

SECTION 07 44 16 – MINERAL-REINFORCED COMPOSITE WALL PANELS

PART 1 – GENERAL

1.1 SUMMARY

- **A. Section Includes:** Factory-cast, glass-fiber-reinforced, polymer-modified gypsum exterior wall cladding panels utilizing a weather-resistant alpha gypsum and acrylic co-polymer matrix system.
- **B. Related Requirements:**
 - Section 05 40 00 – Cold-Formed Metal Framing
 - Section 07 21 00 – Thermal Insulation
 - Section 07 27 00 – Air Barriers
 - Section 07 62 00 – Sheet Metal Flashing and Trim
 - Section 07 92 00 – Joint Sealants

1.2 REFERENCES

- **A. ASTM International (ASTM):**
 - **ASTM E84:** Standard Test Method for Surface Burning Characteristics of Building Materials.
 - **ASTM C170:** Standard Test Method for Compressive Strength of Dimension Stone.
 - **ASTM C947:** Standard Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete.
 - **ASTM D256:** Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
 - **ASTM G154:** Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.

1.3 PERFORMANCE REQUIREMENTS

- **A. Structural Performance:** Provide panel assemblies capable of withstanding effects of wind loads and thermal movements without deflection, cracking, or permanent deformation.
- **B. Fire Performance:** Class A surface-burning characteristics when tested in accordance with ASTM E84.
 - Flame Spread Index: 0.
 - Smoke Developed Index: 5 or less.
- **C. Weatherability & Durability:** Panel matrix must be engineered specifically for continuous, long-term exterior atmospheric exposure, demonstrating freeze-thaw stability and UV resistance.

1.4 SUBMITTALS

- **A. Product Data:** Manufacturer's system descriptions, technical data sheets, and structural performance parameters.
- **B. Shop Drawings:** Show panel layouts, dimensions, edge profiles, field-cut locations, structural framing attachments, flashing intersections, and joint widths.
- **C. Samples:** 6-by-6 inch minimum panel sections demonstrating specified texture, color, and finish.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- **A. Acceptable Manufacturer:**
Zoho Stone Architectural Composites LLC
39340 US Highway 19 N
Tarpon Springs, FL 34689
727-230-6956- Sales@ZohoStone.com
- **B. Forton MG (Modified Gypsum) composite chemical formulation,** incorporating an outdoor-grade alpha gypsum blended with a cross-linked acrylic co-polymer emulsion.
- **C. Substitutions:** Not permitted

2.2 MATERIAL COMPOSITION & PROPERTIES

- **A. Material Matrix Formulation:** Homogeneous composite cast mixture of alpha gypsum matrix, glass-fiber reinforcement, and Forton VF-812 water-resistant acrylic polymer dispersion.
- **B. Physical Properties:** Cast components must exhibit the following performance metrics at full cure:
 - **Compressive Strength (ASTM C170):** Minimum 6,000-9,000 psi (41 MPa).
 - **Flexural Strength (ASTM D790):** Minimum 3,500-9,400 psi
 - **Ultimate Flexural Strength (ASTM C947):** Minimum 3,500 psi (24 MPa).
 - **Water Absorption (24-Hour Soak):** Under 1.0 percent.
 - **Freeze-Thaw Resistance:** Pass 300 cycles with no visible delamination, surface checking, or loss of structural capacity.
 - **UV Stability (ASTM G154):** No visible yellowing or structural embrittlement under continuous accelerated UV testing.

2.3 PANEL FABRICATION

- **A. Casting:** Factory-mold panels under strict environmental controls to specified profiles and dimensions. Replicas must be structurally true, straight, and square within factory tolerances.
- **B. Reinforcement:** Alkaline-resistant continuous strand or chopped E-glass fibers integrated evenly throughout the back plane of the casting profile.
- **C. Factory Finish:**
 - **Texture:** [Smooth] / [Sandblasted] / [Stone Texture] / [Custom Tooled As Selected By Architect].
 - **Color:** [Integral White] / [Factory-Pigmented Color Code] / [Field-Painted Prep].

2.4 ACCESSORIES & ATTACHMENTS

- **A. Anchors and Fasteners:** High-tensile, corrosion-resistant stainless steel or aluminum or hot-dip galvanized fasteners supplied or engineered explicitly by the panel manufacturer.
- **B. Sub-Framing Systems:** Secondary attachment support configurations, including aluminum or galvanized steel hat channels and Z-girts engineered to isolate thermal movements.
- **C. Joint Sealants:** Non-staining polyurethane or silicone sealant assemblies compatible with polymer-modified gypsum substrates.

PART 3 – EXECUTION

3.1 EXAMINATION

- **A. Substrate Verification:** Inspect structural backup framing to ensure walls are plumb, level, planar, and clear of defects before panel fastening. Do not begin installation until unsatisfactory backup wall conditions have been corrected.

3.2 INSTALLATION

- **A. General:** Install fabricated panels level, plumb, and true to lines indicated on approved shop drawings.
- **B. Thermal Expansion Protection:** Provide explicit, uniform joint gaps of [3/16 inch (5 mm)] or as dictated by engineering criteria to safely tolerate material expansion and contraction.
- **C. Fastening:** Mechanically anchor panels to structural sub-girts using concealed or decorative exposed fasteners as engineered per local wind load parameters. Dissimilar metals must be treated to prevent galvanic corrosion.

3.3 CLEANING & PROTECTION

- **A. Cleaning:** Wash down panels using mild water and manufacturer-approved pH-neutral cleaning agents. Avoid abrasive pads, wire brushes, or high-potency acid treatments.
- **B. Protection:** Protect finished exterior panel faces from construction splatter, paint, scaffolding scars, or impact damage until final project handover.