

Pre-Insulated Metal Panels
Division 7, Section 07400

DM40, SM40, MV40, HE40 Panels

Part 1 – General

- 1.0.1 Description
Furnish and install all steel faced factory insulated wall panels forming the exterior cladding and the related accessories and trim required to make the walls air and water tight.
- 1.0.2 Design
The metal faced foam core wall panels shall be produced on a continuous process manufacturing line under strict quality control and must be independently audited quarterly by a recognized audit facility/testing lab. The panel width, thickness, gauges, and core strength shall be as required to contribute to the combined action of the wall in resisting the design load of _____#/sq.ft. inward and _____#/sq.ft. outward with a deflection not to exceed L/180.
- 1.0.3 Shop Drawings
Contractor shall furnish detailed drawings showing location and profile of insulated panels, as well as location and shape of formed metal flashings, and the location and type of sealants and fasteners.
- 1.0.4 Acceptable Manufacturers
Insulated wall panels shall be manufactured by All Weather Insulated Panels, 929 Aldridge Road, Vacaville, CA 95688. 707-359-2280.
- 1.0.5 Substitutions
This specification is written with the _____ wall panel as the basis of acceptable design, quality and performance. Requests for substitutions must be submitted in writing no less than 14 days prior to bid.

Part 2 – Products

- 2.0.1 Material
- A. The insulated metal wall panel shall be _____" thick, 40" wide as detailed on the design drawings. The side joint shall be a double tongue and groove off set design, permitting exterior side installation and fasteners completely concealed within the side joint.
- B. The concealed fasteners shall positively lock the face sheet of the panel to the structural supports and provide positive resistance to negative wind loads.
- C. The female side of the panel joint shall be caulked with a single 3/8 inch minimum continuous bead of approved non-skinning butyloid gun grade sealant equivalent to Schnee-Morehead 5430, prior to engagement as shown on the panel shop erection drawings and installation instructions.
- D. The panel exterior shall be select one of the following
- | | | |
|-----------------------|---|---|
| Mesa (DM40 or SM40) | = | lightly planked mesa ribs on 2.22" centers |
| Micro-Vee (MV40) | = | shallow vee groove striations on 2.48" centers |
| Heavy Embossed (HE40) | = | no planking or striations – flat with heavy embossing |

The exterior metal substrate shall be 26ga G90 Galvanized or AZ50 Galvalume Steel coated with a 30 year ceramic polyester finish to a total dry film thickness of 1.0 mil including primer. The exterior color shall be selected from the manufacturer's seven in-stock standard colors.

- E. The panel interior shall be *select one of the following*
 Mesa = lightly planked mesa ribs on 2.22" centers
 Micro-Vee = shallow vee groove striations on 2.48" centers.

The interior metal substrate shall be 26ga G90 Galvanized or AZ50 Galvalume Steel coated with a 20 year polyester coating to a total dry film thickness of 1.0 mil including primer. Interior color to be "Imperial White".

- F. The continuously foamed-in-place panel core shall be Class 1 rigid polyisocyanurate (polyurethane) foam meeting the physical properties listed under section 2.02 F.

G. The insulated panel manufacturer shall furnish either formed metal flashings of the same gauge and color as the panel exterior, or matching color and gauge flat stock to be formed by the installing contractor.

2.02 Performance Tests

- A. The panels ability to withstand positive and negative design loads shall be verified by testing in accordance with the ASTM E 72 vacuum chamber method with the standard deflection criteria to be L/180.
- B. The panel thermal properties shall be verified by actual tested values in accordance with the ASTM C 518 steady state thermal transmission test method. Aged K Factor shall not exceed 0.14 @ 75°F mean temperature or 0.13 @ 40°F mean temperature.
- C. The weather-tightness of the installed panels system shall be tested and verified by the ASTM E 283 air infiltration method and the ASTM E 331 water penetration method. Air leakage shall not exceed 0.01 CFM per square foot of wall area at a pressure differential of 12.0 psf. Water leakage shall not be observed at the panel joint at a pressure differential less than 6.27 psf.
- D. The panel shall have Factory Mutual Class 1 approval for wall and roof/ceiling construction in accordance with the full scale FM 4880 test program with no height restriction.
- E. The panel shall have Factory Mutual Class 1 Exterior Wall System approval for Windstorm in accordance with the FM 4881 test program.
- F. The polyisocyanurate foam core shall meet or exceed the following physical properties:
- a. Compressive Strength: 25 psi
 - b. Density (in-place): 2.1 to 2.5 pcf
 - c. Shear Strength: 28 to 32 psi
 - d. Closed Cell Content: 95%
 - e. Dimensional Stability: 14 day aged (ASTM D 2126)
 - i. -20°F < 1% change
 - ii. 158°F Dry Heat < 1% change
 - iii. 158°F Humid Heat < 1% change
 - f. The panel core shall have a flame spread maximum of 25 and smoke developed maximum of 450 as tested in accordance with the ASTM E 84 test method.
- G. Panels not meeting these testing and performance criteria are not permitted for use as exterior walls.

Part 3 – Execution

- 3.01 For quality panel installation, the contractor/installer shall examine the alignment of the structural steel before installing the metal wall panels. The steel shall be aligned to the tolerances established in the AISC code of standard practice, section 7, and the supplemental modification control section 7.11.3, adjustable items. The maximum deviation of steel alignment shall be limited to 0 (+/-) 3/16" from the control with a 1/8" maximum change in deviation for any member of any 10'-0" run of panel. The erector shall not proceed with installation if the structural steel is not within the specified tolerances. The face of all structural members to which the panels are attached must be in the same vertical plane, flat and free of obstructions such as weld marks, bolts or rivet heads. In no case shall vertically installed wall panels be fastened directly to structural columns or vertical framing members. In no case shall horizontally installed wall panels be fastened directly to structural beams or horizontal framing members.

- 3.02 The metal wall panels shall be erected by an experienced metal panel contractor in accordance with the approved drawings, specifications, and installation instructions.
- 3.03 Manufacturer shall provide panel contractor with written instructions for recommended product storage and handling.
- 3.04 Manufacturer shall repair or replace any damaged or defective panels after determination of responsibility.
- 3.05 Manufacturer shall warrant the panels as free from defects in material and workmanship for 2 years from the date of production.
- 3.06 Manufacturer shall warrant that the exterior paint finish will not:
 - A. Chip, crack, check, or peel for a period of (30) thirty years from date of installation (except for such crazing that may occur on tightly roll-formed edges and brake bends).
 - B. Chalk in excess of a numerical rating of (8) for a period of (30) thirty years from date of installation when measured in accordance with the standard procedures outlined in ASTM D-659.
 - C. Fade or change color in excess of (5) E units for a period of (30) thirty years from date of installation when calculated in accordance with ASTM D-2244. The color change is to be measured on exposed painted surface cleaned of surface soils and oxidation.

