

## **Section 07 42 16 PREFINISHED INSULATED METAL WALL PANELS**

### **Part 1- General**

#### **1.00 RELATED DOCUMENTS**

- A. Instructions to bidders, "The General Conditions of the Contract for Construction." The Supplementary General Conditions & Division 1, General Requirements, are part of these specifications are hereby included as part of this section and shall be binding on the contractor and/or subcontractor who performs the work specified.
- B. Thoroughly examine all other sections of the specifications for requirements which effect the work of this section, whether or not such work is specifically mentioned in this section.
- C. Work included, but not limited to the furnishing and installation of all prefinished insulated wall panels.

#### **1.01 DESCRIPTION OF WORK INCLUDED**

- A. Provide for furnishing, installing, operating, and maintaining in a safe manner, all hoisting, and rigging equipment, lifts, staging, and machinery at locations acceptable to the Owner as necessary for the proper installation of the work.
- B. Provide for furnishing and installation of aluminum insulated panels, together with all other associated trim, attachments, fasteners, and all other accessories as required for a complete weathertight installation.
- C. Installation of treated wood blocking, fillers, and nailers as required for a plumb, square, and secure installation.
- D. Sealing of all joints within the panel assemblies and the entire interior and exterior perimeter of all new panel assemblies after installation.
- E. Make field observations and take all field measurements of existing conditions as required for accurate completion of the work.
  - 1. Bidders shall survey conditions of existing conditions to thoroughly familiarize themselves with the scope of this contract and the existing site conditions prior to submitting a bid.
  - 2. Bidders shall be responsible for field measurements. The dimensions shown on Contract Documents are to be used as a guide.

#### **1.02 SYSTEM DESCRIPTION**

- A. General: Provide prefinished aluminum insulated (totally encapsulated) wall panels designed and installed to withstand code imposed positive and negative loads.
- B. Fabricate and install aluminum insulated wall panels and wet joint seals which together effectively provides a watertight barrier as part of the contiguous exterior wall system to protect the interior from air and water infiltration. Water entry shall be defined as the appearance of uncontrolled water, other than condensation on any inboard portion of the panel work either during testing or under actual weather conditions.

### **1.03 REFERENCE STANDARDS**

- A. The following are hereby made part of this section by reference thereto:
  - 1. ASTM E-72 Conducting Strength Tests of Panels for Building Construction.
  - 2. ASTM E-331 Water Penetration of Exterior Windows, Curtainwalls, & Doors by Uniform Static Air Pressure Difference.
  - 3. ASTM E-283 Rate of Air Leakage through Exterior Windows, Curtainwalls, & Doors.
  - 4. AAMA 603.8-1990: Voluntary Specifications & Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions.
  - 5. Other applicable ASTM tests as set forth herein.

### **1.04 QUALITY ASSURANCE**

- A. Panel system manufacturer shall be responsible for engineering and fabrication of the metal wall panel system and shall have a minimum of 15 years experience with projects of similar sizes and complexity to this contract. Obtain aluminum panels and all associated accessories from one source and by a single manufacturer.
- B. The panel system installer shall be a manufacturer's approved installer with at least three (3) years experience installing similar materials and systems. The installer shall employ workers who are experienced in every portion of the installation process, be responsible for continuously staffing the job to meet schedules, and to provide a complete, sealed and watertight installation.

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- C. Except as otherwise indicated, comply with air infiltration tests, water resistance tests, and applicable load tests for the type of panel units when installed as

indicated by the manufacturer in accordance with the specified tests.

## **1.05 PERFORMANCE CRITERIA**

### **A. Panel System:**

1. fabricate and install component parts to provide for thermal movement of panels over a temperature range of 180 degrees F without buckling, sealed joint failure, undue stress on members or anchors, or any other detrimental effects.
2. Uniform load deflection at design wind loads, as per ASTM E-72, not to exceed 1/180 of the clear span for any member.
3. Water penetration, as per ASTM E-331, as a differential static pressure of 6.24 psf, no uncontrolled water penetration.
4. Air leakage, as per ASTM E-283, at 1.56 psf pressure differential, not to exceed 0.10 CFM of fixed panel area.

## **1.06 SUBMITTALS**

### **A. General Requirements: Provide submittals in compliance with the following:**

1. Product data: Submit (3 sets )manufacturer's specifications, standard details for panel units, including data on accessories and finishes.
2. Shop drawings: Submit shop drawings, to include locations and/or exterior wall elevations denoting all panel areas, typical unit elevations at 1/4" or larger scale, and large scale sections and details of typical panel units showing dimensions, construction, and methods of attachment.
3. Samples: Submit three (3) each of samples as follows:
  - a. Aluminum panel, 8"x 8" samples with specified of color selected with 45 degree corner cut to expose interior core, or clear anodized sample accompanied with two (2) flat 3"x 5" color selector chips.
  - b. Samples of anchors, fasteners, hardware, and other component parts as may be required.

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## **1.07 PRODUCT DELIVERY, STORAGE & HANDLING**

- out of  
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condensation
- A. Materials will be delivered to the site in an undamaged condition. Use care in handling and hoisting of panels during transportation and at jobsite. All panels and component parts to be stored above grade, on pallets or blocking, contact with the ground under protective covers, inside the building, or storage trailers, so as to prevent damage, warping, bending, or from forming between the panels.
  - B. Prefinished panel exteriors shall be protected with strippable vinyl masking during manufacture, delivery, storage, and installation. Follow manufacturer's recommended instructions for the removal of the masking.
  - C. All damaged panels shall be removed from the site and replaced with new panels at no additional cost to the owner. All materials shall be new and of the best quality. Materials shall be delivered and stored on site in sufficient quantities to allow for the continuity of the work.
  - D. All materials shall be protected at all times from damage of all kinds, including scratches, dents, stains, and deformation. No damaged materials shall be incorporated into any of the work. Protection during installation shall be the responsibility of the contractor.

## **1.08 WARRANTIES**

- A. The panel system manufacturer shall warrant that the panels, its supplies will be free from defects in materials and workmanship for a period of two (2) years.
- B. The panel system manufacturer shall warrant that the finish will not chalk, crack, peel, or check for a period of twenty (20) years.
- C. Upon completion of the work and prior to acceptance of the work, the contractor shall provide to the Owner his own written warranty agreeing to repair and/or replace any panel which fails due to the improper installation within the first two (2) years after the date of substantial completion. In addition the warranty shall certify that the perimeter sealant is suitable for each specific application and has been applied in accordance with the sealant manufacturer's recommendations for joint width, depth, priming, joint movement, weather conditions, bond breaker, etc. This warranty will cover all materials and labor to correct any such failure.

## **1.09 PRE-BID QUALIFICATIONS**

A. All products other than those referenced herein, must be pre-qualified (by the manufacturer and /or contractor) at least ten (10) business days prior to the bid date for consideration. A contractor entertaining submission of a bid proposal must furnish a sample panel, complete with manufacturers literature describing all materials and manufacturing processes, and additional information as shown below:

1. Sample must be same type in which bid will be based upon.
2. Provide documentation showing manufacturer has been in business producing similar type products for at least ten (10) years.
3. Provide evidence that the installer has been in business installing similar type products for a minimum of five (5) years.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. For the purpose of establishing a standard of quality, the aluminum insulated panels noted and specified herein are based on “Tecpan,” as manufactured by Columbia Architectural Products, Inc., Beltsville, MD 20705 (301/937-4383).
- B. Other manufacturers offering products will be considered acceptable as equal, provided the materials submitted meet or exceed all of the qualities and design standards as specified herein. Products will be considered acceptable, provided those products are bid in strict compliance with this specification and requirements of this project, (refer to Section 07420 Paragraph Item 1.09, A). The Owner reserves the right to disapprove alternate manufacturers for aesthetic as well as functional reasons.

### **2.02 MATERIALS**

A. Aluminum insulated wall panels shall be constructed to consist of a formed front face of .040” “Kynar” coated aluminum, laminated to a core consisting of one (1) inch “Dow” extruded polystyrene, and a formed back face of .040” mill finished aluminum, also laminated to the core. The components shall be laminated into one monolithic unit. The adhesive used in the lamination shall be of a permanent elastic type neoprene rubber base industrial contact adhesive and shall applied to 100% of all surfaces to be laminated using as

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automatic HVLP four-gun reciprocator. Adhesive bonding strength shall be equal to or greater than the internal bond strength of any of the individual

component materials. The formed back pan shall fit snugly inside the formed front pan and sealed together with a one part silicone sealant applied at the perimeter joint of the two pans and at the interior corner seams to provide a weathertight seal against any intrusion of moisture to the interior of the panel. The corresponding front and back pan flanges shall be mechanically riveted together with a minimum of one (1) rivet. Finished panel thickness to be a nominal one (1) inch with a tolerance of  $\pm 1/16$ ."

1. Insulated panel core shall be minimum one (1.0) inch extruded polystyrene ASTM C-578 Type IV, with a minimum compressive strength of twenty-five (25) psi (ASTM D 1621).
2. Sealant shall be Dow Corning 999, one part silicone building sealant, or Sikaflex-la one component polyurethane base elastomeric sealant. Sealant must meet Federal Specification TTS-00230C, Type II, Class A.

### **2.03 FABRICATION**

#### **A. General Requirements:**

1. Factory fabricate panels into sizes and profiles as indicated on the shop drawings, with all panel edges brakeformed at right angles to the front plane, with smooth corners and sealed to provide a completely weathertight condition.

#### **B. Provide all necessary clips, screws, and other accessories required for the complete panel system installation.**

### **2.04 FINISHES**

- A. Exposed aluminum surfaces: All exposed surfaces of aluminum wall panels and accessories shall be finished with Polyvinyl-fluoride system meeting "Kynar 500." Duranar Fluopropon, or equal manufacturer's standard thermo-cured system composed of specially formulated inhibitive fluorocarbon color coat with a dry film thickness not less than 2-coat primer, 1.5 mils, and conforming to AAMA 605.2. Exposed surfaces shall be clean of oils, dirt, and free of blemishes. Color shall be selected by Owner from manufacturer's standard colors. Unless otherwise noted the back face shall have either mill finish or of random finished material.

## **PART 3 EXECUTION**

### 3.01 PREPARATION AND INSPECTION

A. Verify existing wall opening conditions to determine that all conditions required for installation of panels are within tolerances acceptable and ready to receive the work of this section.

### 3.02 INSTALLATION

A. The installation contractor and his representatives shall be totally responsible for the installation of the complete panel system.

B. Use only skilled tradesmen and complete all work in strict accordance with the manufacturer's specifications and recommendations for the installation of the panels and associated components as well as the approved project shop drawings and these specifications.

C. All panels shall be installed with back fastened clips or in a fixed glazed window system as indicated on shop drawings. Install panels and other components securely in place, with provisions for thermal and structural movement.

D. Set panels plumb, level, and true to line with uniform joints. Use only types of erection equipment, ropes, wedges, spacers, shims, and other items during centered in which will not stain or mar the finish of panels. Install panels adequately to openings unless otherwise directed by shop drawings. Anchor thermal stresses, maintain position permanently when subjected to normal building movement, typical operating activities, and specified design wind loads.

E. Exposed surfaces and edges shall be kept clean and free from sealants, metal cuttings, hazardous burrs, and any other foreign materials. Stained, discolored, or damaged panels shall be removed from the site.

F. Perform all caulking operations to completely seal metal to metal contact surfaces of panel joints using Dow Corning 795 silicone building sealant or Siksflex-1a one component polyurethane base elastomeric sealant.

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G. Any wood blocking, fillers, or nailers required to provide a secure installation shall be treated.

- H. Seal all exterior perimeter joints between panels and surrounding construction in accordance with the approved project shop drawings. Joints and other surfaces that are to receive sealants shall be clean, free from loose debris or construction stains and must be totally dry. Prepare all surfaces that are to receive sealant and apply sealant according to the manufacturer's instructions.

### **3.03 ADJUSTMENTS, PROTECTION, AND CLEANING**

- A. Clean aluminum surfaces promptly after installation of panels in accordance with the manufacturer's instructions. Exercise extreme caution to avoid damage to finish. Do not use abrasives, caustic, or acid cleaning agents in cleaning surfaces of panels. Thoroughly clean all surfaces of any excess sealant prior to sealant curing, compounds, dirt, handling marks, or other substances by using cleaning agents acceptable to the panel manufacturer. Touch up all scratches, abrasion, blemishes, and other defects in the prefinished metal surface with factory supplied finish materials.
- B. Initiate all protection and other precautions required to ensure that panels will be without damage or deterioration (other than normal weathering) at time of acceptance. Send copy of written recommendations for maintenance and protection of panels to the Owner following Substantial Completion of Panel Contract.

**END OF SECTION**