

Ceco Insulated Concealed Fastener (CF) Vertical Metal Wall Panels

Ceco Insulated Metal Panels (IMPs) consist of two single-skin metal facings and a factory-foamed-in-place core. Ceco offers IMPs for both roof and wall applications. The foam insulation is made of non-chlorofluorocarbon (non-CFC) polyurethane foam. IMPs are sealed to each other at the side laps and to the substructure at all perimeter boundaries, which make them the ideal choice when a continuous air barrier is required. These concealed-clip fastened panels eliminate thermal short circuits and provide superb air and vapor control.

Ceco CF Architectural: The Ceco CF Architectural insulated metal panel is ideal for high-profile architectural applications with its flat, monolithic look. The panels are designed to be installed vertically or horizontally with concealed clips and fasteners in the side joint. Architectural wall panels provide a beautiful, flush appearance, allowing architects flexibility with design.

Ceco CF Striated: The Ceco CF Striated insulated metal panel is an attractive alternative to typical flat wall panels. The exterior face is lightly profiled with narrow longitudinal striations, which create a subtle shadow effect but exhibit a virtually flat appearance from a short distance away. The Striated wall panel is an exceptional value, combining the aesthetics of a flat wall panel with the high insulated ratings of a polyurethane core.

Ceco CF Mesa: The Ceco CF Mesa insulated metal panel is well suited for exterior and interior walls and ceiling applications. The lightly corrugated profile on both faces creates symmetry on the outside of the building and room to room within. The minor rib provides a flattened appearance. Mesa panels are ideal for commercial, institutional and industrial applications.

Ceco CF Light Mesa: The Ceco CF Light Mesa insulated metal panel is well suited for exterior and interior walls and ceiling applications. The shallower version of the Mesa profile creates symmetry on the outside of the building and room to room within. The minor rib provides a flattened appearance. Light Mesa panels are ideal for commercial, institutional and industrial applications.

Ceco CF Flute: The ribbed profile of the Ceco CF Flute insulated metal panels provides bold vertical lines complementary to almost any commercial or industrial building. The bold vertical lines create a distinctive and visually appealing architectural and industrial image.

Ceco CF Santa Fe: The Ceco CF Santa Fe panel has a flat exterior profile with a heavy, embossed stucco texture that mimics the look of a masonry stucco finish but with the added value of an insulated metal panel. The profile is flush with the warmth of an old-world finish, providing a visually pleasing building.

Ceco CF 7.2 Insul-Rib: The CF 7.2 Insul-Rib insulated metal panel combines a traditional 7.2 rib panel with premier polyurethane insulate core. With a bold, ribbed pattern, this panel creates a unique

architectural or industrial image. The 7.2 Insul-Rib panels can be installed either vertically or horizontally, allowing architects flexibility with design.

Ceco CF Partition: The CF Partition insulated metal panel is designed to be the most economical choice for interior partition applications. The lightly corrugated profile provides added strength on both faces and ensures symmetry from the exterior to the interior of the building and between rooms.

Ceco CF Tuff Wall: The Ceco CF Tuff Wall is an attractive, stucco-like insulated metal panel that exhibits the natural beauty sought by many designers and owners. The exterior surface of the panel is a hard aggregated, fiber-reinforced polymer coating created with the factory-applied Tuff Cote finish offers an extremely durable; impact and abrasion-resistant coating that can withstand severe weather conditions.

Ceco CF Tuff-Cast: The Ceco CF Tuff-Cast is an attractive insulated metal panel with the appearance of finished precast concrete. The exterior surface of the panel is a hard aggregated, fiber-reinforced polymer coating created with the factory-applied Tuff Cote finish offers an extremely durable; impact and abrasion-resistant coating that can withstand severe weather conditions.

Ceco manufactures insulated metal panels for both roof and wall applications. Our panels come in a wide array of color and applied finish offerings and are great for a multitude of building projects. Building and energy codes are becoming increasingly more stringent. Insulated metal panels are an ideal choice for a high performance, thermally efficient building envelope.

The foam insulation of IMPs offers superior R-values that provide enhanced energy performance for buildings utilizing these panels. The offset double tongue-and-groove interlock, coupled with vapor seal in the side-joint grooves, provides superior resistance to air and moisture intrusion, allowing for increased thermal performance of the building envelope.

IMPs are able to span greater distances than single skin panels. As well as, offer better in-place building efficiency than typical cavity or field assembled wall products.

IMPs offer many advantages for building owners, designers and contractors. Some of these benefits include reduced building operational expenses, accelerated construction schedules, earlier business starts and much more. Ceco insulated metal panels are ideal for many applications, including architectural, commercial, industrial and institutional markets.

Ceco manufactures insulated metal panels with the most technologically advanced manufacturing plants across North America. Ceco's insulated metal panels are available in several different wall and roof profiles. Our insulated metal panel color and applied finish offerings allow for a multitude of design opportunities. Whether you're looking for design options, easy to install efficient materials, or to save money on energy and maintenance costs, our panels make the difference. Consult your local Ceco sales representative for design assistance or visit metlspan.com for more information.

SECTION 07 42 13 – INSULATED METAL WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Foamed-insulation-core concealed fastener metal wall panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

Specifier: If retaining this optional article, edit list below to correspond to Project.

- A. Division 01 Section "Sustainable Design Requirements" for related LEED general requirements.
- B. Division 05 Section "Structural Steel Framing" for steel framing supporting metal panels.
- C. Division 05 Section "Cold-Formed Metal Framing" for cold-formed metal framing supporting metal panels.
- D. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal flashing items in addition to items specified in this Section.
- E. Division 07 Section "Metal Wall and Roof Panels" for factory-formed metal wall, roof, and soffit panels.
- F. Division 13 Section "Metal Building Systems" for steel framing supporting metal panels.

1.3 REFERENCES

Specifier: If retaining this optional article, edit list below to correspond to Project.

- A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:
 - 1. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.
 - 2. AAMA 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates.
- B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM): www.astm.org:
 - 1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. ASTM A 240 – Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
 - 5. ASTM C 518 - Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 6. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
 - 7. ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics.
 - 8. ASTM D 1622 - Apparent Density of Rigid Cellular Plastics.
 - 9. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

10. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.
 11. ASTM D 6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics
 12. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
 13. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials.
 14. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 15. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
 16. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
- D. National Fire Protection Association (NFPA)
1. NFPA 259 – Test Method for Potential Heat of Building Materials.
 2. NFPA 285 – Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies.
 3. NFPA 286 – Fire Test of Evaluating Conditions of Wall and Ceiling Finish to Roof Fire Growth.
- E. FM Global (FM): www.fmglobal.com:
1. FM 4880 American National Standard for Evaluating Insulated Wall and Roof/Ceiling Assemblies
 2. FM 4881 Approval Standard for Class 1 Exterior Wall Systems.
- F. Canadian Standards Association (CSA)
1. CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 2. CAN/ULC S101 – Fire Endurance Tests of Building Construction and Materials.
 3. CAN/ULC S134 – Fire Test of Exterior Wall Assemblies.
 4. CAN/ULC S138 – Fire Growth of Insulated Building Panels in a Full Scale Room Configuration.
- G. Green Seal (GS) www.greenseal.org
1. GS-11 – Green Seal Standard for Paints and Coatings, Edition 3.2, October 26, 2015.
- H. US Green Building Council (USGBC): www.usgbc.org:
1. Leadership in Energy and Environmental Design (LEED) Green Building Rating System
- 1.4 QUALITY ASSURANCE
- A. Manufacturer/Source: Provide metal panel assemblies and accessories from a single manufacturer approved under an accredited third-party quality control program
 - B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum ten years' experience in the manufacturing of similar products and successful use in similar applications.

Specifier: Retain paragraph below if Owner allows substitutions but requires strict control over qualifying of substituted manufacturers.

1. Approval of Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Product data, including certified independent test data indicating compliance with requirements.

- b. Samples of each component.
 - c. Sample submittal from similar project.
 - d. Project references: Minimum of five installations not less than five years old, with Owner and Architect contact information.
 - e. Sample warranty.
 - f. Certificate from an accredited third-party Quality Control Program.
- 2. Substitutions following award of contract are not allowed except as stipulated in Division 01 General Requirements
 - 3. Approved manufacturers must meet separate requirements of Submittals Article.

Specifier: Review of manufacturers' qualifying of installers is recommended. Ceco requires Installer and supervisor certification when project requirements include extended warranty.

- C. Installer Qualifications: Experienced Installer [certified by metal panel manufacturer] with minimum of five years experience with successfully completed projects of a similar nature and scope.
 - 1. Installer's Field Supervisor: Experienced mechanic [certified by metal panel manufacturer] supervising work on site whenever work is underway.

Specifier: Retain paragraph below and edit as appropriate for Federal projects and for public works projects utilizing Federal funds; consult with project Contracting Officer. Coordinate with Submittals Article.

- D. Buy American Compliance: Materials provided under work of this Section shall comply with the following requirements:
 - 1. Buy American Act of 1933 BAA-41 U.S.C §§ 10a – 10d.
 - 2. Buy American provisions of Section 1605 of the American Recovery and Reinvestment Act of 2009 (ARRA)

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, metal panel installer, metal panel manufacturer's technical representative, inspection agency and related trade contractors.
 - 1. Coordinate building framing in relation to metal panel system.
 - 2. Coordinate openings and penetrations of metal panel system.

1.6 ACTION SUBMITTALS

- A. Product Data: Manufacturer's data sheets for specified products.

Specifier: Retain and edit below to comply with Project requirements for LEED or other sustainable design requirements. LEED Credits for which Insulated metal panels can help but would be represented in other sections are:

MR Credit 6: Rapidly Renewable Materials - The foam core in the wall panels contains a component that contributes to one point for using rapidly renewable buildings materials and products for 2.5% of the total value of all building materials and products used in the project (based on cost.)

- B. LEED Submittals
 - 1. EA Credit 1: Optimize Energy Performance: Provide testing or modeling results demonstrating U-values provided in accordance with this section are in compliance with ASHRAE 90.1, including Appendix G.
 - 2. MR Credit 4: Recycled Content. Provide documentation of the following:
 - a. Material costs for each product having recycled content.
 - b. Percentages by weight of post-consumer and pre-consumer recycled content for each item.

- c. Total weight and cost of products provided.
- 3. IEQ Credit 4.1: Low-Emitting Materials - Adhesives and Sealants. Provide documentation of the following:
 - a. Product data for adhesives and sealants demonstrating compliance with standards of South Coast Air Quality Management District Rule #1168.
- 4. IEQ Credit 4.2: Low-Emitting Materials – Paints and Coatings. Provide documentation of the following:
 - a. Product data for paint and coatings demonstrating compliance with the VOC limits as established in Green Seal Standard GS-11
- C. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, and special details. Make distinctions between factory and field assembled work.
 - 1. Include data indicating compliance with performance requirements.
 - 2. Indicate points of supporting structure that must coordinate with metal panel system installation.
 - 3. Include structural data indicating compliance with performance requirements and requirements of local authorities having jurisdiction.
- D. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.
- E. Samples for Verification:
 - 1. Provide **12-inch- (305 mm)** long section of each metal panel profile.
 - 2. Provide color chip verifying color selection.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Results: Indicating compliance of products with requirements.

Specifier: Retain option in paragraph below if Project requirements include delegated design by Contractor.

- B. Qualification Information: For Installer
- C. Accreditation Certificate: Indicating that manufacturer is accredited under an accredited third-party Quality Control Program, including IAS AC472 and based upon chapter 17 of the International Building Code (IBC).
- D. Buy American Certification: Manufacturers' letters of compliance acceptable to authorities having jurisdiction, indicating products comply with requirements.
- E. Florida State Building Code Compliance: Indicating that products comply with requirements of Florida State Building Code. www.floridabuilding.org/pr/pr_app_srch.aspx
- F. Warranty:
 - 1. Submit manufacturer's written two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.
 - 2. The installation contractor shall issue a separate warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Manufacturer's Warranty: Executed copy of manufacturer's warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping. Protect painted surfaces with a protective covering before shipping.
 - 1. Deliver, unload, store, and erect metal panels and accessory items without deforming panels or exposing panels to surface damage from weather or construction operations.
 - 2. Store in accordance with Manufacturer's written instructions.
 - 3. Shield foam insulated metal panels from direct sunlight until all components are installed.

1.10 WARRANTY

Specifier: Warranty terms below are available from Ceko. Verify that other allowable manufacturers furnish warranty meeting requirements.

- A. Special Manufacturer's Warranty: Submit Manufacturer's two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.
- B. The installation contractor shall issue a separate warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.
- C. Special Panel Finish Warranty: Submit Manufacturer's limited warranty on the exterior paint finish for adhesion to the metal substrate and limited warranty on the exterior paint finish for chalk and fade.

Specifier: Retain finish warranty paragraph corresponding to selected metal panel finish system. Coordinate chalk and fade performance with applicable Ceko finish and color found at www.metlspan.com.

No warranty is offered for the interior painted surface of the panel.

- 1. Fluoropolymer Two-Coat System:
 - a. Color fading in excess of [5] or [10] for copper, silver metallic and bright red; Hunter units per ASTM D 2244.
 - b. Chalking in excess of [6] for copper, silver metallic and bright red or [8] rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.
- 2. Modified Silicone-Polyester Two-Coat System:
 - a. Color fading in excess of [5] or [7] for crimson red; Hunter units per ASTM D 2244.
 - b. Chalking in excess of [7] for crimson red or [8] rating per ASTM D 4214.
 - c. Failure of adhesion, peeling, checking, or cracking.
- 3. Other finish options available; additional information can be found at metlspan.com or contact Ceko at (800)474-CECO.

PART 2 - PRODUCTS

2.1 MANUFACTURER

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Specifier: Retain basis of design manufacturer and products listed in this Article where allowed. If inserting comparable manufacturers, carefully review products and engineering capabilities in relation to requirements of this Section, to ensure that other approved manufacturers offer products meeting Ceco's standards.

- A. Basis of Design Manufacturer: Ceco Building Systems, Division of NCI Group, Inc.; Rocky Mount, NC. Tel: (800)474-CECO; Web: www.cecobuildings.com.
- B. Provide basis of design product [, or comparable product approved by Architect prior to bid].

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

Specifier: Recycled Content paragraph below describes calculation utilized for LEED-NC Credit MR 4. Modify as required to meet project recycled content requirements, or delete if recycled content requirements are stipulated solely in Division 01 Section "Sustainable Design Requirements."

- B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, as determined by ASTM E 72 or ASTM E 1592 applied in accordance with ICC AC 04, Section 4, Panel Load Test Option or Section 5, Panel Analysis Option:

Specifier: Consult structural engineer and edit below as required by local codes. Insert structural data below if not indicated on drawings. Select applicable deflection limit.

- 1. Wind Loads: Determine loads based on applicable building code, wind speed, importance factor, exposure category, and internal pressure coefficient indicated on drawings.
 - a. Wind Negative Pressure: Certify capacity of metal panels by testing of proposed assembly.
- 2. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of [1/120] [1/180] [1/240] of the span with no evidence of failure.

Specifier: Retain FM Approvals' listing requirement for FM Global-insured projects or where FM Global requirements are used as minimum design standard.

- C. FM Approvals Listing: Comply with FM Approval 4881. Provide metal wall panel assembly listed in FM Approvals' "Approval Guide."
- D. Fire Performance Characteristics: Provide metal panel systems with the following fire-test characteristics determined by indicated test standard as applied by testing and inspection agency acceptable to authorities having jurisdiction.
 - 1. Surface-Burning Characteristics: The insulating core shall have been tested per ASTM E 84. The core shall have:
 - a. Flame spread index: 25 or less.
 - b. Smoke developed index: 450 or less.

Specifier: Approval is applicable to structures of unlimited Height.

- 2. Room Test Performance: FM Global 4880: The panel assembly shall not support a self-propagating fire which reaches any limits of the 50' (15.24m) high corner test structure as evidenced by flaming or material damage of the ceiling of the assembly.
- 3. Fire Propagation: The fire assembly shall meet the requirements of the standard for NFPA 285

4. Fire Growth: The fire assembly shall meet the requirements of the standard for NFPA 286
5. Potential Heat: Determined in accordance with NFPA 259

Specifier: Retain Paragraph below for Canadian Projects

6. Canadian Certifications:
 - a. Surface Burning Characteristics: The composite panel shall have to be tested per CAN/ULC S102. Meets the National Building Code of Canada requirements.
 - b. Fire Endurance Tests of Building Construction and Materials: The composite panel shall have to be tested per CAN/ULS S101. Meets 15 minute stay in place requirement.
 - c. Fire Test of Exterior Wall Assemblies. The composite panel shall have to be tested per CAN/ULS S134. Complies with the fire spread and heat flux limitations required by the National Building Code of Canada.
 - d. Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration: The composite panel shall have to be tested per CAN/ULS S138 Met the Criteria of the Standard.
 7. IBC Chapter 26: Panel Performance under the above test methods, shall meet the requirements of IBC, Chapter on foam plastics.
- E. Air Infiltration, ASTM E 283:
1. Maximum 0.0002 cfm/sq. ft. (0.001 L/s per sq. m) at static air pressure difference of 1.57 lbf/sq. ft. (75 Pa).
 2. Maximum 0.0009 cfm/sq. ft. (0.005 L/s per sq. m) at static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).
 3. Maximum 0.01 cfm/sq. ft. (0.050 L/s per sq. m) at static-air-pressure difference of 20 lbf/sq. ft. (958 Pa).
- F. Water Penetration Static Pressure:
1. ASTM E 331: No uncontrolled water penetration at a static pressure of 20 lbf/sq. ft. (958 Pa).
 2. ASTM E 331 Modified (2 hour duration): No uncontrolled water penetration at a static pressure of 6.24 lbf/sq. ft. (300 Pa).

Specifier: Retain paragraph below for Florida projects

- G. Florida State Building Code Compliance: Provide insulated metal wall panels complying with requirements for installation under Florida State Building Code outside of high velocity wind zone.
- H. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

Specifier: The specific configuration of thermal performance testing has a significant impact on the published results. The thermal performance testing performed by Ceco and described below conforms to industry standard testing and ASHRAE 90.1 requirements.

- I. Thermal Performance: When tested in accordance with ASTM C 518, Measurement of Steady State thermal Transmission, the panels shall provide a k factor of 0.14 btu/sf/hr/deg F at a 75° F (24° C) mean temperature, as required by code, or 0.126 btu/sf/hr/deg F at a 40° F (4° C) mean temperature.

2.3 INSULATED METAL WALL PANELS

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- A. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of exterior metal sheet with five major tapered inverted ribs **1 by 1/4 inches (25.4 by 6.4 mm)** with a mesa profile between the inverted ribs, and interior metal sheet with a Mesa or Light Mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
1. Basis of Design: Ceco, CF Flute.
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, preprepared by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. ([Click Here To View](#))**

- a. Exterior Face Sheet: **[26 gauge] [24 gauge] [22 gauge]** thickness, with stucco embossed surface.
 - 1) Finish: **[Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].**
 - 2) Color: **[As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].**
- b. Interior Face Sheet: **[26 gauge] [24 gauge] [22 gauge]** thickness, with stucco embossed surface and Mesa or Light Mesa profile.
 - 1) Finish: **[Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].**
 - 2) Color: **[As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].**
3. Panel Width: **42 inches (1067 mm)**
4. Panel Thickness: **[2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [5 inch (127 mm)] [6 inch (152 mm)] [as shown on drawings]**
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: **2.0 pcf (32 kg/m³)** as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: **[insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W)** per ASTM C 518 at **75** degrees Fahrenheit mean temperature.

6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- B. Concealed Fastener, Insulated Metal Panel with foam core: Structural metal panel consisting of flush, smooth exterior metal sheet, and interior metal sheet with a Light Mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
1. Basis of Design: Ceco, CF Architectural.
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. ([Click Here To View](#))**

- a. Exterior Face Sheet: 22 gauge thickness, with stucco embossed surface and [1/8 inch (3.2 mm)] [1/4 inch (6.3 mm)] [1/2 inch (12.7 mm)] [3/4 inch (19 mm)] [1 inch (25.4 mm)] [1-1/2 inch (38.1 mm)] [2 inch (50.8 mm)] [2-1/2 inch (63.5 mm)] [3 inch (76.2 mm)] reveals.
 - 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system]
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
 - b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and a Light Mesa profile.
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic color system]
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
3. Panel Width: [24 inches (610 mm)] [30 inches (762 mm)] [36 inches (914 mm)] [as shown on drawings]
 4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [as shown on drawings]
 5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and

Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- C. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of exterior metal sheet and interior metal sheet with matching 4 by 1/8 inch (102 by 3 mm) o.c. profile. Factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
 1. Basis of Design: Ceco, CF Mesa
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface.
 - 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and Mesa or Light Mesa profile.
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
3. Panel Width: [30 inches (762 mm)] [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]
4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [5 inch (127 mm)] [6 inch (152 mm)] [as shown on drawings].
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621

- c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- D. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of exterior metal sheet and interior metal sheet with matching 4 by 1/16 inch (102 by 1.5 mm) o.c. profile. Factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
1. Basis of Design: Ceco, CF Light Mesa
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface.
- 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and Light Mesa profile.
- 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
3. Panel Width: [30 inches (762 mm)] [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]
4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)]
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent

- a. Closed Cell Content: 90% or more as determined by ASTM D 6226
- b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
- c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- E. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of exterior metal sheet with minor striations 1/16 by 1 inch o.c. (1.6 by 25.4 mm), and interior metal sheet with a light mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
1. Basis of Design: Ceco, CF Striated.
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, preprimed by the coil-coating process per ASTM A 755/A 755M.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [24 gauge] [22 gauge] coated thickness, with stucco embossed surface.
 - 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
 - b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] coated thickness, with stucco embossed surface and Light Mesa profile.
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
3. Panel Width: [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]

4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [as shown on drawings]
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
 6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- F. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of flat exterior metal sheet with heavy, stucco-embossed pattern, and interior metal sheet with a light mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
1. Basis of Design: Ceco, CF Santa Fe
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, preprepared by the coil-coating process per ASTM A 755/A 755M

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [24 gauge] [22 gauge] thickness, with stucco embossed surface
 - 1) Finish: : [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and a Light Mesa profile
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system].

- 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
3. Panel Width: [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]
4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [as shown on drawings]
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- G. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of flat exterior metal sheet with 7.2 rib pattern, and interior metal sheet with mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
 1. Basis of Design: Ceco, CF 7.2 Insul-Rib
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface
 - 1) Finish: [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Fluoropolymer two-coat metallic and pearlescent color system] [Fluoropolymer two-coat weathered metal and woodgrain color system] [Fluoropolymer two-coat design series color system] [Fluoropolymer two-coat aurora color system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and Mesa profile

- 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system].
- 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
3. Panel Width: 36 inches (914 mm)
4. Panel Thickness: [3 inch (76 mm)] [4 inch (102 mm)] [5 inch (127 mm)] [6 inch (152 mm)] [as shown on drawings]. Panel thickness measured from inside skin to top of high cell.
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints. For actual overall R and U values, refer to the Technical Bulletins on metlspan.com
- H. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of flat exterior metal sheet with heavy, stucco finish, and interior metal sheet with a light mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
 1. Basis of Design: Ceco, CF Tuff Wall
 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [24 gauge] [22 gauge] thickness, with stucco embossed surface
 - 1) Finish: [Fiber-reinforced polymer coating]
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]

- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and a Light Mesa profile
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
- 3. Panel Width: [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]
- 4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [as shown on drawings]
- 5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
- 6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- I. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of flat exterior metal sheet with the look of precast concrete finish, and interior metal sheet with a light mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
 - 1. Basis of Design: Ceco, CF Tuff-Cast
 - 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, preprimed by the coil-coating process per ASTM A 755/A 755M

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [24 gauge] [22 gauge] thickness, with stucco embossed surface
 - 1) Finish: [Fiber-reinforced polymer coating]
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]

- b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and a Light Mesa profile
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system].
 - 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color]
- 3. Panel Width: [36 inches (914 mm)] [42 inches (1067 mm)] [as shown on drawings]
- 4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [as shown on drawings]
- 5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
- 6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.
- J. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of exterior metal sheet and interior metal sheet with matching Mesa 4 by 1/8 inch (102 by 3 mm) or Light Mesa 4 by 1/16 inch (102 by 1.5 mm) o.c. profile. Factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.
 - 1. Basis of Design: Ceco, CF Partition
 - 2. G-90 galvanized coated steel conforming to ASTM A 653 and/or AZ50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, prepainted by the coil-coating process per ASTM A 755/A 755M or 3042B stainless steel ASTM A 240.

Specifier: Prior to selecting metal thickness and panel thickness below, consult manufacturer's span tables and review selection against panel thickness requirements and span condition. Select appropriate panel configuration to meet requirements of design wind pressure. **Important: Consult this document when specifying gauge with the intent that it meet a prescriptive decimal thickness requirement in addition to strength performance requirements. (Click Here To View)**

- a. Exterior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and Mesa or Light Mesa profile.
 - 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].

- 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
 - b. Interior Face Sheet: [26 gauge] [24 gauge] [22 gauge] thickness, with stucco embossed surface and Mesa or Light Mesa profile.
- 1) Finish: [Polyester two-coat system] [Modified silicone-polyester two-coat system] [Fluoropolymer two-coat system] [Vinyl plastisol two-coat system] [304 Stainless Steel] [316 Stainless Steel].
- 2) Color: [As indicated] [As selected by Architect from manufacturer's standard colors] [Match Architect's custom color].
- 3. Panel Width: [36 inches (914 mm)] [42 inches (1067 mm)] [44.5 inches (1130 mm)] [as shown on drawings]
- 4. Panel Thickness: [2 inch (51 mm)] [2.5 inch (64 mm)] [3 inch (76 mm)] [4 inch (102 mm)] [5 inch (127 mm)] [6 inch (152 mm)] [as shown on drawings].
- 5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
 - a. Closed Cell Content: 90% or more as determined by ASTM D 6226
 - b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 15 psi as determined by ASTM D 1621
 - c. Minimum Density: 2.0 pcf (32 kg/m³) as determined by ASTM D 1622

Specifier: Insert corresponding panel thickness R-value below if using IMP as continuous insulation or U-factor if treating as an assembly for code compliance purposes. Refer to Ceco literature and Paragraph 2.2 J above. Coordinate with information on drawings. Consult Ceco representative for details.

- d. Thermal Resistance R-Value: [insert corresponding value] deg. F * hr * sq. ft./Btu (K * sq. m/W) per ASTM C 518 at 75 degrees Fahrenheit mean temperature.
- 6. Heat Transfer Coefficient (U-factor): [insert corresponding value] Btu/hr * sq. ft. * deg. F (W/K * sq. m) as determined by ASTM C 1363 at 75 degrees Fahrenheit mean temperature. Tested specimen must include at least two engaged side joints.

2.4 METAL WALL PANEL ACCESSORIES

- A. General: Provide complete metal panel assemblies incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings. Provide required fasteners, closure strips, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panels.
- C. Panel Clips: ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating, one-piece, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
- D. Panel Fasteners: Self-drilling or Self-tapping screws and other acceptable fasteners recommended by metal panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal panels by means of factory-applied coating, with weathertight resilient washers.
- E. Joint Sealers:
 - 1. Sealants: Provide Tape Mastic Sealants, Non-skinning sealants, and Urethane Sealants in accordance with manufacturers standards

2. Vertical Joint Gasket: Manufacturers standard EPDM gasket. Color: [Black] [Or custom color].

2.5 FABRICATION

- A. General: Provide factory fabricated and finished metal panels, trim, and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Fabricate metal panel joints configured to accept sealant providing weathertight seal.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings.

2.6 FINISHES

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.
- B. Exterior Face Sheet Coil-Coated Finish System
 1. Silicone-Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat, [meeting solar reflectance index requirements].
 - a. Basis of Design: Ceco, Silicone Polyester.

Specifier: [Ceco's fluoropolymer coatings are based on Arkema, Inc. Kynar 500 and Solvay Solexis Hylar 500 PVF2 resins.](#)

2. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621, [meeting solar reflectance index requirements].
 - a. Basis of Design: Ceco, Fluoropolymer.

Specifier: [Select interior face sheet finish from the options below; Igloo White system is standard unless otherwise indicated. Verify with Ceco; not all finishes are available on all products.](#)

- C. Interior Face Sheet Coil-Coated Finish System
 1. Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat
 - a. Basis of Design: Ceco, Igloo White
 2. Silicone-Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat
 - a. Basis of Design: Ceco, Silicone Polyester
 3. Fluoropolymer Two-Coat System: 0.2-mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat
 - a. Basis of Design: Ceco, Fluoropolymer
 4. Vinyl Plastisol Two-Coat System: 0.2 mil primer with 4 mil high solids plastisol finished with PVC technology.
 - a. Basis of Design: Ceco, Vinyl
 5. 304 and 316 Stainless Steel: 2B 304 or 2B 316 Stainless Steel.
 - a. Basis of Design: Ceco, Stainless Steel

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine metal panel system substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panels.

1. Inspect framing that will support insulated metal panels to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to metal panel manufacturer and installer. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal panels.
2. Panel Support Tolerances: Confirm that metal panel supports are within tolerances acceptable to metal panel manufacturer but not greater than the following:
 - a. 1/4 inch (6 mm) in 20 foot (6100 mm) in any direction.
 - b. 3/8 inch (9 mm) over any single wall plane.
 - c. Girt Spacing 8 feet (2438 mm) or more: 1/4 inch (6 mm) out only.
 - d. Girt Spacing Less Than 8 feet (2438 mm): 1/8 inch (3 mm) out only.
 - e. CF Architectural girt spacing less than 4 feet (1219 mm): 1/16 inch (1.5 mm) inch out only.
- B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal panel installation.

3.2 METAL PANEL INSTALLATION

- A. Concealed-Fastener Insulated Metal Panels with foam core: Install metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal panels in orientation, sizes, and locations indicated. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Attach panels to metal framing using screws, fasteners, sealants, and adhesives recommended for application by metal panel manufacturer.
 1. Fasten metal panels to supports with fasteners at each location indicated on approved shop drawings, at spacing and with fasteners recommended by manufacturer.
 2. Cut panels in field where required using manufacturer's recommended methods.
 3. Provide weatherproof jacks for pipe and conduit penetrating metal panels.
 4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by metal panel manufacturer
- C. Attach panel flashing trim pieces to supports using recommended fasteners and joint sealers
- D. Joint Sealers: Install sealants where indicated and where required for weatherproof performance of metal panel assemblies
 1. Seal panel base assembly, openings, panel head joints, and perimeter joints using sealants indicated in manufacturer's instructions

Specifier: Retain optional wall panel vapor seal bead below when recommended based upon architect's water vapor transmission analysis.

2. Seal wall panel joints; apply continuously without gaps in accordance with manufacturer's written instructions, approved shop drawings, and project drawings
3. Prepare joints and apply sealants per requirements of Division 07 Section.

3.3 ACCESSORY INSTALLATION

- A. General: Install metal panel accessories with positive anchorage to building and weather tight mounting; provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.

3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.

3.4 FIELD QUALITY CONTROL

Specifier: Retain one or both paragraphs below and edit options when scope and complexity of insulated metal panel installation justifies independent inspection and testing provisions.

- A. Testing Agency: [Owner will engage] [Engage] an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.
- B. Water-Spray Test: After completing portion of metal panel assembly including accessories and trim, test 2-bay area selected by Architect for water penetration, according to AAMA 501.2.

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective films immediately in accordance with metal panel manufacturer's instructions. Clean finished surfaces as recommended by metal panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION