Hylar 5000® Unpainted/ Mill Finish
GALVANIZED STEEL 26 ga.(0.48 mm) 24 ga. (0.64 mm) 22 ga. (0.79 mm)	Base Metal: AISI-G90 Galvanized steel Minimum Yield: 33 to 45 KSI (227 to 310 MPa) Thermal Expansion: 06.7 x 10^{-6} in/in/ °F (13.9 m/m.K x 10^{-6}) Mod. Of Elasticity: 29.0 x 10^{6} x KSI (200 GPa)	Kynar 500®/Hylar 5000® Unpainted G90
GALVALUME® STEEL 26 ga.(0.48 mm) 24 ga. (0.64 mm) 22 ga. (0.79 mm)	Base Metal: AZ-55 Hot Dipped Galvalume Minimum Yield: 50 KSI (345 MPa) Thermal Expansion: 06.7 x 10^{-6} in/in/ °F (13.9 m/m.K x 10^{-6}) Mod. Of Elasticity: 29.0 x 106 x KSI (200 GPa)	Acrylume – Clear Acrylic Coated
COPPER 16 oz (0.56 mm) 20 oz (0.69 mm)	AGSC minimum copper content of 99.9% copper, silver counting as copper, cold rolled from ingots of 122 alloy. Thermal Expansion: 9.3 x 10^{-6} in/in/ °F (16.5 m/m.K x 10^{-6}) AGSC copper meets and/ or exceeds ASTM B370 specification.	Natural Patriot Green™ Freedom Gray™
ZINC 0.028" (0.7 mm) 0.032" (0.8 mm) 0.040" (1.0 mm)	RHEINZINK®: Electrolytic high-grade, 99.995% pure, fine zinc (DIN EN 1179) titanium copper alloy. certified according to DIN ISO 9001: 1994 Thermal Expansion: 2.2 mm/m x 100K (16.5" x 10^{-6} in/in/ °F)	Shiny Pre-weathered Blue-Gray Pre-weathered Graphite Gray

NOTE: Consult current UNA-CLAD Color Selection Guide
Custom color services available upon request
Consult current base metal Coil & Flat sheet TIS for additional information on the base metal and coating.
Not all materials and thicknesses are available from all locations. Contact your Firestone Building Systems Advisor for additional information.

Please contact Quality Building Services Technical Department at 1-800-428-4511 for further information.

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Firestone BUILDING PRODUCTS

UNA-CLAD™ UC-501

This sheet is meant to highlight Firestone products and specifications and is subject to change without notice. Firestone takes responsibility for furnishing quality materials which meet published Firestone product specifications or other technical documents, subject to normal roof manufacturing tolerances. Neither Firestone nor its representatives practice architecture. Firestone offers no opinion on and expressly disclaims any responsibility for the soundness of any structure. Firestone accepts no liability for structural failure or resultant damages. Consult a competent structural engineer prior to installation if the structural soundness or structural ability to properly support a planned installation is in question. No Firestone representative is authorized to vary this disclaimer.

SECTION 07 42 13
METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured metal panels for walls, with related flashings and accessory components.

B. Finishes.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation.

B. Section 07 25 00 - Weather Barriers: Weather barrier under wall panels.

C. Section 07 42 13.23 - Metal Composite Material Wall Panels: Other types of metal wall panels.

D. Section 07 92 00 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.

E. Section 09 21 16 - Gypsum Board Assemblies: Wall panel substrate.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate dimensions, layout, joints, construction details, related flashings, and methods of anchorage.
   1. Indicate substrates and adjacent work with which the wall system must be coordinated.
   2. Include large-scale details of anchorages and connecting elements.
   3. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.
   4. Include design engineer's stamp or seal on shop drawings for attachments and anchors.

C. Design Data: Submit structural calculations stamped by design engineer, for Architect's information and project record.

D. Samples: Submit two samples of wall panel, 12 inch by 12 inch in size illustrating finish color, sheen, and texture.

1.04 QUALITY ASSURANCE

A. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Qualified Professional Engineer experienced in design of this type of Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years of experience.

C. Installer Qualifications: Company specializing in installing products of the type specified in this section with minimum 5 years of experience.

1.05 MOCK-UP

A. Construct mock-up, 12 feet wide by 8 feet high; include panel system, attachments to building frame, associated vapor retarder and air seal materials, weep drainage system, sealants and seals, related insulation, and window or door opening in mock-up.

B. Locate where directed by Architect.

C. Mock-up may remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.

C. Prevent contact with materials that may cause discoloration or staining of products.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. ~~Correct defective work within a twenty year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.~~

C. Correct defective work within a five year period after Date of Substantial Completion, including defects in water tightness and integrity of seals.

PART 2 PRODUCTS

2.01 MANUFACTURERS - FOR METAL PANELS DESGINATED BY KEYNOTES 5A AND 5B

A. Basis of Design: Metal Wall Panels - Concealed Fasteners: Firestone Building Products Co; UC-501 and UC-500: www.firestonebpco.com.

B. Other Acceptable Manufacturers - Metal Wall Panels - Concealed Fasteners:
   1. ATAS International, Inc: www.atas.com/#sle.
   2. Berridge Manufacturing Company: www.berridge.com/#sle.
   3. Centria: www.centria.com.
   4. MBCI: www.mbci.com.
   5. Metal Sales Manufacturing Corporation : www.metalsales.us.com.
   6. Morin - A Kingspan Group Company : www.morincorp.com.
   7. Petersen Aluminum Corporation: www.pac-clad.com/#sle.
   8. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MANUFACTURED METAL PANELS

A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
   1. Provide exterior panels and subgirt framing assembly.
   2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
   3. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
   4. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
   5. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
   6. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
   7. Corners: Factory-fabricated in one continuous piece with minimum 2 inch returns.

B. Exterior Panels 5A and 5B:
   1. Profile: Vertical orientation.
   2. Style: Flush, flat face with inset, reveal at edge; smooth or textured finish, as indicated; concealed fastening.
   3. Side Seams: Tongue and groove interlocked, sealed with continuous gaskets.
   4. Material: Non-precoated aluminum sheet, 18 gage, 0.0403 inch minimum thickness.
   5. Panel Width: 11 inches flat face plus 1 inch reveal.
   6. Color: Two colors required:
      a. Metal Panel 5A: Provide or match Lorin "AnoZinc I" that simulates the appearance of an aged Zinc sheet.
         1) Texture: 60 percent smooth and 40 percent embossed.
      b. Metal Panel 5B: Provide or match Lorin "AnoZinc II" that simulates the appearance of an aged Zinc sheet.
         1) Texture: Smooth.

C. Exterior Panels 5C:
   1. Profile: Horizontal orientation.
   2. Style: Flush, flat face, no edge reveal; smooth finish; concealed fastening.
   3. Side Seams: Tongue and groove interlocked, sealed with continuous gaskets.
   4. Material: Non-precoated aluminum sheet, 18 gage, 0.0403 inch minimum thickness.
   5. Panel Width: 16 inches flat face.
   6. Color: Provide or match Lorin "AnoZinc I" that simulates the appearance of an aged Zinc sheet.:

D. Exterior Perforated Metal Panel at North Elevation of Garage:
   1. Match Exterior Panels 5B described above, but with punched perforations.
   2. Perforation Pattern: 1/4 inch diameter holes on 3/8 inch staggered centers.

E. Subgirts:
   1. Miscellaneous Secondary Framing: Light gauge steel framing incidental to structural supports; fabricated from steel sheet.
   2. Framing Material: Non-precoated steel sheet.
      a. Thickness: As required to provide a stable, secure substrate for the span and panel conditions of the project.
      b. Zee, cee, or hat profile; to attach panel system to building.

F. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; brake formed to required angles.

G. Expansion Joints: Same material, thickness and finish as exterior sheets; 18 gage, 0.0403 inch thick; manufacturer's standard brake formed type, of profile to suit system.

H. Trim, Closure Pieces, Caps, Flashings, Facias, and Corners: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

I. Anchors: Stainless steel.

2.03 MATERIALS

A. Non-Precoated Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, SS Grade 33/230, with G90 coating.

B. Non-Precoated Aluminum Sheet: ASTM B209 (ASTM B209M), 3105 alloy, O temper, smooth surface, finish as indicated in Article 2.02.

2.04 ACCESSORIES

A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

B. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   1. Color: To match metal panel color.

C. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized. Fastener cap same color as exterior panel.
   1. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws.

D. Field Touch-up Paint: As recommended by panel manufacturer.

E. Bituminous Paint: Asphalt base.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building framing members are ready to receive panels.

B. Verify that weather barrier has been installed over substrate completely and correctly.

3.02 PREPARATION

A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at 24 inches on center, maximum.

3.03 INSTALLATION

A. Install panels on walls in accordance with manufacturer's instructions.

B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

C. Fasten panels to subgirt supports; aligned, level, and plumb.

D. Locate joints over supports.

E. Lap panel ends minimum 2 inches.

F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.04 TOLERANCES

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

3.05 CLEANING

A. Remove site cuttings from finish surfaces.

B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION 07 42 13

SECTION 07 42 13.23
METAL COMPOSITE MATERIAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior cladding consisting of formed metal composite material (MCM) sheet, secondary supports, and anchors to structure, attached to solid backup.

B. Matching flashing and trim.

1.02 RELATED REQUIREMENTS

A. Section 05 75 00 - Decorative Formed Metal: Factory fabricated MCM column covers.

B. Section 07 25 00 - Weather Barriers: Weather barrier behind wall panel system.

C. Section 07 42 13 - Metal Wall Panels: Other types of metal wall panels.

D. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashing components integrated with this wall system.

E. Section 07 92 00 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene one week before starting work of this section to verify project requirements, co-ordinate with installers of other work, establish condition and completeness of building substrate, and review manufacturers' installation instructions and warranty requirements.
   1. Require attendance by the installer and relevant sub-contractors.
   2. Include MCM sheet manufacturer's representative and wall system manufacturer's representative to review storage and handling procedures.
   3. Review in detail truck transportation, parking, vertical transportation, schedule, personnel, installation of adjacent materials and substrate.
   4. Review procedures for protection of work and other construction.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
   1. Finish manufacturer's data sheet showing physical and performance characteristics.
   2. Storage and handling requirements and recommendations.
   3. Fabrication instructions and recommendations.
   4. Specimen warranty for finish, as specified herein.

C. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, exposed fasteners, number of anchors, supports, reinforcement, trim, flashings, and accessories.
   1. Indicate panel numbering system.
   2. Differentiate between shop and field fabrication.
   3. Indicate substrates and adjacent work with which the wall system must be coordinated.
   4. Include large-scale details of anchorages and connecting elements.
   5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.
   6. Include design engineer's stamp or seal on shop drawings for attachments and anchors.

D. Design Data: Submit structural calculations stamped by design engineer, for Architect's information and project record.

E. Samples:
   1. Panel Assembly: Submit 2 samples of assembly, 36 x 36 inches minimum in size, illustrating panel construction, mounting system, and panel to panel joint.

F. Test Report: Submit report of full-size mock-up tests for air infiltration, water penetration, and wind performance.

G. Test Report: Submit report of full-size mock-up test for NFPA 285 fire performance.

H. Manufacturer's Qualification Statement.

I. Installer's Qualification Statement.

J. Testing Agency's Qualification Statement.

K. Maintenance Data: Care of finishes and warranty requirements.

L. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.

B. Design Engineer's Qualifications: Design structural supports and anchorages under direct supervision of a Qualified Professional Engineer experienced in design of this type of Work and licensed in the State in which the Project is located.

C. Manufacturer Qualifications: Company with a minimum of 10 years of continuous experience manufacturing products specified in this section.

D. Fabricator Qualifications: Company specializing in fabricating wall panel systems specified in this section.
   1. With not less than five years of experience.
   2. Approved by MCM sheet manufacturer.

E. Installer Qualifications: Company specializing in performing work of the type specified in this section.
   1. With minimum five years of experience.
   2. Approved by wall panel system manufacturer.

F. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.

G. Mock-Up: Provide a mock-up for evaluation of fabrication workmanship.
   1. Minimum Size: 10 x 10 feet including panel to panel joints.
   2. Locate where directed.
   3. Provide panels finished as specified.
   4. Mock-up may remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in fabricator's original, unopened, undamaged containers with identification labels intact.
   1. Protect finishes by applying heavy duty removable plastic film during production.
   2. Package for protection against transportation damage.
   3. Provide markings to identify components consistently with drawings.
   4. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1. Store in well ventilated space out of direct sunlight.
2. Protect from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.
3. Store at a slope to ensure positive drainage of any accumulated water.
4. Do not store in any enclosed space where ambient temperature can exceed 120 degrees F.
5. Avoid contact with any other materials that might cause staining, denting, or other surface damage.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. MCM Sheet Manufacturer's Product Warranty: Provide manufacturer's written warranty stating that there will be no defects in panel manufacturing and workmanship for minimum of 5 years.

C. MCM Sheet Manufacturer's Finish Warranty: Provide manufacturer's written warranty stating that the finish will perform as follows for minimum of ~~20~~ **30** years:
   1. Chalking: No more than that represented by a No. 8 rating based on ASTM D4214.
   2. Color Retention: No fading or color change in excess of 5 Hunter color difference units, calculated in accordance with ASTM D2244.
   3. Gloss Retention: Minimum of 30 percent gloss retention, when tested in accordance with ASTM D523.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Composite Material (MCM) Sheet Manufacturers:
   1. 3A Composites USA; Alucobond Plus: www.alucobondusa.com/#sle.
   2. Alcoa, Inc; REYNOBOND FR: www.alcoa.com.
   3. ALPOLIC Materials; ALPOLIC/fr (Fire Retardant core): www.alpolic-americas.com/#sle.
   4. Alucoil North America LLC; Iarson by Alucoil, FR Core (fire resistant): www.alucoilnorthamerica.com/#sle.
   5. Fairview Architectural; VITRABOND/FR: www.www.vitrabond.com.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 WALL PANEL SYSTEM

A. Wall Panel System: Metal panels with fire-resistant core, fasteners, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage or failure.
   1. Provide structural design by or under direct supervision of a Qualified Professional Engineer licensed in the State in which the Project is located.
   2. Provide panel jointing and weatherseal using reveal joints and gaskets but no sealant.
   3. Anchor panels to supporting framing without exposed fasteners.

B. Performance Requirements:
   1. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 40 degrees F to 180 degrees F without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
   2. Wind Performance: Provide system tested in accordance with ASTM E330/E330M without permanent deformation or failures of structural members under the following conditions:
      a. Inward and Outward Design Wind Pressures: As required by applicable Code.
      b. Maximum deflection of perimeter framing member of L/175 normal to plane of the wall; maximum deflection of individual panels of L/60.

c. Maximum anchor deflection in any direction of 1/16 inch at connection points of framing members to anchors.

3. Fire Performance: Tested in accordance with, and complying with the acceptance criteria of, NFPA 285; testing performed for previous project is acceptable provided tested system was truly equivalent.
   a. An engineering judgment letter addressing the project-specific installation from an experienced, third-party, fire protection engineer shall be acceptable to Architect as meeting this requirement.

C. Panels: One inch deep pans formed of metal composite material sheet by routing back edges of sheet, removing corners, and folding edges.
   1. Reinforce corners with riveted aluminum angles.
   2. Provide concealed attachment to supporting structure by adhering attachment members to back of panel; attachment members may also function as stiffeners.
   3. Maintain maximum panel bow of 0.8 percent of panel dimension in width and length; provide stiffeners of sufficient size and strength to maintain panel flatness without showing local stresses or read-through on panel face.
   4. Reinforce panels as recommended by manufacturer to maintain flatness of panels.
   5. Secure members to back face of panels using structural silicone sealant approved by MCM sheet manufacturer.
   6. Fabricate panels under controlled shop conditions.
   7. Where final dimensions cannot be established by field measurement before commencement of manufacturing, make allowance for field adjustments without requiring field fabrication of panels.
   8. Fabricate as indicated on drawings and as recommended by MCM sheet manufacturer.
      a. Make panel lines, breaks, curves and angles sharp and true.
      b. Keep plane surfaces free from warp or buckle.
      c. Keep panel surfaces free of scratches or marks caused during fabrication.
   9. Provide joint details providing a structurally sound wall panel system that allows no uncontrolled water penetration on inside face of panel system.
      a. Joint seepage water and condensate water are not considered uncontrolled water by Architect.
   10. For "dry" jointing, secure extrusions to returned pan edges with stainless steel rivets; provide means of concealed drainage with baffles and weeps for water that might accumulate in members of system.

2.03 MATERIALS

A. Metal Composite Material (MCM) Sheet: Two sheets of aluminum sandwiching a core of extruded proprietary fire-resistant material; no foamed insulation material content.
   1. Overall Sheet Thickness: 4 mm, minimum.
   2. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F.
   3. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
   4. Flammability: Self-ignition temperature of 650 degrees F or greater, when tested in accordance with ASTM D1929.
   5. Factory Finish: Two coat, except where three coat is recommended because of color selection, PVDF fluoropolymer resin coating, approved by the coating manufacturer for the length of warranty specified for the project, and applied by coil manufacturing facility that specializes in coil applied finishes.

a. Coating Flexibility: Pass ASTM D4145 minimum 1T-bend, at time of manufacturing.
b. Long-Term Performance: Not less than that specified under WARRANTY in PART 1.

6. Color: Two colors required.
   a. Composite Metal Panel 5D: Basis of Design: Alucobond Contemporary Colors, "Summer Suede Metallic Cool 30" color, 3 coat finish.
   b. Composite Metal Panel 5E: Basis of Design: Alpolic "AGT Aluminum Grey" color.

B. Metal Framing Members: Include sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
   1. Provide material strength, dimensions, configuration as required to meet the applied loads applied and in compliance with applicable building code.
   2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy-coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
   3. Stainless Steel Sheet Components: ASTM A480/A480M.
   4. Aluminum Components: ASTM B209 (ASTM B209M); or ASTM B221 (ASTM B221M).

C. Flashing: Sheet aluminum; 0.040 inch thick, minimum; finish and color to match MCM sheet; refer to Section 07 62 00 for additional requirements.

D. Anchors, Clips and Accessories: Use one of the following:
   1. Stainless steel complying with ASTM A276/A276M, ASTM A480/A480M, or ASTM A666.
   2. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A153/A153M.
   3. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A123/A123M Coating Grade 100.

E. Fasteners:
   1. Exposed Fasteners: Stainless steel; permitted only where absolutely unavoidable and subject to prior approval of the Architect.
   2. Screws: Self-drilling or self-tapping Type 410 stainless steel or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels.
   3. Bolts: Stainless steel.
   4. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.

F. Provide panel system manufacturer's and installer's standard corrosion resistant accessories, including fasteners, clips, anchorage devices and attachments.

2.04 FABRICATION

A. Shop fabricate all composite panels. No field fabrication is allowed.

B. Fabricate panels using the envelope pan corner with back up plate, sealant, and pneumatically applied pop rivets.

C. Fabricate panels with lines, brakes, and angles sharp and true, and with surface free from wave, warp, or buckle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine dimensions, tolerances, and interfaces with other work.
   1. Verify that weather barrier system is properly installed, refer to Section 07 25 00 for requirements.

B. Examine substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturers written instructions.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Notify Architect in writing of conditions detrimental to proper and timely completion of work, and do not proceed with erection until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

3.03 INSTALLATION

A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.

B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

C. Provide a concealed fastener installation system, with no fasteners exposed.

D. Install panels with lines, brakes, and angles sharp and true, and with surfaces free from wave, warp, or buckle.

E. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.

F. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.

G. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.

H. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

I. Where composite panels about or joins adjacent dissimilar metals, execute joint to facilitate drainage and eliminate possibility of corrosion.

J. Provide positive and adequate drainage to exterior for moisture entering or condensation occurring within panel system. Space weeps 20 - 24 inches oc. Make weeps 3/8 inch diameter and with aluminum mesh screen back-up adhered with silicone sealant.

K. Install flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.

L. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
   1. Variation From Plane or Location: 1/2 inch in 30 feet of length and up to 3/4 inch in 300 feet, maximum.
   2. Deviation of Vertical Member From True Line: 0.1 inch in 25 feet run, maximum.
   3. Deviation of Horizontal Member From True Line: 0.1 inch in 25 feet run, maximum.
   4. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch, maximum.

M. Replace damaged products.
   1. Panels may be considered damaged and require replacement for the following reasons:
      a. Exceeding specified installation tolerances.
      b. Damage during construction operations.
      c. Exposed-to-view surfaces having surface-finish deficiencies, scratches, dents or other conditions.

2. Exception: Field repairs of minor damage to finishes are permitted only when approved in writing by Architect, panel manufacturer, and fabricator.
3. Field Repairs to Finishes: Using materials and methods sufficient that repairs are not discernible when viewed at distance of 10 feet under all typical light conditions experienced at the project.
4. Replace repaired panels that are not found acceptable by Architect.

3.04 CLEANING

A. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

C. Remove temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Protect installed panel system from damage until Date of Substantial Completion.

END OF SECTION 07 42 13.23