SECTION 07410 - PREFORMED LAMINATED METAL WALL PANELS

Items noted *(in parenthesis and italic text)* are optional
or variable depending on individual job conditions.

PART 1 - GENERAL

1.1 Description

A. Furnish and install all metal-faced, factory laminated foam wall panels and accessories, *(including the structural subframing and/or light gauge metal framing support system)*, in accordance with the contract drawings and details to insure a weathertight system. Metal panel supplier shall be responsible for the design of the wall panel system, including, but not limited to, the anchorage details, sealant recommendations, extrusions, and flashings, *(and light gauge metal stud framing system), (and structural subframing)*.

B. Related work: not included as work or materials furnished in this section:

1. Structural Steel, Section 05 _____.
2. Light Gauge Metal Framing, Section 05 _____.
3. Miscellaneous Metals, Section 05 _____.
4. Insulation, Section 07 _____.
5. Metal Siding Panels, Section 07 _____.
6. Flashing and Sheet Metal, except as specifically noted herein, Section 07 _____.
7. Sealant, Section 09 _____.
8. Preformed Laminated Sunscreens, Section 10700

1.2 Quality Assurance

A. Industry Standards

1. Reference to ASTM and ICBO standards shall mean the latest edition of those standards.

2. Any reference to specific manufacturers is not intended to restrict bidding but rather to establish a minimum standard of quality and offer clarification of panel profiles. Manufacturers not listed must

obtain the written approval of the architect a minimum of 10 days prior to the bid. Such request for approval must be in accordance with paragraph 1.3 of this section and the general conditions.

B. Installation

1. The installer shall be an experienced erection firm licensed by or acceptable to the panel manufacturer.

2. Written approval of any subcontract erector must be received by the architect prior to the installation of any materials.

1.3 Pre-Bid Approval

A. The name of the manufacturer and/or installer must specifically be listed by the general contractor at the time of submission of the bid.

B. No bidder of the wall panel system will be accepted without the prior written approval of the architect based on submission of a mock-up illustrating the significant conditions of the project.

1. Scope of the mock-up must be closely coordinated with the architect.

2. Written approval of all bidders fulfilling these requirements shall be so noted by addendum.

1.4 Submittals

A. Submit copies of manufacturer's standard guide specifications, standard detail drawings and installation procedures.

B. Submit certified test reports verifying the performance requirements.

C. Submit product samples as directed by the project architect representative of materials to be furnished.

D. Submit shop drawings showing small scale layout and elevations of the total project. Details shall include attachment to the support system, horizontal and vertical joints and their intersection, trim flashings, and all accessories. Show details of weatherproofing at edges, termination, penetrations and connections to adjacent materials.

E. Submit mill certifications documenting that the physical properties of the metal used in the manufacturing of the panels meet the specified requirements.

1.5 Design Load

The wall panels *(and framing)* shall be designed for a minimum positive and negative wind loading at *(20)* PSF with a maximum allowable deflection of L/180.

PART 2 - PRODUCTS

2.1 Manufacturer

Provide FM-100 panels as manufactured by Protean Construction Products, Inc. of Burnsville, MN. Phone: (952)895-4000 Fax: (952)895-1691. ***www.protean.com***

2.2 Panel System

The entire panel system shall be installed in accordance with the details illustrated on the contract drawings. The vertical and horizontal joints shall be sealed through the use of exposed sealants as indicated. The panels shall be positively attached to the building structure or subframe with concealed clips or tabs on the panel edges, as illustrated on the contract drawings.

2.3 Panel Assembly

A. The basic panel shall consist of metal skins laminated to a polyisocyanurate urethane foam core, in thicknesses, lengths and widths as illustrated on the contract drawings.

B. Panels shall be laminated on a dead level platen in a vacuum press for a period of time sufficient to cure the thermo-setting adhesive. Under NO circumstances, shall panels that are laminated with a pinch roller or a stacked type of system be acceptable.

C. Exterior Face and Finish

1. The exterior face skin shall be manufactured from 22 gauge, G90 galvanized steel sheets in a smooth texture, conforming to ASTM A446, Grade A (minimum) with a minimum yield of 33,000 PSI, then galvanized in accordance with ASTM A525 or 22 gage, Galvalume^{TM} steel sheets in a smooth texture, confirming to ASTM A792, Grade CQ.

2. The exterior face skin shall be finished with a KYNAR (PVF), fluorocarbon finish with a total nominal dry film thickness of 1.0 mil. Finish shall be applied at manufacturer's option, either by coil coating or spray painting in accordance with industry standards.

(For alternate finishes or more detailed specifications, refer to separate guide specification for insertion at this point.)

3. One manufacturer's standard *(custom)* color shall be selected by the architect.

4. The non-exposed side of the exterior face skin shall be finished with a special primer compatible with the manufacturer's standard adhesive.

5. The exposed side of the exterior face skin shall be protected with a strippable coating.

a. The strippable coating shall be compatible with the exterior finish.

b. The strippable coating shall be removed by the erector immediately upon installation of the panel.

D. Interior Liner and Finish

1. The interior liner skin shall be manufactured from 22 gage, G90 galvanized steel sheets in manufacturer's standard texture, conforming to ASTM A446, Grade A (minimum) with a minimum yield of 33,000 PSI, then galvanized in accordance with ASTM A525 or 22 gage, Galvalume^{TM} steel sheets in manufacturer's standard texture, confirming to ASTM A792, Grade CQ.

2. The interior liner skin shall be finished in manufacturer's standard primer or polyester finish.

3. The non-exposed side of the interior liner skin shall be finished with a special primer compatible with the manufacturer's standard adhesive.

E. Core Material

The core material shall be polyisocyanurate urethane foam of thicknesses indicated on the contract drawings. The core density shall be a minimum of 1.8 to 2.3 pounds per cubic foot and have a tensile strength of not less than 30 PSI and shear strength of not less than 24 PSI. The "U" value of the panels shall be as indicated on the contract documents for the various thicknesses.

F. Adhesive

1. The adhesive system shall be manufacturer's standard thermo-setting type adhesive, approved for application in sandwich panel construction per ICBO requirements.

2. Under NO circumstances, will contact types of adhesives be acceptable.

2.4 Accessories

A. Fasteners

1. All panels shall be positively attached to the structure through the use of concealed fasteners contained within the side joint of the assembly.

2. No exposed fasteners will be accepted, unless noted otherwise.

3. Fastener types and sizes shall be designed to resist negative & positive wind loads.

B. Extrusions and Flashings

1. All flashings noted in the contract documents as part of this section shall be fabricated as detailed from materials matching the specifications for the face materials, unless noted otherwise. The reverse side of all flashings and/or backer plates will only be finished with a primer only.

2. All extrusions noted in the contract documents, as part of this section shall be fabricated as detailed and finished to match the exterior skin.

3. All flashings and extrusions will be formed in 10'-0" or 12'- 0" lengths unless otherwise noted. All inside and outside corner intersections shall be field mitered from standard flashing or extrusion lengths.

C. Sealants

All sealants shall be in accordance with the latest ASTM standards and shall comply with the sealant specifications of the contract documents.

D. Subgirts & Clips

Subgirts and clips shall be furnished as part of the scope of this work as noted on the contract drawings and as required to provide a complete wall panel assembly. They shall be designed by the panel manufacturer to withstand the specified loads and shall typically be fabricated from mill finished, G90 galvanized steel, unless otherwise noted.

2.5 Light Gauge Steel Stud Framing System

(If the light gauge steel stud framing system is included as part of the scope of this section of work, refer to separate guide specification for insertion at this point.)

PART 3 - PERFORMANCE REQUIREMENTS

3.1 Performance Testing - The Panel Assembly

A. Structural

Structural designs shall have been verified by witnessed uniform load deflection tests in accordance with ASTM specification E-330, the standard test method for structural performance of exterior curtainwalls by uniform static air pressure difference. Standard test design loading shall be 40 pounds per square foot as a positive and negative wind load and a deflection limit of L/180.

B. Water Penetration

Water penetration of panel assembly shall have been tested in accordance with ASTM specification E-331, the standard test method for water penetration of curtain walls by uniform static air pressure difference. The test assembly when subjected to a water spray of five gallons per square foot and a static pressure of 6.24 PSF shall have no uncontrollable water on the inside surface of the building.

C. Air Infiltration

Air infiltration of the panel assembly shall have been tested in accordance with ASTM specification E-283, the standard test method for the rate of leakage through curtain walls. The test assembly shall not exceed .06 cubic feet per minute per square foot of wall area at a pressure differential of 6.24 PSF.

D. Weathering

Weathering of the laminated assembly shall have been tested in accordance with ASTM specification D-2247. The panel shall show no evidence of delamination of the facing and core when subjected to 100% humidity at 100^0 F for 1000 hours.

E. Dimensional and Flatness Criteria

1. Panels shall have a flatness criteria not to exceed 1/16" in 18" in any direction. Using a straight edge, no point shall be more that 1/16" away from the straight edge between two points of contact.

2. Normal dimensional tolerances shall be as follows:

Length	+/- 1/16"
Width	+/- 1/32"
Diagonal	+/- 1/16"

3.2 Performance Testing - Adhesive

A. The adhesive shall have been tested in accordance with ASTM E84.

B. The adhesive shall be tested at a temperature of 225 degrees F to determine that the shear values are not affected at this service temperature.

PART 4 - EXECUTION

4.1 Installation

A. Comply with panel manufacturer's instruction for assembly, installation and erection of preformed metal panels. Install in accordance with approved shop drawings.

B. Anchor component parts securely in place, providing for necessary thermal and structural movement.

C. Examine structure and surfaces for defects that would prevent proper installation of the wall system. Report any discrepancies to the architect and contractor. Do not proceed until the situations have been corrected.

D. Field weld support members in accordance with AWS D1.1.

E. All fasteners shall be installed in accordance with the materials specification above.

F. Erection of the panels must be started correctly and the panels held true to line. Horizontal lines are to be straight and level and vertical lines plumb. Tolerance is to be +/- 1/8" in 10 feet.

4.2 Cleaning

Clean exterior exposed surfaces of work promptly after completion of installation. Comply with recommendations of panel and coating manufacturer.

4.3 Damaged Panels

Repair or replace any and all metal panels and trim that have been damaged upon determination of responsibility.

ALTERNATE SPECIFICATION OPTIONS

At specifier's option, the following alternatives may be selected in lieu of the above standard options.

1. Protean recommends the use of 22 gauge face and liner skins, however alternate gauge skins are also available. If alternate gauge face and/or liner skins are preferred:

*Delete the word "22 gauge" in paragraph 2.3/C/1 and substitute "24 gauge" or "20 gauge".

*Delete the word "22 gauge" in paragraph 2.3/D/1 and substitute "24 gauge" or "20 gauge".

2. If aluminum skins are to be substituted in lieu of the standard steel skins, make the following modifications to the specifications above:

*Delete paragraph 2.3/C/1 in its entirety and substitute the following:

The exterior face shall be manufactured from *.040" (.050", .063")* aluminum, tension leveled sheets in a smooth texture, confirming to ASTM B209, 3003 alloy, H14 temper.

*Delete paragraph 2.3/D/1 in its entirety and substitute the following:

The interior liner skin shall be manufactured from *.040" (.050", .063")* aluminum, tension leveled sheets, in manufacturer's standard texture, confirming to ASTM B209, 3003 alloy, H14 temper.

3. Protean recommends the use of smooth textured face skins; however embossed skins are also available. If embossed face skins are preferred:

*Delete the words "smooth" in paragraph 2.3/C/1 and substitute "embossed".

4. Protean recommends the backup stud framing support system to be furnished and installed as part of the scope of this work. If specifier concurs, make the following modification:

*Delete paragraph 2.5 in its entirety and substitute the separate guide specification.

Prōtean
Construction Products, Inc.
11901 Riverwood Drive, Burnsville, MN. 55337
PHONE (952) 895-4000 FAX (952) 895-1691