PART 1 GENERAL

1.01 SUMMARY

A. The section includes Aluminum Composite Materials that are attached and/or secured to structural components of the project.

B. Related work specified elsewhere may include:
1. _____ Structural steel section
2. _____ Backup walls section
3. _____ Insulation section
4. _____ Metal flashing, counter flashing and parapet coping section
5. _____ Caulking and sealants section
6. _____ Interior wall finishes section

C. The extent of panel system work is indicated on the drawings and in these specifications.
1. Panel system requirements include the following components:
   a. Aluminum-faced composite panels adhered directly to sub-frame / sub-structure with Construction-Grade adhesive (3M or equal).
   b. System to be fabricated and installed per local code requirements.

   OR

   a. Aluminum-faced composite panels with mounting system. Panel mounting system including anchorages, furring, fasteners, gaskets and sealants, related flashing adapters and masking for a complete installation.
   b. Panel manufacturer recommends that system should include shop-installed aluminum stiffeners on all panels of 20 square feet or larger. Minimum stiffener recommendation is one per 20 square feet of panel area.
   c. Parapet coping, column covers, soffits, sills, border and filler items may be indicated as integral components of the panels system or as designed.
   d. All flashing metal required shall be provided by the panel manufacturer.
   e. System to be fabricated and installed per local code requirements.

1.02 INDUSTRY STANDARDS

A. Reference: Products and executions are specified in this section by reference to the following industry and/or trade specifications or standards:
American Society for Testing and Materials (ASTM)
American Architectural Manufacturers Association (AAMA)

1.03 QUALIFICATIONS

A. Manufacturer:
1. American Products Inc.
   12157 West Linebaugh Ave. #335
   Tampa, FL. 33626
   Telephone: (813) 925-0144; Fax: (813) 925-1414
   www.americanprod.com

1.04 SUBMITTALS

A. Shop Drawings:
Submit for architect's and/or owner's approval prior to the commencement of any work or fabrication, following required submittal processes and under the appropriate Section, detailed shop drawings showing all areas of work profiles and sections of all components, finishes and fastening details.

B. Structural Calculations:
Documents showing product compliance with the local building code shall be submitted prior to fabrication. These documents may include evaluation reports, test reports, supporting document and drawings, and manufacturer's data. The architect must approve alternate material prior to bid date.

1.05 COMPONETS

A. Shipping and Handling:
Deliver materials to the job site ready for erection. Assembled units to be packaged to prevent damage during freight and storage on site.

A. Section Includes: Glazed Aluminum Curtain Wall:
   1. American Products, Inc. (813.925.0144) Series CW600 outside Glazed Aluminum Curtain Wall System.

B. Services Furnished:
   1. Materials by API

C. Related Sections:
   1. Sealants: Refer to Division 7 Joint Treatment Section for sealant requirements.
   2. Glass and Glazing: Refer to Division 8 Glass and Glazing Section for glass and glazing requirements.

PART 2 PRODUCTS

2.01 MATERIALS

A. Composite Panels
   1. Panels shall be:
      Reynobond Aluminum Composite Material manufactured by Alcoa Architectural Products Alpolic Aluminum Composite Material manufactured by Mitsubishi Plastics, Inc.
   2. Other manufacturers are acceptable as long as their product meets the same criteria in thickness, pane weight, bond integrity, fire rating, paint color and finish.

B. Standard Polyethylene (PE) or Fire Resistant (FR) Core.

C. Panel Thicknesses:
(4 mm) = 0.157"

D. Panel Weight:
(4 mm) = 1.12 lbs/sft

E. Product Performance:
   1. Bond Integrity
      When tested for bond integrity, in accordance with ASTM D1781 (simulating resistance to panel delamination), there shall not be
      a. an adhesive failure of the bond between the core and the skin or
      b. Cohesive failure of the core itself below the following values.

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2. Peel Strength:
    a. Standard Polyethylene Core
    178 N mm/mm (40 in lb./in.) as manufactured 178 N mm/mm (40 in lb./in.) after 21 days soaking in water at 70°F
    b. Fire Resistant Core
    100 N mm/mm (22.5 in lb./in.) as manufactured 100 N mm/mm (22.5 in lb./in.) after 21 days soaking in water at 70°F
3. Fire Performance:
    ASTM E84 – Passed Class A

F. Panel Finishes
Color to be determined and approved by architect and/or owner.

2.02 PANEL FABRICATION

A. Composition
ACM is comprised of two sheets of aluminum sandwiching a solid core of extruded thermoplastic material formed in a continuous process with no glues or adhesives between dissimilar materials. The core shall be free of voids and/or air spaces and not contain foamed insulation materials. The bond between the core and the skins shall be a chemical bond. Products laminated sheet by sheet in a batch process using glues or adhesives between materials shall not be acceptable.

B. Aluminum Face Sheets
1. Thickness: 0.020"
2. Aluminum alloy shall be 3000 series or equivalent to.

C. Tolerances
1. Panel Bow: Shall not exceed 0.8% of panel overall dimension in width or length.
2. Panel Dimensions: Field fabrication shall be allowed where necessary, but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible. Panel dimensions shall be such that there will be an allowance for field adjustment and thermal movement.
3. Panel Lines: Breaks and curves shall be sharp and true and surfaces free of warps or buckles.
4. Flatness: Panels shall be visually flat.
5. Panel Surfaces: Shall be free of scratches or marks caused during fabrication.

D. System Characteristics
1. Plans, elevations, details, characteristics and other requirements indicated are based upon standards by one manufacturer. It is intended that other manufacturers, receiving prior approval, may be acceptable, provided their details and characteristics comply with size and profile requirements, and material/performance standards.
2. System must not generally have any visible fasteners, telegraphing or fastening on the panel faces or any other compromise of a neat and flat appearance.
3. Fabricate panel system to dimension, size and profile indicated on the drawings based on a design temperature of 68ºF (20ºC).
4. Fabricate panel system to avoid compressive skin stresses. The installation detailing shall be such that the panels remain flat regardless of temperature changes and at all times remain air- and watertight.
5. The finish side of the panel shall have a removable protective film applied prior to fabrication, which shall remain on the panel during fabrication, shipping and erection to protect the surface from damage.

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E. System Type (Select from the following)
   1. Direct adhesion.
   2. Continuous Edge Grip System: API extruded perimeter frame; drainage gutter; including all extrusions, clips, fasteners, anchors, spacers, trim, flashings, gaskets, sealant, etc.
   3. Route-and-Return Dry System: API pressure relief system including extruded perimeter frame, drainage gutter, all extrusions, clips, fasteners, anchors, spacers, trim, flashings, gaskets, sealant, etc.
   4. Route-and-Return Wet System: API engineered system including clips, fasteners, anchors, spacers, trim, flashings, gaskets, sealant, etc.

F. System Performance
   1. Composite panels shall be capable of withstanding building movements and weather exposures based on the following test standards required by the architect and/or local building codes:
      a. Wind Load – If system tests are not available, under the direction of an independent third-party laboratory, mockups shall be constructed and tests performed to show compliance to the following minimum standards:
         i. Panels shall be designed to withstand the design wind load based upon the local building code, but in no case less than 20 pounds per square foot (psf) and 30 psf on parapet and corner panels. Wind-load testing shall be conducted in accordance with ASTM E330 to obtain the following results.
         ii. Normal to the plane of the wall between supports, deflection of the secured perimeter-framing members shall not exceed L/175 or 3/4", whichever is less.
         iii. Normal to the plane of the wall, the maximum panel deflection shall not exceed L/60 of the full span.
         iv. Maximum anchor deflection shall not exceed 1/16". At 1 1/2 times design pressure, permanent deflections of framing members shall not exceed L/100 of span length and components shall not experience failure or gross permanent distortion at connection points of framing members to anchors. Permanent set shall not exceed 1/16".
      b. Air/Water System Test – Without backup waterproof membrane. If system tests are not available, under the direction of an independent third-party laboratory, mockups shall be constructed and tests performed to show compliance to the following minimum standards:
         i. Air Infiltration – When tested in accordance with ASTM E283, air infiltration at 1.57 psf must not exceed 0.06 cubic feet per minute per square foot of wall area.
         ii. Water Infiltration – Water infiltration is defined as uncontrolled water leakage through the exterior face of the assembly. Systems not using a construction sealant at the panel joints (i.e., Dry Systems) shall be designed to drain any water leakage occurring at the joints. No water infiltration shall occur in any system under a differential static pressure of 6.24 psf after 15 minutes of exposure in accordance with ASTM E331.
         iii. The above tests are on panel systems that do not include a waterproof membrane behind panels.

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2.03 Accessories

A. Extrusions, formed members, sheet and plate shall conform with ASTM B209 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 0.040" minimum thickness aluminum sheet provided by panel manufacturer to match the adjacent curtain wall/panel system where exposed. Post-painted spray-applied flashings are not acceptable. Provide a lap strap under the flashing at abutted conditions and seal lapped surfaces with a full bead of non-hardening sealant.
E. Fasteners (concealed/non-corrosive): Fasteners as recommended by system fabricator and installer.

PART 3 EXECUTION

3.01 Accessories

A. Surfaces to receive panels shall be even, smooth, sound, clean, dry and free from defects detrimental to work. Notify contractor in writing of conditions detrimental to proper and timely completion of the work. Do not proceed with erection until unsatisfactory conditions have been corrected.
B. Surfaces to receive panels shall be structurally sound as determined by a registered engineer. In no case shall metal structural supports be less than 18 gauge.

3.02 Installation

A. Erect panels plumb and level.
B. Attachment system shall allow for the free vertical and horizontal thermal movement due to expansion and contraction for a material temperature range of -20ºF (-29ºC) to +180ºF (+82ºC). Buckling of panels, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement are not to be permitted. Fabrication, assembly and erection procedure shall account for the ambient temperature at the time of the respective operation.
C. Panels shall be erected in accordance with an approved set of shop drawings.
D. Anchor panels securely per engineering recommendations and in accordance with approved shop drawings to allow for necessary thermal movement and structural support.
E. Conform to panel fabricator's instructions for installation of concealed fasteners.
F. Do not install component parts that are observed to be defective, including warped, bowed, dented, scraped and broken members.
G. Do not cut, trim, weld or scrape component parts during erection in a manner that would damage the finish, decrease strength or result in a visual imperfection or a failure in performance. Return component parts that require alteration to shop for refabricating, or for replacement with new parts.
H. Separate dissimilar metals; use appropriate gaskets and fasteners to minimize corrosive or electrolytic action between metals.

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3.03 Adjusting and Cleaning

A. Remove and replace panels damaged beyond repair as a direct result of panel installation. After installation, panel repair and replacement shall become the responsibility of the general contractor.
B. Repair panels with minor damage.
C. Remove masking film (if used) as soon as possible after installation. Masking intentionally left in place after panel installation on an elevation shall become the responsibility of the general contractor.
D. Any additional protection, after installation, shall be the responsibility of the general contractor to remove.
E. Make sure weep holes and drainage channels are unobstructed and free of dirt and sealants.
F. Final cleaning shall not be part of the work of this section.

END OF SECTION

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