

SECTION 07412 – COMPOSITE METAL WALL PANEL SYSTEM (Accu-Trac® Low Profile DS)

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Metal-faced composite wall panels and related components.
- B. Related Sections include the following:
 - 1. Division 5 Section “Cold-Formed Metal Framing” for secondary support framing supporting metal wall panels.
 - 2. Division 7 Section _____ for vapor barrier and/or moisture barrier.

1.3 DEFINITIONS

- A. Metal Wall Panel Assembly: Metal wall panels, attachment system components and accessories necessary for a complete weather tight system.

1.4 PERFORMANCE REQUIREMENTS

- A. **Provide:** Metal wall panel assemblies that comply with performance requirements specified within this section. Manufacturers’ standard assemblies indicated for this Project, shall have been tested by a certified (3rd party) testing and inspecting agency.
- B. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 330-02:

1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Uniform pressure of 50 psf, inward or outward.
 2. Deflection Limits: Metal wall panel assemblies shall be shown to withstand test pressures with deflection no greater than 1/180 perimeter and L/60 of the span and no evidence of material failure, structural distress, or permanent deformation exceeding 0.4 percent of the clear span.
- C. Surface-Burning Characteristics: Provide metal wall panels with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 under a testing and inspecting agency acceptable to authorities having jurisdiction:
1. PE Core:
 - a. Flame-Spread Index: 0
 - b. Smoke-Developed Index: 0
- OR**
2. FR Core:
 - a. Flame-Spread Index: 0
 - b. Smoke-Developed Index: 10

1.5 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal wall panel and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 1. Accessories: Include details of all integral panel components and their interface with adjacent materials.
 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. (Optional)
- C. Samples for Initial Selection: For each type of metal wall panel indicated with factory-applied color finishes.

1. Include MCM manufacturer's standard color charts showing full range of colors available, in specified finish type, for the metal panel system.
- D. Samples for Verification:
1. Metal Wall Panels: Two (2) each, six inches by ten inches minimum, panel samples with joinery included as part of the sample.
 2. Accessories: Twelve-inch long samples for each type of accessory.
- E. Compatibility and Adhesion Test Reports: From sealant manufacturer indicating the following:
1. Materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants.
 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Maintenance Data: For metal wall panels to include in maintenance manuals.
- G. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Panel System Manufacturer:
1. System Manufacturer responsibilities include engineering and fabricating metal wall panel assemblies and when required, provide professional engineering services and stamp, showing engineering responsibility.
 2. Panel Manufacturer shall have a minimum of 5 years experience with the fabrication of MCM panels.
 3. Drawing Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by the manufacture, not a subcontractor.
- B. Fabrication Location: Panels to be factory assembled at manufacturer's facility. Panels fabricated on site shall not be permissible.
- C. Installer: MCM installers shall be certified by MCM manufacture.
- D. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated, as documented according to ASTM E 548.
- E. Source Limitations: Obtain each type of metal wall panel through one source from a single fabricator.

- F. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal wall panels and are based on the specific system indicated.
- G. Manufacturer to have established a written quality assurance program. QA program to be monitored and audited by a third party independent inspection agency.
- H. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section “Project Management and Coordination”. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
 - 1. Meet with Owner, Architect, Owner’s insurer if applicable, testing and inspecting agency representative, metal wall panel installer, metal wall panel manufacturer’s representative, structural-support installer, and installers whose work interfaces with or affects metal wall panels including installers of doors, windows, 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 panels installation, including fabricator’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 wall panel observation and repair procedures after metal wall panel installation.
 - 9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal wall panels, and other manufactured items so as not to be damaged or deformed. Package metal wall panels for protection during transportation and handling.
- B. Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.

- C. Stack metal wall panels on platforms, pallets, or within crates, covered with suitable weathertight and ventilated covering. Store metal wall panels to ensure dryness, with positive slope for drainage of water. Do not store metal wall panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Leave protective strippable film as applied by MCM sheet manufacturer on panel face throughout fabrication and installation. Remove only after panels are installed and not subject to damage.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before metal wall panel fabrication, as the project schedule permits.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal wall panel assemblies that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:

- a. Structural failures, including rupturing, cracking, or puncturing.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

- 2. Warranty Period: Two (2) years from date of Substantial Completion.

- 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. Panel Finish: Finish deterioration shall be defined as:

- 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: Twenty (20) years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MCM Sheet Manufacturer:

A. Products from the following manufacturers will be acceptable provided that they meet the requirements of this specification:

- a. ALFREX FR, by ALFREX
- b. Alpolic, by Mitsubishi Plastics Composites America, Inc.
- c. Alucobond, by 3A
- d. Reynobond, by Alcoa
- e. Larson, by Alucoil

2.2 Panel System Manufacturer:

A. The following requirements apply for product selection:

1. Basis of Design: Altech Panel Systems (678-721-4569) or (800-684-6178). System: Accu-Trac® Low Profile DS
2. Subject to compliance with all the requirements of the specifications, provide products by manufacture noted above. Other fabricators must be approved by architect prior to bid, but in no case shall the requirements of this specification not be met.

2.3 PANEL MATERIALS:

A. Composite Metal Panel System:

1. Drain & Back Ventilated Rain Screen / Dry Joinery System

- a. Panel system shall be nominal one and one half (1 ½”) with shop applied, concealed continuous perimeter extrusions. (Note: Intermittent extrusions at panel perimeter are not acceptable.) Panel system shall employ shop attached clips with sliding capability for exact location over supports, while allowing for thermal movement in all four directions. To minimize thermal stresses on the panels, fixed attachment systems that don't allow free movement are not permissible.
- b. Panel system shall have minimal 1/2" or as indicated at the drawings vertical and horizontal joinery. Panel system shall be of rainscreen type with no exposed sealants permissible in the panel to panel joinery. Caulking is allowed only for non-exposed areas (e.g. top of roof coping). See Section _____ for caulking specifications
- c. Panel joints to utilize an integral spline of the same composition as the panels. Splines to be held in place by slots in the perimeter panel

extrusions. Bonding of metal material within the joinery to simulate an encapsulated spline is not permissible.

- d.** All rivets and / or fasteners that are used to attach the MCM sheet to the extrusions shall be countersunk, painted the same color as the panel and uniformly aligned both vertically and horizontally.
- e.** All internal weeps shall be baffled and aligned vertically
- f.** All panel corners shall be reinforced with aluminum angles
- g.** All routed folds at panel perimeter shall be reinforced with continuous extrusion system.
- h.** Panel system shall be provided in panel modules and lengths as indicated on the Contract drawings (up to 60” in the short direction and up to 240” in the long direction).
- i.** Panel system to be applied over properly installed vapor and/or moisture barrier. See Section _____.

B. MCM – Aluminum Composite Material: Formed with 0.020-inch thick coil coated aluminum sheet facings. MCM sheets to be formed in a continuous, inline process:

- 1. MCM Thickness: 0.157 inch (4 mm).
- 2. Core: Standard PE or FR as required.
- 3. Bond Strength: (ASTM D1781): 22 in-lb/in minimum.
- 4. Finish shall consist of a fluoropolymer paint finish that complies with AAMA 2605 standards.
- 5. Exposed Finish –
 - a.** 2-Coat Fluoropolymer:
 - (1) .8 mil nominal coil coated color coat with a Lumiflon based fluoropolymer paint finish. Color coat to be applied over .2 mil nominal coil coated primer coat.
 - (2) Colors to match architect’s samples (2 colors)OR
 - b.** 3-Coat Fluoropolymer:
 - (1) .8 mil coil coated clear coat with a Lumiflon based fluoropolymer paint finish applied over coat coated .8 mil color coat also with fluoropolymer paint finish. Fluoropolymer based coats to be applied subsequent to .2 mil nominal coil coated primer coat.
 - (2) Color to be selected by Architect from manufacturer’s standard metallic or non-metallic colors.OR
 - c.** 2-coat Mica:
 - (1) .8 mil nominal coil coated color coat containing pearlescent flakes within Lumiflon based fluoropolmer paint finish. Color coat to be applied over .2 mil coil coated primer coat.

- (2) Color to be as selected by Architect from manufacturer's standard Mica colors. OR.
- d. Clear Anodized

6. Backside/Concealed Finish: Backside of panels to be coated with manufacturer's standard backside washcoat.

2.4 ACCESSORIES

A. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including trim, copings, fasciae, splines, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels, unless otherwise indicated.

2.5 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. Form panel lines, breaks and angles to be sharp and true, with surfaces free from warp and buckle.

B. Fabricate metal wall panels in a manner that would weep any possible condensation to the exterior.

C. Provide panel profile for full length of panel.

D. Fabricate metal wall panel joints in a manner that will minimize noise from movements within panel assembly.

E. Metal-Faced Composite Wall Panels:

1. Fabricate panels, as required to comply with deflection limits, without the use of backside panel stiffeners.

2. Fabricate panels with sharply cut edges, with no displacement of face sheets or external exposure of core material.

3. Dimensional Tolerances:

a. Length: Plus 0.375 inch (9.5 mm).

b. Width: Plus 0.188 inch (4.8 mm).

c. Thickness: Plus or minus 0.008 inch (0.2 mm).

- d. Panel Bow: 0.8 percent maximum or panel length or width.
- e. Squareness: 0.2 inch (5 mm) maximum.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

PART 3 – EXECUTION

3.1 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 primary and secondary wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
 - 2. Examine solid wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 COMPOSITE WALL PANEL INSTALLATION, GENERAL

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on approved shop drawings. Install panels perpendicular to girts and subgirts, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
- B. Install attachment system required to support wall panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, panel clips, and anchor channels as may be required.
 - 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 water barrier and flashings that will be concealed by composite panels are installed. (See Section _____.)

C. Clip Installation: Attach integral panel clips to supports at locations, spacing's, and with fasteners recommended by system fabricator. Panel clips to be attached to panels at the factory in lieu of field applied.

1. Install wall panels to allow individual panels to “free float” and be installed and removed without disturbing adjacent panels. No joint sealants shall be utilized at typical vertical or horizontal joints. Panel joints shall include a spline fabricated from same ACM system as panels.

3.3 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4-inch in 20-feet (6-mm in 6-m), non-accumulative, on level, plumb, and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.4 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.

END OF SECTION 07412