

SECTION 074213.16 - METAL PLATE WALL PANELS.

**3A Composites Inc.**  
ALUCOBOND AXCENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Section 05 4000 – Cold-Formed Metal Framing: Wall panel substrates support framing.
- B. Section 06 1000 – Rough Carpentry: Plywood substrate wall sheathing.
- C. Section 07 2500 – Weather Barriers: Air and moisture barrier required as part of metal wall panel assembly.
- D. Section 07 6200 – Sheet Metal Flashing and Trim: Field formed flashings and other sheet metal work.
- E. Section 07 9200 – Joint Sealants: Perimeter sealant.

1.2 SUMMARY

- A. Aluminum metal plate wall panels

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **[Project site] <Insert location>**.
  - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Fabricator and Installer, metal sheet manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal 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. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
  - 4. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect Metal panels.
  - 5. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
  - 6. Review temporary protection requirements for metal panel assembly during and after installation.
  - 7. Review procedures for repair of panels damaged after installation.
  - 8. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
  - 1. Include fabrication and installation layouts of panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, and accessories; and special details.
  - 2. Accessories: Include details of the flashing, trim and anchorage, at a scale of not less than [1-1/2 inches per 12 inches] (1:10).
- C. Samples for Initial Selection: For each type of panel indicated with factory-applied color finishes.
  - 1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

Aluminum Panels: [ ] inches long by actual panel width. Include fasteners, closures, and other aluminum panel accessories. Submit custom color samples in paint manufacturer's standard size.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
- B. Product Data: Submit for each type of product indicated, include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal plate wall panel and accessory.
- C. Shop Drawings: Submit fabrication and installation layouts of metal plate wall panels; including details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - 1. Provide distinction between factory-assembled, shop-assembled, and field-assembled work.
  - 2. Provide details of following items at full scale.
    - a. Manufacturer's standard sheet metal trims.
    - b. Components of wall panel construction, anchorage methods, and hardware.
- D. Coordination Drawings: Submit exterior elevations, drawn to scale, that have the following items shown and coordinated with each other, using input from installers of the following items:
  - 1. Metal plate wall panels and attachments.
  - 2. Girts.
  - 3. Wall-mounted items including doors, windows, louvers, and lighting fixtures.
  - 4. Penetrations of wall by pipes and utilities.

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- E. Samples: Submit for each type of exposed finish required, and prepared on samples of size as follows:
  - 1. Aluminum Metal Plate Wall Panels: At least 2 inch by 3 inch.
  - 2. Submit pre-painted color samples in manufacturer's standard size.
- F. Test and Inspection Reports: Submit test and inspection reports on each type of wall panel system provided for project based on evaluation of comprehensive tests performed by qualified testing agency.
- G. Maintenance Data: Submit maintenance data for metal plate wall panels.
- H. Warranty: Submit manufacturer's and fabricator's warranty and ensure forms have been completed in Owner's name and registered with manufacturer and fabricator.
- I. Sustainable Design Submittals **[LEED Documentation]**:
  - 1. Submit documentation from manufacturer for amounts of pre-consumer and post-consumer recycled content for products specified, and include statement indicating costs for materials having recycled content.
  - 2. Submit documentation providing location of manufacturing.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least five years of documented experience.
- B. Fabricator Qualifications: Company specializing in fabricating products specified in this section with at least five years of documented experience.
- C. Installer: Company specializing in performing work of this section and approved by Fabricator.
  - 1. Install system in strict compliance with Fabricator's installation instructions.
- D. Source Limitations: Obtain each type of metal plate wall panel from single source and from single Fabricator.
- E. Mockups: Provide mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and to establish quality standards for fabrication and installation.
  - 1. Build mockup of typical wall panel assembly **[as shown on Drawings]** **<insert size>**, including **[corner,]** **[soffits,]** supports, attachments, and accessories.
    - a. Include at least four panels to represent a four-way panel joint and showing full thickness.
  - 2. Water Spray Test: Conduct water-spray test of mockup metal panel assembly, test water penetration in accordance with AAMA 501.2, as required.
  - 3. Approval of mockups does not constitute approval of deviation from Contract Documents within mockups unless these deviations are approved by Architect in writing.
  - 4. Subject to compliance with requirements, approved mockups **[may]** or **[may not]** become part of completed Work if undisturbed upon Date of Substantial Completion.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in fabricator's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling: Store materials in clean, dry, interior area in accordance with manufacturer's instructions.
- C. Deliver panels, components, and other fabricated items without damage or deformation.
- D. Protect panels during transportation, handling, and installation from weather, excessive temperatures and construction operations.
- E. Handle panels in strict compliance with fabricator's instructions and recommendations, and in a manner to prevent bending, warping, twisting, and surface damage.
  - 1. Store panels vertically with top of panel down, storage of panels horizontally is not permitted.
- F. Store panels covered with suitable weather tight and ventilated covering.
- G. Provide storage of panels to ensure dryness, with positive slope for drainage of moisture.
- H. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.
- I. Remove strippable protective covering from aluminum panel prior to installation.

### 1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work to be performed according to fabricator's installation instructions and warranty requirements.
- B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before panel fabrication and indicate measurements on Shop Drawings.
  - 1. Coordinate with construction schedule.

### 1.9 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Wall System Warranty: Provide wall panel fabricator's warranty, agreeing to correct defects in fabricating of materials within a one year period after Date of Substantial Completion.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures, including rupturing, cracking, or puncturing.
    - b. Deterioration: Beyond normal weathering of wall system metals and other materials.

- C. Panel Material Warranty: Provide panel material manufacturer warranty, agreeing to repair finish of metal plate wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Finish Warranty Period: [ ] years from Date of Substantial Completion.
  2. Warranty Coverage:
    - a. Fading, Loss of Color Retention: Loss of 5 Delta E units (Hunter) or less, in accordance with ASTM D2244.
    - b. Chalking, Chalky White Powder on Panel Surface: Chalking at No. 8 or less for colors, or No. 6 for white, in accordance with ASTM D4214.
    - c. Loss of Adhesion: Loss of 10 percent due to cracking, checking or peeling, or failure to adhere to bare metal.

#### 1.10 REFERENCE STANDARDS

- A. AAMA - American Architectural Manufacturers Association ([www.aamanet.org](http://www.aamanet.org))
1. AAMA 501.1 – Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure; 2005
  2. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2009
  3. AAMA 508 – Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems; 2014
  4. AAMA 509 – Voluntary Test Method and Specification for Drained Back Ventilated Rain Screen Wall Cladding Systems; 2014
  5. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2013
  6. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels; 2013
- B. ASTM International (American Society for Testing and Materials; [www.astm.org](http://www.astm.org))
1. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011
  2. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015
  3. ASTM D523 - Standard Test Method for Specular Gloss; 2014
  4. ASTM D2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2015
  5. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2011
  6. ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films; 07(2015)
  7. ASTM E8/E8M - Standard Test Methods for Tension Testing of Metallic Materials; 2013a
  8. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 04(2012)
  9. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014
  10. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 00(2009)

11. ASTM E1233/E1233M – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential; 2014 [Testing based on 2006 Edition]
- C. LEED – Leadership in Energy and Environmental Design
- D. NAAMM – National Association of Architectural Metal Manufacturers
- E. SMACNA – Sheet Metal and Air Conditioning Contractor’s National Association
- F. PS - Voluntary Product Standard; National Institute of Standards and Technology (NIST)
  1. PS-1 – Structural Plywood; 2009

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Aluminum Plate Wall Panel Assemblies: Comply with performance requirements without failure due to defective manufacturing, fabrication, installation, or other construction defects.
- B. Weather Tightness: Design, fabricate, and erect a rainscreen aluminum wall panel system tested as installed in compliance with appropriate standards for the specified system
  1. Pressure Equalized Rainscreen tested in compliance with AAMA 508
  2. Drained and Back Ventilated Rainscreen tested in compliance with AAMA 509
  3. Wet Sealed Barrier wall tested in compliance with ASTM E283 and ASTM E331
- C. Structural: Provide systems tested in accordance with ASTM E330/E330M and certified to be without permanent deformation or failure of structural members in accordance with applicable codes. Panel deflection limit should be L/60
  1. Positive Design Pressure: [ ] psf ([ ] Pa
  2. Negative Design Pressure: [ ] psf ([ ] Pa
- D. Intermediate Panel Stiffeners: Provide as required by design loads applied to panels and secured to rear face of panel with silicone based adhesive, or structural tape with appropriate size and strength to maintain flatness.

### 2.2 METAL WALL PANELS <Insert drawing designation>

- A. Aluminum Plate: Alloy and temper as recommended by manufacturer for application and in compliance with manufacturers design requirements.
  1. Aluminum Material: Tension-leveled, **[3000 series alloy]** or **[5000 series alloy]**.
  2. Thickness: [0.040], [0.063], [0.080] inch.
  3. Weight: Less than 2 lbs per sf.
    - a. Coil Coated Finish: **[Two-Coat Fluoropolymer]** **[Three-Coat Fluoropolymer]** **[Two-Coat Mica Fluoropolymer]** **[Three-Coat Metallic Fluoropolymer]** **[Two-Coat Polyester]** **[Three-Coat Polyester]**

- b. Color: [As indicated by manufacturer's designations] [As selected by Architect from manufacturer's full range] [As indicated on drawing schedule].
  - 1) Color 1: <Insert color>.
  - 2) Color 2: <Insert color>.
  - 3) Color 3: <Insert color>.
  - 4) Color 4: <Insert color>.

4.

- B. Panel Depth: 1-1/4 inch, nominal.
- C. Panel Size: As indicated on Drawings.
- D. Panel Joints: As indicated on Drawings.

### 2.3 FABRICATION (From Pre-approved Fabricator)

- A. Fabricate and finish wall panels within fabricator's facilities and fulfill indicated performance requirements demonstrated by laboratory testing.
  - 1. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide coil coated aluminum wall panels
- C. Provide pre anodizing of panels, anodize aluminum wall panels
- D. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- E. 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 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.

### 2.4 FINISHES

- A. Comply with NAAMM's - Metal Finishes Manual for Architectural and Metal Products, for recommendations of designating finishes.
  - 1. PVDF Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. [Two Coat] ; [Three Coat]
  - 2. FEVE Fluoropolymer: One-coat [clear] [tinted] fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Siliconized Polyester: AAMA 2604 Epoxy primer and silicone-modified, polyester- enamel topcoat; with a dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat. [Two Coat] ; [Three Coat]

## 2.5 ACCESSORIES

- A. Metal Plate Wall Panel Accessories: Provide components required for a complete metal plate wall panel assembly including trim, copings, fascia, mullions, sills, corner units, flashings, and similar items. Match material and finish of panels unless otherwise indicated.
- B. Provide integral drainage system and manufactures standard extrusions at termination of dissimilar materials.
- C. Flashing and Trim: Match material, finish, and color of adjacent wall panels.
  1. Thickness: [0.040], [0.063], [0.080] inch.
  2. Basis-of-Design Product: Subject to compliance with requirements, provide 3A Composites USA Inc.; ALUCOBOND® AXCENT™
  3. Refer to Section 07 6200.
- D. Panel Fasteners: Designed to withstand design loads, with at least 7/16 inch diameter head and neoprene washer.
  1. Aluminum Wall Panel Material: Provide stainless steel fasteners, or coated fastener approved by panel manufacturer or project wall consultant.
- E. Sub-Girts: Galvanized, provide size and gage in accordance with project requirements.
  1. Furring Channel: Provide Hat, C, U or Z type as recommended by fabricator.
  2. Flat Strap: At least 14 gage, 0.0747 inch (1.90 mm) thick.
  3. Refer to Section 05 4000.
- F. Substrate Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, at least 5/8 inch thick.
  1. Refer to Drawings and Section 06 1000 for requirements.
- G. Weather Barriers: Provide climate specific weather barrier with performance characteristics for air penetration, water vapor transmission, and water penetration resistance.
  1. Refer to Section 07 2500 for requirements.
- H. Sealants: As recommended by metal panel manufacturer for openings within wall panels and perimeter conditions.
  1. Refer to Section 07 9200 for requirements.

## PART 3 - EXECUTION

### 1.02 EXAMINATION

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



- B. Examine wall framing to verify that girts, angles, channels, studs, and other structural wall panel support members and anchorage have been installed within alignment tolerances required by wall panel manufacturer.
- C. Verify that weather barrier has been installed over sheathing or substrate to prevent air infiltration or water penetration.
- D. Examine rough-in for components and systems penetrating wall panels to coordinate actual penetration locations relative to wall panel joint locations prior to installation.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### **1.03 PREPARATION**

- A. Miscellaneous Framing: Install sub girt, base angles, sills, furring, and other wall panel support members and provide anchorage in accordance with ASTM C754 for gypsum panel type substrates and panel manufacturer's installation instructions.

### **1.04 INSTALLATION**

- A. Install wall panels in accordance with fabricator's installation instructions,
  - 1. Use of secondary drainage channels, brackets, support pins, joint sealants or gaskets to manage the drainage of wall panel system is not permitted.
  - 2. Attach wall panels using progressive interlocking method, engaging bottom of panel in top of previous panel working bottom up, and left to right.
  - 3. Install wall panels with single top attachment in pre-punched holes to allow individual panels to move due to thermal expansion.
  - 4. Do not compromise internal gutter.
- B. Install wall panels for orientation, sizes, and locations as indicated on Drawings.
- C. Install wall panels with proper anchorage and other components for this Work securely in place.
- D. Install wall panels with provisions for thermal and structural movement.
- E. Install shims to plumb substrates as necessary for installation of wall panels.
- F. Install weather tight seals at perimeter of wall panel openings.
  - 1. Test for proper adhesion on small unexposed area of solid surfacing prior to use.
  - 2. Refer to Section 07 9200.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA - Architectural Sheet Metal Manual.
  - 1. Provide concealed fasteners where possible, and set units true to line and level as indicated.
  - 2. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
  - 3. Install flashing and trim as wall panel Work proceeds.

- H. Install weather tight escutcheons for pipe and conduit penetrating exterior walls.
- I. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by wall panel manufacturer.
- J. Install attachment system to support wall panels and with provisions to provide a complete weather tight wall system, including sub girts, extrusions, flashings and trim.
  - 1. Include attachment to supports and trims at locations using dissimilar materials.
  - 2. Do not apply sealants to joints, unless noted otherwise on Drawings or Shop Drawings.
  - 3. Install starter extrusion at base course and at cut panel locations.
- K. Install accessories with positive anchorage to building and weather tight mounting and provisions for thermal expansion, and coordinate installation with flashings and other components.
  - 1. Install components required for a complete wall panel assembly including trim, copings, flashings and other accessory items.
- L. Weather Barrier: Install weather barrier behind wall panels and over substrate in accordance with requirements of Section 07 2500.

#### 1.05 TOLERANCES

- A. Shim and align wall panel units with installed tolerances of 1/4 inch in 20 feet, non-cumulative, on level, plumb, and location lines as indicated.

#### 1.06 FIELD QUALITY CONTROL

- A. Testing Agency: **[Owner will engage]** or **[Engage]** a qualified independent testing agency to perform field tests and inspections.
- B. Water-Spray Test: After installation and in coordination with Mockup requirements, test area of assembly **[shown on Drawings] [as directed by Architect]** or **<Insert area>** for water penetration in accordance with AAMA 501.2.
- C. Fabricator's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.
- D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.
- E. Perform additional tests and inspections, at Contractor's expense, to verify compliance of replaced wall panels or necessary additional work with specified requirements.
- F. Prepare test and inspection reports.

#### 1.07 CLEANING

- A. Upon completion of wall panel installation, clean finished surfaces as recommended by panel manufacturer.
- B. Upon completion of wall panel installation, clear weep holes and drainage channels of obstructions and dirt.

**1.08 PROTECTION**

- A. Protect installed products from damage during subsequent construction.
- B. Replace wall panels damaged or deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION**