



**Precision Walls, Inc.**  
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**Specification Section 07 42 63**  
**PREFABRICATED EXTERIOR WALL PANELS**

**PART I - GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. This work consists of fabrication of panel framing, application of finish system materials, erection of panels, and installation of elastomeric sealants.

**1.2 SUBMITTALS**

- A. Product Data: Submit manufacturer's technical data for each component of panelized exterior insulated finish system to the Architect. Include standard details and a list of all accessory products. Provide comprehensive on insulation board and fire test data on system.
- B. Intent to Warrant: Submit an Intent to Warrant executed by an authorized representative of the EIFS manufacturer, indicating that the manufacturer has reviewed drawings, specifications, shop drawings, conditions affecting the work, and the relationship of EIFS and adjacent construction and proposes to provide warranties as referenced herein without further stipulation.
- C. Shop Drawings: Submit shop drawings showing complete information for fabrication and installation of panelized units. Indicate member dimensions and cross-section, location, size and type of connections, including reinforcement and lifting devices for handling and erection.
1. Include erection procedure for prefabricated panel units, and sequence of erection.
  2. Show layout, dimensions, and identification of each prefabricated panel unit corresponding to sequence and procedure of installation. Indicate welded connections by AWS standard symbols. Detail connections and joints, including accessories.
  3. Show location and details of anchorage devices that are to be installed on other construction.
- D. Calculations: Structural design calculations and drawings, sealed and signed by a Professional Engineer, currently registered in the State of North Carolina, shall be submitted to the Architect for review. Structural documents submitted shall clearly demonstrate that the buildings are designed in complete accordance with all applicable Building Codes, Technical Specifications, and Design Criteria defined and included herein.
- E. Samples:
1. Samples for Initial Selection: Submit manufacturer's standard color charts and small scale samples indicating textural choices available. Submit sealant manufacturer's

- standard bead samples, consisting of strips of actual products showing full range of colors available.
2. Samples for Verification: Submit 2 ft. x 4 ft. samples for each finish, color and texture for the location shown on the drawings. Prepare samples using the same tools and techniques intended for the actual work. Incorporate within each sample a typical control joint filled with sealant of the color indicated or selected.
  3. Sample Joint Mock-Up: Submit one mock-up of typical panel joint 27 inches long, showing joint construction, backer rod and sealant, including color of sealant.
- F. Installer Certificates: Submit installer certificates signed by the panel manufacturer certifying that the installer complied with specified requirements.
- G. Test Reports: Submit test reports on the panel system components from a qualified independent testing laboratory certifying and interpreting test results relative to system's compliance with requirements of fire performance characteristics, bond integrity and material properties.
- H. Sealant Compatibility and Test Reports: Submit sealant compatibility and test reports from a sealant manufacturer certifying that materials forming joint substrates of system have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

### **1.3 QUALITY ASSURANCE**

- A. Component Design: Compute structural properties of studs and framing members in accordance with AISC "Specifications for Design of Cold-Formed Steel Structural Members." Design panels to resist wind load of 80 mph (with deflection not to exceed L/360), transportation and erection stresses, and performance requirements specified.
- B. Local Codes: Panelized exterior insulated finish system shall comply with all applicable local codes, including seismic and wind load requirements.
- C. Manufacturer's Qualifications: Manufacturer shall gather and assemble the various components specified herein. He shall have pre-approval to bid the project by the Architect, Engineer, Owner or other agency who has jurisdiction for the project based on the following:
1. Manufacturer/Installer shall be able to secure a Payment and Performance Bond, if requested, along with other guaranties/Guarantees specified herein.
  2. Firm shall be regularly engaged in manufacturing products for projects of this site, quality and complexity and with at least 5 years successful experience in applications similar to that required for this project.
  3. Manufacturer shall have his own facilities and perform at least 80% of the fabrication.
  4. Prior-approved Panel manufacturers are as follows:
    - a. Precision Walls, Inc.- Raleigh, NC Contact Jerry Baker- (919) 772-3313
- D. Field Supervision: Installer shall demonstrate the ability and experience to erect the project on time with the specified quality. Any portions of the work which will be subcontracted shall require the same approval.
- E. Compatibility: Provide substrate, insulation board, reinforcing fabric, base and finish coat materials, mechanical anchors and accessories which are compatible with one another and approved for use by system manufacturer. Provide color and texture of Protective coating shall comply with the following requirements. Provide selection made by Architect from manufacturers full range of colors and textures available for the type of finish coat indicated.
- F. Pre-Installation Conference: Conduct pre-installation conference at the project site, at the Architect's direction and include Structural Engineer, Architect, Supplier, Owner, Panel Erector, Contractor and other interested trades, for the purposes of ensuring coordinated and timely execution of this work.
- G. Tolerances: Overall height and width measured at face of panels:
1. Panels 10 ft. or under, plus or minus 1/8 inch.

2. Panels 10 ft. to 20 ft., plus 1/8 inch and minus 3/16 inch.
  3. Panels 20 ft. to 30 ft., plus 1/8 inch and minus 1/4 inch.
  4. Panel thickness, plus 1/4 inch and minus 1/8 inch.
  5. Each additional 10 feet plus or minus 1/16 inch per additional 10 feet.
  6. Openings (framed within one member), plus or minus 1/4 inch.
  7. Out of square (diagonal measure), 1/8 inch per 6 feet or 3/8 inch total.
  8. Exposed surface shall not vary more than 1/8 inch from true plane as measured by a 10 ft. straight edge.
  9. Failure to meet any of the above tolerances will be cause for rejection of the entire panel.
- H. Test Data: Test data from test of identical or similar assemblies shall be submitted to confirm that materials fabricator intends to use, when assembled in panel construction, have produced the following levels of performance under simulated environmental conditions:
1. Rate of Air Infiltration Under Uniform Static Differential Air Pressure, ASTM E283: Less than 0.06 cfm/sf.
  2. Water Infiltration by Uniform Static Differential Pressure, ASTM E331: No leakage through panel.
  3. Water Infiltration by Dynamic Wind Loading, AAMA 501-1: No leakage through panels with up to 185 mph wind.
  4. Structural Performance Under Uniform Static Differential Air Pressure, ASTM E330: No dislodgement of materials from the face of panels and no water leakage though panels subjected to 150% (75 psf) of design load positive and negative pressures.
  5. Flexural Test: One hundred cycles of alternating positive and negative loading at 40 psf (equivalent to 125 mph/200 kmph wind). (No visible change.)
  6. Thermal Test: Temperatures cycled from 10°F (-12°C) to 121° (48°C) on the exterior side of the panel. Three complete cycles in 24 hours. (No signs of distress, no air infiltration or water infiltration in subsequent tests.)
  7. Soaker Water Penetration Test: Water spray applied to the surface of test panel for a period of 1 hour. Simultaneously, a positive pressure of 6.24 psf (49 mph wind / 78.4 kmph) applied to the panel. (No water infiltration observable.)
  8. Water Penetration Test - Dynamic Forces: A 100 mph (160 kmph) wind directed at the exterior side of the panel while foot (2041/hour.m2). (Equivalent of 8"/20 cm rain per hour.) (No signs of water penetration observable.)
  9. Uniform Structural Overload Test: 150% of design load, equivalent to 48 psf, (hurricane force winds of 12 mph) applied in both positive and negative directions. (No visible damage.)
  10. Structural Overload Test to Failure: A progressively increasing positive load applied to the test panel until maximum test equipment capacity reached. (List max load and visible changes in sample.)

#### **1.4 FIELD VERIFICATION OF EXISTING BUILDING STRUCTURAL FRAMING**

- A. Installer shall field verify existing conditions of concrete structure prior to shop drawings and fabrication of panels.
- B. Installer shall provide control lines as necessary for installation of panels.

#### **1.5 DELIVERY, HANDLING AND STORAGE**

- A. Load and unload units one at a time. Carefully remove bracing, crating, and packing. Stack vertically against suitable supports. Provide protective material under panels and between panels. Use spacers of proper length and in sufficient numbers to prevent warping and twisting of panels in stacked position. Provide protective coverings. Replace panels damaged during loading, transporting, unloading, or storage with

acceptable panels. Cracks, including hairline cracks, will be cause for rejection of entire panel.

## **1.6 SITE CONDITIONS**

- A. Mark panels to identify position of placement, in accordance with erection drawings. Place markings so as not to detract from final appearance of panels.

## **1.7 SEQUENCING AND SCHEDULING**

- A. Sequence installation of system with related work specified in other sections to ensure that wall assemblies, including flashing, trim and joint sealers are protected against damage from weather, aging, corrosion or other causes.

## **1.8 GUARANTEE**

- A. Manufacturer/Installer shall furnish a 3 year guarantee in an acceptable form, guaranteeing that all joints will remain watertight and weather tight. Manufacturer shall provide watertight warranty for insulated finish system for period of ten years from Date of Substantial Completion against defects in materials and workmanship, covering all replacement costs including materials and labor, due to failure of the system in adhesion, cohesion, discoloration, watertightness and other visual, thermal or watertight defects.

## **1.9 MAINTENANCE KIT**

- A. Supply maintenance kit to job and store where directed. Containers of all liquid shall be unopened. Kit shall include one bucket of finish material.

## **PART 2 - PRODUCTS**

### **2.1 PANEL MANUFACTURER / FABRICATOR**

- A. Panelized exterior insulated finish system shall be manufactured/fabricated by Precision Walls, Inc., Raleigh, NC or approved substitute. Materials described herein are to establish quality and system.

### **2.2 METAL FRAMING**

- A. Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to the following:
  - 1. Dietrich Industries, Inc.
  - 2. Marino-Ware, Inc.
  - 3. Clark Steel Framing, Inc.
  - 4. Dale/Incor Industries, Inc.
- B. System Components: With each type of metal framing required, provide manufacturer's standard steel runners (channels), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories as recommended by the manufacturer.
- C. Materials and Finishes:
  - 1. For "C" shape \_\_\_ gage and heavier units, fabricate metal framing components of commercial quality steel sheet with a minimum yield Point of 33,000 psi; ASTM 446, A570, or A611. Units shall be of the size and gage indicated, with a minimum 1.625 inch flange and flange return lip.
  - 2. Horizontal bridging (bracing) shall be cold rolled galvanized steel channel or strap where member serve as load collection for lifting only, structural shapes painted with rust resistant paint may be used.

3. Purlins welded horizontally between studs to support edges of backer board shall be identical to the stud material or, as otherwise designed. Should the purlins be designed to also satisfy the need for horizontal bridging, cold rolled galvanized steel channel or strap may be eliminated.
4. Metal framing components shall receive a minimum G60 galvanizing finish. Galvanizing shall conform to ASTM A525. Finish of installation accessories shall match that of main framing components, unless indicated otherwise.
  - a. Galvanized surfaces shall be repaired using 'Gaivicon' galvanizing spray, as manufactured by Southern Coatings and Chemical Cp., Sumter, SC or an approved substitute.

### **2.3 SUBSTRATE SHEATHING**

- A. Acceptable Product: Basis of design is Georgia-Pacific Corp., Dens-Glass Gold Gypsum Sheathing. Products of other manufacturers meeting specified criteria and warranty requirements may be submitted for Architect's consideration.
- B. Characteristics:
  1. Composition: Conforming to ASTM C1177-91, incombustible, silicone treated and water-resistant gypsum core with inorganic fiberglass mat face treated with alkali-resistant coating.
  2. Type: 4'-0" wide by 8'-0", 9'-0", or 10'0" length, square ends and edges.
  3. Weight: 1900 lbs/msf for 1/2" thickness board, 2500 lbs/msf for 5/8" thickness board.

### **2.4 SHEATHING FASTENERS**

- A. Screws shall be corrosion-resistant, self-tapping type.

### **2.5 INSULATED FINISH SYSTEM**

- A. Acceptable Manufacturers: The standard of quality for EIFS system is Finestone Class PB, Non-Drainable. Products of other acceptable manufacturers may be submitted for Architect's consideration, subject to compliance with specified requirements based on Finestone and subject to Architect's approval:
  1. Basis of Design: Finestone
    - a. Adhesives:
      - 1) Projections, projecting trim and other horizontal and sloped areas not protected by metal flashing, as recommended by manufacturer.
      - 2) Other substrates, as recommended by manufacturer.
    - b. Insulation board.
    - c. Reinforcing Mesh:
      - 1) Regular duty mesh: 4.5 oz./sq.yd.
      - 2) Heavy duty mesh: minimum 15 oz.
      - 3) Detail mesh: Detail Short Roll Mesh, 4.5 oz./sq.yd.
      - 4) Corner Mesh: Corner Mesh, 11.4 oz./sq.yd.
    - d. Basecoat:
      - 1) Areas with projections, projecting trim and other horizontal and sloped areas not protected by metal flashing: 1
      - 2) Other areas: Basecoat
    - e. Finish Coat:
    - f. Coating and seal for areas to receive sealant joints: Primer as recommended by sealant manufacturer.
  2. Finestone: Natural Swirl/Limestone/Stonemist/etc. finishes

- B. General System Description: Expanded polystyrene insulation adhesively applied to vertical and horizontal sheathing, reinforced with regular mesh fabric over base coat in areas as specified, and finished with textured finish.
- C. Coating Components:
1. Adhesives shall be manufactured by system manufacturer.
    - a. Provide adhesives recommended by system manufacturer for attachment of insulation to sheathing.
    - b. Bond strength: Adhesives shall have been tested to withstand 180 psf negative pressure without loss of bond to substrate in accord with ASTM E330-90.
  2. Mesh Reinforcement: Alkali-resistant glass or synthetic fabric provided by system manufacturer. Provide regular, detail and corner mesh.
  3. Finish coat: Manufacturer's factory-blended, integral-colored synthetic finish, dirt pickup resistant.
    - a. Colors: As selected by Architect from manufacturers standard selection.
    - b. Textures: \_\_\_\_\_ texture
- D. Insulation: Provide straight and special shapes and configurations as indicated on the drawings and as required during the course of the work.
1. Type: Expanded polystyrene meeting ASTM C578-92, Type 1, manufactured or approved by system manufacturer and aged at least six weeks prior to time of cutting.
  2. Minimum density: 0.9 pound, minimum.
  3. Thermal Value: Aged R value of 3.25/inch or better at 75°F.
  4. Burning characteristics: Flame spread of 25 or less when tested in accord with ASTM E84-95.
  5. Dimensional Tolerances:
    - a. Edges: Square within 1/32" per foot.
    - b. Board Thickness:  $\pm 1/16"$ .
  6. Compressive Strength, 10% deformation: 10 psi, minimum.
  7. Moisture Resistance:
    - a. Water Vapor Permeance: Maximum 5.0 perms/in.
    - b. Absorption: 4% maximum.
  8. Thickness: Minimum 1", with greater thicknesses as indicated on the drawings.
- E. Trim Shapes: Minimum 26 ga. roll-formed zinc alloy with expanded or solid flanges.
- F. Accessories: Provide sizes and shapes as indicated on the drawings.
- G. Sealant: Dow Corning Corp., #790 low modulus silicone sealant as specified in Joint Sealers section.
- H. Elastomeric Sealants:
1. Sealant System shall be one of the following:
    - a. Dow Corning  
Primer: 1200  
Sealant: 790
    - b. Pecora Corp.  
Primer: Type P75  
Sealant: Dynatrol II
    - c. Products Research & Chemical Corp.  
Primer: Primer #17  
Sealant: PRC Rubber Caulk 350
    - d. Sonneborn  
Primer: 733  
Sealant: Sonlastic NP11
    - e. Tremco, Inc.  
Primer: Primer #1  
Sealant: PRC Rubber Caulk 350
  2. Sealer color shall be as selected by the Architect.
  3. Backer rod shall be Dow Ethafoam, or an approved substitute.

4. Bond breaker depending on the surface, contact sealant manufacturer for recommendations.

### **3. PART 3 - EXECUTION**

#### **3.1 FRAMING FABRICATION**

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

1. Follow the recommendations published in the Metal Lath/Steel Framing Association "Steel Framing System Manual and meet requirements of ASTM C955, Load Bearing Steel Studs, Runners (Track), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
2. Framing components shall be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Panels shall be fabricated in accordance with approved shop drawings.
3. Fabricate panels in jig templates to hold members in proper alignment and position and to assure consistent component placement.
4. Install continuous runner channels to studs. Align channels accurately to layout at base and tops of studs.
5. Secure studs to top and bottom runner channels by welding at both inside and outside flanges.
6. Space studs maximum of 16 inches o.c. unless shown otherwise on the drawings.
7. Frame wall openings larger than 2 ft. square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions.

##### **B. Fastenings:**

1. Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with the panel manufacturer.
2. Wire tying of framing of components is not permitted.

#### **3.2 SHEATHING AND INSULATION BOARD INSTALLATION**

##### **A. Substrate Sheathing:**

1. Attach 1/2" substrate with stud spacing at 16 inches o.c. and attach 5/8 inch substrate with stud spacing at 24 inches o.c.
2. Tightly butt edges of sheathing board.
3. Screw Attachment: Screw fasten sheathing to metal panel framing as recommended by sheathing material manufacturer and the Architect, but in no case more than 8 inches o.c. across face of panel; 6 inches o.c. along edges. Minimum spacing of fasteners from ends and edges is 3/8 inch.

##### **B. Rigid Insulation Board:**

1. Apply insulation board to the substrate surface starting from the bottom, supported by permanent or temporary means.
2. Apply insulation board with the long edge horizontal, with its joints offset respect of the substrate joints and using a running bond pattern. Align edges of outboard sheathing pieces with panel frame edge.
3. Precut insulation board pieces to fit openings, corners and projections prior to application of this adhesive.
4. Insulation board shall be staggered and interlocked.
5. Insulation board smaller than 2 ft. x 4 ft. may be used, such as at corners, etc. In all cases, the perimeter of the insulation board shall have 32% minimum contact area.

#### **3.3 FINISH SYSTEM INSTALLATION**

- A. Mixing and Preparation:
1. Use a clean container free of foreign substances shall be used for mixing and preparation. Containers which have come in contact with petroleum products shall not be used.
  2. Stir adhesive mixture to obtain a homogenous consistency.
  3. Measure a given weight of adhesive into a container, and an equal weight of Portland cement into another container.
  4. While stirring the adhesive, small amounts of Portland cement shall be added in increments to obtain a final of one-to-one by weight. Stirring shall continue until the mixture is homogenous.
  5. Small amounts of water may be added to the adhesive mixture to adjust workability. The mixture shall not be watered down.
  6. Allow a period of five minutes to lapse after the initial mixing, the mixture shall be tempered by stirring again.
  7. Mixture shall be used immediately after tempering. Pot life is the same as plaster-like materials and depends on ambient temperature and humidity conditions and substrate - Keep container closed when not in use.
  8. No additives, or materials of any kind, such as rapid binders, antifreeze, accelerators, fillers, pigments, etc., shall be added under any circumstances.
- B. Notched Trowel Method: Beads of adhesive mixture shall be applied to one surface of insulation board using a notched trowel with an edge profile. The beads shall stand out 3/8 inch from the surface of the insulation board. Ribbons of adhesive mixture 2 inch wide by 3/8 inch thick shall be applied around the entire perimeter of the insulation board using a trowel. Adhesive mixture shall not be applied to the ends of the insulation board. This method shall be used for sheathing substrates only.
- C. Base Coat - General:
1. Surface of insulation board shall be inspected as follows:
    - a. For flatness, using a straight edge. High areas and out-of-place insulation board joints shall be sanded flat. Low areas shall not be built-up with adhesive mixture to form a flat surface. Surface shall be flat to within plus or minus 1/16 inch in 2 feet.
    - b. For damage and foreign materials. Deficiencies shall be corrected.
    - c. For deterioration, visible as discoloration, due to weathering. Affected areas shall be sanded to remove deterioration while maintaining the flatness of the surface.
  2. Embed reinforcing mesh into the wet adhesive with its concave surface facing the wall.
- D. Standard Base Coat:
1. Apply adhesive mixture to the surface of the insulation board with a stainless steel trowel. Apply adhesive to a uniform thickness of 1/16".
  2. Immediately embed reinforcing mesh into the wet adhesive mixture with a trowel. Smooth surface of adhesive mixture with a trowel until the reinforcing mesh shall not be visible beneath the surface of the adhesive mixture.
  3. Lap reinforcing mesh pieces a minimum of 2-1/2 inches on all sides, working from the center to the edge while smoothing out wrinkles.
  4. Allow 24 hours to lapse for the standard base coat to form a positive bond. Protect standard base coat from damage and weather from curing.
  5. Details of the installation of the standard base coat at the end of walls, windows, panel edges, corners, etc., shall be in accordance with the panel manufacturer's latest published detailed installation instructions.
- E. Double Mesh Base Coat:
1. When double layers of reinforcing mesh are used for local reinforcing only, the smaller impact layer shall be installed first.
  2. The impact layer shall be installed as specified herein.
  3. Examine the surface of the first layer after curing for projections, loose strands of reinforcing mesh. Correct first layer to produce a flat surface.

- F. Finish - General:
1. Apply finish continuously and in 1 operation to the entire wall surface. Maintain a wet edge. The finish shall not be allowed to set up in a distinct area. Employ sufficient manpower, scaffolding and equipment to ensure a continuous operation and a uniform appearance.
  2. Use a clean stainless trowel.
  3. A small amount of water may be used to adjust the workability of the finish. Water shall be clean and potable. The same amount shall be added to each pail.
  4. Certain finishes can be spray-applied. The panel manufacturer shall be contacted for specific information for this project.
  5. Protect finish from airborne contamination due to dust, etc., and from weather and other damage, until dry.
  6. All edges where sealant is to be applied shall be by non-aggregate latex with color to match finish.
  7. Texture of finish shall match the approved sample.
  8. Minimum thickness of finish shall be not less than 1/16" and not more than 1/4".

### **3.4 INSTALLATION OF PANELS**

- A. Erection shall be by the fabricator or under direct supervision of the fabricator.
- B. Set each panel in the position to which it is assigned, anchor securely to the structural supports. Carefully plumb and align all panels to within allowable tolerances. Maintain uniform horizontal and vertical joints. Provide temporary supports and bracing as required to maintain position, stability and alignment as members are being permanently connected.
- C. When members require adjustment beyond -design criteria, do no further work, advise the Architect. Execute modifications to acceptability of Architect, at no cost to the Owner.
- D. Joint Sealants:
  1. Seal joints between panels and adjoining members. Clean joints with specified sealant manufacturer's cleaner, if required. Fill joints tight with backing, using tools to leave joints open to the surface for depth of % the joint width, but never more than 3/8 inch.
  2. Finish system materials shall be fully cured prior to sealant system installation.
  3. Color shall be as selected by Architect.
  4. Joint design and surface preparation shall be based on the Sealant Manufacturer's recommendations and project conditions.
  5. Joint installer shall have a thorough working knowledge of specified joint sealant and a minimum of 3 years in application of jobs of similar type and size.
- E. At welded connections, apply rust-inhibitive coating on damaged areas, same as shop-applied material. Use galvanizing repair coating on galvanized surfaces.

### **3.5 CLEANING**

- A. Panels shall be cleaned by the installer and inspected and accepted by the Owner as soon after erection as is practical.
- B. Clean exposed facings to remove dirt and stains, which may be on units after erection and completion of joint treatments. Wash and rinse in accordance with panel manufacturers recommendations. Protect other work from damage due to cleaning operations. Do not use cleaning materials or processes which could change the character of exposed surfaces.

**END OF SECTION**