

## SECTION 07413

### METAL-FACED COMPOSITE WALL PANELS

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

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

##### 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Metal-faced composite wall panels.
  - 2. Manufactured moldings for panel installations.
  - 3. Prefinished aluminum trim and flashing in conjunction with panels.
  - 4. Sealant for panel joints and panel to adjacent construction materials.
- B. Related Sections include the following:
  - 1. Division 6 Section "Rough Carpentry" for plywood wall sheathing supporting metal wall panels and building paper covering sheathing.
  - 2. Division 7 Section "Metal Wall Panels" for factory-formed lap-seam metal wall panels.
  - 3. Division 7 Section "Sheet Metal Flashing and Trim" for fasciae, flashings and other sheet metal work not part of metal wall panel assemblies.
  - 4. Division 7 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

##### 1.03 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal-faced composite wall panel and accessory. Include manufacturer's installation instructions.
- C. Shop Drawings: Show fabrication and installation layouts of metal-faced composite wall panels; details of edge and corner conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.
  - 1. Accessories: Include details of flashing and trim, at a scale of not less than 3 inches per 12 inches.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
  - 1. Metal-Faced Composite Wall Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal-faced composite wall panel accessories.
  - 2. Trim and Closures: 12 inches long. Include fasteners and other exposed accessories.
  - 3. Accessories: 12-inch-long Samples for each type of accessory.
  - 4. Exposed Sealants: For each type and color of joint sealant required. Install joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of metal-faced composite wall panels adjacent to joint sealants.
- E. Qualification Data: For Installer and fabricator.
- F. Maintenance Data: For metal-faced composite wall panels to include in maintenance manuals.

- G. Warranties: Special warranties specified in this Section.

#### 1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer and who has completed wall panel projects similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
- B. Fabricator Qualifications: Certified by metal-faced composite wall panel manufacturer to fabricate manufacturer's wall panel system.
- C. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal-faced composite wall panels.
  - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings." Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
  - 1. Meet with Owner, Architect, metal-faced composite wall panel Installer, metal-faced composite wall panel manufacturer's representative, and installers whose work interfaces with or affects metal-faced composite wall panels including installers of lap-seam metal wall panels, metal trim and flashing, doors, windows, storefront, and louvers.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review methods and procedures related to metal wall panel installation, including manufacturer's written instructions.
  - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  - 5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
  - 6. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
  - 7. Review temporary protection requirements for metal wall panel assembly during and after installation.
  - 8. Review mock-up panel.
  - 9. Review wall panel observation and repair procedures after metal wall panel installation.
  - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal-faced composite wall panels, and other manufactured items so as not to be damaged or deformed. Package metal wall panels for protection from dirt, road grime, and similar soiling and weather affects during transportation and handling.
- B. Handling: Unload, store, and erect metal-faced composite wall panels in a manner to prevent bending, warping, twisting, and surface damage. Cover fork truck tines and use protected rigging lifting devices to protect panels from marring and damage.
- C. Store metal-faced composite wall panels vertically, covered with suitable weathertight and ventilated covering. Store metal-faced composite wall panels to ensure dryness, with positive slope for drainage of water. Do not store metal-faced composite wall panels in contact with other materials that might cause staining, denting, or other surface damage. Do not allow storage space to exceed 120 deg F.
- D. Protect strippable protective covering on metal-faced composite wall panels from exposure to sunlight and high humidity, except to extent necessary for period of metal-faced composite wall panel installation.

## 1.06 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal wall panels to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before metal wall panel fabrication and indicate measurements on Shop Drawings.

## 1.07 COORDINATION

- A. Coordinate metal-faced composite wall panel assemblies with rain drainage work, flashing, trim, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

## 1.08 WARRANTY

- A. General: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 10years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 MANUFACTURERS

- A. Product: Subject to compliance with requirements, provide one of the following products:
  - 1. Laminators Incorporated; Omega-Lite.
  - 2. Alusuisse Composites, Inc.; Alucobond.
  - 3. Mitsubishi Chemical America, Inc.; Alpolic.
  - 4. Reynolds Metal Company, Reynobond.

### 2.02 PANEL MATERIALS

- A. Aluminum Sheet: Coil-coated sheet, ASTM B 209, alloy as standard with manufacturer for painted finishes, with temper as required to suit forming operations and structural performance required.
  - 1. Surface: Smooth, flat finish.
  - 2. Exposed Finishes: Apply the following coating, as specified or indicated on Drawings.
    - a. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
      - 1) Fluoropolymer Two-Coat System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
  - 3. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and finish indicated.
- C. Panel Sealants:
  1. Joint Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal wall panels and remain weathertight; and as recommended in writing by metal wall panel manufacturer.

## 2.03 MISCELLANEOUS MATERIALS

- A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal wall panels by means of plastic caps or factory-applied coating.
  1. Exposed Fasteners for Composite Panels: Stainless steel.
  2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
  3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
- B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

## 2.04 METAL-FACED COMPOSITE WALL PANELS

- A. General: Provide factory-formed and -assembled metal-faced composite wall panels fabricated from two metal facings bonded, using no glues or adhesives, to solid extruded thermoplastic core; formed into profile for installation method indicated. Include attachment system components and accessories required for weathertight system.
- B. Aluminum-Faced Composite Wall Panels: Formed with 0.020-inch-thick, coil-coated aluminum sheet facings.
  1. Panel Thickness: 0.236 inch.
  2. Core: Standard.
  3. Exterior Finish: Fluoropolymer.
    - a. Color: As selected by Architect from manufacturer's full range.
- C. Attachment System Components for Wall Panels: Formed from extruded aluminum
  1. Include manufacturer's standard panel clips, and anchor system.
  2. Molding Installation Type: Provide 1-piece, extruded aluminum molding system with reveal for use on flat surfaces. Provide matching outside corners, inside corners, and J-moldings.
    - a. Contractor's Option: Provide extruded aluminum rout and return concealed fastening system with prefinished start molding to match panels. Clip and caulk system is not acceptable.
- D. Flashing and Trim: Fabricate from 0.032 inch minimum thickness aluminum sheet with same finish, and color as facings of adjacent composite panels, unless otherwise indicated.
  1. Exterior Corners: Factory formed corners.
  2. Provide a lap strap under flashing at abutted conditions and seal lapped surfaces with a full bed of non-hardening sealant.
- E. Accessories: Unless otherwise specified, provide components required for a complete wall panel assembly including trim, sills, sealants, and similar items. Match materials and finishes of panels.
  1. Joint Sealant: One-part silicone-rubber sealant as recommended by panel manufacturer.

## 2.05 FABRICATION

- A. General: Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

1. Fabricate wall panels with panel stiffeners as required to maintain fabrication tolerances.
- B. Fabricate metal wall panels in a manner that eliminates condensation on interior side of panel and with joints between panels designed to form weathertight seals.
- C. Where indicated, fabricate metal wall panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will minimize noise from movements within panel assembly.
- D. Metal-Faced Composite Wall Panels: Factory form panels in a continuous process with no glues or adhesives between dissimilar materials. Trim and square edges of sheets with no displacement of face sheets or protrusion of core material.
1. Fabricate panels with panel stiffeners, as required to comply with deflection limits, attached to back of panels with structural silicone sealant or bond tape.
  2. Fabricate panels with sharply cut edges, with no displacement of face sheets or protrusion of core material.
  3. Dimensional Tolerances:
    - a. Length: Plus 0.375 inch.
    - b. Width: Plus 0.188 inch.
    - c. Thickness: Plus or minus 0.008 inch.
    - d. Panel Bow: 0.8 percent maximum of panel length or width.
    - e. Squareness: 0.2 inch maximum.
- E. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.
  3. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
  4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal wall panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

## 2.06 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of work.

1. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
  2. If unacceptable conditions are encountered, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
  3. Coordinate installation of building paper behind metal wall panels to assure a weather tight installation.
- B. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- 3.02 PREPARATION
- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
- B. Install flashings and other sheet metal to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."
- C. Miscellaneous Framing: Install base angles, sills, furring, and other miscellaneous wall panel support members and anchorage according to ASTM C 754 and metal wall panel manufacturer's written recommendations.
- 3.03 METAL WALL PANEL INSTALLATION, GENERAL
- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cutting of metal wall panels by torch is not permitted.
  2. Shim or otherwise plumb substrates receiving metal wall panels.
  3. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Predrill panels.
  4. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather barrier and flashings that will be concealed by metal wall panels are installed.
  5. Install screw fasteners in predrilled holes.
  6. Install flashing and trim as metal wall panel work proceeds.
  7. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
  8. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  9. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Fasteners for Aluminum Wall Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior and aluminum or galvanized steel fasteners for surfaces exposed to the interior. Exposed fasteners shall be finished to match adjacent panel finish.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal wall panel manufacturer.
1. Coat back side of aluminum wall panels with bituminous coating where wall panels will contact wood, ferrous metal, or cementitious construction.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal wall panel manufacturer.

1. Seal metal wall panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal wall panel manufacturer.
2. Prepare joints and apply sealants to comply with installation requirements in Division 7 Section "Joint Sealants."

### 3.04 METAL-FACED COMPOSITE WALL PANEL INSTALLATION

- A. General: Install attachment system required to support wall panels and to provide a complete weathertight wall system, including perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
  2. Do not begin installation until weather barrier and flashings that will be concealed by composite panels are installed.
- B. Track-Support Installation: Provide manufacturer's standard horizontal and vertical tracks that provide support and complete secondary drainage system, draining to the exterior at horizontal joints. Install support system at locations, spacings, and with fasteners recommended by manufacturer. Attach panels to wall by interlocking tracks with perimeter extrusions attached to wall panels. Fully engage integral gaskets and leave horizontal and vertical joints with open reveal.
1. Attach flush wall panels to perimeter extrusions by engaging panel edges and by attaching with manufacturer's standard structural silicone adhesive.
  2. Install wall panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.
  3. Do not apply sealants to joints, unless otherwise indicated on Drawings.
- C. Accessories: Install components required for a complete wall panel assembly including trim, flashings, sealants, and similar items.
1. Fasten moldings or receptors to substrate using concealed fasteners recommended by manufacturer. Intersections of reveal moldings shall be mitered to provide continuous unbroken groove in horizontal and vertical direction.
  2. Apply panel adhesive to back of panels staggered and at 16 inches o.c.
  3. For rout and turn method, install panels to receptors with concealed fasteners.
  4. Apply a thick bead of silicone caulk into moldings so excess is squeezed out, fully filling panel edge to be watertight. Remove excess caulk with non-marking plastic scraper and clean panel with cloth and required solvent cleaner.
- D. Joint Sealers: Install sealants where indicated and where required for weatherproof performance of wall panel assemblies. Install sealant around window units, storefront, and at interface with other dissimilar materials.
- E. Wall Panels: Apply elastomeric sealant continuously between metal base channel (sill angle) and substrate, and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up according to sealant manufacturer

### 3.05 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. 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.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, SMACNA's "Architectural Sheet Metal Manual," and approved Shop Drawings. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install

sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
3. Exposed fasteners shall match color and finish of material being secured.

### 3.06 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 feet, nonaccumulative, on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### 3.07 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.
- B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION