

SECTION 09 27 13 – GLASS-FIBER-REINFORCED GYPSUM FABRICATIONS (EXTERIOR-GRADE)

PART 1 – GENERAL

1.1 SUMMARY

- **A. Section Includes:** Exterior-grade, polymer-modified, glass-fiber-reinforced gypsum (GFRG) architectural elements, fabrications, and decorative cornices utilizing a weather-resistant alpha gypsum and acrylic co-polymer matrix system.
- **B. Related Requirements:**
 - Section 05 40 00 – Cold-Formed Metal Framing (Light-gauge backup framing)
 - Section 07 44 16 – Mineral-Reinforced Composite Wall Panels (Main flat wall cladding sections)
 - 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 G154:** Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.

1.3 SYSTEM DESCRIPTION & PERFORMANCE

- **A. Exterior Application:** Unlike standard interior GFRG, fabrications under this section must be explicitly engineered with cross-linked polymer emulsions to withstand freeze-thaw cycles, driving rain, and continuous UV exposure.
- **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.

1.4 SUBMITTALS

- **A. Product Data:** Manufacturer's product descriptions, structural performance data, and verification of exterior weather-exposure approval.
- **B. Shop Drawings:** Detailing dimensions, thicknesses, edge conditions, structural reinforcing inserts, anchoring locations, joints, and flashing configurations.
- **C. Samples:** Minimum 6-by-6 inch flat samples and representative profile sections demonstrating specified color, texture, and mold crispness.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- **A. Acceptable Manufacturer: A. Acceptable Manufacturer:**
Zoho Stone Architectural Composites LLC
39340 US Highway 19 N
Tarpon Springs, FL 34689
727-230-6956- Sales@ZohoStone.com
- **B. Material Baseline:** Architectural shapes must be cast utilizing the Forton MG (Modified Gypsum) composite system, incorporating an exterior-grade alpha gypsum blended with an outdoor-grade acrylic co-polymer emulsion additive.
- **C. Substitutions:** [Not Permitted] / [Comply with provisions of Division 01].

2.2 MATERIAL COMPOSITION & PROPERTIES

- **A. Composition Matrix:** Homogeneous factory-cast mixture consisting of ultra-pure alpha gypsum, alkaline-resistant glass fiber reinforcements, and Forton VF-812 cross-linked 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 FABRICATION

- **A. Molding:** Mold shapes in factory conditions to match architectural profile drawings. Surfaces must be free of air voids, cracks, or surface blemishes.
- **B. Sharpness & Detail:** Mold detailing must achieve crisp lines, deep reveals, and true geometric curves as indicated in design documents.
- **C. Embedments:** Factory-integrate structural framing steel, structural backup tubes, or reinforcing pins directly into the rear of the GFRG casting profile to facilitate field anchorage.
- **D. Finish:** [Smooth Factory White Paint-Grade] / [Integral Pigmented Color Code] / [Sand-Textured Finish].

PART 3 – EXECUTION

3.1 EXAMINATION

- **A. Site Verification:** Verify that light-gauge metal backup framing and structural attachment grids are installed plumb, square, and within the dimensional tolerances required by the fabrication manufacturer.

3.2 INSTALLATION

- **A. Alignment:** Erect exterior GFRG elements level, plumb, and aligned perfectly with adjacent architectural finishes.
- **B. Attachment:** Secure shapes to structural backup framing via factory-integrated attachment tabs or concealed framing using stainless steel or hot-dip galvanized fasteners.
- **C. Joint Treatment:**
 - Do not patch exterior joints with standard interior drywall compounds or gypsum plasters.
 - Seal all expansion and movement joints using a professional, non-staining exterior polyurethane or silicone structural sealant assembly.

3.3 CLEANING & PROTECTION

- **A. Cleaning:** Wash finished elements with low-pressure water streams and mild, non-alkaline detergents.
- **B. Field Coating:** If field painting is specified, ensure surfaces are completely clean and dry before applying an exterior-grade, UV-stable, 100% acrylic breathable masonry coating or elastomeric paint system.