SECTION 07 42 13.16

ALUMINUM METAL PLATE WALL PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Pressure-equalized aluminum exterior wall panel system.

B. Related Requirements:
1. Section 05 4000 – Cold-Formed Metal Framing: Wall panel substrates support framing.
2. Section 06 1000 – Rough Carpentry: Plywood substrate wall sheathing.
3. Section 07 2500 – Weather Barriers: Air and moisture barrier required as part of metal wall panel
4. Section 07 6200 – Sheet Metal Flashing and Trim: Field-formed flashings and other sheet metal work.
5. Section 07 9005 – Joint Sealers: Perimeter sealant.

1.2 DEFINITION

A. Metal Plate Wall Panel Assembly: Metal wall panels, attachment system components, miscellaneous metal framing, and accessories necessary for a complete weather-tight wall system based on AAMA CW-RS-1.

1.3 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
1. AAMA CW-RS-1 – The Rain Screen Principle and Pressure Equalized Wall Design.
2. AAMA 501.1 – Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.
3. AAMA 501.2 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.
4. AAMA 508 – Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.
5. AAMA 611 – Voluntary Standards for Anodized Architectural Aluminum.
6. AAMA 2605 – Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusion and Panels.

B. Aluminum Association (AA):
1. ADM – Aluminum Design Manual.
2. DAF-45 – Designation Systems for Aluminum Finishes.

C. American Society of Civil Engineers (ASCE) ASCE/SEI7 – Minimum Design Loads for Buildings and Other Structures.

D. ASTM International (American Society for Testing and Materials):
   1. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
   2. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Differences.
   3. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Differences.
   4. ASTM E 1233/E 1233 M – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential.
   5. ASTM D 4214 – Standard Test Method for Evaluating the Degree of Chalking of Exterior Paint Films.
   6. ASTM E 283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Window, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
   7. ASTM D 2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
   8. ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity

E. LEED – Leadership in Energy and Environmental Design

F. NAAMM – National Association of Architectural Metal Manufacturer

1.3 REQUIREMENTS

A. Coordination: Coordinate panel assemblies with rain drainage, flashing, trim, stud back-up, soffits, and other adjoining work.

B. Pre-installation Meeting:
   1. Attendees: Owner, Architect, Installer, Panel Manufacturer's Representative, Structural Support Installer's, and all Installer's whose work interfaces with or affects wall panels including installers of doors, windows, and louvers.
   2. Review and finalize construction schedule.
   3. Verify availability of materials, installer's personnel, equipment, and facilities needed to maintain schedule.
   4. Review means and methods related to installation, including manufacturer's written instructions.

1.4 SUBMITTALS

A. Action Submittals:
   1. Shop Drawings: Include elevations, layout, profiles, and components including:
      a. Details showing thickness and dimensions of system parts, edge conditions, attachments, corners, fastening and anchoring methods, locations of joints and gaskets, location and configurations of joints necessary to accommodate thermal movement, and trim and flashings.
   2. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each material and accessory.

B. Samples: Submit for each type of exposed finish required.
   1. Approval sample size is 2 inch by 3 inch.

C. Test and Inspection Reports: Submit test and inspection reports on each type of wall panel system provided for project based on evaluation of comprehensive test performed by qualified testing agency.

D. Maintenance Data: Submit maintenance data for metal plate wall panels.

E. Warranty: Submit manufacturer system warranty.

1.5 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least five years of documented experience.
   2. Installer: Company specializing in performing work of this section and approved by the manufacturer.
      a. Install system in strict compliance with manufacturer's installation instructions.
      b. Minimum 5-year continuous experience installing aluminum wall panels.
   3. Regulatory Requirements: Wall panel system evaluated and is in compliance with applicable building code.

B. Mockup: Provide mockup to verify selections made under contract document to demonstrate visually How the system works and to establish quality standards for fabrication and installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling: Store materials in clean, dry, interior area in accordance with manufacturer's instructions.

C. Deliver panels, components, and other manufactured items without damage or deformation.

D. Provide storage of panels to ensure dryness, with positive slope for drainage of moisture.

F. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

E. Remove strippable protective covering from aluminum panel prior to installation.

1.7 WARRANTY

A. Wall System Warranty: Provide manufacturer's warranty, agreeing to correct defects in manufacturing of materials within a two-year period after date of Substantial Completion.
   1. Failures include, but are not limited to the following:

a. Structural failures, including rupturing, cracking, or puncturing.
b. Deterioration beyond normal weathering of wall system metals and other materials.

B. Panel Finish Warranty: Provide panel finish manufacturer warranty, agreeing to repair finish of metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Finish Warranty Period:
a. Paint Finish: Provide manufacturer's 20-years warranty against cracking, peeling, fading, or chalking from the date the panels ship to the customer.

PART 2 PRODUCTS

2.1 Manufacturer

A. Zeeff Panels Systems Origin Premiere Series – Aluminum Wall Panel System.
1. Address: 138 W. Washington Avenue, Zeeland, MI 49464

B. Approved Manufacturers
1. Pohl Panel of America
2. Centria Intercept

2.2 PERFORMANCE REQUIREMENTS

A. Metal Plate Wall Panel Assemblies: Comply with performance requirements without failure due to defective manufacturing, fabrication, installation, or other construction defects.

B. Design, fabricate, and erect a dry joint, pressure equalized rainscreen aluminum wall panel system without use of sealants, gaskets, or butyl tape, tested as installed in compliance with AAMA 508, and as follows.
1. Pressure Equalization Cycling: Pass cycled pressure loading from 5 psf to 25 psf for 100 three-second cycles at 0.08 seconds or less; ASTM E 1233.
2. Air Infiltration: 0.12 cfm per sf of wall area, tested at 1.57 psf (25 mph) in accordance with ASTM E 283.
a. Maintain air/water barrier leakage rate at 0.11 to 0.13 cfm per sf at 1.57 psf when tested in accordance with ASTM E 283 in compliance with AAMA 508 criteria.
3. Water Penetration:
a. Static: Pass water penetration test under static pressure when tested in accordance with ASTM E 331 at a differential of 10 percent of inward acting design load, with 15 psf pressure differences for at least 15 minutes with 5 gal per sf per hour of water applied.

4. Structural: Provide systems tested in accordance with ASTM E 330 and certified to be without permanent deformation or failure of structural members.

2.3 MATERIALS

A. Aluminum Plate: Alloy and temper as recommended by manufacturer for application and in compliance with Manufacturer's design requirements.

1. Aluminum Material: Tension-leveled, fluoropolymer 100% FEVE painted finish, 5052-H32 manganese alloy.
2. Thickness: 0.080 inch.
3. Weight: Less than 2 lbs. per sf.
4. Finish: Smooth (Fine Texture)

B. Panel Depth: 1 1/4-inch, nominal.

C. Panel Joints: 5/8” horizontal joints and 5/8” vertical joints.

2.4 FABRICATION

A. System Type: Pressure equalized rainscreen; Interlocking joint design with allowance for ventilation while preventing excessive water to contact air/water barrier

B. Provide Post finished material to form panels, trims, and extrusions.

2.5 FINISHES

A. Meet performance criteria of AAMA 2605:
1. Type: FEVE (Fluoroethylene Vinyl Ether) finish
2. FEVE: AAMA 2605, fluoropolymer finish containing not less than 100 Thermosetting FEVE Resin percent

B. Superior Performance Organic Coating System: AAMA 2605 Single coat, thermally cured Fluoroethylene Vinyl Ether (FEVE) Powder system.
1. One-Coat Fluoropolymer: AAMA 2605, fluoropolymer finish containing not less than 100 percent FEVE Powder by weight in color coat. Prepare, pre-treat, and apply coating to exposed metal surface to comply with coating and Powder manufacturer’s installation instructions.
a. Color 1:
b. Color 2:
c. Color 3:

2.6 ACCESSORIES

A. Metal Plate Wall Panel Accessories: Provide components required for a complete metal plate wall panel Assembly, including trim, copings, fascia, mullions, sills, corner units, flashings, and similar items. Match material and finish of panels unless otherwise indicated.
B. Flashing and Trim: Match material, finish, and color of adjacent wall panels.
1. Thickness: At least 0.050 inch.
C. Panel Fasteners: Designed to withstand design loads, with at least 7/16-inch diameter head and neoprene washer.
1. Aluminum Wall Panel Material: Stainless steel fasteners.

E. Sub-Girts: Provide size and gauge in accordance with project requirements.

1. Furring Channel: Provide Hat, C, U or Z type as recommended by manufacturer.
2. Flat Strap: At least 14 gage thick.
3. Refer to Section 05 4100.

F. Substrate Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, at least 5/8 inch thick.
1. Refer to Drawings and Section 06 1000 for requirements.

G. Weather Barriers: Provide specific weather barrier with performance characteristics for air penetration, water vapor transmission, and water penetration.
1. Refer to Section 07 2600 for requirements.

H. Sealants: As recommended by metal panel manufacturer for openings within wall panels and perimeter conditions.
1. Refer to Section 07 9005 for requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates, and work areas and conditions for compliance with requirements for installation tolerances, wall panel supports, and other conditions affecting performance of this Work.

B. Examine wall framing to verify that girts, angles, channels, studs, and other structural wall panel support members and anchorage have been installed within alignment tolerances required by wall panel manufacturer.

C. Verify that weather barrier has been installed over sheathing or substrate to prevent air infiltration or water penetration.

D. Proceed with installation only after unsatisfactory conditions have been corrected

3.2 PREPARATION

A. Miscellaneous Framing: Install required sub girt, base angles, sills, furring, and other wall panel support member and provide anchorage in accordance with ASTM C 754 for gypsum panel type substrates and panel manufacturer’s installation instructions.

3.3 INSTALLATION

A. Install wall panel system in accordance with manufacturer’s installation instruction and approved shop drawings.

B. Install proper sub framing in accordance with manufacturer for system attachment.

C. Install system plumb, level, and true to line.

D. Install wall panels with tolerances for thermal and structural movement.

E. Install shims to plumb substrates as necessary for installation of wall panels.

F. Install weather tight seals at perimeter of wall panel openings.
   1. Test for proper adhesion on small unexposed area of solid surfacing prior to use.
   2. Refer to Section 07 9004.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA - Architectural Sheet Metal Manual.
   1. Provide concealed fasteners where possible, and set units true to line and level as indicated.
   2. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
   3. Install flashing and trim as wall panel Work proceeds.

H. Install weather tight escutcheons for pipe and conduit penetrating exterior walls.

I. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by wall panel manufacturer.

J. Install attachment system to support wall panels and with provisions to provide a complete weather tight wall system, including sub girts, extrusions, flashings and trim.
   1. Include attachment to supports and trims at locations using dissimilar materials.
   2. Do not apply sealants to joints, unless noted otherwise on Drawings or Shop Drawings.
   3. Install required parts/pieces per manufacturer’s shop drawings at base course and at cut panel locations where required.

K. Install accessories with positive anchorage to building and weather tight mounting and provisions for thermal expansion, and coordinate installation with flashings and other components.
   1. Install components required for a complete wall panel assembly including trim, copings, flashings and other accessory items.

L. Weather Barrier: Install weather barrier behind wall panels and over substrate in accordance with requirements of Section 07 2400.

3.4 ADJUSTING

A. Repair minor damage so that repairs are not visible from viewing distance of 10 ft.

3.5 CLEANING

A. Please refer to the manufacturer's cleaning and maintenance guide for proper cleaning procedures of the completed installed wall panel.

B. Ensure that weep holes and drainage channels are unobstructed from debris.

3.6 PROTECTION

A. Protect installed panels from damage during the duration of construction.

B. Repair or Replace panels if damaged beyond repair.

END OF SECTION