Fiberglass Steeples

SECTION 066100

RoyaLite™ Fiberglass Steeples

Architectural
Specifications

Architectural Fiberglass Steeples Specifications
SECTION 066100

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, conditions of the contract and Division 1 Specifications sections, apply to work of this section.

1.2 SUMMARY

A. Section Includes: Architectural Fiberglass Reinforced Polymer (FRP) Decorative Self-Supporting Steeple for exterior application.

1.3 RELATED SECTIONS

A. Section 05120 – Structural Steel: Attachment framing for architectural fiberglass Steeple.
B. Section 06100 – Rough Carpentry: Framing of opening and blocking.
C. Section 07900 – Joint sealants and field applied sealants.
D. Section 07230 – Spray Applied Insulation.

1.4 DESIGN REQUIREMENTS

A. Architectural fiberglass steeple shall be designed as a self-supporting fiberglass structure with integral framing system. No additional skeleton structural framing shall be required to support the fiberglass steeple.
B. Installed architectural fiberglass steeple and fastening systems shall be designed, engineered, fabricated, and installed to conform to the state codes, local codes, and the Architect's design.

1.5 SUBMITTALS

A. Shop Drawings: Include plans, elevations, sections, profiles, and details of steeple sections. Illustrate dimensions, adjacent construction, materials, thickness, fabrications details, required clearances, field jointing, colors, finishes, methods of support, attachments, anchorage to substrates, integration of components, and list of part numbers that coordinate with labeled architectural fiberglass parts.

B. Professional Engineering, if required, shall include calculations and stamped drawings by P.E. registered in the state of steeple installation, to meet all state and local codes.
C. Provide a list of steeple projects demonstrating the capability of manufacturing steeples comparable in size, scope, and complexity as indicated.
D. Submit Manufacturer's current valid certification with the Certified Composites Technician (CCT) program created by the American Composites Manufacturers Association (ACMA).
E. Submit Manufacturer's internal Quality Control & Assurance Procedures based upon provisions published in the "Guidelines and Recommended Practices for Fiberglass Reinforced Plastic Architectural Products" upon request.
F. Product Data: Submit Manufacturer's product data and installation instructions.
G. Product Samples: Submit minimum 3-inch x 5-inch samples in specified color, texture and finish when applicable.

1.6 QUALITY ASSURANCE

A. Obtain architectural fiberglass steeple from a single source manufacturer that has the ability and resources to comply with the requirements and schedule of the project.
B. Manufacturer to comply with Quality Control & Assurance Procedures and fabricate architectural fiberglass based upon provisions published in the "Guidelines and Recommended Practices for Fiberglass Reinforced Plastic Architectural Products".
C. Inspect each molded steeple section to ensure that it complies with specified requirements, including nominal dimensions.

1.7 MANUFACTURER'S QUALIFICATIONS

A. Manufacturer: Provide products manufactured by a firm specializing in the manufacture of fiberglass architectural products, in the United States with a minimum of ten (10) years experience.
B. Manufacturer shall demonstrate current valid certification and participation in the CCT program and fabricate material based upon provisions published in the "Guidelines and Recommended Practices for Fiberglass Reinforced Plastic Architectural Products".
C. Provide verification that architectural fiberglass steeple meets or exceeds products specified.

1.8 DELIVERY, STORAGE AND HANDLING

A. Handle, store and transport architectural fiberglass steeple according to Manufacturer's recommendations and in a manner that prevents damage.
B. Protect architectural fiberglass from damage by retaining any shipping protection and store in a secure place until installation.
C. Damage Responsibility: Except for damage caused by others, the installer is responsible for chipping, cracking, or other damage to fiberglass fabrications, after delivery to the jobsite and until installation is completed and inspected and approved by the Architect or Owner's representative.

1.9 WARRANTY

A. Warrant architectural fiberglass steeple to be free from defect due to materials and workmanship for one year.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

Royal Corinthian
603 Fenton Lane, West Chicago, IL 60185
T. 888-265-8661 / E. royalcor@royalcorinthian.com

2.2 FABRICATION PATTERNS/MOLDS

A. Custom Pattern/Mockups: Patterns and mockups shall be hand-carved and/or CNC machined by skilled pattern makers with minimum of ten (10) years experience with architectural elements. Patterns and mockups shall be available at manufacturing facility for Architect's inspection and approval before molds are produced.
B. Custom Molds: Molds shall be produced with ample layers of tooling resin, tooling gel-coat, glass fibers and/or flexible rubber by skilled mold makers with minimum of ten (10) years

experience with architectural elements. Produced molds shall have rigidity and thickness to prevent distortion and deflection of molded architectural fiberglass.

2.3 MATERIALS CHARACTERISTICS

A. MOLDED EXTERIOR SURFACE: U-V inhibited, polyester gel coat, 18 to 22 mils thick. Color to match in texture and finish of sample supplied by Architect.

B. BACK UP LAMINATE:

1. Resin: Polyester resin shall be fire retardant and meet Class 1 flame spread rating of 25 or less and smoke density under 450 without the use of antimony trioxide as characterized by the ASTM E-84 tunnel test at typical 1/8" glass mat laminate or general purpose resin if elected.
2. Filler: Functional filler to be added to resin matrix to minimize shrinkage, add stiffness, control opacity, add fire retardance, improve surface finish, minimize crazing, and control dimensional stability from weather extremes.
3. Fiberglass Reinforcement: Type "E" fiberglass, glass cloth, matt and/or random chopped glass fibers. Glass content approximately 35% to 40%.
4. Laminate Thickness: Nominal laminate shall be minimum 1/4" thickness. Larger steeple sections shall be manufactured with additional core reinforcements and/or sandwich structure added as required for rigidity and structural integrity.

2.4 FABRICATION

A. Steeple shall be fabricated with integral framing system without the need for additional skeleton framing after assembly.

B. Steeple sections shall be formed with assembly bolting flanges on the interior of the structure with sufficient depth to provide structural integrity and to accommodate gaskets, fasteners, and sealant.

C. Steeple sections shall be manufactured for proper panel-to-panel alignment and for weather-tight installation.

D. Connection flanges shall be reinforced with polywood or other treated rot-proof material for connection to building substrate.

E. Steeple sections shall be factory pre-drilled, labeled, and pre-assembled for field reassembly.

2.5 AVERAGE MECHANICAL PROPERTIES:

PROPERTY	VALUE	TEST METHOD
Tensile Strength	18,000 PSI	ASTM D638
Flexural Strength	30,000 PSI	ASTM D790
Flexural Modulus	0.9×10^6 PSI	ASTM D790
Compressive Strength	35,000 PSI	ASTM D695
Bearing Strength	30,000 PSI	ASTM D638
Thermal Expansion	10×10^{-6} (°F)	
Specific Gravity	1.5	

2.6 FINISH

A. Steeple shall be finished with colored gel coat or Benjamin Moore Command Series Polyurethane Enamel Coating as selected by Architect or Owner's representative. Surface texture / exposed side shall be smooth or textured based upon approved sample.

2.7 TOLERANCES

A. Part Thickness: + or – 1/8 inch.

B. Gel Coat Thickness: + or – 2.5 mils.

C. Length: + or – 1/8.

D. Variation from Square: 1/8 inch.

E. Hardware Location Variation: + or – 1/4 inch.

2.8 IDENTIFICATION

A. Identify each architectural fiberglass steeple section to coordinate with shop drawings.

B. Number steeple sections showing sequence of assembly.

2.9 CURING AND CLEANING

A. Cure and clean components prior to shipment and remove material which may be:

1. Toxic to plant or animal life.
2. Incompatible with adjacent building material.

2.10 ANCHORS AND FASTENERS

A. Contractor to provide anchors, fasteners, gaskets, and other accessories for proper installation of architectural fiberglass steeple as recommended and approved by fiberglass fabrication manufacturer. Steeple manufacturer to specify the above accessories.

PART 3 – EXECUTION

3.1 PRE-INSTALLATION EXAMINATION

A. Carefully observe and verify field conditions that substrates are ready for installation of architectural fiberglass Steeple. Contractor shall verify on-site dimensions with shop drawings and assume full responsibility for fitting the components to the structure.
B. Verify that bearing surfaces are true and level.
C. Verify that steeple connection framing has been constructed to allow accurate placement, alignment and connection of architectural fiberglass steeple to structure.
D. Report discrepancies between design dimensions and field dimensions, which could adversely affect the steeple installation, to the Architect and/or Owner's representative.
E. Do not proceed with installation of steeple until discrepancies are corrected, or until installation requirements are modified and approved by the Architect and/or Owner's representative.
F. Beginning of installation means acceptance of existing conditions and fiberglass materials.

3.2 INSTALLATION

A. Install architectural fiberglass steeple in accordance with Manufacturer's instructions and approved shop drawings.
B. Apply continuous run of sealant and expandable cellular foam gasket as recommended per Manufacturer's instructions and approved shop drawings to the bolting flanges of all sections for weather-tight installation.
C. Steeple to be assembled on level surface and raised into place.
D. Steeple shall be field insulated for water tightness and to prevent condensation when installed on unfinished roof or when interior finish is required. Field applied spray insulation to be sprayed on interior surface of steeple. Insulation shall be sprayed and encapsulate entire surface including attachment flanges, anchor bolts, assembly bolts, and perimeter bolting flange.
E. Flashing shall be installed around the perimeter of the steeple structure per Manufacturer's instructions and approved shop drawings.
F. Exterior steeple shall receive final sealant application on the exterior joints after installation.

3.3 ALLOWABLE TOLERANCES FOR INSTALLED UNITS

A. Maximum Offset from True Alignment: 1/4 inch in 20 feet.
B. Maximum Variation from True Position: 1/2 inch in 20 feet.

3.4 CLEANING

A. Clean installed architectural fiberglass steeple using cleaning methods and material approved by Manufacturer.

3.5 PROTECTION OF INSTALLED FABRICATIONS

A. Comply with Manufacturer's recommendations and instructions for protecting installed steeple during construction activities.