SECTION 074100 - CORRUGATED METAL PANEL

PART 1   GENERAL

1.01   SUMMARY

A. Section Includes: All exterior metal wall panels and associated flashing, extruded aluminum trim, insulation, subgirts, sealants, and fasteners necessary to form the exterior metal wall panel system as shown on the contract drawings and/or specified herein.

B. Related Sections:

1. Structural Metal Framing
2. Cold-Formed Metal Framing
3. Building Insulation
4. Air Barriers
5. Flashing & Sheet Metal
6. Joint Sealers
7. Gypsum Sheathing
8. Louvers & Vents

1.02   REFERENCES


B. The Aluminum Association

1. Specification for Aluminum Structures

C. American Society for Testing and Materials (ASTM):

1. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

2. ASTM C 236 Standard Specification for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box.¹

3. ASTM E 283 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

4. ASTM E 331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference¹

D. American Iron and Steel Institute (AISI):

1. Specification for the Design of Cold-Formed Steel Structural Members
E. American Institute of Steel Construction (AISC):
   1. Code of Standard Practice

F. American Society of Civil Engineers (ASCE):
   1. ASCE-7, Minimum Design Loads for Buildings and Other Structures

1.03 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Single-skin concealed fastener metal wall panel applied as the exterior component of an insulated wall system. This system must include an air and water resistant barrier located on the outboard side of the wall supports, that is designed and provided by a subcontractor/supplier other than the metal wall panel manufacturer. The air and water resistant barrier will provide the air and water infiltration performance.
   2. Wall panel system shall be manufactured and installed to withstand specified design loads and maintain performance requirements without defects, damage, or failure.

B. Performance Requirements:
   1. Design wind loads shall be as indicated on the contract drawings.
   2. Wall panels shall be designed for a maximum deflection under loading of L/180.
   3. Air infiltration of the wall panel system shall be limited to 0.06 CFM/ft² at a positive pressure differential of 1.57 psf when tested in accordance with ASTM E 283.
   4. There shall be no uncontrolled water penetration to the building interior when the wall panel system is tested per ASTM E 331 at a positive pressure differential of 6.24 psf or 20% of the design wind pressures whichever is greater. The test pressure need not exceed 12 psf.
   5. Wall panel system shall be tested for thermal transmittance in accordance with ASTM C 236.

1.04 SUBMITTALS

A. Submit product data, test reports, and certifications in accordance with quality assurance and performance requirements specified herein.

B. Submit panel shop drawings consisting of design and erection drawings, finish specifications, and other data necessary to clearly describe the design, materials, sizes, layouts, construction details, and erection. Submit small-scale layouts of panels and large-scale details of edge conditions, joints, fastener and sealant placement, flashings, penetrations, and special details. Distinction must be made between factory and field assembled work.

   1. Drawings must be approved prior to fabrication.
C. Submit structural design calculations, in accordance with the AISI Specification for the Design of Cold-Formed Steel Structural Members, for the metal wall panel system.

1. A professional engineer registered in the state where the project is located shall certify the calculations.

D. Samples:

1. Panels: One (1) of each type, full panel width by 12 inches long.
2. Fasteners: Two (2) of each type with statement of intended use.
3. Closures: One (1) of each type metal closure and foam closure as required.
4. Sealants: One (1) sample of each type with statement of intended use.
5. Clips: Two (2) of each type.

1.05 QUALITY ASSURANCE

A. Manufacturers Qualifications: The manufacturer shall have had a minimum of ten (10) years experience in the successful completion of projects employing similar materials, applications, and performance requirements.

1. Manufacturer shall provide a list of five (5) similar completed projects with addresses of the project location, architect, and owner.

B. Installers Qualifications: The wall systems contractor shall have had a minimum of ten (10) years experience in the successful completion of projects employing similar materials, applications, and performance requirements.

1. The wall systems contractor shall provide a list of five (5) similar completed projects with addresses of the project location, architect, and owner.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be unloaded and stored per the manufacturer’s instructions to prevent damage due to handling and weather.

1.07 WARRANTIES

A. Material Warranty: The manufacturer shall warrant that the materials and accessories furnished in accordance with these specifications shall remain free from defects in material and factory workmanship for a period of one (1) year from date of shipment.

B. [Paint Finish Warranty: The manufacturer shall warrant against fading, chalking, peeling, cracking, checking, chipping, or erosion to base metal of the exterior panel finish, in accordance with the paint supplier's standards.] or

PART 2 PRODUCTS

2.01 MANUFACTURERS
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.

B. Substitutions: Materials, accessories, and testing specified shall establish the minimum level of quality, performance, dimension, and appearance required of any substitution.

2.02 MATERIALS

A. Exterior metal wall panel system shall be Concept Series as manufactured by CENTRIA or approved equal.

1. Concept Series panel profile(s) model # CS-660. Wall panel variation shall be as defined on the contract drawings.
   a. Panels shall be nominal 7/8-inches in depth with 16 inches of coverage width.
   b. Panels shall have identical interlocking side joints to accommodate multiple panel profile integration.
   c. Panels shall be fastened to the wall girts with minimum 16 gage concealed clips and fasteners to allow for unimpeded thermal movement of the wall system. Clips shall be designed to hold panel ½” minimum from exterior sheathing. Exposed fastened panels are unacceptable.
   d. Panels shall be factory fabricated by roll-forming operations to assure consistency and quality of manufacture. Panels fabricated by press brake or folding machine are unacceptable.
   e. Metal panels shall be fabricated from zinc coated steel conforming to ASTM A 653 SS Grade 37, G90 coating. Material shall be minimum 20 gage with smooth surface texture.

B. All exterior metal flashing shall be fabricated in the same material, gage, finish, and color as the exterior profile, unless otherwise noted.

C. Extruded aluminum exterior panel trim shall be MicroLine as manufactured by CENTRIA. Extruded trim details shall provide sharp, crisp appearance with maximum 2 inch sight lines with no exposed fasteners, unless otherwise noted. MicroLine details shall be as defined on the contract drawings.

1. Extrusions shall be 6063-T5 aluminum with exposed surfaces painted to match wall panels.

D. Subgirts shall be fabricated from minimum 16 gage zinc coated steel conforming to ASTM A 653 SQ Grade 37, G90 coating.

E. Insulation shall be 1.65 pcf density semi-rigid glass fiber type.

2.03 FINISHES
A. Exterior metal panel material shall be factory coil coated in one of the manufacturer’s standard finishes and colors. Manufacturer shall provide a minimum of 25 standard colors for selection.

1. Exposed exterior surface finish shall be DURAGARD, consisting of 0.8 mil primer with 0.8 mil 70% Kynar 500 color coat.
   
a. Exposed surface color shall be CENTRIA Slate Gray, color #181.

2. Concealed interior surface finish shall consist of a 0.2 mil primer and 0.3 mil backer coat

Exposed interior surface finish shall match finish and color of specified exterior surface finish and color.

2.04 MITERED CORNERS

A. Horizontal exterior profile panel outside [and/or inside] corners shall be trimless MicroSeam™ corners as manufactured by CENTRIA or equal.

1. Mitered corner assemblies shall match specified exterior profile panel in shape, general appearance, material, and finish.

2. Mitered corner assemblies shall be notched, bent, and structurally bonded by the panel manufacturer. Field fabrication or fabrication by other than the panel manufacturer is not acceptable.

3. Mitered corner assemblies shall be factory coil coated to match adjacent panels. Paint finish shall meet specified warranty requirements.

B. Welded corners or mitered corner assemblies with exposed rivets or fasteners are unacceptable.

2.05 ACCESSORIES

A. Wall panel system fasteners shall be #14 minimum diameter, self-tapping, with hex head.

1. Concealed fasteners shall be cadmium plated carbon steel or 300 series stainless steel with 5/8" bonded neoprene and galvanized or stainless steel washers.

2. Exposed fasteners shall be 300 series stainless steel with 5/8" bonded neoprene and stainless steel washers coated to match the exterior panel color.

B. Closures shall be metal and/or foam as required. Foam shall be a pre-cut profile closure of cross-linked, closed cell foam. Metal closures shall be fabricated from the same material, gage, finish, and color as the exterior metal panel.

C. Sealants:

1. Hidden sealant at all side laps, end laps, and flashing details shall be gun grade non-curing butyl or polymeric non-skinning butyl tape to ensure weather tightness.
2. Exposed sealant shall be one-part moisture curing, gun grade polyurethane.

2.06 FABRICATION

A. Wall panel system components shall be fabricated in the factory for field assembly to the greatest extent possible.

PART 3 EXECUTION

3.01 INSPECTION

A. Wall panel systems contractor shall check the alignment of the structural supports. Alignment exceeding tolerances defined in the AISC Code of Standard Practice shall be corrected prior to proceeding with the installation of the wall panel system.

B. Wall panel systems contractor shall inspect installation of vapor permeable air and water barrier for compliance with manufacturers installation instructions. Corrections necessary to ensure specified performance shall be made prior to wall panel installation.

3.02 INSTALLATION

A. Manufacturer shall provide detailed instructions covering the tools, fasteners, sealants, and assembly procedures required to achieve the structural, thermal, and weathering performance specified.

B. Metal filings caused by cutting and drilling shall be immediately removed from finished surfaces to prevent rusting and staining.

C. The wall panel systems contractor shall coordinate work with other trades as required to insure proper flashing and seals with adjoining construction.

3.03 DAMAGED MATERIAL AND CLEANING

A. Damage caused by the manufacturer or wall panel systems contractor shall be repaired or replaced.

B. The general contractor shall inspect and approve each completed wall area and be responsible for protecting finished work from damage by other trades.

C. The wall panel systems contractor shall remove all protective materials and labels from the wall components as they are installed.

D. The general contractor shall be responsible for final cleaning of the wall panel system due to any conditions that occur after the wall panel systems contractor has completed an area. Cleaning is to be done in accordance with the manufacturer’s instructions.

END OF SECTION 074100