

SECTION 074243**ALUMINUM COMPOSITE WALL PANELS****PART 1 GENERAL****1.1 GENERAL REQUIREMENTS**

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. The Work of this Section includes all labor, materials, equipment, and services necessary to complete the aluminum composite wall panels as shown on the drawings and/or specified herein, including, but not necessarily limited to, the following:
 - 1. Preformed aluminum composite metal wall panels.
 - 2. Preformed trim pieces, copings and accessory moldings.
 - 3. All necessary seals and gaskets to weather-seal all exterior panel to panel joints.

1.3 RELATED SECTIONS

- A. Joint Sealers - Section 079200.

1.4 SUBMITTALS

- A. Submit complete and detailed shop drawings, calculations indicating conformance with load and performance requirements, anchorage to structure, product data, and installation instructions prior to start of any fabrication. Drawings shall include all field dimensions, and shall indicate interface with windows set in metal cladding panels. Shop drawings shall be submitted concurrently with structural calculation bearing seal and signature of a licensed professional engineer registered for practice in the State of New York.
- B. Indicate dimensions, panel profile, panel layout, construction details, method of anchorage, and any other details as required for the specific installation.
- C. Submit 24" x 24" mock-up of each type of metal panel.
- D. Submit manufacturer's 12" x 12" color samples and finish samples for each panel type.
- E. Submit certification that systems meet performance standards.

1.5 QUALITY ASSURANCE

- A. The Contractor, by commencing the work of this Section, assumes overall responsibility, as part of his warranty of the work, to assure that all assemblies, components and parts shown or required comply with the Contract Documents. The Contractor shall further warrant:
 - 1. That all components, specified or required to satisfactorily complete the installation, are compatible with each other and with the conditions of installation and expected use.

2. The overall effective integration and correctness of individual parts and the whole of the system.
3. Compatibility with adjoining substrates, materials and work of other trades.
4. There shall be no premature material failure due to improper design and fabrication.
5. Manufacturer and installer shall have a minimum of 3 years in the manufacturing, fabrication, and installation of this product.
6. Field measurements shall be taken or otherwise guaranteed prior to fabrication. Field fabrication and/or modifications will not be permitted. All panel fabrication shall be performed under shop conditions.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect panels and accessories during storage and construction against moisture, staining and physical damage.
- B. Store panels under cover in a dry and clean location, off the ground. Do not store panels face down or in contact with earth or damaging foreign materials. Store panels with appropriate separating materials to prevent scratching, denting or abrading any panel surface.

1.7 JOB CONDITIONS

- A. Review installation procedures and coordination with other work, with other trades whose work will be affected by work of this Section.

1.8 PERFORMANCE CRITERIA

- A. Deflection Design: Design calculations, certified by a registered professional engineer, licensed in the State of New York, shall be submitted to verify load carrying capability of panel system. Panel and anchorage system shall be designed to meet the more restrictive of the requirements of the International Building Code and ASCE-7 for a wind speed of 110 mph, importance factor 1.0, and exposure category B, and shall be capable of resisting a minimum positive and negative wind load of not less than 40 psf at Interior Zone 4 and 65 psf at Zone 5 corner conditions (per ASCE-7) (or greater if required by Code) without exceeding a deflection of $L/175$ or $3/4"$, whichever is less, for perimeter framing members. Maximum panel deflection normal to the plane of the wall shall not exceed $L/60$ of the full span.
- B. Water Penetration: No uncontrolled water penetration through the standard vertical panel and sealed joints at a static pressure of 6.24 psf when tested in accordance with ASTM E 331.
- C. Thermal Expansion: Attachment system shall accommodate free and noiseless vertical and horizontal movement due to thermal expansion for a material temperature range of -20 deg F to $+180$ deg F.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Protection: Materials shall be packed, unloaded, stored and protected to avoid abuse, damage and defacement from any source in accord with the recommendations contained in the AAMA Aluminum Curtain Wall Manual #10, "Care and Maintenance of Architectural Aluminum."

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal composite material panel systems 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 and other materials beyond normal weathering.
 - 2. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Warranty On Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace flashing that shows evidence of deterioration of factory-applied finishes within the warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 hunter units when tested according to ASTM D2244.
 - b. Chalking in excess of a No 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 – PRODUCTS**2.1 MANUFACTURER**

- A. Provide "Alucobond" composite aluminum panel system as manufactured by Alcan Composites USA Inc., or product by Reynobond, Centria, or approved equal.
 - 1. Panel Thickness: 4 mm.
 - 2. Rout and return - dry seal.

2.2 ALUMINUM COMPOSITE PANELS

- A. Materials
 - 1. Core: Thermoplastic material which in composite assembly meets performance characteristics specified and code requirements as set forth in the BOCA Basic/National Building Code for Class A construction.
 - 2. Face Sheets: 0.50 mm aluminum 3003 alloy, coated with specified high performance finish and bonded in a continuous process to core material to meet performance requirements.
 - 3. Bond Integrity: When testing in accordance with ASTM D 1781 for bond integrity, simulating resistance to delamination:
 - a. Bond Strength: 100 psi minimum.
 - b. Peel Strength: 22.5 lbs./in. minimum.
 - c. Shall have successfully passed 6 each ASTM D 1037 weather cycling test.
 - d. Shall have had no change in bond performance after 8 hours of submersion in boiling water.

4. 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 manufacturer's written instructions.
 - a. Fluoropolymer Three-Coat System: Manufacturer's three-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color coat and clear top coat with both color and top coat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605-98.
 - b. Custom color as selected by Commissioner.

B. Fabrication

1. Panels shall have a removable plastic film applied prior to fabrication and to remain on during fabrication, shipping, and erection.
2. Composition: Two sheets of aluminum sandwiching a core of extruded thermoplastic formed in a continuous process with no glues or adhesives between dissimilar materials. Panels shall be factory formed and complete with all related extrusions, fasteners, gasketing, etc., as required or a complete installation. Shop fabricated panels to sizes and joint configurations indicated on the drawings.
 - a. Panels without shop applied extrusions will not be accepted. No field bending accepted.
 - b. Shop applied extrusion must allow for thermal expansion of panels.
3. Tolerances
 - a. Panel Bow: Maximum 0.8% of panel dimension in width and length.
 - b. Panels Dimensions: Provide allowance for field adjustments as recommended by manufacturer, where final dimensions cannot be established by field measurement before completion of panel manufacturing.
 - c. Panel lines, breaks, and angles shall be sharp, true and surfaces free from warp or buckle.
4. Provide baffled weeps at all panels, spaced per manufacturer's recommendation or 24" o.c. maximum.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: "Ultra" by Grace Construction Products, or equivalent of Carlisle, Henry Company, or approved equal; 30 to 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.
- B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 ACCESSORIES

- A. Extrusions, formed members, sheet, and plate shall conform to ASTM B 209 and the recommendations of the manufacturer.
- B. Panel stiffeners, if required, shall be structurally fastened or restrained at the ends and shall be secured to the rear face of the composite panel with silicone of sufficient size and strength to maintain panel flatness. Stiffener material and/or finish shall be compatible with the silicone.
- C. Sealants and gaskets within the panel system shall be as per manufacturer's standards to meet performance requirements.
- D. Fabricate flashing materials from 0.030" minimum thickness aluminum sheet painted where exposed. Provide a lap strap under the flashing at abutted conditions and seal lapped surfaces with a full bed of non-hardening sealant.
- E. Fasteners (concealed/exposed/non-corrosive): Fasteners as recommended by panel manufacturer. Do not expose fasteners except where unavoidable and then match finish of adjoining metal.

PART 3 EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where preformed siding panels are to be installed and notify the Commissioner of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

- A. Install panels and related components in strict accordance with manufacturer's instructions. Installation shall be performed under experienced supervision authorized by the manufacturer.
- B. All supports and fastenings shall be protected against corrosion and the effects of moisture.
- C. Separate dissimilar materials and use gasketed fasteners where needed to eliminate the possibility of corrosive or electrolytic action between metals.
- D. Each unit shall be accurately and securely erected, lined up with relations to adjoining parts, with all joints plumb, level and true within the limits as set by the flatness of the panels and the general contour of the building.
- E. Dented, sprung, bent, chipped or otherwise face damaged units will not be accepted and, if erected must be replaced by undamaged units at no additional cost to the City of New York.
- F. Installation Tolerances: Align panels within 1/8" of 20'-0" on level/plumb and location. Hold surface plane of adjacent panel within 1/16" tolerance.
- G. The work shall be designed to accommodate all tolerances and anticipate dead and live load movement, creep, sway and torsion of the structure without any harmful effects.

- H. Buckling of panels, opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects due to thermal movement will not be permitted. Installer shall take into account the ambient temperature at the time of installation.

3.3 CLEANING

- A. Upon completion of erection, finish surface shall be cleaned to the satisfaction of the Commissioner.
- B. Remove from premises, all surplus materials resulting from the foregoing work.
- C. Weep holes and drainage shall be unobstructed and free of dirt and sealants.
- D. Any additional protection, after installation, shall be the responsibility of the General Contractor.

END OF SECTION