



Specification for Glass Fiber Reinforced Gypsum (GFRG) (For Interior Applications)

1. General

1.1 Summary

A. This section includes furnishing all materials, labor, equipment, and related services necessary to supply and install molded glass fiber reinforced gypsum (GRG) parts as indicated in the contract documents, and in compliance with applicable codes.

1.2 Related Sections

- A. Section 06 10 00 Rough Carpentry - for blocking, nailers, shims and carpentry supporting glass fiber reinforced gypsum fabrications.
- B. Section 09 22 00 Supports for Plaster and Gypsum Board - for support, blocking, and bracing supporting glass fiber reinforced gypsum fabrications.
- C. Section 09 90 00 Painting and Coating

1.3 References

- A. ASTM International (ASTM)
 - 1. C1381 Standard Specification for Molded Glass Fiber Reinforced Gypsum Parts.
 - 2. C1467 Standard Specification for the Installation of Molded Glass Fiber Reinforced Gypsum Parts.
 - 3. C1355 Standard Specification of Glass Fiber Reinforced Gypsum Composites
 - 4. C754 Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 5. C1007 Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
 - 6. C840 Specification for Application and Finishing of Gypsum Board

1.4 Submittals

- A. Product Data: Submit product data sheets for each specified product, including dimensions, finishes, storage and handling requirements and recommendations and installation recommendations.
- B. Samples: Two samples, minimum size 6 inches (150 mm) square, representing actual product, color and patterns.
- C. Samples and submissions shall be under provisions of Section 01300.
- D. Shop Drawings: Submit drawings for approval showing plans, sections, details, joint treatment, reinforcing, fastening devices and the relation of the GRG parts to the surrounding construction.

1.5 Quality Assurance

- A. GRG Parts and Installation to conform to ASTM Standards governing Molded Glass Fiber Reinforced Gypsum Parts, namely: C1355; C1381; and, C1467 including physical properties and tolerances. See 1.3 References.
- B. Manufacturer Qualifications: Manufacturer shall have a minimum of 5 years of experience having successfully supplied GRG parts for other projects similar in scope and complexity for the work of this Contract.
- C. Installer Qualifications: Installer shall have a minimum of 5 years of experience having successfully installed GRG parts for other projects similar in scope and complexity for the work of this Contract.
- D. The Alpha gypsum cement used to make the GRG parts is to be mined and processed in the USA with a purity of not less than 90% in accordance to ASTM C1355. Provide a Manufacturer's Certification of Raw Materials.
- E. Substrates to accept GRG parts shall be installed straight and true within 1/8 in. in 8 linear ft. (3mm in 2500mm) in accordance to ASTM C1467 and shall be free of obstructions and interference that prohibits the correct alignment and attachment of the GRG parts.
- F. The gypsum drywall contractor shall install and tape the work under this section and will be responsible for coordinating the installation with gypsum drywall work and other trades.



1.6 Delivery, Storage and Handling

A. GRG parts shall be kept clean and dry and stored to prevent distortion, warping, and other physical damage in accordance with the manufacturer's recommendations.

1.7 Project Conditions

A. Environmental Limitations: Do not deliver or install GRG parts until building is enclosed and weatherproof, wet work is complete, and the HVAC system maintains temperature and humidity at normal occupancy levels.

B. Acclimatize GRG parts for a minimum of 48 hours to the ambient temperature and humidity levels of spaces in which they are to be installed.

2. Products

2.1 Manufacturers

A. Manufacturer:

GC Products, Inc.
1601 Aviation Blvd, Suite 150
Lincoln, CA 95648
P. 916-645-3870 F. 916-645-3857
www.gcproductsinc.com

B. Manufacturer shall have a minimum of 5 years of experience having successfully supplied GRG parts for five or more years and similar in scope and complexity for the work of this contract, and confirm to applicable ASTM standards.

2.2 Substitutions

A. Not permitted.

B. Request for substitutions will be considered on accordance with provisions of Section 01600.

2.3 Glass Fiber Reinforced Gypsum (GRG) Parts

A. Fabrications: Molded GRG parts made in accordance with samples, shop drawings and with ASTM C1381 Standard for Molded Glass Fiber Reinforced Gypsum Parts.

B. Materials: Molded GRG parts to be made in accordance with ASTM C1355 Standard for Glass Fiber Reinforced Gypsum Composites.

C. Embedments: GRG parts to have typical embedments and reinforcement of galvanized steel or wood, if required, for the purposes of suspension, attachment and stiffness.

D. Molded GRG units to be ready for primer for typical flat paint finishes.

E. GRG parts subject to critical lighting or scheduled to receive semi-gloss decoration shall be prepared as a Level 5 finish which may require skim coats, filling, and sanding to hide imperfections inherent in GRG, in accordance to ASTM Standards C840 and C1467.

2.4 Physical Properties

A. Molded Glass Fiber Reinforced Gypsum Parts manufactured by GC Products, Inc. meet the following mechanical properties including those required in ASTM Standards C1381 & C1355:

- (1) Glass Content: not less than 5 percent by weight
- (2) Density: 103 to 112 pcf
- (3) Shell (Part) Thickness: not less than 3/16"
- (4) Control Thickness: not less than 5/16"
- (5) Dimensional: overall in all directions +/- 1/8"
- (6) Straightness: +/- 1/8" in 8 ft
- (7) Warpage/Bowing: +/- 1/16" per ft
- (8) Draft Angle: 3 degrees minimum on returns, setbacks, reveals and grooves
- (9) Flexural Yield Strength: not less than 1200 psi (ASTM C947)
- (10) Flexural Ultimate Strength: not less than 2500 psi (ASTM C947)
- (11) Impact Resistance: not less than 3 ft-lb (ASTM D256)
- (12) Hardness: not less than 50 Barcol (ASTM D2583)
- (13) Coefficient of Linear Thermal Expansion: not more than 11.1×10^{-6} in/in °F (ASTM D696)



- (14) Humidified Deflection: not more than 1/8" (3 mm) (ASTM C473)
- (15) Flammability: Flame Spread Index of 0 & Smoke Development Index of 0 (ASTM E84)
- (16) Behavior at 750°C: Pass (ASTM E136)
- (17) Nail Pull Resistance: not less than 110 lbf (ASTM C473)

3. Execution

3.1 Examination

- A. Site Conditions: Verify the conditions for compliance with the requirements including environmental conditions, installation tolerances and other conditions affecting the installation and performance of GRG parts. Any unsatisfactory conditions to be corrected prior to installation.
- B. Field Dimensions: Field dimensions are to be verified including those not shown on the drawings. Any discrepancies are to be brought to the attention of the Architect with resolutions to the discrepancies to be mutually agreed upon by all parties involved. Details of any changes required must be incorporated into the manufacturer's shop drawings prior to commencing the manufacture of the GRG parts.

3.2 Preparation

- A. Substrate: Substrates to accept GRG parts, provided by others, shall be installed straight and true within 1/8 in. in 8 ft. (3mm in 2500mm) and shall be free of obstructions and interference that prohibits correct attachment of GRG parts.
- B. Metal framing members, provided by others, shall be of the proper size and design for the intended use and shall be sufficient to properly support the installed GRG parts. Metal framing members shall be installed in accordance with ASTM Standards C754 or C1007 as required.
- C. Ensure clean surfaces prior to installation.

3.3 Installation

- A. Comply with ASTM C1467 Standard for the Installation of Molded Glass Fiber Reinforced Gypsum Parts.
- B. It is the Installer's responsibility to verify scope and to order the correct quantities of parts (including a waste allowance).
- C. Supply and install all shims and brackets required for work in this section and to ensure a solid and secure installation of GRG parts.
- D. Position GRG parts carefully into place and align with adjacent parts and materials in accordance to the drawings. Attach GRG parts to substrates and framing with fastening devices as specified by the GRG manufacturer. Use concealed shims as required and countersink screws below the surrounding surface.
- E. Where GRG parts are suspended, use the suspension points indicated on the shop drawings as a minimum requirement and use additional support(s) if required.
- F. Install control joints between GRG parts as indicated and as required by the manufacturer.
- G. Use joint-treatment materials to finish GRG parts and assemblies to produce surfaces ready to receive primers and paint finishes as detailed. Note: Unfinished GRG parts may exhibit slight imperfections, normally hidden by a textured finished. To obtain satisfactory results with smooth finishes, filling and sanding will be required to hide imperfections inherent in GRG.

3.4 Protection

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before substantial completion.

END OF SECTION