



Precision Walls, Inc.
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**SECTION 07 42 00
ALUMINUM COMPOSITE PANEL SYSTEM
EQUAL PRESSURIZED RAINSCREEN SYSTEM**

**Section 07 42 43
Aluminum Composite Wall Panel System**

PART1-GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, and Division 1- GENERAL REQUIREMENTS apply to the work specified in this Section.

1.2 SUMMARY

- A. **Scope:** provide design, labor, material, equipment, related services, and supervision required, including, but not limited to, manufacturing, fabrication, erection, and installation for aluminum wall panel system as required for the complete performance of the work, and as shown on the Drawings and as herein specified. Panel Systems with exposed sealants in panel joints are not accepted.
- B. **Section Includes:** The work specified in this Section includes, but shall not be limited to, the following:
1. **Rainscreen Composite Aluminum Wall Panel System.**
 2. **Accessories not limited to subgirts, shims, and fasteners.**
- C. **Related Sections:** The following sections contain requirements that relate to this section:
1. **Section 05400: - COLD-FORMED METAL FRAMING.**
 2. **Section 07900: - SEALANTS.**

1.3 REFERENCES

- A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. The edition/revision of the referenced publications shall be the latest date of the Contract Documents, unless otherwise specified.
- C. Aluminum Association, Inc. (AA)
1. AA.ADM-1, "Aluminum Design Manual."

- D. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 605.2, "Voluntary Specification for High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels"
- E. American Institute of Steel Construction, Inc. (AISC):
 - 1. AISC MSC, "Manual of Steel Construction ASD."
- F. American Iron and Steel Institute (AISI):
 - 1. AISI LRFDS, "Load and Resistance Factor Design Specification for the Cold-Formed Steel Structural Members."
- G. ASTM (ASTM):
 - 1. ASTM C 236, "Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box."
 - 2. ASTM E 72, "Standard Methods of Conducting Strength Tests of Panels for Building Materials."
 - 3. ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials"
 - 4. ASTM E 283, "Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Difference Across the Specimen."
 - 5. ASTM E 331, "Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference."
- H. Building Officials and Code Administrators International, Inc. (BOCA):
 - 1. BOCA NBC, "National Building Code."

1.4 SYSTEM DESCRIPTION

A. DESIGNER REQUIREMENTS:

1. **Designer:** Engage the services of a designer to design the aluminum panels system and the connections for attaching it to the structure.
2. **Deflection:**
 - a. Normal-to-wall deflection shall not exceed manufacturer's recommendations.
 - b. Base calculations for deflections on the combination of maximum direct loadings, building deflections, thermal stresses, and erection tolerances. Design the system to be without permanent deflections.
3. **Safety Factor.** Design structural components of the system including, but not limited to, framing members, welds, connections, adhesives and sealants used as adhesives with a safety factor of not less than 1.5; so that failure shall not occur at less than 1.5 times the maximum design wind pressure as defined in the Code. Failure shall be defined as breakage, component disengagement, permanent distortion or cracking.
4. **Joints:** Design aluminum panel systems with composite material, no sealant allowed in joints between panels, no filler strip allowed in joint.
5. **Movement:** Design the aluminum panel systems to accommodate structural movement such as creep, shortening, live load deflections, and thermal movement such as expansion and contraction.
6. **System Depth:** 2" minimum required.

B. Performance Testing Requirements:

1. **Structural Tests:** Provide manufacturers wall panel system capable of withstanding building movements and weather to include wind load and temperature variations. Determine loads based on the following minimum design wind pressures: Uniform pressure of 30 lbf/sf, acting inward or outward. Deflection limits: Engineer metal wall panel assemblies to withstand test pressures deflection no greater than 1/180 of the span and no evidence of material failure, structural distress, or permanent deformation exceeding 0.2 percent of the clear span. Test

pressures: 150 percent of inward and outward wind-load design when tested in accordance with ASTM E330 Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

2. **Air Infiltration:** Provide wall panel system with an air infiltration rate of not more than .01 cfm per square foot of fixed wall when tested at 6.24 psf in accordance with ASTM E 283, "Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors."
1. **Water Penetration:** No appearance of uncontrolled water in the wall system when tested in accordance with ASTM 331, "Water Penetration of Exterior Windows, Curtainwalls and Doors by Uniform Static Air Pressure Difference" and AAMA 501.1-83 "Standard Test Method for Metal Curtain Walls for Water Penetration using Dynamic Pressure" at a pressure of 15 psf.

1.5 SUBMITTALS

- A. **GENERAL:** Submit the following in accordance with conditions of the contract and Division 1 Specifications unless otherwise indicated.
 1. **PRODUCT DATA:** Manufacturers product specifications, standard details of tested panel system, certified product test results, installation instructions and general recommendations as applicable to materials and finishes for each component as well as the entire panel system.
 2. **SAMPLES:** Provide sample two feet by two feet in the actual style, color, composite material, and specified finish fabricated into four equal adjacent panels with actual mounting system showing typical mounting members, anchorage, expansion provisions, extrusion profiles, intersections and panel accessories.
 3. **SHOP DRAWINGS:** To include dimensions, description of materials and finishes, general construction, component connections, anchorage connections, anchorage methods and installation procedures. Indicate joints and gaskets required to allow for thermal expansion, detail supports and closures. Depict layouts of panels on walls, details of edge conditions, comer and panel profiles.

GUARANTEE

1. Fabricator/Installer: Submit two copies of a one year written guarantee, signed by the contractor and metal wall panel installer, agreeing to repair or replace defective materials or workmanship during the period of the guarantee. Repair work required as a result of acts of God exceeding performance requirements are excluded.
2. Composite Panels: Applied Kynar Coil Coated Finishes guarantee. Submit a twenty year guarantee covering the integrity of the applied color coating and its performance.

1.6 QUALITY ASSURANCE

- A. **Manufacturers Qualification:** Producer of aluminum composite wall panels shall have a minimum of five years experience in the production of panel systems.
- B. **Fabricator/Installer Qualifications:** Minimum five years experience with aluminum curtainwalls of equal complexity and difficulty. Fabricator must provide manufacturer training for installation for installation of the Wall System.
- C. **Field Dimensions:** Verify field measurements of structure and substrates prior to fabrication to ensure all fabricated members are correctly dimensioned for proper installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Aluminum Wall Panel System is based upon Precision Walls, Inc. (1.800.849.7568). DSS 5000 Rainscreen panel system or prior approved system of equal performance characteristics. Written approval required 15 days prior to bid date.
- B. Acceptable Aluminum Composite Material Manufacturer:
 - 1. Reynobond RB160 by Alcoa Architectural Products.
 - 2. Alpolic by Mitsubishi
 - 3. Alucobond by Alcan Composites.

2.2 COMPONENTS

- A. Composite Metal Building Panels:
 - 1. **Facing Materials:**
 - a. Exterior Face - .020" aluminum 3105 h25 alloy.
 - b. Interior Face - .020" aluminum 3105 h25 alloy.
 - 2. **Core Material:** 4mm Polyethylene core material of thermoplastic compound sandwiched between two aluminum sheets formed into a continuous process.
 - 3. **Finishes:**
 - a. Factory finish coating. Duranar or Duranar XL with 70% resins.
 - b. Color as selected by Architect per manufactures standard colors.
 - c. Coating shall be factory applied on a continuous process paint line. Coating shall consist of a 0.2 mil prime coat, a 0.75 finish coat containing 70% Kynar resins. For XL finishes, an additional 0.5 mil clear coat containing 70% resin.
- B. PANEL MOUNTING SYSTEM:
 - 1. Attachment System:
 - a. **Panel Attachment System:** Provide aluminum extrusions of 6065 T-5 alloy.
 - b. **Subgirts:** Provide hat shaped subgirts of galvanized steel minimum **18 Gauge** for system depths greater than 2".
 - c. **Fasteners:** Aluminum, non-magnetic stainless steel or climucote steel compatible with aluminum members. No exposed fasteners allowed.
 - d. **Intermediate Panel Stiffeners:** Extruded aluminum 6065 T-5 alloy capable of spanning 60" with a 24" O.C. spacing. Intermediate supports to be structurally adhered to the back of composite panel with silicone.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Verification of Conditions:** Install must examine all parts of the supporting structure and adjoining work, and the conditions under which the aluminum wall panel work is to be installed, and notify the General Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.
- B. **Pre-installation Conference:** Immediately prior to installation of aluminum wall panels, the General Contractor shall arrange a meeting at the jobsite to include the General Contractor, aluminum panel fabricator and installer, and all subcontractors whose work is affected by the aluminum panels.

3.2 ERECTION

- A. **Erection:** Set aluminum wall panel work accurately in location, alignment and elevation, plumb, level and true as measured from established building lines, and from other work already in place. Fit components accurately together to form tight joints conforming to the module shown. Install column covers where shown on the drawings and indicated to be Aluminum Composite Material. Complete installation shall be in accordance with approved shop drawings, to produce a watertight system complying with all requirements of the contract documents.
- B. **Dissimilar Metals:** Protect aluminum wall panels and mounting system that come in contact with dissimilar materials with either a heavy coat of bituminous paint or two coats of zinc chromate primer in different color, or provide other separation as per manufacturer's recommendations such as factory finish.
- C. **Removal of unused materials:** Remove all unused panel materials and fasteners immediately from finished panels and/or adjacent roof surfaces.
- D. **Erection Tolerances:** Erect all component parts within the following tolerances.
1. Variations from plumb or any dimensions angle shown to be +/- 1/8" maximum variation in any story height or 10 foot run, non-cumulative.
 2. Variations from level a specified slopes to be +1-118' maximum variation in any column to column space or 20 foot run, non cumulative.
 3. Variations from Theoretical calculated position as located in plan or elevation in relation to established floor lines, including variations from plumb, level, straight and member size:
 - a. 1/4" maximum variation in any column to column space or floor to floor height, or 20 feet
 - b. 3/8" maximum total variation at any location.
 4. Variation from the theoretical calculated position at the hypotenuse of any rectangular bay between mullions in story height:
 - a. 1/4" maximum variation in any 10' length of hypotenuse, noncumulative.
 - b. 3/8" maximum total variation in any hypotenuse.
 5. Field modification: Cut and trim component parts of the wall system during erection only with the approval of the manufacturer or fabricator, and in strict conformance of his recommendations. Restore finish completely to protect material and remove all evidence of cutting and trimming. Remove and replace members where cutting and trimming has impaired strength or appearance, as directed.
 6. Damaged panels: Do not erect members which are observed to be warped, bowed, deformed or otherwise damaged or defaced to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection, as directed.
- E. **Protection and Cleaning: Protective plastic must be removed upon installation of panels. Final cleaning is to be by General Contractor.**
Any panels that are within proximity to other trades, or vicinity of flow of materials or personnel to be protected and signed as approved by area by General Contractor.

End Section