

SECTION 07410
PREFORMED METAL SIDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Metal wall panels with exposed fasteners.
 - 2. Vertical structural steel support system (Secondary steel supports)
- B. Related Sections:
 - 1. Division 5 Section "Structural Steel" for structural-steel framing.
 - 2. Division 5 Section "Cold-Formed Metal Framing" for metal studs, bracing, anchorage, and framing accessories.
 - 3. Division 7 Section "Manufactured Roof Panels" for preformed metal roof panels.
 - 4. Division 7 Section "Joint Sealants" for field-applied sealants.
 - 5. Division 8 Section "Exterior Wall Systems - General", for requirements for exterior wall components.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide manufactured wall panel assemblies and vertical structural steel support system complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior.
- B. Air Infiltration: Provide manufactured wall panel assemblies with permanent resistance to air leakage through assembly of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 6.24 lbf/sq. ft.
- C. Water Penetration: Provide manufactured wall panel assemblies with no water penetration as defined in the test method when tested according to ASTM E 331 at a minimum differential pressure of 20 percent of inward acting, wind-load design pressure of not less than 6.24 lb/sq. ft. and not more than 12.0 lb/sq. ft.
- D. Structural Performance: Provide manufactured wall panel assemblies capable of withstanding design wind loads indicated under in-service conditions with deflection no greater than the following, based on testing manufacturer's standard units according to ASTM E 330 by a qualified independent testing and inspecting agency.
 - 1. Maximum Deflection: 1/180 of the span.
- E. Thermal performance of the wall panels shall be based on tests in accordance with ASTM C 236 corrected to 15 mph outside and still air inside. Tests shall include side joint, standard fastening and reveals.
- F. Panels and secondary support systems shall be designed for component and cladding wind loads determined in accordance with the more stringent of the local building code or ASCE 7-95 for the parameters specified.
 - 1. Importance Factor: Varies. Refer to structural drawings.
 - 2. Exposure Category: C
 - 3. Basic Wind Speed: 90mph per ASCE 7-95.

- G. Secondary support framing systems shall be designed and engineered by the panel manufacturer. Secondary support systems for openings greater than 7 feet shall be provided as shown on Drawings.
 - 1. Steel Framing for Target Building: Attach preformed metal siding to the steel framing as shown on the Drawings.
- H. Secondary Support Systems shall not vary from the theoretical plane by more than the specified tolerances:
 - 1. ¼ inch in any 20 foot length vertically or horizontally.
 - 2. ½ inch in any building elevation
 - 3. 1/8 inch within 5 feet of any change in plane such as corners and soffits.
- I. Panels and secondary support systems shall be designed for component and cladding seismic loads determined in accordance with the Uniform Building Code UBC-97 and for the parameters specifications listed below.
 - 1. UBC Seismic Zone 2A
 - 2. Importance Factor: Varies. Refer to structural drawings.
 - 3. DOE Seismic Performance Category: Varies. Refer to structural drawings.
 - 4. Site Specific Design Response Spectra: 500-Year Return Period

1.4 SUBMITTALS

- A. Shop Drawings: Show layouts of panels and vertical structural steel support system, details of corner conditions, joints, panel profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work.
- B. Structural Calculations prepared by a professional engineer, licensed in Tennessee for all the exterior panel secondary steel supports, such as, vertical girts, angle supports and bracing.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed metal wall panel projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against damage during transportation or handling.
- B. Handling: Exercise care in unloading, storing, and erecting wall panels to prevent bending, warping, twisting, and surface damage.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify location of structural members and openings in substrates by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

- A. Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal wall panels within the specified warranty period and agreeing to repair finish or replace wall panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.
- B. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide panels by one of the following:
1. Steel Wall Panels:
 - a. Berridge Manufacturing Co.
 - b. Centria
 - c. Peterson Aluminum Corp.

2.2 METALS AND FINISHES

- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with
1. Galvanized Steel Sheet: ASTM A 653, G90
 2. Surface: Manufacturer's standard stucco-embossed finish.
 3. Exposed Finish for Exterior Panels: Apply the following coating in thickness indicated. Furnish appropriate air-drying spray finish in matching color for touchup.
 - a. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight with a total minimum dry film thickness of 0.9 mil and 30 percent reflective gloss when tested according to ASTM D 523.
 - 1) Durability: Provide coating field tested under normal range of weather conditions for a minimum of 20 years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of a chalk rating of 8 according to ASTM D 4214; and without fading in excess of 5 Hunter units.
 - 2) Color: Match Construction Manager's sample.
 4. Prime Coat for Concealed Surfaces: Apply pretreatment and white or light-colored, baked-on polyester primer coat; with a minimum dry film thickness of 0.2 mil .

2.3 WALL PANEL ASSEMBLIES

- A. Exterior Wall Panel Assemblies: Wall panels shall be fabricated to the profile, thickness and finish indicated. Design and install joints between panels to form weather tight seals.
1. Steel Face Sheet: 22 gage minimum "Super-rib" 4" deep roll-formed profile metal panels with organic coating finish on both sides.
 2. Liner Panels as noted on Drawings:
 - a. Type A: 22 gage, 3" deep, coated on both sides and 1.65 pcf fiberglass batt insulation for R-10 value requirement.
 - b. Type B: 22 gage, 3" deep, coated on both sides and 1.65 pcf fiberglass batt insulation and additional 1-1/2 inch Zee subjirt with 1 inch of 1.65 pcf fiberglass batt insulation for R-14 value requirement.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.
1. Use stainless-steel fasteners for exterior applications and galvanized steel fasteners for interior applications.
 2. Provide exposed fasteners with heads matching color of panel by means of plastic caps or factory-applied coating.
 3. Provide metal-backed neoprene washers under heads of exposed fasteners located on weather side of panels.
- B. Accessories: Unless otherwise specified, provide components required for a complete wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, seam covers,

flashings, louvers, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

1. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam flexible closure strips. Cut or premold to match configuration of panels. Provide closure strips where indicated or necessary to ensure weathertight construction. Where specified, foam closure strips shall be used in conjunction with metal closures.
2. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
3. Joint Sealant: One-part elastomeric polyurethane, polysulfide, or silicone-rubber sealant as recommended by panel manufacturer.

2.5 FABRICATION

- A. General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

2.6 SECONDARY FRAMING

- A. Design, supply, and install vertical steel support system including angles, plates, bracing and other secondary framing members.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements indicated for conditions affecting performance of metal panel walls.
 1. Panel Supports and Anchorage: Examine wall framing to verify that girts, angles, and other secondary structural panel support members and anchorage have been installed to meet requirements of panel manufacturer.
 2. Do not proceed with wall panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate metal wall panels with rain drainage work; flashing; trim; and construction of soffits, roofing, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.
- B. Promptly remove protective film, if any, from exposed surfaces of metal panels. Strip with care to avoid damage to finish.

3.3 SECONDARY STEEL SUPPORT AND PANEL INSTALLATION

- A. Siding contractor shall design and install secondary framing members in accordance with approved shop drawings. Secondary framing shop drawing shall clearly indicate the structural connection details between the secondary framing members and main building steel framing. Secondary framing design shall also be in accordance with the manufacturer's recommendations.
- B. General: Comply with panel manufacturer's written instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Field cutting exterior panels by torch is not permitted.

2. Install panels with exposed exterior and interior fasteners, prefinished to match panel finishes.
 3. Locate and space exposed fasteners in true vertical and horizontal alignment. Use proper tools to obtain controlled, uniform compression for positive seal without rupture of neoprene washer.
- C. Accessories: Install components required for a complete wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, seam covers, flashings, louvers, sealants, gaskets, fillers, closure strips, and similar items. All trim and fabricated corners shall match panel profiles.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not otherwise indicated, types recommended by panel manufacturer.
1. Install weatherseal to prevent air and moisture penetration. Flash and seal panels at ends and intersections with other materials with rubber, neoprene, or other closures to exclude weather.
 2. Seal panel end laps with a bead of tape or sealant, full width of panel. Seal side joints where recommended by panel manufacturer.
 3. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."
- E. Wall Panels: Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up according to sealant manufacturer's written instructions.
1. Align bottom of wall panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 2. Install screw fasteners with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
 3. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- F. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4 inch in 20 feet on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.4 REPAIR TOUCH-UP, CLEANING, AND PROTECTING

- A. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- B. Damages to the panel finishes during the installation shall be touched-up with compatible, same color, manufacturer supplied coating material.
- C. Cleaning: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

END OF SECTION 07410