+SECTION 07 42 43
MODULAR METAL WALL PANELS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Concealed fastener, coil coated, rainscreen wall panel as part of the wall assemblies described in Section 2.1.

1.02 RELATED REQUIREMENTS

A. Section 05 4000 – Cold-Formed Metal Framing: Wall panel substrates support framing.
B. Section 06 1000 – Rough Carpentry: Plywood substrate wall sheathing.
C. Section 07 2500 – Weather Barriers: Air and moisture barrier required as part of metal wall panel assembly.
D. Section 07 6200 – Sheet Metal Flashing and Trim: Field formed flashings and other sheet metal work.
E. Section 07 9200 – Joint Sealants: Perimeter sealant.

1.03 DEFINITION

A. Modular Metal Wall Panels: Modular 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.

1.04 REFERENCE STANDARDS

A. **AAMA** – American Architectural Manufacturers Association (www.aamanet.org)

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 509** – Voluntary Test and Classification Method of Drained and Back Ventilated Rain Screen Wall Cladding Systems.
5. **AAMA 611** – Voluntary Specification for Anodized Architectural Aluminum.
6. **AAMA 620** – Voluntary Specification High Performance Organic Coatings on Coil Coated Architectural Aluminum.
7. **AAMA 2605** – Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. **ASCE** – American Society of Civil Engineers

1. **ASCE 7** – Minimum Design Loads for Buildings and Other Structures.

C. **ASTM International** – American Society for Testing and Materials (www.astm.org)

1. **ASTM B117** – Standard Practice for Operating Salt Spray (Fog) Apparatus.
2. **ASTM B209** – Specification for Aluminum and Aluminum Alloy Sheet and Plate.

3. **ASTM B221** – Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
4. **ASTM C754** – Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
5. **ASTM D523** – Standard Test Method for Specular Gloss.
6. **ASTM D2244** – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
7. **ASTM D2247** – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
8. **ASTM D3359** – Standard Test Methods for Measuring Adhesion by Tape Tests.
9. **ASTM D4214** – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
10. **ASTM E72** – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
11. **ASTM E136** – Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.
12. **ASTM E283** – Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen.
13. **ASTM E330/E330M** – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
14. **ASTM E331** – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
15. **ASTM E1233/E1233M** – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential.

D. **LEED** – Leadership in Energy and Environmental Design
E. **SMACNA** – Sheet Metal and Air Conditioning Contractor's National Association

1.05 PERFORMANCE REQUIREMENTS

A. General: Provide modular metal wall panel system meeting performance requirements as determined by application of specified tests by a qualified testing agency on manufacturer's standard assemblies.
B. Structural Performance: Design modular metal wall panel system fabricated to withstand the effects of wind loads under conditions indicated below.

1. Wind Loads: Determine loads based on uniform pressure, building category, exposure category, and basic wind speed indicated on drawings.
2. Air/Moisture Barrier: Refer to Division 07 "Air Barrier" section.

C. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction.
D. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire- test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E84.
2. Fire-Resistance Ratings: ASTM E119.
3. Combustion Characteristics: ASTM E136.

4. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which wall panel is a part, complies with **NFPA 285** for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies.

1.06 ACTION SUBMITTALS

A. Product Data: Submit for each type of product indicated, include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal plate wall panel and accessory.
B. Shop Drawings: Provide shop drawings prepared by manufacturer. Include full elevations showing openings and penetrations. Include details of each condition of installation and attachment. Provide details at a minimum scale 3-inch per foot of all required trim needed for a complete installation.

1. Include data indicating compliance with performance requirements.
2. Indicate points of supporting structure that must coordinate with modular metal panel system installation.

C. Samples: For each product specified including sealants. Provide representative color charts of manufacturer's full range of colors.
D. Sustainable Design Submittals [**LEED Reports**]:

1. Submit documentation from manufacturer for amounts of pre-consumer and post-consumer recycled content for products specified, and include statement indicating costs for materials having recycled content.
2. Submit documentation providing location of manufacturing.

1.07 INFORMATION SUBMITTALS

A. Product Test Reports: Indicating compliance of products with requirements, from a qualified independent testing agency.
B. Qualification Information: For Installer and Installer's field supervisor.

1.08 CLOSEOUT SUBMITTALS

A. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
B. Maintenance data.

1.09 MOCKUPS

A. Mockups: Build mockup in size and location indicated. Show details of modular metal panel system. Demonstrate methods and details of installation. Show details of vertical joints, penetrations, doors, windows, louvers, pipe openings, inside and outside corners, top and bottom of wall, horizontal and vertical joints.

1. Approval of mockup does not relieve Contractor of responsibility to comply with all requirements of contract documents.
2. Approved mockup may become part of installation if approved by Architect.

1.10 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting:

1. Conduct a preinstallation meeting at the site
   a. Attendees shall include Owner, Architect, Contractor, Installer, Manufacturer's Representative & other trades whose work incorporates with modular metal wall panels.
2. Review and finalize construction schedule
   a. Verify availability of material, installer's personnel and facilities needed to maintain schedule.
3. Review means and methods related to installation, including manufacturer's written instructions.
4. Review and coordinate building framing in relation to modular metal panel system.
5. Review and coordinate installation of building air and water behind composite wall panel system.
6. Review and coordinate window, door, louver and other openings and penetrations of modular metal panel system.
7. Review temporary protection requirements for during and after installation of modular metal wall panels.

1.11 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with at least five years of documented related experience.
B. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashings and trim like that required for this Project and whose products have a record of successful in-service performance.
C. Wall Systems Installer Qualifications: Experienced Installer with minimum of 5 years' experience with successfully completed projects of a similar nature and scope.
D. Source Limitations: Obtain each type of metal plate wall panel from single source and from single manufacturer.

1.12 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, protected, sloped and well-ventilated area to not allow standing water on material and in accordance with manufacturer's instructions.
C. Protect products of modular metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage.

1. Approval of mockup does not relieve Contractor of responsibility to comply with all requirements of contract documents.

D. Store panels covered with suitable weather tight and ventilated covering.
E. 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.
G. Remove strippable protective covering from aluminum panel prior to installation.

1.13 SITE CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of this Work to be performed according to manufacturer's installation instructions and warranty requirements.
B. Field Measurements: John W. McDougall Co., Inc. to verify locations of structural members, adjoining construction and wall openings dimensions by field measurement before panel fabrication and indicate measurements on final shop drawings.

1.14 WARRANTY

A. Special Manufacturer's Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal wall panel assemblies that fail in materials and workmanship within two years from date of Substantial Completion.
B. Special Panel Finish Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace wall panels that display evidence of deterioration of finish within 30 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Modular metal wall panel system consisting of aluminum panels in a rainscreen application as part of the assembly described below.

1. **Modular Metal Wall Panels over Multi-Component Framed Wall System**: Modular metal wall panels applied as exterior rainscreen cladding over wall framing with exterior sheathing, an applied membrane that provides air, moisture, and water vapor control and insulation within the framing.

    a. Water-resistive barrier is provided under Division 07 Section "Weather Barriers."
    b. Air, moisture, and water vapor control membrane is provided under Division 07 Section "Air Barriers."

2. **Modular Metal Wall Panels over Masonry Wall System**: Modular metal wall panels applied as exterior rainscreen cladding over a masonry wall [and rigid board insulation] and an applied membrane that provides air, moisture, and water vapor control.

    a. Water-resistive barrier is provided under Division 07 Section "Weather Barriers."
    b. Air, moisture, and water vapor control membrane is provided under Division 07 Section "Air Barriers."

3. **Modular Metal Wall Panels over Outside-Insulated Framed Wall System:** Modular metal panels applied as exterior rainscreen cladding over wall framing with exterior sheathing, an applied membrane that provides air, moisture, and water vapor control and insulation [within the framing and] applied outboard of the sheathing.

    a. Water-resistive barrier is provided under Division 07 Section "Weather Barriers."
    b. Air, moisture, and water vapor control membrane is provided under Division 07 Section "Air Barriers."

4. **Modular Metal Wall Panels over Insulated-Composite Backup Panel Wall System:** Modular metal wall panels applied as the exterior rainscreen cladding component of a metal wall panel system that includes insulated composite metal wall backup panels. Metal wall backup panels provide thermal, air, water, and water vapor control.

2.02 MANUFACTURERS

A. Basis of Design: **John W. McDougall Co., Inc. - GENESIS Modular Metal Wall Panel System**. Provide basis of design product, or comparable product approved by Architect prior to bid.

1. John W. McDougall Co., Inc.
   a. Address: 3731 Amy Lynn Drive, Nashville, TN 37218
   b. Phone: (615) 321-3900, Fax: (615) 329-9069, Website: www.jwmcd.com

2.03 MATERIALS

A. Aluminum Sheet: Smooth surface coil-coated sheet, ASTM B209, 3003 H14 or 3105-H14 Alloy.

1. Aluminum Material: Tension-leveled
2. Thickness: 0.080 inch standard
3. Weight: 1.12 lbs. per square foot

2.04 MODULAR METAL PANELS

A. Modular Metal Panels: Factory-formed, aluminum-faced panels fabricated from 0.80” thick aluminum coil coated sheet.

1. Panel Depth: 1 3/4”
2. Panel Flatness: Maximum allowable distortion: 1/32 inch in 24 inches in any direction. Panel lines, breaks, and angles shall be sharp and true, and surfaces shall be free from warp or buckle.
3. Panel Joints: 1/2"
4. Panel Sizes: As indicated on drawings.

B. Sheet Surface: Smooth.

1. Aluminum Face Sheet Coil-Coated Finish: Reverse roll coated, PVDF (2-coat opaque and 2-coat mica are standard) (3-coat PVDF available on request) (Custom colors and finishes available upon request and subject to color matching and coil coating standard limitations and minimum quantities) (Anodized material available upon request and subject to minimum quantities)

2.05 FABRICATION

A. General: Fabricate modular metal panels and accessories at factory identical to tested units using manufacturer's standard procedures and processes necessary to meet performance requirements.

1. Provide components of modular metal panel system that are products of one manufacturer, including modular metal panels, head and sill trim, bottom weep, starter flash, and metal copings.

B. Modular Metal Panels: Fabricate modular metal panels requiring no further fabrication or modification in field.

1. Horizontal Joints: Dry seal, drained and back ventilated.
2. Vertical Joints: Pre-formed returns.
3. Reveals: 1/2"
4. Standard System Depth: 1 3/4"

2.06 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. Exposed Trim, flashings and Fastener Finish: Match panel finish.

1. Thickness: 0.040" nominal

C. Panel Fasteners: Designed to withstand design loads, with at least 3/8-inch diameter head and neoprene washer.

1. Aluminum Wall Panel Material: Provide stainless steel fasteners, or coated fastener approved by panel manufacturer or project wall consultant.

D. Sub-Girts: Galvanized (or aluminized), 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 gauge, 0.0747 inch thick.

E. Substrate Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I, at least 5/8 inch thick.

F. Weather Barriers: Provide climate specific weather barrier with performance characteristics for air penetration, water vapor transmission, and water penetration resistance.

G. Sealants: As recommended by metal panel manufacturer for openings within wall panels and perimeter conditions.

PART 3 – EXECUTION

3.01 EXAMINATION

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

1. Examine framing that will support modular metal panel system to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to modular metal wall panel system manufacturer.

a. Maximum deviations acceptable to modular metal panel system manufacturer:

1) 1/4-inch in 20 feet vertically or horizontally from face plane of framing.
2) 1/2-inch maximum deviation from flat substrate on any building elevation.
3) 1/8-inch in 5 feet.

2. Confirm presence of acceptable framing members to match installation requirements of modular metal panel system.

a. Confirm framing minimum .063 inch/16ga at maximum 24 inch spacing.

3. Confirm presence of acceptable framing members to match installation requirements of modular metal panel system.
4. Examine rough-in for components and systems penetrating wall panels to coordinate actual penetration locations relative to wall panel joint locations prior to installation.
5. Verify that window, door, louver and other penetrations match layout on shop drawings.
6. Verify that weather barrier has been installed over sheathing or substrate to prevent air infiltration or water penetration.

B. Advise General Contractor of out-of-tolerance work and other deficient conditions prior to proceeding with modular metal wall panel system installation.

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

3.02 PREPARATION

A. Examine substrates, and Work areas and conditions with Installer present for compliance with requirements for installation tolerances, wall panel supports, and other conditions affecting performance of this Work.
B. Miscellaneous Framing: Install sub girt, base angles, sills, furring, and other wall panel support members and provide anchorage in accordance with ASTM C754 for gypsum panel type substrates and panel manufacturer's installation instructions.

3.03 INSTALLATION

A. General: Install modular metal panel system in accordance with approved shop drawings and manufacturer's recommendations.
B. Weather Barrier: Install weather barrier behind wall panels and over substrate in accordance with requirements of Section 07 2500.
C. 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 starter extrusion at base course and at cut panel locations.

D. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by wall panel manufacturer.
E. Install wall panels in accordance with manufacturer's installation instructions, including pressure equalized rainscreen installation method and installation guidelines.

1. Wall panels consist of single sheets of metal formed with interlocking gutter and drainage system integral to the panel with single horizontal attachment for dry-joint rainscreen assembly.
2. Use of secondary drainage channels, brackets, support pins, joint sealants or gaskets to manage the drainage of wall panel system is not permitted.
3. Attach wall panels using progressive interlocking method, engaging bottom of panel in top of previous panel working bottom up, and left to right.
4. Install wall panels with single top attachment in pre-punched holes to allow individual panels to move due to thermal expansion.
5. Do not compromise internal gutter.

F. Install wall panels for orientation, sizes, and locations as indicated on Drawings.

G. Install wall panels with proper anchorage and other components for this Work securely in place.
H. Install wall panels with provisions for thermal and structural movement.
I. Install shims to plumb substrates as necessary for installation of wall panels.
J. 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.

K. 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.

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

3.04 CLEANING AND PROTECTION

A. Upon completion of wall panel installation, clean finished surfaces as recommended by panel manufacturer.
B. Upon completion of wall panel installation, clear weep holes and drainage channels of obstructions and dirt.
C. Protect installed products from damage during subsequent construction.
D. Replace wall panels damaged or deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION