SECTION 07410

EXTERIOR METAL WALL SYSTEMS

1 PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. All engineering, manufacturing and installation of the items listed by a single manufacturer and wall systems contractor trained, tested and, certified by the manufacturer for proficiency in erecting the specified products.

1. Steel faced factory foamed in-place flat panels with integral reveals and profiled panels with compatible joinery. Panels shall be designed to permit installation in either vertical or horizontal orientations.

2. Extruded aluminum trim related to the wall and window system and its intersection with adjacent materials.

3. Sealants and gasketing between panels, windows and their intersections.

4. Adjustable secondary supports for the panel and window system specified in 1.04, B *or final inspection and alignment of adjustable secondary supports by others for conformance to tolerances specified in 1.04, B, 1*.

B. Related sections

1. Secondary support system for the panel system.

2. Windows where specified.

3. Louvers where specified.

4. Exterior sunshades where specified.

1.2 QUALITY ASSURANCE

A . CENTRIA, 1005 Beaver Grade Road, Moon Township, PA 15108 products and services shall establish the minimum level of quality, performance, dimension and appearance required. Questions regarding interpretation of this specification should be directed to (CENTRIA sales person, address, phone number).

B. Manufacturer and wall systems contractor shall demonstrate a minimum of ten years of experience in the successful completion of projects employing similar materials, applications and performance requirements.

C. Manufacturer and wall systems contractor shall provide a list of five similar completed projects with addresses of the location, architect and owner.

1.3 SUBSTITUTIONS

A. Materials, accessories and testing specified shall establish the minimum level of quality, performance, dimension and appearance required of any substitution. (Note: Formawall Dimension Series incorporates foamed-in-place construction with a pressure equalization

chamber vented along the panel length providing true curtainwall performance. Only fabricated thin composites with comparable joinery, equivalent insulation and a separate vapor barrier can be considered "as equal")

B. No substitution will be considered unless a written request to the specifying architect is received for approval at least ten days prior to the established bid date. Evidence shall be submitted to demonstrate equivalency to the products and performance levels specified. Laminated panels shall not be considered acceptable substitutes for the specified foamed in-place panels.

1. A complete description of the substitution including details referenced to the wall and window conditions shown on the contract drawings.

2. Independent test reports verifying compliance with specified performance requirements.

3. A detailed listing of each specification item with which the substitution does not fully comply.

C. The manufacturer or wall systems contractor proposing the substitute shall pay the costs of any other subcontractor affected by the proposed substitute.

1.4 PERFORMANCE REQUIREMENTS

A. 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 7-98 for the parameters specified.

1. Building Classification: Mixed Use Office Building

2. Importance Factor: II / 1.0

3. Exposure Category: B

4. Basic Wind Speed: 100

B. Secondary supports for the panel system shall be designed in accordance with AISC or Aluminum Association design procedures. Through-tube support systems shall be designed and installed only by the manufacturer and certified wall systems contractor.

1. Secondary supports shall not vary from the theoretical plane by more than the specified tolerances. (Note: These are more stringent than AISC or ACI tolerances to ensure optimal appearance and performance of the wall system.)

a. ¼ inch in any 20-foot length vertically or horizontally.
b. + Or - ½ inch maximum in any building elevation.
c. + Or - 1/8 inch within 5 feet of any change in plane such as corners and soffits.

2. Cold-formed steel girts, subgirts, or studs which insulted metal panels are attached shall be a minimum of 16 Gauge (SSMA 54 mils). Cold Formed steel 18 Gauge (SSMA 43 mils or lighter shall not be used as structural supports. All cold-formed framing shall be designed in accordance with the latest edition of AISI or North American Standard Specification. Double studs or minimum 3” wide bearing surface shall be provided at all vertical joints of horizontal panel systems

and at all horizontal stack joints of vertical panel systems to insure the integrity of liner side seals.

C. The panel system and secondary supports shall be designed to allow differential movement of the buildings roof and floor structures. (Note: Movement of roof and/or floor systems exceeding ¼" shall require the use of thru tube supports with sliding connections.)

D. Performance of the wall panel system shall be verifiable with tests witnessed or conducted by independent agencies.

1. Structural performance of the wall panels shall be derived from ASTM E72 Chamber Method with a deflection limit of l/180 applied to positive load. Ultimate structural values shall be achieved without the use of backside mechanical attachments to the structure.

2. Thermal performance of the wall panels shall be based on tests in accordance with ASTM C1363 corrected to 15 mph outside and still air inside. Tests shall include 3 side-joints, in a mock-up assembly approx. 5'-0 X 5'-0 in size, standard fastening and integral reveals or profiling. Where reveals exceed the standards the manufacturer shall provide similar testing to document any adjustments required to the standard conditions.

a) R value for 2" flat panel shall be 14.5
b) R value for 3" flat panel shall be 18.9
c) R value for 2" profiled panels shall be 12.8

3. Air infiltration of the wall panels shall not exceed .06 CFM/Ft² at a static pressure of 6.24 PSF (equivalent to 49 mph wind) when tested in accordance with ASTM E283. Mock-up test size should be approx. 10'-0 X 10'-0 in size to simulate actual field conditions.

4. There shall be no uncontrolled water penetration through the panel joints at 12 PSF (equivalent to 68.5 mph wind) when tested in accordance with ASTM E331. Mock-up test size should be approx. 10'-0 X 10'-0 in size to simulate actual field conditions.

5. The standard horizontal panel joint shall demonstrate effective rain screen and pressure equalization principles with interior seal broken at least 1" in 10 l/f of panel and any exterior seal removed when tested at a static pressure of 12 PSF (equivalent to 68.5 mph wind) in accordance with ASTM E331. Effective performance shall mean no water rising within the equalization chamber and no uncontrolled leakage to the interior.

1.5 BUILDING CODE ACCEPTANCE

A. Wall panel system shall comply with requirements for foam plastics and finished panel performance as established by the applicable building code for use where non-load bearing, non-combustible wall construction is permitted. Laboratory and full scale testing including, but not limited to the following shall be available. (Note: Tests of building units shall be conducted with the joinery, sealant, clips and fastening intended for the project.)

1. Foam core and interior surface of the complete panel system shall demonstrate compliance with the following criteria for surface burning characteristics per UL Standard 723 (ASTM E84). Flame Spread – 25* or less Smoke Developed – 450

or less * Numerical flame spread ratings are not intended to reflect hazards presented by these materials under actual fire conditions.

2. Classified as Building Units for Interior Building Construction per UL Standard 1715.

3. Classified as a component of fire rated non- load bearing wall assemblies per UL Standard 263.

4. Approved per FM Standard 4880 as a Class 1 insulated wall and/or ceiling panel.

5. Evaluated per UBC 26-9 Intermediate Scale Fire Test for flammability characteristics of exterior non-load bearing wall panel assemblies.

6. Ignition temperature of the foam plastic core shall have been established per ASTM D1929.

7. Panels shall be approved for use without the requirement of a thermal barrier or automatic sprinkler.

1.6 WARRANTY

A. The manufacturer shall warrant for a period of one year that the panel and window system frame materials will be free from defects. The wall systems contractor shall warrant for a period of one year that the installation workmanship will be free from defects.

B. Painted finish warranties shall be the paint manufacturer's standard for wall panels and finished extrusions.

C. Duracast textured finish shall carry a 20-year warranty backed by the suppliers of both base coat and texture coat.

D. Durallure finish shall carry a 20-year warranty.

2 PART 2 PRODUCTS

2.1 BASIS OF DESIGN

A. Flat panels with integral reveals (Select Options Required)

1. 3-inch thickness in the main panel field and 13/16 inch thick in the reveal area.

2. 24 or 30 or 36-inch standard panel module. Refer to building elevations.

3. 10-inch minimum to 40-inch maximum custom panel modules. Refer to details.

4. Reveal width for vertical panels is 1/2 inch.

5. Reveal width for horizontal panels is 1/2 inch.

6. Minimum width of the main panel field is 8 inches (i.e., 10 inch module has 2 inch maximum reveal).

7. The face of the panel shall be flat with

   a. Smooth surface.

B. Joinery for flat and profiled panels

1. Double tongue and groove side joint joinery that can be used vertically and horizontally and can integrate with any combination of flat and profiled panel units.

2. Adjustable plus 1/16-inch to minus 1/8-inch from the specified panel module.

3. Horizontal joints shall have a positive drip edge, sloped drain shelf and integral venting to the exterior along the panel length and a 2-3/8-inch baffle interlock to provide effective rain screen and pressure equalized performance as demonstrated by testing specified in 1.04, D.

4. Joinery shall be designed to prevent entrapment of moisture, which may occur during the storage and construction process due to dynamically driven rain. Gutter interlock shall be designed to prevent moisture from becoming trapped within the foam core and shall clearly demonstrate the ability of moisture to escape to the exterior along the panel length.

5. Vertical joints for insulated metal panels shall be gasketed, exposed wet seals are not permitted. Outer wings of gasket shall compress against the metal return flange (trimless end) of the panel face. A continuous backup flash behind the vertical joint is required with two beads of field sealant applied between the panel and back up flashing for each panel.

C. Trimless ends shall be provided at panel ends.

D. Panels shall be foamed in-place between the metal skins so that no internal voids exist that could trap moisture or condensation and so that the initial insulating integrity of the foam core is preserved by the impermeable steel face and liner.

E. All panel face and liner elements shall be roll formed to insure consistency of shape and joinery.

F. Panel attachment clips shall be designed to prevent crushing of the foam core during fastening work with the panel fasteners to engage both face and liner elements and mechanically attach to the panel supports.

G. The foam core shall have a minimum density of 2.7 PCF and minimum tensile and compressive strength of 20 PSI.

2.2 TRIM

A. The wall panel manufacturer shall furnish extruded trim. Installation shall be by the certified wall systems contractor except for those that require completion of work by other trades such as gravel stops.

2.3 MATERIALS AND FINISHES

A. Panels

1. Exterior skin of the flat panels with integral reveals shall be ASTM A653, grade 22 gage G90 galvanized steel.

2. Interior skin for all panels shall be ASTM A653, grade 26, G90 galvanized steel.

4. Exterior finish on G90 galvanized steel shall be:

a. FLUOROFINISH consisting of 0.2 mil primer with 0.8 mil 70% Hylar 5000 or Kynar 500 color coat

5. Interior finish shall consist of 0.2-mil primer with 0.6-mil acrylic in Arctic Ice color.

6. Interior Finish shall be 22 Gauge, Embossed, Planked Durallure

B. Formed Trim

1. Gauges as required

2. Finish to match Panel.

C. Exposed panel gaskets at trimless ends shall be manufacturers standard.

1. Material may be EPDM, Neoprene, or silicone, black color in sizes suitable for the joint width.

D. Manufacturing of Formawall Dimension Series and related trim shall be performed IN THE USA.

3 PART 3 EXECUTION

3.1 SUBMITTALS

A. Submit test reports and certifications to demonstrate compliance with performance requirements and building code acceptance specified.

B. Shop and erection drawings shall clearly illustrate the details required to comply with the performance requirements specified including interface of the panel system with adjoining construction.

1. Materials and finish for each component shall be defined.

2. Erection procedures will be included where required to clearly explain proper installation of fasteners, trim, gaskets and sealants.

3. Calculations supporting structural performance shall be prepared by a Professional Engineer in the state of Maine.

4. Samples shall be submitted to illustrate the panel design, texture, color and other features specified.

3.2 INSPECTION

A. The panel systems contractor in accordance with section 1.4, B, 1, shall check final alignment of the secondary steel supports for the wall system.

B. All materials shall be inspected for damage and conformance to the specifications and shop drawings prior to installation.

3.3 FABRICATION

A. The panel components shall be prefabricated for field assembly in accordance with the procedures and details shown on the shop drawings.

B. The wall panels shall be fabricated in accordance with the quality procedures established for the specified UL classifications, FM and building code approvals.

3.4 INSTALLATION

A. Manufacturer shall provide detailed instructions covering the tools, fasteners, sealants, gaskets, and procedures required to assure performance of the wall assembly as specified.

B. Installers of panels, other components shall be trained, tested and certified by the manufacturer to erect the specified products.

C. Install the panel system, fasteners, trim and related items in accordance with dimensions and procedures shown on the approved shop and erection drawings.

D. Paint, bituminous coating, or sealant as recommended by the manufacturer shall separate dissimilar metals.

E. Work shall be coordinated with other trades as required to insure proper flashing and seals to adjoining construction.

3.5 DAMAGED MATERIAL

A. Damage caused by the manufacturer or wall systems contractor shall be replaced or repaired to as new condition.

B. The construction manager for the project shall inspect and approve each completed wall and window area and be responsible for protection of completed work from damage by other trades.

3.6 CLEANING

A. The wall systems contractor shall remove all protective materials and labels from the wall and window system as the system is erected.

B. The construction manager shall be responsible for final cleaning of the wall and window system due to conditions that occur after wall systems contractor has completed an area. Cleaning is to be done in accordance with the manufacturers instructions.

…END OF SECTION