**Completing Your Specification**

 **For**

 **Structured Polycarbonate Panel Assemblies**

 **Walkways and Canopies**

**Instructions:**

**Step 1.** {Script highlighted in RED and enclosed in brackets are intended to be instructions for that portion of the specifications} After completing the task, which usually requires making a selection, delete the red script from the specification.

**Step 2.** Scripts highlighted in BLUE are selection items. Change the item you want to use to BLACK text and delete all the other blue text in that area of the specification.

**Step 3.** Add the project name at the top of each page and the correct page numbering system at the bottom.

**Step 4.** Delete this page from your new specification and copy and paste it into your master specification document.

**Please call Crystal Structures/Sunshine Rooms at 1-800-222-1598 for any help with this specification, application questions or for drawing details.**

 **Continue with the Specification below -**

 **STRUCTURED-POLYCARBONATE-PANEL ASSEMBLIES**

 **STANDING SEAM WALKWAYS AND CANOPIES**

 **SECTION 107300**

**PART 1 – GENERAL**

* 1. RELATED DOCUMENTS
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

1. Section includes aluminum-frames assemblies glazed with structured-polycarbonate panels as follows:
2. Standing seam canopy assemblies.
3. Related Sections:
4. Division 01 Section "Sustainable Design Requirements – LEED for Schools" for additional LEED requirements.
5. Division 05 Section "Structural Steel Framing" for structural framing and purlins supporting standing seam canopy assembly.

1.3 SUBMITTALS

1. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for aluminum components of panel assemblies.
2. LEED Submittals:
3. Product Data for Credit MR 5: List of regionally manufactured products and materials (within a radius of 500 miles from project) with documentation of cost and distance from project to manufacturer.
4. Shop Drawings: For panel assemblies. Include plans, elevations, sections, details, and attachments to other work.
5. Include details of provisions for assembly expansion and contraction.
6. Samples for Initial Selection: For factory-applied color finishes for aluminum components.
7. Fabrication Samples: Of each framing system intersection and adjacent panels, made from 12 inch lengths of full-size framing members and showing details of the following:
8. Structured-polycarbonate panels.
9. Flashing, trim and batten
10. Delegated-Design Submittal: For panel assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified, professional engineer responsible for their preparation.
11. Provide (list quantity) of shop drawings and the balance of the submittal components to the architect for approval prior to any fabrication

Or submit electronic copies of complete submittal package electronically by e-mail or downloaded to the project’s cloud management folder.

1.4 INFORMATIONAL SUBMITTALS

1. Qualification Data: For qualified Installer.
2. Warranties: Sample of special warranties.

1.5 CLOSEOUT SUBMITTALS

1. Maintenance Data: For panel assemblies to include in maintenance manuals.
2. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSUARNACE

1. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of panel assemblies required for this Project.
2. Product Options: Information on Drawings and in Specifications establishes requirements for the panel assemblies' aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including testing conducted by an independent testing agency and in-service performance.
3. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect review.

1.7 WARRANTY

1. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of panel assemblies that fails in materials or workmanship within specified warranty period.
2. Failures include, but are not limited to, the following:
3. Structural failures including, but not limited to, excessive deflection.
4. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
5. Water leakage.
6. Limited Warranty Period: 10 years from date of Substantial Completion.
7. Special Structured-Polycarbonate-Panel Warranty: Manufacturer's standard form in which manufacturer agrees to replace panels that exhibit defects in materials or workmanship.
8. Defects include, but are not limited to, the following:
9. Delamination.
10. Color changes exceeding requirements.
11. Losses in light transmission beyond 6 percent from original when measured per ASTM D 1003.
12. Hail damage.
13. Warranty Period: 10 years from date of Substantial Completion.
14. Trim and batten finish warranty (if aluminum) {Select finish}
15. Polycron (AAMA 2603) – 5 years
16. Class I Anodized finish – 10 years
17. 2-Coat flouropolymer paint finish (AAMA 2604) – 10 years
18. 3-Coat flouropolymer paint finish (AAMA 2605) – 15 years

**PART 2 – PRODUCTS**

2.1 MANUFACTURERS

1. Basis of Design Product: Subject to compliance with requirements, provide Crystal Structures, Inc., commercial division of Sunshine Rooms, Inc.; Standing Seam Polycarbonate Canopy, 626 System
2. Other manufactures that have be pre-approved by the architect at least 10 days prior to the bid date

2.2 PERFORMANCE REQUIREMENTS

1. General Performance: Structure-polycarbonate-panel assemblies shall withstand the effects of the following forces without failure due to defective manufacture, fabrication, installation, or other defects in construction:
2. Structural loads.
3. Thermal movements.
4. Movements of supporting structure.
5. Dimensional tolerances of building frame and other adjacent construction.
6. Failure includes, but is not limited to, the following:
7. Deflection exceeding specified limits.
8. Water leakage.
9. Thermal stresses transferred to building structure.
10. Noise or vibration created by wind, thermal, or structural movements.
11. Loosening or weakening of fasteners, attachments, and other components.
12. Structural Loads:
13. Seismic Loads: As indicated on Structural Drawings.
14. Wind Loads: As indicated on Structural Drawings.
15. Snow and Drift Loads: As depicted on Structural and Architectural drawings
16. Deflection Limits:
17. Overhead Panel Assemblies: Limited to 1/100 of clear span for each assembly component.
18. Structural-Test Performance: Provide panel assemblies tested according to ASTM E 330, as follows:
19. When tested at positive and negative wind-load design pressures, assemblies do not show evidence of deflection exceeding specified limits.
20. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not show evidence of material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
21. Water Penetration under Static Pressure: Provide panel assemblies that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft...
22. Thermal Movements: Allow for thermal movements from ambient- and surface-temperature changes. Base calculations on surface temperatures of material due to both solar heat gain and nighttime-sky heat loss.
23. Temperature Change (Range): 120 deg F, ambient: 180 deg F, material surfaces.

2.3 STRUCTURED-POLYCARBONATE PANELS AND BATTEN CAPS

1. Description: Translucent, extruded-polycarbonate sheet with cellular cross section that provides isolated airspaces and that is coextruded with a UV-protective layer on each side.
2. Plastic Self-Ignition Temperature: 650 deg F or more per ASTM D 1929.
3. Smoke-Developed Index: 450 or less per ASTM E 84, or 75 or less per ASTM D 2843.
4. Flame-Spread Index: Nor more than 25 per ASTM E 84.
5. Combustibility Classification: Class CC1 per ASTM D 635.
6. Color Tolerance: Passes IBC 2006 requirements per ASTM E 308, ASTM E 313 and ASTM G 155.
7. Hail Impact: ASTM E 822, no damage from 1.57 inch diameter hail impact at 65 ft./sec.
8. Panel Thickness: Not less than 20 mm.
9. Panel Color: To be selected by the architect from manufacturer’s standard selection. The panels shall be uniform in color with the integral core.
10. Horizontal Translucent Panel and Join System:
11. Panel Width: Manufacturer's standard, not exceeding 2 feet.
12. Panel Length: Horizon panel shall be extruded in one single formable length. Transverse connections are not acceptable.
13. Up-Stands: Panels shall be manufactured with heavy duty up-stands that are integral to the panel. Up-stands shall be 90 degrees to the panel face (standing seam concept).
14. Panel Battens:
15. Exposed, interlocking, tapered aluminum U battens, 1-1/4 inch wide. Battens shall have a heavy duty locking mechanism to ensure maximum uplift capability.

 Or b. Polycarbonate battens designed to have a compatible interlocking mechanism (recommended for vaulted applications)

1. Locking Clip: Shall be stainless steel configured with a 2.56 inch wide top flange with three separate locking areas to resist maximum up-lift.
2. Free movement of the panels shall be allowed to occur for expansion and contraction without damage to the weather tightness of the completed system.
3. Horizon polycarbonate panels shall incorporate a co-extruded ultra-violet protective layer on both exterior surfaces.
4. Flammability: Polycarbonate panels shall be an approved light transmitting cellular panel with a CC1 fire rating classification per ASTM D 635. Flame spread no greater than 25 per ASTM E 84. Smoke density no greater than 75 per ASTM D 2843 and a minimum self-ignition temperature of 1000 degree F per ASTM D 1929. Panels shall be self-extinguishing.
5. End Closurec:
6. Extruded aluminum J-channel sill with weep holes.

 Or b. Polycarbonate J-channel closures

2.4 FABRICATION

1. Fabricate aluminum components before finishing.
2. Fabricate aluminum components that, when assembled, have the following characteristics:
3. Profiles that is sharp, straight, and free of defects or deformations.
4. Accurately fitted joints with ends coped or mitered.
5. Fabricate aluminum sill closures with weep holes and for installation as continuous component.
6. Reinforce aluminum components as required to receive fastener threads.

2.5 ALUMINUM FINISHES (battens and trim, if selected in aluminum) {Select one}

 All exposed aluminum components shall be finished with:

 A. electrostatically-applied baked PPG Polycron enamel from the manufacturer’s standard colors.

 B. or Class I anodized finish in a color selected by the architect

 C. or 2-coat fluoropolymer paint in a color selected by the architect from the manufacturer’s standard colors

 D. or 3-coat fluoropolymer paint in a color selected by the architect from the manufacturer’s standard colors

**PART 3 – EXECUTION**

3.1 EXAMINATION

1. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the work.
2. Verify that supporting frame and purling have received final finishes prior to installation of work of this Section.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

1. General:
2. Comply with manufacturer's written instructions.
3. Do not install damaged components.
4. Fit joints between aluminum components to produce hairline joints free of burrs and distortion.
5. Rigidly secure non-movement joints.
6. Install anchors with separators and isolaters to prevent metal corrosion, electrolytic deterioration, and immobilization of moving joints.
7. Seal joints watertight unless otherwise indicated.
8. Metal Protection: Where aluminum components will contact dissimilar materials, protect against galvanic action by painting contact surfaces with corrosion-resistant coating or by installing nonconductive spacers as recommended in writing by manufacturer for this purpose.
9. Install continuous aluminum sill closures with weatherproof expansion joints and locked and sealed corners. Locate weep holes at rafters.
10. Install components plumb and true in alignment with established lines and elevations.
11. Erection Tolerances: Install panel assemblies to comply with the following maximum tolerances:
12. Alignment: Limit offset from true alignment to 1/32 inch where surfaces abut in line, edge to edge, at corners, or where a reveal or protruding element separates aligned surfaces by less than 3 inches; otherwise, limit offset to 1/8 inch.
13. Location and Plane: Limit variation from true location and plane to 1/8 inch in 12 feet, but no greater than 1/2 inch over total length.

3.3 CLEANING

1. Clean translucent polycarbonate panels in accordance with manufacturer's instructions.
2. Do not use harsh cleaning materials or methods that would damage metal finish or glazing.

3.4 PROTECTION

1. Protect installed translucent polycarbonate-panel assemblies from damage during construction.
2. Remove and replace damaged assembly components as determined by Architect.

END OF SECTION 084513