

SECTION 07 05 43
RAINSCREEN ATTACHMENT SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide a non-continuous, extruded aluminum rainscreen attachment system for attachment of various siding types, installed in conjunction with exterior insulation. System shall be designed to incorporate flashing components, drainage components, and air barriers in such a way that the system will properly perform.

1.2 RELATED SECTIONS [List appropriate spec sections and numbers as applicable]

- A. Section 03 00 00 – Concrete
- B. Section 05 40 00 – Cold-Formed Metal Framing
- C. Section 06 10 00 – Rough Carpentry
- D. Section 06 16 00 – Sheathing
- E. Section 07 21 00 – Thermal Insulation
- F. Section 07 27 00 – Air Barriers
- G. Section 07 42 00 – Wall Panels
- H. Section 07 62 00 – Sheet Metal Flashing and Trim

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM) Publications:
 - 1. ASTM E330 – Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
 - 2. ASTM E331 – Test Method for Water Penetration of Exterior Windows
- B. American Society of Civil Engineers (ASCE) Publications:
 - 1. ASCE 7 – Minimum Design Loads for Buildings and Other Structures
- C. IBC 1403.2: Reference Standard for Selection of Weather Resistive Barriers
- D. AAMA 509: Test and Classification Method for Drained and Back-Ventilated Rainscreen Wall Cladding Systems

1.3 SYSTEM DESCRIPTION

- A. System assembly shall include the following components from the substrate out:

1. Substrate: Wall framing assembly and sheathing
2. Weather Resistant/Air Barrier over substrate
3. Exterior Insulation
4. Non-continuous extruded aluminum rainscreen attachment system
5. Exterior cladding

B. Design Requirements

1. Provide, in conjunction with wall substrate and air barrier, a weather tight wall assembly utilizing rainscreen principles.
2. Manufacturer is responsible for designing system, including anchorage to structural system.
3. Design modifications shall be provided only as necessary to satisfy as built conditions and to meet performance requirements.
4. Employ registered professional engineer, licensed to practice engineering in jurisdiction where project is located, to engineer each component of rainscreen attachment system.

1.4 PERFORMANCE REQUIREMENTS

A. Thermal Performance

1. Attachment system must be thermally modeled to demonstrate, at minimum, a compliance with ANSI/ASHRAE 90.1-2010 maximum U-Value for walls.
2. Tubes attaching direct to substrate are not permitted.

B. Design Loads [as required by applicable codes for Project location]

1. System shall be optimized based on design loads.
2. Maximum panel deflection: $L/300$ [or applicable for product] of span or less of span when tested in accordance with positive and negative pressures and as required to prevent cracking or damage to panel facing.
3. Comply with applicable seismic requirements for Project location.
4. Adequately resist wind forces and uplift for Project location with minimum of [_____] [PSF] [kilopascals] [_____] for wall surface and [_____] [PSF] [kilopascals] for parapet and corner panels tested in accordance with ASTM E330.
5. Accommodate movement of cladding components without undue stress on fasteners or other detrimental effects, when subjected to seasonal temperature range of:
 - a. Ambient: [120 degrees F] [67 degrees C]
 - b. Cladding surface: [180 degrees F] [100 degrees C]
6. Accommodate tolerances of support structure.
7. Condensation: System shall accommodate positive drainage for moisture entering or condensation occurring within panel system.
8. Flatness: System shall be flat with no noticeable warpage, buckling, deflections or other surface irregularities.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures.
- B. Product data information describing materials and fabrication for aluminum rainscreen attachment system
- C. Shop Drawings: Submit detailed shop drawings showing:
 - 1. Location, layout, and dimensions of subframing components, including special pieces and trim
 - 2. Locations of fixed and sliding fastening points
 - 3. Details at top, bottom, corner, windows, doors, etc.
 - 4. Installation details: attachment methods, fasteners, joints, corners, openings, intersections with adjacent materials, flashings, closures, trim and other critical conditions
- D. Copy of written approval by perimeter fastener supplier of the use of selected screws confirming use in a rainscreen wall assembly.
- E. Engineering Calculations: Submit engineering calculations as required by local building code
- F. Samples
 - 1. [3 inches][76mm] minimum length of attachment profiles
 - 2. Typical anchor brackets and fasteners
- G. Provide manufacturer's sample warranty, installation and maintenance instructions.

1.6 QUALITY ASSURANCE

- A. System Manufacturer's Qualifications: Provide exterior wall system manufactured by a firm with minimum 15 years' experience in the production of systems that are similar to those indicated for this project.
- B. Installer Qualifications: Company experienced in installing rainscreen systems and acceptable to Rainscreen Attachment System supplier.
- C. Attachment details shall be designed under direct supervision of licensed professional structural engineer. Calculations and shop drawings shall bear seal of supervising engineer.

1.7 QUALITY CONTROL

- A. Single Source Responsibility: Furnish engineered rainscreen attachment system components under direct responsibility of single manufacturer.

- B. Field Measurements: Verify actual supporting and adjoining construction before fabrication. Record measurements on project record shop drawings.
- C. Established Dimensions: Where field measurements cannot be made without delaying work, guarantee dimensions and proceed with fabrication of rainscreen attachment system corresponding to established dimensions.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Prior to shipping, pack and crate system components to prevent damage during transit and storage.
- B. Deliver materials and components in manufacturer's original, unopened, and undamaged containers or bundles, full identified. Exercise care to avoid damage during unloading, storing and installation.
- C. Inspect aluminum attachment components immediately upon delivery at site. Notify manufacturer of damage.
- D. Follow manufacturer's instruction for storage of product. Keep pieces in original packing material until ready to install.

1.9 WARRANTY

- A. One Year Warranty: Provide manufacturer's written warranty for aluminum rainscreen attachment system to cover repair and replacement of defective components.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Alpha Eci.10 Aluminum Rainscreen Attachment System with non-continuous, self-shimming bracket and rectangular tube assembly to accommodate out of plumb conditions supplied by ECO Cladding
 - 1. ECOCLADDING.com or (855) 237-3370
 - 2. Represented locally by: _____
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 – Product Requirements.

2.2 PRODUCT REQUIREMENTS

- A. Provide all rainscreen attachment system components from a single source.
- B. Materials
 - 1. Bracket and rectangular tube components
 - a. Made from 6000 series architectural grade aluminum
 - b. Finish: Mill finish

- c. Brackets shall be self-shimming for out of plumb conditions, with at least 1½” of built in adjustability.

2. Fasteners

- d. Minimum 304 series stainless steel fasteners and anchors of type, size and spacing required for type of substrate and Project conditions, to meet performance requirements specified in Paragraph 1.4 and as indicated in design calculations and shop drawings

3. The following characteristics are not acceptable:

- a. Continuous framing profiles (including tube-shaped sections or furring) penetrating insulation
- b. Components made from galvanized steel, galvalume, or other carbon-based metals
- c. Components made from FRP or fiberglass materials

2.3 EXTERIOR INSULATION

- A. Refer to Section 07 21 00 – Thermal Insulation

2.4 SIDING/RAINSCREEN PANEL

- A. Refer to Division 7 Sections applicable to project.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of rainscreen cladding.
- B. Do not proceed with cladding installation until deficiencies have been addressed.

3.2 RAINSCREEN ATTACHMENT SYSTEM INSTALLATION

- A. Install rainscreen attachment system in accordance with manufacturer’s instructions and approved shop drawings.
- B. Establish level lines for panel coursing and positioning of Alpha Eci brackets and support rail.
- C. Attach Alpha Eci brackets with engineered fasteners to accomplish performance requirements specified in Paragraph 1.4.
- D. Attach vertical support rails with engineered fasteners to accomplish performance requirements specified in Paragraph 1.4.

- a. Provide [1/2"- 1"] [12 to 25mm] space between end of adjacent profiles.
- E. Install exterior insulation to fit between wall brackets as specified by Section 07 21 00.

3.3 QUALITY CONTROL

- A. The installing contractor shall perform daily inspections to maintain and confirm that tolerances are being met and that manufacturer's instructions are complied with.
- B. The owner may engage a third-party inspection agency to verify that installed rainscreen attachment system meets performance requirements and tolerances.

3.4 CLEANING AND PROTECTION

- A. Remove and replace damaged, bowed, or bent pieces of aluminum.
- B. Immediately after installing, wipe down work. Do not use wire brushes, metallic tools, or abrasives for cleaning.
- C. Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

END OF SECTION 07 05 43