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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat™*, *SectionFormat™* and *PageFormat™*. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets [ ]; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols are typically used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies special wall surfaces, including fiberglass reinforced plastic (FRP) panels, marketed under the Structoglas® trade name, as manufactured by Crane Composites, Inc./Sequentia. Structoglas fiberglass reinforced plastic (FRP) wall and ceiling paneling products are suitable as an interior finish for commercial, industrial and institutional applications. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

**SECTION 09 77 00**  
**SPECIAL WALL SURFACING**  
**(FIBERGLASS REINFORCED PLASTIC PANELS)**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section Includes: Special wall surfaces, including fiberglass reinforced plastic wall and ceiling panels.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
  1. [Work Title]: Division [#] [Title] Section.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Division 01 References Section may establish the edition date of standards. This article does not require compliance with standards, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

**1.02 REFERENCES**

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. ASTM International:
  1. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
  2. ASTM D5319 Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
  3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

Specifier Note: Article below should be restricted to statements describing design or performance requirements and functional (not dimensional) tolerances of a complete system. Limit descriptions to composite and operational properties to the extent necessary for linking multiple components of a system and interfacing with other systems.

### 1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 01 Submittal Procedures Section.

### 1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures. Indicate location and dimension of joints and fastener attachments.
- D. Samples: Submit selection and verification samples for finishes, colors and textures.
  - 1. Submit 3 inch x 3 inch (76 x 76 mm) samples of each surface and color required.
  - 2. Submit 3 inch (76 mm) samples of each trim profile and trim color required.
- E. Quality Assurance Submittals: Submit the following:
  - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
  - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
  - 3. Manufacturer's Instructions: Manufacturer's installation instructions. Submit manufacturer's *Installation Guide #2503*.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- F. Closeout Submittals: Submit the following:
  - 1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 01 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
  - 2. Warranty: Warranty documents specified herein.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate below article with Division 01 Quality Assurance Section.

### 1.05 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.

Specifier Note: Retain paragraph below to suit project requirements; otherwise, delete paragraph below.

- a. Certificate: When requested, submit certificate indicating qualifications.
- 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and capable of approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section.

General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 01 Regulatory Requirements Section. Repetitive statements should be avoided.

- B. Regulatory Requirements: [Specify applicable requirements of regulatory agencies].

Specifier Note: Retain paragraph below for erected assemblies (either onsite or offsite) required for review of construction, coordination of work of several sections, testing or observation of operation. Mock-ups, when accepted or approved, establish standards by which work will be judged. Coordinate below with Division 01 Quality Control (Mock-Up Requirements) Section.

- C. Mock-Ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods. Obtain Owner's and Architect's acceptance of finish color, texture, pattern and workmanship standards. Comply with Division 01 Quality Control (Mock-Up Requirements) Section.

Specifier Note: Edit paragraph below when specifying mock-up size.

1. Mock-Up Size: [Specify mock-up size].
2. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when it is no longer required.
3. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

Specifier Note: Coordinate paragraph below with Division 01 Project Management and Coordination (Project Meetings) Section.

- D. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 01 Project Management and Coordination (Project Meetings) Section.

Specifier Note: Article below should include special and unique requirements. Coordinate article below with Division 01 Product Requirements Section.

#### 1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 01 Product Requirements Section.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.
1. Store products indoors and protect from moisture, construction traffic and damage.
  2. Store panels flat on clean, dry surface. Do not stand on edge or stack on fresh concrete or other surfaces that emit moisture.
  3. Store panels at least 24 hours with temperature and humidity conditions approximating the average environment of the finished room.
- E. Handling: Remove foreign matter from face of panel by use of a soft bristle brush, avoiding abrasive action.

#### 1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation and residual moisture from plaster, concrete or terrazzo work has dissipated.
  2. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
  3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.
- B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 01 Closeout Submittals (Warranty) Section.

#### 1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

1. Warranty Period: [Specify term.] years commencing on Date of Substantial Completion.

Specifier Note: Coordinate article below with Division 01 Closeout Submittals (Maintenance Materials) Section.

#### 1.09 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals (Maintenance Materials) Section.

Specifier Note: Revise paragraph below specifying size and percentage as required for project.

1. Quantity: Furnish quantity of [Identify items.] units equal to [Specify %.] of amount installed.
2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

### PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

#### 2.01 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

- A. Manufacturer: Crane Composites, Inc.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

1. Contact: Grand Junction Sales Office, PO Box 569, Grand Junction, TN 38039; Telephone: (800) 238-6874, (731) 764-2153; Fax: (731) 764-6397; E-mail: [salesgj@cranecomposites.com](mailto:salesgj@cranecomposites.com); website: [www.structoglas.com](http://www.structoglas.com).

Specifier Note: Crane Composites, Inc., offers Structoglas fiberglass reinforced plastic (FRP) panels.

- B. Proprietary Product(s): Structoglas Flat Fiberglass Reinforced Plastic Composite (FRP) Panels.
  1. Structoglas Panels:
    - a. FRFR, FSI, FTST, FSQ, FRCP, CGP, FTH, FTCAN, FSCAN or CPCAN.
    - b. Color: FRCP, CGP and FTH are available in 1130 White. Specify color: [1130 white, 1726 beige, 1114 almond, 1268 silver, 1198 ivory, 1207 gray, 1201 black colors as indicated on the Drawings, selected by the Architect from manufacturer's standard range of white, beige, almond, silver, ivory, gray and black.].
    - c. Size:
      - 1) Wall Panel Width: 48 inches (1.2 m).
      - 2) Wall Panel Length: [Specify 96 inches (2.4 m), 108 inches (2.7 m), 120 inches (3.0 m) or 144 inches (3.7 m), as indicated on the drawings.] Provide full-length panels unless substrate dimensions exceed available fabricated size.
      - 3) Ceiling Panel Width: 23 3/4 inches (603 mm).

- 4) Ceiling Panel Length: [23 3/4 inches (603 mm)] [47 3/4 inches (1213 mm)].
- d. Moldings: Provide harmonizing PVC (polyvinyl chloride) moldings. [Specify color - 1130 white, 1726 beige, 1114 almond, 1268 silver, 1198 ivory, 1207 gray, 1201 black.].
  - 1) 0.09 Inch (2.3 mm) Contractor Trim: Match panel color.
- e. Rivets: Nonstaining nylon drive rivets; match panel colors and length to suit project conditions.
- 2. Structoply Panels:
  - a. FRP Face: FRFR, FSI, FTST or FSQ.
  - b. Color: Uniform throughout. [Specify: 1130 white, 1726 beige, 1114 almond, 1268 silver, 1198 ivory, 1207 gray, 1201 black colors as indicated on the Drawings, selected by the Architect from manufacturer's standard range of white, beige, almond, silver, ivory, gray and black.].
  - c. Size:
    - 1) Wall Panel Width: 48 inches (1.2 m).
    - 2) Wall Panel Length: [Specify 96 inches (2.4 m), 108 inches (2.7 m), 120 inches (3.0 m) or 144 inches (3.7 m), as indicated on the drawings.] Provide full-length panels unless substrate dimensions exceed available fabricated size.
    - 3) Ceiling Panel Width: 23 3/4 inches (603 mm).
    - 4) Ceiling Panel Length: [23 3/4 inches (603 mm)] [47 3/4 inches (1213 mm)].
    - 5) Thickness: [FTST Standard Panels: {0.12 inch (3.05 mm)} {0.09 inch (2.29 mm)}] [FRFR Panels: 0.09 inch (2.29 mm)].
  - d. Moldings: Provide panel manufacturer's standard vinyl moldings to meet project conditions. Provide division bar, inside corner, outside corner and end cap. [Specify color - 1130 white, 1726 beige, 1114 almond, 1268 silver, 1198 ivory, 1207 gray, 1201 black.].
  - e. Rivets: Nonstaining nylon drive rivets; match panel colors and length to suit project conditions.

Specifier Note: Edit article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 01 Project Requirements (Product Substitutions Procedures) Section.

## 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

## 2.03 MANUFACTURED UNITS

- A. Structoglas Class A Fiberglass Panels:

- 1. Rating:
  - a. Structoglas FRFR/FSI/FRCP Wall and Ceiling Panels: Surface Burning Classification: Class A; flamespread (ASTM E84): 25 or less; smoke developed (ASTM E84): 450 or less.
- 2. Wall Panels: Finish, thickness and color shall be:
  - a. Embossed 0.09 inch (2.3 mm) Structoglas FRFR: [Specify color: 1130 white, 1114 almond, 1207 gray.].
  - b. Smooth 0.075 inch (1.9 mm) Structoglas FSI: 1130 white.
- 3. Lay-In Ceiling Panels: Finish, thickness and color shall be:
  - a. Smooth 0.10 inch (2.5 mm) Structoglas FRCP: 1130 white.
- 4. Dimensional Tolerances:
  - a. Width and Length: 1/8 inch (3.2 mm).
  - b. Thickness: +/- 10%.
  - c. Squareness: Not more than 1/8 inch (3.2 mm) out of square.
- 5. Performance Properties: Provide products with the following properties:
  - a. Meets USDA/FSIS requirements.
  - b. Barcol Hardness (ASTM D2583):

- 1) Embossed 0.09 inch (2.3 mm) FRFR: 20.
  - 2) Embossed 0.10 inch (2.5 mm) FRCP: 20 - 40.
  - 3) Smooth 0.075 inch (1.9 mm) FSI: 50.
- B. Structoglas Class C Fiberglass Panels:
1. Rating:
    - a. Structoglas FTST/FSQ/CGP/FTH Wall and Ceiling Panels: Surface Burning Classification: Class A; flamespread (ASTM E84): 25 or less; smoke developed (ASTM E84): 450 or less.
    - b. Structoglas FTCAN/FSCAN/CPCAN Wall and Ceiling Panels: Surface Burning Classification: Class A; flamespread (Canadian CAN/ULC-S10): 150 or less; smoke developed (Canadian CAN/ULC-S10): 300 or less.
  2. Wall Panels: Finish, thickness and color shall be:
    - a. Embossed 0.09 inch (2.3 mm) Structoglas FTST: [Specify color: 1130 white, 1114 almond, 1207 gray, 1198 ivory, 1268 silver, 1726 beige, 1201 black.].
    - b. Smooth 0.09 inch (2.3 mm) Structoglas FSQ: 1130 white.
  3. Lay-In Ceiling Panels:
    - a. Embossed 0.10 inch (2.5 mm) Structoglas CGP: 1130 white.
    - b. Embossed 0.12 inch (3 mm) Structoglas FTH: 1130 white.
  4. Dimensional Tolerances:
    - a. Width and Length: 1/8 inch (3.2 mm).
    - b. Thickness: +/- 10%.
    - c. Squareness: Not more than 1/8 inch (3.2 mm) out of square.
  5. Performance Properties: Provide products with the following properties:
    - a. Meets USDA/FSIS requirements.
    - b. Barcol Hardness (ASTM D2583):
      - 1) Embossed 0.09 inch (2.3 mm) FTST: 20 - 30.
      - 2) Embossed 0.12 inch (3 mm) FTH: 20 - 30.
      - 3) Smooth 0.075 inch (1.9 mm) FSQ: 25 - 35.
- C. Structoply Fiberglass Laminated Wall Panel:
1. Wall Panel: Manufacturer's standard factory laminated panel with specified substrate and specified skin (single or double sided as indicated); size shall be [4 feet x 8 feet (1.2 x 2.4 m)] or [4 feet x 10 feet (1.2 x 3 m)].
  2. Wall Panel Substrate:
    - a. Plywood Substrate: [Specify: 3/8 inch (9.5 mm) BCX-Fir, or 1/2 inch (12.7 mm) BCX-Fir, or 5/8 inch (15.9 mm) BCX-Fir.].
    - b. Oriented Strand Board (OSB) Substrate: [Specify: 1/4 inch (6.4 mm) OSB, or 9/32 inch (7.1 mm) OSB, or 1/2 inch (12.7 mm) OSB.].

Specifier Note: Edit paragraph below to suit project requirements. In areas of high temperature (over 100 degrees F (38 degrees C)), Structoply polypropylene panels must be laminated on both sides with Structoglas FRP skins to avoid warping. Lay-in ceiling panels should be laminated on both sides for all installations. Laminated panels that use fluted polypropylene as a substrate are designed to line the walls or ceilings of applications such as car washes and agricultural buildings. The local building code official must approve the installation of these panels prior to ordering. Crane Composites, Inc., cannot ensure code compliance in all situations.

- c. Fluted Polypropylene Substrate: [Specify: 0.32 inch (8.1 mm) black, 0.32 inch (8.1 mm) white, 0.40 inch (10.2 mm) black or 0.40 inch (10.2 mm) white.].
3. Wall Panel Skin:
  - a. Class C Skin: [Specify: 0.035 inch (0.89 mm) embossed Structoglas FTL, or 0.09 inch (2.3 mm) embossed Structoglas FTST, or 0.09 inch (2.3 mm) smooth Structoglas FSQ.].

- b. Class A Skin: [Specify: 0.09 inch (2.3 mm) embossed Structoglas FRFR, or 0.075 inch (1.9 mm) smooth Structoglas FSI.].

D. Structoply Fiberglass Laminated Lay-In Ceiling Panel with *Surfaseal* Surface Protection:

- 1. Lay-In Ceiling Panels: Manufacturer's standard factory laminated panel with specified substrate and specified skin; size shall be [23 3/4 inches x 23 3/4 inches (0.6 x 0.6 m)] or [23 3/4 inches x 47 3/4 inches (0.6 x 1.21 m)]. Panels shall meet USDA/FSIS requirements.

2.04 ACCESSORY MATERIALS

- A. Adhesive: Structural construction adhesive as recommended by adhesive manufacturer.
- B. Sealant: Clear silicone sealant as recommended by sealant manufacturer.

2.05 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.

2.06 SOURCE QUALITY

- A. Source Quality: Obtain fiberglass reinforced plastic (FRP) panels from a single manufacturer. Provide panels and molding only from manufacturer specified to ensure warranty and color harmonization of accessories.

**PART 3 EXECUTION**

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
  - 1. Examine back-up surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk, and joints and cracks are filled flush and smooth with the adjoining surface.
  - 2. Examine substrates to receive panels to ensure that surfaces are smooth, dry, true and free of dirt and dust.
  - 3. Do not begin installation until back-up surfaces are in a satisfactory condition.

3.03 PREPARATION

- A. Surface Preparation: [Specify applicable product preparation requirements.].

Specifier Note: Coordinate article below with manufacturer's recommended installation details and requirements.

3.04 INSTALLATION

- A. Fiberglass Reinforced Panel (FRP) Installation:
  - 1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
  - 2. Install panels with manufacturer's recommended gap for panel field and corner joints.
  - 3. Predrill fastener holes in panels with 1/8 inch (3.2 mm) oversize.
  - 4. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
  - 5. Using products acceptable to panel manufacturer, install FRP system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's *Installation Guide #2503*.
- B. Site Tolerances: [Specify applicable site tolerances for specified product(s) installation.].
- C. Finish Color/Patterns: [Specify installation finishes coordinated with finishes specified in Part 2 Products.].
- D. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related materials installation.

Specifier Note: Coordinate article below with Division 01 Quality Assurance and Quality Control Sections.

### 3.05 FIELD QUALITY REQUIREMENTS

Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 01 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service is not required.

- A. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

1. Site Visits: [Specify number and duration of periodic site visits.].

Specifier Note: Coordinate article below with Division 01 Execution Requirements (Cleaning) Section.

### 3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

1. Remove any adhesive or excessive sealant from panel face using solvent or cleaner recommended by panel manufacturer.
2. Remove scraps and debris from the site, and leave in a neat and clean condition.

Specifier Note: Coordinate article below with Division 01 Execution Requirements Section.

### 3.07 PROTECTION

- A. Protection: Protect installed product and finished surfaces from damage during construction.

**END OF SECTION**