

Bio/CR-5 Glass-Fiber Reinforced Polymer, Engineered Composite Wall and Ceiling Panel System

Division 6

Section 06XXXX – GLASS-FIBER REINFORCED POLYMER WALL AND CEILING PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Include all appropriate Detail Drawings, as well as General and Supplementary provisions of the contract that apply to this section.

1.2 SUMMARY

A. Section Includes:

1. Prefinished engineered composite panels of glass-fiber reinforced polyester polymer face, backed by alternating layers of aluminum, and recycled, moisture impervious plastic. The wall and ceiling panels are designed for interior use in bio-science labs, medical and pharmaceutical research facilities, and environments where high containment is required.

B. Related Sections:

1. "Cold-Formed Metal Framing" (Section 05) when panels will be installed directly to framing.
2. Gypsum or Cementitious (Section 09) wallboard when panels will be installed directly to wallboard substrate.
3. Stainless or aluminum (Section 10) "Wall and Door Protection" for wall panel rail protection, wall corner guards, and FRP/Stainless/Metal Doors and Frames

1.3 REFERENCES

- A. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
- B. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
- C. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics
- D. ASTM D638 - Standard Test Method for Tensile Properties of Plastics

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- E. ASTM D790 - Standard Test Methods for Flexural Strength of Reinforced Plastics.
- F. ASTM D790 - Standard Test Methods for Flexural Modulus of Reinforced Plastics.
- G. ASTM E84 – Surface Buring Characteristics of Building Materials
- H. ASTM E96 – Standard Test Method for Water Vapor Transmission of Materials
- I. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials
- J. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

1.3 SUBMITTALS

- A. Product Data Sheets
- B. Shop Drawings: Submit elevation of each wall, or ceiling in manufacturer’s shop drawings. Include all detail drawings of wall-to-wall transitions, wall-to-ceiling transitions, wall-to-floor transitions, wall-to-door frames, wall-to-window frames, wall-to-pass-throughs. If panels will be used as a “hard-lid” ceiling, include all details of ceiling-to-light fixtures, ceiling-to-diffusers, ceilings-to-access doors/panels, and all ceiling soffits.

Drawings should show all methods of panel attachments, joint sealing and materials, sizes and locations of any and all panel penetrations or attachments.
- C. Samples: Submit manufacturer’s standard panel and joint sealant or trims.
 - 1. Wall and Ceiling Panel Samples should be 12” x 12’ (304.8mm x 304.8mm).
 - 2. Wall Base Transition to Cove should be 12” x 6” (304.8mm x 152.4mm).
 - 3. Manufacturer’s Safety Data Sheets (SDS), LEED Documents and Proof of Manufacturer’s Installer Certification, (If not directly installed by manufacturer.)

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1.5 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 5 years proven experience in the design, engineering, fabrication, and installation of composite glass-fiber reinforced polyester polymer panels as specified. Manufacturer, upon request, should be able to identify a minimum of 10 installed similar projects in bio-science labs, medical and pharmaceutical research facilities, and environments where high degrees of containment are required.
- B. Installers must either be the manufacturer's own installation group, or manufacturer certified installers.
 - 1. Installers are required to have a minimum of 3 years' experience in the construction of bio-science labs, medical and pharmaceutical research facilities, and environments where high degrees of containment are required.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original and unopened packaging. Materials should clearly show Product Name, Manufacturer's Name, and any Project Specific Designations.
- B. Store panels and accompanying materials in a covered area protected from the elements.
 - 1. Store panels flat to prevent any damage.
 - 2. Inspect all direct job-site deliveries to assure quantities are correct, there is no damage from shipping or handling,
 - 3. Handle all panels and materials to prevent job-site damage.
 - 4. Store panels at final installation location for at least 48 hours prior to installation. Room temperature for final installation should be between 60° and 75° F.
 - 5. Joint Compound and any Adhesives should be stored between 60° and 75° F.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Buildings are to be fully enclosed, with sufficient heat/air conditioning (60° and 75° F), ventilation consistent with safe working conditions, and relative humidity control between 35-60 percent.

1.8 WARRANTY

- A. Manufacturers standard warranty guarantees panels and products free of defects under normal use for a period Ten Years from date of Substantial Completion when installed by Manufacturer Certified Installers.

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PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Life Science Products, Inc., 124 Speer Road, Chestertown. MD 21620. 800-638-9874 | Website: www.lspinc.com | Email: info@lspinc.com

2.2 PANELS

- A. Bio/CR-5 Engineered Composite Panels of Glass-Fiber Reinforced Polyester Polymer face, pre-laminated to a moisture impervious plastic with an embedded woven fabric backer. Backer provides exponentially greater adhesion to gypsum or concrete block.
1. Dimensions:
 - a. Thickness – 1/4” (6mm) nominal. Width – 4’ (1.22m) nominal.
 - b. Length – 8’ (2.43m); 9’ (2.74m); 10’ (3.05m), 12’ (3.65m) nominal.
 - c. Weight – 2.0 lbs/sq.ft.
 2. Tolerances:
 - a. Length and Width: +/- 1/8” (3.175mm)
 - b. Square – Not to Exceed 1/8” for 8’ (2.43m) panels or 5/32” (3.96mm) for 9’ (2.74m) and 10’ (3.05m) panels.
- B. Properties: Resistant to Denting, Staining, Rot, Corrosion, Cracking or Splintering.
1. Flexural Strength – ASTM D790 – 8,180 psi.
 2. Flexural Modulus – ASTM D790 – 338,000 psi
 3. Barcol Hardness – ASTM D2583 – 86 Barcol
 4. Tensile Strength – ASTM D638 – 6,760 psi
 5. Tensile Modulus – ASTM D638 – 282,000 psi
 6. Compressive Strength – ASTM D695 – 4,450 psi
 7. Modulus of Elasticity – ASTM D695 – 223,000 psi
 8. Water Vapor Permeance – ASTM E96 - < 0.015 perms
 9. Air Permeance – ASTM E2178 – 0.00001 L/(Pa x m² x s)

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- C. Surface Characteristics:
 - 1. Surface Finish – Smooth Glossy
 - 2. Color – White
 - 3. Surface Burn Rating – Class A per ASTM E-84 Flame Spread of Less than 25
 - 4. Surface Flame Spread Resistance – Self-Extinguishing
- D. Subsurface: Bio/CR-5 was designed as primarily a retrofit wall and ceiling panel system. It is semi-rigid, allowing it to conform to imperfections in existing walls or ceilings. The embedded woven fabric backer provides exceptional adhesion points when applied to existing gypsum or concrete block walls that have been cleaned, patched or sanded as needed.
- F. A reasonably smooth, dirt, dust, and grease free surface is a suitable subsurface for the Bio/CR-5 panel system.

2.3 CHEMICAL RESISTANCE AND PERFORMANCE

- A. Panels should have use-case performance results for a wide variety of both gaseous and chemical sterilization agents, disinfectants and cleaning agents. Results demonstrated in minimum of at least ten facilities and for a minimum of five years.
- B. The following list of chemicals were tested on glass-fiber reinforced polyester polymer panels, as on the face of LSP Bio/CR panels. Specimens were completely submerged in the reagents. The findings were observed and reported by an independent test agency.
 - 1. Acetic Acid (0-60%) - Excellent
 - 2. Citric Acid (5%) - Excellent
 - 3. Nitric Acid (20%) - Good
 - 4. Hydrochloric Acid (0-25%) - Excellent
 - 5. Hydrofluoric Acid (10%) - Excellent
 - 6. Hydrogen Peroxide (0-50%) - Excellent
 - 7. Potassium Hydroxide (40%) - Good
 - 8. Sodium Hydroxide (40%) - Good
 - 9. Sulfuric Acid (10%) - Excellent
 - 10. Urea – Good

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- C. Panels should have proven chemical resistance with use-case performance results in biological science labs, medical and pharmaceutical research facilities, and environments where a high degree of containment is required. The following list of “Brand Name”, or commonly used chemical agents, applied and removed per chemical agent manufacturer recommendations, should have no lasting degradation effects on the panels.
1. Beta-Dyne
 2. Spor-Klenz
 3. Peridox
 4. Decon-Clean
 5. VHP (Vaporized Hydrogen Peroxide)
 6. Quatricide
 7. Sodium Hypochlorite Alkaline
 8. Lysol (Phenolics)
 9. Clidox
 10. Denatured Alcohol
 11. Chlorine Bleach
 12. MB-10

2.4 ACCESSORIES

- A. Joint Sealant Compound
1. Two-Component Urethane supplied by the panel manufacturer.
 2. Compound color is a UV Resistant Bright White. Compound will have No VOC content and is Non-Flammable. Compound will have chemical resistance properties similar to manufacturer’s panels.
- B. Attachment Screws to be a length and type determined by the panel manufacturer, so as to properly attach and support the panels. Screw should be coated, non-corrosive steel or stainless steel.
- C. Adhesive: Structural Acrylic Advanced Polymer adhesives should be used to mount panels to studs. Contact manufacturer for recommendations.
- D. Miscellaneous trim and face plates, seals, and grommets should be either white or stainless steel. If any of the above are not equipped with self-sealing gaskets, they are to be sealed with manufacturer’s joint sealant compound.

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PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine condition and quality of existing CMU or gypsum/cementitious board. Ensure they are plumb and smooth, free of dirt, grease or debris, and properly installed to support the weight of the panels. Verify there is no obvious moisture in the repaired substrate.
- B. Ensure the entire area is completely prepared for the panel installation. If any portion is deemed unsuitable for the proper installation of the panels, notify the Site Supervisor and the Architect.

3.2 INSTALLATION

A. Certified Installers

1. Installation is only to be provided by either Life Science Products Installation Group, or contractors Certified by Life Science Products for wall and ceiling panel installations.

B. Installation Instruction

- 1. Contact the manufacturer for complete installation instructions.
- 2. Contact Information: Life Science Products, Inc., 124 Speer Road, Chestertown, MD 21620, Phone: 800-638-9874. Email: info@lspinc.com
- 3. Check the appropriate Architectural detail drawing(s) that apply and assure you follow intended clearances and termination details including elevations.
- 4. Assure that the starting corner is true and plumb and if needed saw the corner of the starting panel to assure that the panel is installed plumb. It is critical that all panel edges are installed plumb and that the seam between panels is an even width.
- 5. Locate all through wall penetrations and cut the new panel so that the penetrations fit in the appropriate location. Take any time necessary to assure that the measurements are correct and fit as tightly as possible.
- 6. Spread adhesive on the entire face of the studs. (For gypsum installations, spread the adhesive on the entire back of the panel, edge to edge, to assure that the entire back of the panel has adhesive contact. We recommend Xtrabond 9500 Adhesive and a ¼” by ¼” by ¼” Flat-Top V trowel for this product).
- 7. Once the panel is placed on the wall roll the face of the panel to compress it to the wall firmly and to assure there is even contact.

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8. Remove any adhesive or foreign materials from the panel surface before beginning the next panel. This is done to prevent foreign materials or adhesive from setting up on the panel face.
9. At some point during the installation but not until the installed panel is completely set, you can begin the joint sealing.
10. Be sure the joints are clean, smooth and free of any protrusions from saw blades or panel adhesive. Apply 3M fine line tape (we recommend using at least a 1” wide tape to the edge of the panel, the tape can be placed close to the edge of the panel without going past it.
11. Before striking the joints make sure the joints are cleaned, any leftover adhesion in the joints needs to be removed and the gap needs to be clear.
12. Fill each joint with Bio/Cr sealant and strike the joints using a caulking tool or a Credit card (plastic card/Hotel room key, etc.), try to do each joint in one strike starting from the top to the bottom keeping even pressure.
13. Consult all manufacturer’s Detail Drawings for the proper sealing of transition areas such as wall-to-ceiling, wall-to-wall (inside and outside corners), and wall-to-floor.

3.3 CLEANING

- A. Remove any excess sealant or adhesive from panel faces.
- B. Wipe panels down using a damp cloth and a mild soap or cleaning solution. Do not use any rough or sharp utensils that could scratch the panel surface.

END OF SECTION 06XXXX