

SECTION 07 42 00
METAL WALL PANELS

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Corrugated Metal wall panels.
2. Metal-faced composite wall panels.

- B. Related Sections include the following:

1. Section 05 40 00 "Cold-Formed Metal Framing" for secondary support framing supporting metal wall panels.
2. Section 07 13 00 "Sheet Waterproofing" for breathable membrane to be applied to sheathing for rain screen construction.
3. Section 07 60 00 " Flashing and Sheet Metal" for fasciae, copings, flashings, soffits and other sheet metal work not part of metal wall panel assemblies.
4. Section 07 92 00 "Joint Sealants " for field-applied sealants not otherwise specified in this Section.
5. Section 01 81 11 "Sustainable Design Requirements" for sustainability and LEED requirements.
6. Section 08 44 13 "Glazed Aluminum Curtain Walls" for curtain walls.
7. Blast-Resistant Design: Section 01 36 00 Blast-Resistant Design.

1.3 DEFINITIONS

- A. Metal Wall Panel Assembly: Metal wall panels, composite metal wall panels, corrugated metal wall panels, attachment system components, miscellaneous metal framing, and accessories necessary for a complete rain screen system.
- B. Metal Sheet Thickness: Minimum thickness of base metal without metallic coatings or painted finishes.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide metal wall panel assemblies that comply with performance requirements specified as determined by testing

manufacturers' standard assemblies similar to those indicated for this Project, by a qualified testing and inspecting agency.

- B. Structural Performance: Provide metal wall panel assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated, based on testing according to ASTM E 1592:
- C. Rain Screen Installation: Metal panels will be installed without gaskets or sealants on a weatherproof membrane over GWB based, fiberglass faced sheathing.
 - 1. Wind Loads: Determine loads based on the following minimum design wind information:
 - a. Wind Speed of 90 mph, Exposure C, with a Wind Importance Factor (Iw): 1.15. Pressures will be acting inward or outward.
 - 2. Deflection Limits: Engineer metal wall panel assemblies to withstand test pressures with deflection no greater than **1/240** of the span and no evidence of material failure, structural distress, or permanent deformation exceeding 0.2 percent of the clear span.
 - a. Test Pressures: **150** percent of inward and outward wind-load design pressures.
- D. Seismic Performance: Provide metal wall panel assemblies capable of withstanding the effects of earthquake motions determined according to 2006 International Building Code.
 - 1 Seismic Use Group: III
 - 2 Seismic Design Category: D
 - 3 Seismic Importance Factor (Ie): 1.5
 - 4 Sds: 0.448
- E. Thermal Movements: Provide metal wall panel assemblies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- F. Thermal Movements for Metal-Faced Composite Wall Panels: Provide composite wall panel assemblies that allow for noiseless thermal

movements resulting from the following range in ambient temperatures and that prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects:

1. Ambient Temperature Range: Minus 20 to plus 180 deg F.

1.5 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal wall panel and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details. Distinguish between factory-and field-assembled work.
 1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
 - a. Flashing and trim.
 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Coordination Drawings: Exterior elevations drawn to scale and coordinating penetrations and wall-mounted items. Show the following:
 - 1 Wall panels and attachments.
 - 2 Girts; Stud framing.
 - 3 Wall-mounted items including doors, windows, louvers, and lighting fixtures.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 1. Metal Wall and Soffit Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal wall panel accessories.
 - a. Include four-way joint for composite panels.
 - 1 Trim and Closures: 12 inches long. Include fasteners and other exposed accessories.
 - 2 Accessories: 12-inch-long Samples for each type of accessory.
- E. Qualification Data: For Installer.
- F. Field quality-control test reports.
- G. Research/Evaluation Reports: For metal-faced composite wall panels.

H. Maintenance Data: For metal wall panels to include in maintenance manuals.

I. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

- 1 Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- 2 Engineering Responsibility: Preparation of data for metal wall panels, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Fabricator Qualifications: Certified by metal-faced composite wall panel manufacturer to fabricate and install manufacturer's wall panel system.

C. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated, as documented according to ASTM E 548.

D. Source Limitations: Obtain each type of metal wall panel through one source from a single manufacturer.

E. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal wall panels and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

F. Fire-Resistance Ratings: Where indicated, provide metal wall panels in or as part of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

- 1 Combustion Characteristics: ASTM E 136.
- 2 Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
- 3 Metal wall panels shall be identified with appropriate markings of applicable testing and inspecting agency.

G. Mockups: Build mockups of each of the three types of wall panels to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.

1. Build mockups of typical corner wall panel condition **including soffit**, in location to be determined by Resident Engineer and Architect; approximately 96 inches square by full thickness, including insulation, supports, attachments, and accessories.
 - a. Include four-way joint for metal-faced composite wall panels.
2. Approval of mockups is for other material and construction qualities specifically approved by Resident Engineer in writing.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Resident Engineer in writing.

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