



Precision Walls, Inc.
1230 NE Maynard Road
Cary, NC 27513-4174

**SECTION 07 42 43
ALUMINUM COMPOSITE PANEL SYSTEM
ROUT-RETURN WET SEAL SYSTEM**

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Aluminum Composite Panel System**

PART 1- 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 and engineering, 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.
- B. **Section Includes:** The work specified in this section includes, but shall not be limited to, the following:
1. **Rout Return Aluminum Composite Wall Panel System with exposed sealant.**
 2. **Accessories not limited to subgirts, shims, and fasteners.**
- C. **Related Sections:** The following section contains requirements that relate to this section:
3. **Section 05 40 00: COLD-FORMED METAL FRAMING.**
 4. **Section 07 92 00: SEALANTS.**
 - a. Pecora 864 or Dow Corning 795 for panel joint sealant.

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)
- D. American Architectural Manufacturers Association (AAMA):
1. AA.ADM-1, "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):
 - a. ASTM C 236, "Standard Test Method for Steady-State thermal Performance of Building Assemblies by Means of a Guarded Hot Box."
 - b. ASTM 72, "Standard Methods of Conducting Strength Tests of Panels for Building Materials."
 - c. ASTM 84, "Standard Test Method for Surface Burning Characteristics of Building Materials."
 - d. ASTM 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."
 - e. ASTM 331; "Standard Test Method for Water Penetration of Exterior Difference."
- H. Building Officials and Code Administrators International, Inc. (BOCA):
 - a. 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 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 panels systems with closed-cell backer rod and silicone sealant in joints between panels.
5. **Movement:** Design the aluminum panel systems to accommodate structural movement such as creep, shortening, live load deflections, and thermal movement such and expansion and contraction.
6. **System Depth:** 2"min. 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 for up to a twenty foot unbroken single span panel. The entire panel surface will not deflect more than $L/60$ or $3/4$ " whichever is less under specified wind load 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 .03 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."
3. **Water Penetration:** No appearance of uncontrolled water in the wall system when tested in accordance with ASTM 331, "Water Penetration of Exterior Windows, Curtain walls 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 12 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:** manufactures product specifications, standard details of tested panel system, certified product test results, installations instructions and general recommendation as applicable to materials and finishes for each component as well as the entire panel system.
 2. **SAMPLES:** Provide manufacturer's standard samples of 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 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, corner and panel profiles.
- B. **GUARANTEE**
1. **Fabricator/Installer:** Submit two copies of a one-year written guarantee, signed by the contractor and Wall panel installer, agreeing to repair or replace defective materials of 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:** Applies finished 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 system.
- B. **Fabricator/Installer Qualifications:** Minimum five years experience with aluminum curtain wall of equal complexity and difficulty. Fabricator must provide manufacturer training of 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-1000 Rout Return Wet Seal 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.
 4. Alcopanel by Dae-A Industrial

2.2 COMPONENTS

- A. Composite Metal Building Panels:
 - 1. **Facing Materials:**
 - a. Exterior Face - .020" aluminum 3105-h25 alloys.
 - b. Interior Face - .020" aluminum 3105-h25 alloys.
 - 2. **Core Materials:** 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 alloys.
 - b. **Subgirts:** Provide hat shaped subgirts of galvanized steel minimum 18 Gauge if system depth is greater than 2".
 - c. **Fasteners:** Aluminum, non-magnetic stainless steel or plated 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 panels 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 n 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 or specified slopes to be +/- 1/8" maximum variation in any 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, non-cumulative.
 - 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 member 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 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