

**SECTION 074120**

METAL WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Foamed insulation core horizontal and vertical metal wall panel assembly with integral reveals and profiled panels, and related trim and accessories.
- B. Secondary metal framing support system.

1.2 RELATED SECTIONS

- A. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal copings, flashings, reglets and roof drainage items.
- B. Division 07 Section "Joint Sealants" for field-applied joint sealants.

1.3 REFERENCES

- A. American Architectural Manufacturer's Association (AAMA):
  - 1. AAMA 501.1 - Standard Test Method for Exterior Windows, Curtain Walls and Doors for Water Penetration Using Dynamic Pressure.
  - 2. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
  - 3. AAMA 508-07 - Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
  - 4. AAMA 605.2 - Voluntary Specification for High Performance Organic Coatings.
  - 5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. American Society of Civil Engineers (ASCE):
  - 1. ASCE 7- Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM):
  - 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 C 1363 - Standard Test Method for thermal performance of building materials and envelope assemblies by means of a Hot Box Apparatus.
  - 4. ASTM C 645 - Specification for Nonstructural Steel Framing Members.
  - 5. ASTM C 920 - Specification for Elastomeric Joint Sealants.
  - 6. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
  - 7. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials.

8. ASTM E 96 - Test Methods for Water Vapor Transmission of Materials.
  9. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials.
  10. ASTM E 283 - Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen.
  11. ASTM E 330 - Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  12. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  13. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
  14. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- D. Factory Mutual Global (FMG):
1. ANSI/FMG 4880 Standard for Evaluating Insulated Wall & Roof/Ceiling Assemblies.
- E. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA):
1. Architectural Sheet Metal Manual.
- F. Underwriters Laboratories, Inc. (UL):
1. UL 263 - Fire Resistance Tests of Building Construction and Materials.
  2. UL 723 - Test for Surface Burning Characteristics of Building Materials.
  3. Fire Resistance Directory.
  4. UL 1715 Room Corner Test.
- G. MBDC Cradle to Cradle Certification.
- 1.4 PERFORMANCE REQUIREMENTS
- A. Air Infiltration: Maximum 0.06 cfm/sf (0.3 L/s per sq. m) per ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sf (300 Pa), using minimum 10 feet by 10 feet (3050 mm by 3050 mm) test panel that includes horizontal and vertical joints.
- B. Water Penetration:
1. Wall panel system for this application shall perform to ASTM E331 for static pressures and AAMA 501.1 for dynamic pressures at 15psf.
  2. Standard horizontal and vertical joints shall perform to ASTM E331 for static pressure at 40 psf on a minimum 10 foot by 10 foot laboratory mockup.
- C. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, per ASTM E 72:
1. Wind Loads: Determine loads based on uniform pressure calculated per IBC

2012.

2. Deflection Limits: Withstand test pressures of inward and outward wind-load design pressures with maximum deflection of L/180 of the span with no failure.
3. Secondary Framing: Design secondary framing system according to AISI "Standard for Cold-Formed Steel Framing - General Provisions." Provide bearing surface for metal wall panels at the following locations:
  - a. Horizontal Panel System: At vertical joints 4 inches minimum (102 mm).
- D. Seismic Performance: Comply with ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

#### 1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets for metal wall panels and accessories.
- B. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
- C. Shop Drawings: Prepared by manufacturer or factory trained authorized dealer. Include elevations showing metal wall panels, and details of each condition of installation and attachment. Indicate coordination dimensions related to structural support system elements provided by others.
  1. Include structural data indicating compliance with performance requirements.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Qualification Information: For Installer firm, proof of installer's manufacturer trained field supervisor.
- G. Warranty: Submit proposed warranty meeting requirements of this Section.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer/Source: Provide metal wall panel system and panel accessories from a single manufacturer.
- B. Installer Qualifications: Experienced Installer with minimum of 5 successful completed projects of similar materials and scope, approved by manufacturer, and employing workers trained by manufacturer to install specified products.
- C. Calculations supporting structural performance of the wall panels shall be prepared by a professional structural engineer.
- D. Fire Resistance Ratings: Where indicated by design designations, provide metal wall panels tested per ASTM E 119 or UL Standard 263 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Fire-Test-Response Characteristics per ASTM E 84 or UL Standard 723:
  1. Flame spread index: 25 or less.
  2. Smoke developed index: 450 or less.

- F. FMG Listing: Class 1 Insulating Wall or Ceiling Panel per FMG 4880.
- G. UL Listing for UL 1715 room corner test.
- H. NFPA 286 room corner test.
- I. NFPA 285 ISMA test.
- J. Substitutions: No substitution will be considered unless the architect has received a request for approval at least ten days prior to the established bid date. Evidence shall be submitted to demonstrate equivalency to the products and performance levels specified. The written request shall include:
  - 1. A complete description of the substitution, including details of all transition conditions at panel termination points.
  - 2. Independent test reports verifying compliance with the performance requirements.
  - 3. A detailed list of each item that does not fully comply with the specifications.
  - 4. A letter indicating that the substitution is a foamed-in-place panel.
  - 5. A letter stating that the manufacturer or wall systems contractor proposing the substitution will pay additional costs incurred by subcontractors affected by the proposed substitution

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect metal wall panels during shipping, handling, and storage to prevent staining, denting, or other visible damage. Deliver, unload, store, and erect metal wall panels and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.

#### 1.8 WARRANTY

- A. Standard Manufacturer's Warranty: Manufacturer shall warrant for a period of two years that the wall system materials will be free from defects. The wall systems contractor shall warrant for a period of one year that the installation workmanship will be free from defects.
- B. Special Panel Finish Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall panels that evidence deterioration of fluoropolymer finish within 20 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CENTRIA Architectural Systems or approved equal.
- B. Bidders that are using materials supplied by a manufacturer other than CENTRIA shall list the material supplier/manufacturer of the metal walls panels, provide a sample of the panel including a complete side joint with clip, and provide a letter signed and sealed by a professional engineer registered in the jurisdiction of the project indicating that the proposed products meet or exceed specified requirements. Manufacturers unable to provide this information prior to the time of bid will not be considered.
- C. Requests for substitutions will be considered in accordance with provisions

of Paragraph 1.6 J.

## 2.2 FOAMED INSULATION CORE METAL WALL PANELS

### A. Panel System Product:

1. Basis of Design: CENTRIA, FormaWall Dimension Series 2 (2 inches (51 mm) thick panel) Horizontal Flat panel system.
2. Factory-foamed horizontal wall panel system consisting of an exterior metal sheet with interior metal liner panel, bonded to factory foamed-in-place core in thermally-separated profile, with factory sealed tongue-and-groove and rainscreen-design pressure-equalized-chamber horizontal joint, and attached to supports using concealed fasteners.
3. Foamed Insulation Core: Urethane or isocyanurate, density 2.7 lb/cu. ft. min (43.4 kg/cu. m), min compressive strength 20 lb/sq. in. (137.9 kPa), and containing no CFC or HCFC compounds.
4. Thermal performance of the wall panels shall be based on tests in accordance with ASTM C236 corrected to 15 mph outside and still air inside. Tests shall include side-joint, standard fastening and integral reveals or profiling. Where reveals exceed the standards, the manufacturer shall provide similar testing to document any adjustments required to the standard conditions.
  - a. R value for Series 2 flat panel shall be 14.
5. Panel Sealant/Vapor Seal: Factory-applied non-curing butyl.

### B. Steel Sheet Exterior and Interior Facing: Contractor engineered panel meeting requirements indicated in Performance Requirements Article.

### C. Face Sheet:

1. Steel Thickness: 22 gage (0.030 inches (0.76 mm)).
2. Surface: Smooth.

### D. Exposed Coil-Coated Finish:

1. Urethane two-Coat Corrosion and Abrasion Resistant System: 3.0 mil barrier coat primer with 1.5 mil urethane color coat.
  - a. Basis of Design: CENTRIA Versacor Ultra TF.
2. Color: As selected by Architect from manufacturer's standard colors.

### E. Liner Sheet: 22 gage G-90 coating, embossed, planked with 0.2 mil primer and 0.6 mil acrylic finish.

### F. Exposed Trim and Fasteners: Match panel finish.

### G. Panel System Design:

1. Panel Joinery:
  - a. Horizontal Panel Joint Configuration: Rain screen design with equalized pressure chamber.
2. Panel Width and Length: Refer to the Drawings.
3. Panel Reveal Width: Horizontal panel reveal width to be as shown on Drawings.
4. Profile Faced Panels: As indicated on the Drawings

## 2.3 MATERIALS

- A. Metallic-Coated Steel Face Sheet, Coil Coated: ASTM A 755/A 755M.
  - 1. Zinc-Coated (Galvanized) Steel Face Sheet: ASTM A 653/A 653M, G90, structural quality.

## 2.4 ACCESSORIES

- A. Metal Wall Panel Accessories:
  - 1. Provide complete metal wall panel assembly including trim, copings, fascia, parapet caps, soffits, sills, inside and outside corners, jambs, and miscellaneous flashings. Include required fasteners, gaskets, closure strips, and sealants.
  - 2. Fabricate accessories listed above from aluminum extrusions, 6063-T5 unless noted otherwise on the Drawings.
  - 3. Finish exposed trim and extrusions to match panels.
  - 4. Provide extrusions with thermal breaks.

## 2.5 MISCELLANEOUS MATERIALS

- A. Sealant: Synthetic non-skinning butyl rubber sealant, as recommended by panel manufacturer, for metal wall panel assemblies to remain watertight.
- B. Fasteners: Self-tapping screws, bolts, nuts, and other acceptable fasteners recommended by panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal wall panels by means factory-applied coating.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine metal wall panel supports, substrates, and conditions for compliance with requirements for installation tolerances and other conditions affecting work.
  - 1. Verify that structural panel support members and anchorage have been installed within the following tolerances:
    - a. Plus or minus 1/4 inch (6.35 mm) in 20 feet (6096 mm).
    - b. Plus or minus 1/2 inch (12.7 mm) across building elevation.
    - c. Plus or minus 1/8 inch (3.17 mm) within 5 feet (1524 mm) of any change in plane.
- B. Correct out of tolerance work and deficient conditions prior to proceeding with metal wall panel installation

### 3.2 PREPARATION

- A. Install miscellaneous framing and anchorage according to ASTM C 754, metal wall panel manufacturer's written recommendations, and approved shop drawings.

### 3.3 METAL WALL PANEL INSTALLATION

- A. Install metal wall panels and accessories in accordance with manufacturer's recommendations and approved shop drawings.

- B. General: Install metal wall panels in orientation, sizes, and locations indicated. Anchor metal wall panels and other components securely in place. Provide for thermal and structural movement.
  - 1. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as approved by manufacturer.
  - 2. Field cutting of metal wall panels is not permitted.
  - 3. Fasten metal wall panels to supports with concealed clips at each joint at location, spacing, and with fasteners recommended by manufacturer. Install clips to supports with self-tapping fasteners.
  - 4. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- C. Fasteners for Steel Wall Panels:
  - 1. Exterior: Stainless-steel.
- D. Metal Protection: Provide metal wall panel manufacturer's recommended permanent separation material where dissimilar metals will contact each other or corrosive substrates.
- E. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies.
  - 1. Seal metal wall panel end laps to supports or back-up flashing sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer. Do not install sealant in locations that will interfere with drainage of pressure-equalized panel chambers.
  - 2. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

### 3.4 ACCESSORY INSTALLATION

- A. General: Install metal wall panel accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install related flashings and sheet metal trim per requirements of Division 07 Section "Sheet Metal Flashing and Trim."
  - 2. Install components required for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
  - 3. Comply with performance requirements and manufacturer's written installation instructions.
  - 4. Provide concealed fasteners except where noted on approved shop drawings.
  - 5. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

### 3.5 FIELD QUALITY CONTROL

- A. Testing Agency: 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 wall panel assembly

including accessories and trim, test 2-bay area selected by Architect for water penetration, according to AAMA 501.2. Wall areas should be tested as a routine QA procedure. Areas erected by each crew should be checked at various stages of erection.

- C. Manufacturer's Field Service: Engage a service representative authorized by metal wall panel manufacturer to inspect completed installation. Submit written report. Correct deficiencies noted in report.

### 3.6 CLEANING AND PROTECTION

- A. Remove temporary protective films. Clean finished surfaces as recommended by metal wall panel manufacturer. Clear weep holes and drainage channels of obstructions, dirt, and sealant. Maintain in a clean condition during construction.
- B. Replace damaged panels and accessories that cannot be repaired by finish touch-up or minor repair.

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