

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum wall panel dry joint, pressure-equalized rainscreen system.
2. Accessories including sub girts, aluminum panel splines, aluminum panel bases, head flashings, clips, shims, fasteners, and aluminum trim prefinished to match aluminum wall panels.

B. Related Sections:

1. Section 05 40 00 - Cold-Formed Metal Framing
2. Section 06 10 00 - Rough Carpentry
3. Section 06 16 43 - Gypsum Sheathing
4. Section 07 25 00 - Air Barriers
5. Section 07 62 00 - Sheet Metal Flashing and Trim
6. Section 07 92 00 - Joint Sealants

1.2 REFERENCES

A. Reference Standards: Current edition at date of bid.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure
2. AAMA 508-07 - Voluntary Test Method and Specifications for Pressure Equalized Rain Screen Wall Cladding Systems

C. ASTM International:

1. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus
2. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
3. ASTM D 294 - Method of Tumbler Test for Coke
4. ASTM D 659 - Method of Evaluating Degree of Chalking of Exterior Paints
5. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
6. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
7. ASTM D 2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
8. ASTM D 3352 - Standard Test Method for Strontium Ion in Brackish Water, Seawater, and Brines
9. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials

- 10. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- 11. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- 12. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Conform to provisions of Section 01 31 13 for coordination with work of other Sections.
 - 1. Section 07 25 00 for application of weather resistive barrier over exterior sheathing substrate specified. Section 06 16 43 following installation of sub girt system as required to seal and make a continuous air barrier.
- B. Preconstruction Meetings: Conform to provisions of Section 01 31 19.
 - 1. Attendance: Contractor, Applicator, Owner, Architect, and those specifically requested to attend.
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Review methods and procedures related to aluminum metal panel installation, including manufacturer's written instructions.
 - c. Examine support conditions for compliance with requirements, including alignment between and attachment to the structural members.
 - d. Review flashings, special details, wall penetrations, openings, and condition of other construction that will affect aluminum wall panels.
 - e. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - f. Review temporary protection requirements for aluminum wall panel assembly during and after installation.
 - g. Review wall panel observation and repair procedures after aluminum wall panel installation.
 - 2. Meeting Time: Minimum 3 weeks prior to beginning work of this Section and related work affecting work of this Section.
 - 3. Location: Project Site.

1.4 DESIGN REQUIREMENTS

- A. Components: Designed and manufactured to withstand dead and live loads caused by positive and negative wind pressure acting normally to plane of aluminum wall panels in accordance with International Building Code, Chapter 16.
- B. Wall Panel Deflection: L/180.
- C. Perimeter Framing Deflection: L/180.

- D. Thermal Movement: Design system to accommodate vertical and horizontal thermal movement of components without causing distortion, excessive stress on fasteners, and oil canning when subjected to recurring temperature variations.
- E. Drainage: Design for positive drainage of water leakage and condensation to exterior of wall panel system.
- F. Tolerance of Substructure: Design system to accommodate up to ¼ inch in 10 feet of variation out of plane.
- G. Seismic Design: Conform to International Building Code for the Seismic Category appropriate for location of system installation.

1.5 PERFORMANCE REQUIREMENTS

- A. Provide following testing documentation. Testing documentation must be current and meet or exceed specified design and performance requirements, and documented and certified by an independent testing agency acceptable to Architect and applicable building code jurisdiction.
- B. Preload at +12.5 pounds per square foot.
- C. Air Infiltration in accordance with ASTM E283 (at 1.57 pounds per square foot): Maximum of 0.126 cubic feet per minute per square foot.
- D. Water Penetration in accordance with ASTM E331 (at 6.24 pounds per square foot): Approximately 0.43 square feet.
- E. Water Penetration in accordance with AAMA 501.1 (at 6.24 pounds per square foot): Not to exceed 0.43 square feet.
- F. Pressure Cycling in accordance with ASTM E1233 (100 cycles for 5 pounds per square foot to 25 pounds per square foot to 5 pounds per square foot): Not to exceed 0.03 seconds.
- G. Pressure Equalized Rainscreen Performance: No streaming water or droplets/mist on more than 5% of weather resistive barrier in accordance with AAMA 508-07.
- H. Structural Load Pressure in accordance with ASTM E 330-02 (at 110 pounds per square foot): Not to exceed 0.01 inches of deflection.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. LEED Credits: Conform to Section 01 81 13 for documentation of LEED Credits contributing to Certification of Project under USGBC LEED 2009 (Version 3.0) Green Building Rating System for sustainable building requirements.
- C. Product Test Reports: Indicate compliance of products with requirements from qualified, independent testing agency.
- D. Shop Drawings: Provide drawing details prepared by manufacturer or manufacturer's authorized agent showing openings and penetrations. Include details of each condition of installation and attachment. Provide details at a minimum scale of 1½ inch per foot of all required trim needed for complete installation. Provide shop drawings reflecting deviations from manufacturer's standard details and details differing from Contract Documents. Include components, metal panel profile, dimensions, joinery dimensions, configurations, and reason for deviation.

- E. Product Data: Manufacturer's technical data, installation instructions, standard detail drawings specific to this project, and accessories showing conformance with specified requirements.
 - 1. Fasteners including clips, fastener types, and locations.
 - 2. Treatment at edges, terminations, and flashings.
- F. Product Samples: 2x3" showing specified finish for each specified wall.
- G. Manufacturer's Instructions: Indicate installation requirements, rough-in dimensions, special procedures, and conditions requiring special attention.
- H. Sample Warranty: Meet or exceed provisions specified by this Section.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Minimum of 10 years' experience in fabricating and supplying metal wall panel systems.
 - 2. Responsible for technical design support as required for system conforming to panel manufacturer's warranty provisions.
 - 3. Provide review and approval of shop drawings differing from panel manufacturer's standard details prior to installation and conduct interim inspections during construction.
- B. Installer Qualifications:
 - 1. Minimum 7 years' experience installing commercial metal wall panel systems.
 - 2. Trained and authorized by metal wall panel manufacturer prior to bid date.
 - 3. Employ job-site foreman, with minimum of 3 years' experience supervising installation of metal wall panel work of this section, dedicated to work of this contract.
 - 4. Foreman: Continuously on site for duration of work of this section for this project.
- C. Single Source Responsibility:
 - 1. Provide system and components for this Section under responsibility of single metal wall panel manufacturer.
 - 2. Perform metal panel and related flashing and sheet metal work by or under supervision of single installer.

1.8 WARRANTY

- A. Provide Warranties under provisions of Section 01 78 36.
- B. Painted Finish Coatings Manufacturer/Applicator to Provide Twenty (20) Year Warranty of the Factory Applied Finish.
 - 1. WILL NOT chip, crack or peel (lose adhesion) but does not include minute fracturing which may occur in proper fabrication of building parts.
 - 2. WILL NOT chalk in excess of ASTM D-4214-89 number eight (8) rating, determined by the procedure outlined in ASTM D-4214-89 specification test.
 - 3. WILL NOT change color more than five (5) Delta-E Hunter units (square root of the sum of square Delta-L, Delta-A and Delta-B) as determined by ASTM method D-2244. It is acknowledged that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.
- C. Contractor: 5-year labor warranty for panel installation, including, flashings, sealants, fasteners, and accessories to remain watertight and weatherproof.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, aluminum wall panels, and other manufactured items to prevent damage or deformity. Package aluminum wall panels for protection during transportation and handling.
- B. Unload, store, and erect aluminum wall panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Store aluminum wall panels vertically, covered with suitable weather tight and ventilated covering. Store aluminum wall panels to ensure dryness, with positive slope for drainage of water. Do not store aluminum wall panels in contact with other materials that may cause staining, denting, or other surface damage. Do not allow storage space to exceed 120 degrees Fahrenheit.

PART 2 PRODUCTS

2.1 SYSTEMS

- A. Aluminum Wall Panels: Plate aluminum wall panel on perimeter extrusion, dry joint, pressure-equalized rainscreen system: Install over substrate system.

2.2 MANUFACTURERS

- A. Subject to compliance with requirements, provide products manufactured by NorthClad Rainscreen Solutions, 11831 Beverly Park Rd, Bldg C, Everett, WA 98204, Telephone (425) 740-3702, E-mail: dkillian@northclad.com; Website: www.northclad.com.
 - 1. NorthClad AL-PR Series Extruded Mounted Plate Wall Panels:
 - a. Panel Skin Material: ASTM B209, Aluminum Association Specification Sheet 3003-H14/5052-H32 {5005-H34 for Anodized finish}. SELECT ONE.
 - 2. Panel Material Thickness: 0.125"
 - 3. Submit alternate tested systems by other manufacturers/fabricators to architect not less than 30 days prior to bid.

2.3 ALUMINUM PANEL MATERIALS

- A. Composition:
 - 1. Panel Skin Material: ASTM B209, 0.125 inch thickness, Aluminum Association specification sheet 3003-H14/5052-H32 [5005-H34 for anodized finish].
 - 2. Aluminum Extrusions: ASTM B221 alloy 6063 T6 and 6005A T61.
- B. Fabrications:
 - 1. Back-stiffen Aluminum panels to maintain flatness tolerances.
 - a. Not to exceed L/175 panel dimension in width and length for panel bow.
 - 2. Allow for field adjustments as recommended by the manufacturer where final dimensions cannot be established by field measurement before completion of panel manufacturing.
 - 3. Eliminate all warping and/or bucking in panel lines, breaks, and angles.
- C. Condition: Panel surfaces will be free of scratches and marks caused during fabrication.
- D. Custom Fabrications: Include fabrications to complete watertight and finished system.
- E. Expansion/Contraction: Engineer panels to permit required expansion and contraction using concealed anchors.

- F. Vapor Management: Fabricate panels for control of condensation and ventilation of the rainscreen cavity.
- G. Panel Edge: Select One;
 - 1. Back routed panel edge (with 1/13" radius) with non-welded corners.

2.4 FASTENERS

- A. Supply Fasteners and clips tested to meet provisions of this section, as approved by fastener manufacturer and engineer of record.
- B. Concealed Fasteners: Non-corrosive fasteners, and as instructed by engineer of record.
- C. Fastener Lengths: Penetrate cold-formed metal framing and subgirts, and other metal framing systems in accordance with the recommendations of engineer of record.

2.5 SYSTEM COMPONENTS

- A. Subgirts: Provide G90 galvanized steel of gauge and spacing for metal wall panel system's structural requirements as recommended by the engineer of record. To avoid galvanic reaction, separate dissimilar materials.

2.6 FLASHINGS

- A. Metal Flashing, Fascias and Trim: 0.040 inch minimum, material, color, and finish as wall panels, conforming to provisions of Section 07 60 00.
- B. Cutting and Fitting: Make neat, square, and true. Saw-cut panels, de-burr edges, and clean filings from adjacent surfaces.

2.7 SEALANTS

- A. Conform to Section 07 92 00 and manufacturer's instructions.

2.8 FINISH

- A. Factory Finish for Wall Panel:
 - 1. Weather Face: Polyvinylidene Fluoride (PVDF) spray coating with 70 percent Kynar® 500 resin content.
 - 2. Number of Coats: 2-Coat[3-Coat][4-Coat], chosen color dependent. Coating shall be factory applied on a continuous process paint line. Coating shall consist of a 0.2 mil prime coat, a 0.75 mil barrier coat[4-Coat], a 0.75 mil metallic/color coat containing 70 percent Kynar® resins[3-Coat][4-Coat], and a 0.5 mil clear coat containing 70 percent Kynar® resins (Note; mil thickness is approximate).
 - 3. Relevant to the color selected, material to be painted in accordance with either AAMA specification 2604 or 2605.
- B. Pencil Hardness - ASTM D3352-74:
 - 1. Use Eagle Turquoise HB-H pencil as a minimum.
- C. Impact Adhesion – ASTM D294-84:
 - 1. No cracking or loss of adhesion in coating.
 - 2. Cure Test - NCCA 11-18:
 - a. Withstand 50+ double rubs of MEK.
- D. Humidity Resistance – ASTM D2247-85:

1. No blisters after 3,000 hours of 100 percent humidity at 95 degrees Fahrenheit.
- E. Salt Spray Resistance – ASTM B117-85:
 1. After 3,000 hours of exposure to 5 percent salt fog at 95 degrees Fahrenheit, show few #8 blisters and less than 1/8 inch creepage from scribe.
- F. Weatherometer Test – ASTM D882-86/G23-88:
 1. No cracking, peeling, blistering or loss of adhesion after 2,000 hours in coating.
 2. Chalking resistance – ASTM D659-86:
 - a. No chalking greater than #8 after 10 years of Florida exposure at 45 degrees S.
 3. Color Change – ASTM D2244-74:
 - a. Color change not to exceed 5 NBS units after 10 years of Florida exposure at 45 degrees S.
 4. After 5,000 hours in Atlas Weatherometer, coating shall show no objectionable chalking or color change.
- G. Abrasion Resistance – ASTM D968-81:
 1. Resist 65 +/-15 liters/mil of falling sand on coating.
- H. Anodized Finish (if specified):
 1. Class 1, Anodic Finish: AA-M12C22A41 (mechanical finish: M12 nonspecular as fabricated; chemical finish: C22 etched, medium matte; clear anodic coating: Architectural Class 1, 0.018 mm coating or thicker) complying with AAMA 607.1.
 2. Class 1, Anodic Finish: AA-M12C22A44 (mechanical finish: M12 nonspecular as fabricated; chemical finish: C22 etched, medium matte; tinted anodic coating: Architectural Class 1, integrally colored or electrolytically deposited color coating, 0.018 mm coating or thicker) complying with AAMA 608.1.
 - a. Performance:
 - a. Change of Color: Maximum 5 DE (Hunter Units), tested to ASTM D2244.
 - b. Chalking: No. 8 rating, tested to ASTM D4214, Photographic Reference Standard No. 1 Test Method D659.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify installation conditions satisfactory to receive work of this Section before beginning.
- B. Verify substrate installation complete, flat, and true to plane.

3.2 PREPARATION

- A. Field Measurements: Verify prior to fabrication of metal panels, trim and flashings.
- B. Electrolytic Protection: Treat contacting surfaces of dissimilar metal of different galvanic range with non-absorptive tape, gaskets, or as instructed by manufacturer.
- C. Protect surrounding areas and surfaces to preclude damage during work of this Section.
- D. Lay out work before beginning installation as necessary for true, plumb, and aligned panel installations. Verify locations of joints and panel lengths.

3.3 INSTALLATION

- A. Conform to manufacturer's instructions and provisions of Contract Documents.
- B. Install to allow expansion of metal panels.

3.4 SUBGIRTS AND FASTENERS

- A. Space, locate, align, and fasten subgirt hat channel framing, if required, over gypsum sheathing after application of air barrier specified by Section 07 25 00.
- B. Install fasteners in lengths and locations to penetrate hat channels and structural metal wall framing in accordance with fastener manufacturers' instructions and engineer of record.
- C. Torque fasteners as necessary for snug fit. To prevent damage to panels, do not over-torque fasteners.

3.5 METAL WALL PANELS

- A. Do not stretch or compress.
- B. Secure panel in place with panels aligned and without warp or deflection.
- C. Make cutting and fitting neat, square, and true. Where required saw cut, de-burr edges, and clean filings from adjacent surfaces. No torch cutting permitted.

3.6 FLASHINGS AND TRIM

- A. Install flashings and trim as part of manufacturer system as necessary to seal and close ends and to restrict water penetration behind wall panels.
- B. Thermal Movement: Install flashing and trim systems to allow unrestricted thermal movement of metal panels on attachment clips.
- C. Penetrations: Install per weather resistive barrier manufacturer instructions.
- D. Metal Flashing:
 - 1. Detail per metal panel manufacturer's instructions.
 - 2. Make overlaps minimum 4 inches and in conformance to Section 07 60 00.
- E. Cutting and Fitting: Make neat, square and true. De-burr edges, and clean filings from adjacent surfaces.

3.7 ADJUSTING

- A. Correct identified defects and irregularities.
- B. Replace damaged, soiled and discolored work.

3.8 CLEANING

- A. Leave installation clean and free from residue and debris from work of this Section.

3.9 PROTECTION

- A. Take measures to protect metal panel installations from construction activities for duration of Project. Do not permit activities that may result in gouging, scratching or denting metal panels, trim or flashings.

END OF SECTION