

SECTION 107300 – TRANSLUCENT FIBERGLASS METAL CANOPY SYSTEM (BASE BID AND ALTERNATE BID)

PART 1 -GENERAL

1.1 SUMMARY

- A. Section includes the structural canopy system as shown and specified. Work includes providing and installing:
 - 1 Structural aluminum box beam superstructure
 - 2 Factory prefabricated structural insulated translucent sandwich panels
 - 3 Aluminum installation system

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.
- B. Submit shop drawings. Include plans, elevations and details.
- C. Submit manufacturer's color charts showing the full range of colors available for factory finished aluminum.
 - 1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
 - a. Sandwich panels: 14"x28" units
 - b. Factory finished aluminum: 5" long sections
- D. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- E. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
 - 1. Reports required (if applicable) are:
 - a. International Building Code Evaluation Report (AC 177)
 - b. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
 - c. Burn Extent (ASTM D 635)
 - d. Color Difference (ASTM D 2244)
 - e. Impact Strength (UL 972)
 - f. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)

- g. Bond Shear Strength (ASTM D 1002)
- h. Beam Bending Strength (ASTM E 72)
- i. Insulation U-Factor (NFRC 100 or ASTM C-236)
- j. 1200°F Fire Resistance (SWRI)
- k. Fall Through Resistance (ASTM E 661)
- l. Class A Roof Covering Burning Brand (ASTM E 108)

1.3 CLOSEOUT SUBMITTALS

- A. Provide project maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:

- 1 Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
- 2 Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
- 3 Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

- B. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

1.5 PERFORMANCE REQUIREMENTS

- A. The manufacturer shall be responsible for the configuration and fabrication of the complete canopy system, including the aluminum box beam superstructure.
 - 1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Structural Loads; Provide canopy system capable of handling the following loads:
 - a. Roof Live Load, on horizontal projected surface, minimum: 35 PSF
 - b. Roof Snow Load, on horizontal projected surface, minimum: 35 PSF
 - c. Roof Snow Drift Load, on horizontal projected surface, minimum:
 - d. Base Wind Load PSF factored per applicable Building Code –

B. Deflection Limits:

1. Canopy Panels: Limited to $l/60$ of clear span.

1.6 DESIGN

A. Description: Canopy System

- 1 Nominal Size: shown on drawings
- 2 Roof Pitch: as shown on drawings

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver canopy system, components and materials in manufacturer's standard protective packaging.
- B. Store canopy system panels on the long edge; several inches above the ground, blocked and under cover to prevent warping in accordance with manufacturer's storage and handling instructions.

1.8 WARRANTY

- A. Provide manufacturer's and installer's written warranty agreeing to repair or replace canopy system work, which fails in materials or workmanship within one year from the date of delivery. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering, defects in accessories, insulated translucent sandwich panels and other components of the work.

PART 2 -PRODUCTS

2.1 MANUFACTURER

- A. The basis for this specification is for products manufactured by Structures Unlimited, Inc. Other manufacturers may bid this project provided they comply with all of the performance requirements of this specification and submit evidence thereof. Listing other manufacturers' names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.

1. Structures Unlimited
2. Kalwall, Inc.
3. Panelwall

PANEL COMPONENTS

- A. Face Sheets:

1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
 - b. Face sheets shall not deform, deflect, or drip when subjected to fire or flame.
 2. Interior face sheets:
 - a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 10 and smoke developed no greater than 350-400 when tested in accordance with UL 723.
 - b. Burn extent by ASTM D 635 shall be no greater than 1”.
 3. Exterior face sheets:
 - a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 3 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
 - b. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4” diameter, 5 lb. free-falling ball per UL 972.
 - c. Erosion Protection: Integral, embedded-glass erosion barrier.
 4. Appearance:
 - a. Exterior face sheet: Smooth, .070” thick and white in color.
 - b. Interior face sheet: Smooth, .045” thick and white in color.
 - c. Face sheets shall not vary more than $\pm 10\%$ in thickness and be uniform in color.
- B. Grid Core:
- 1 Aluminum I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16”.
 - 2 I-beam Thermal break: Minimum 1”, thermoset fiberglass composite.
- C. Laminate Adhesive:
1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives”.
 2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
 3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure

to four separate conditions:

- a. 50% Relative Humidity at 68° F: 540 PSI
- b. 182° F: 100 PSI
- c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
- d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
 - 1 Thickness: 2 3/4"
 - 2 Light transmission: 20%
 - 3 Solar heat gain coefficient: .38
 - 4 Panel U-factor: .53
 - 5 Grid pattern: Nominal size 12"x24" pattern shoji
- B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10'-0" span without a supporting frame by ASTM E 72.
- C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.
- D. Canopy System:
 1. Canopy system shall pass Class A Roof Burning Brand Test by ASTM E 108. .
- E. Canopy System shall meet the fall through requirements of OSHA 1910.23 as demonstrated by testing in accordance with ASTM E 661, thereby not requiring supplemental screens or railings.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system: Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: Various series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish: Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards

2.5 SUPERSTRUCTURE

- A. The superstructure shall be pre-fabricated of extruded aluminum alloy 6005-T5, 6005A-T61 or 6061-T6 box beams. Ferrous metals shall not be allowed. All parts shall be pre-assembled at the factory and knocked down for shipment. System shall be a Rigid Frame design.
- B. Finish: Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards.
- C. Aluminum structural system design and calculations must be furnished in accordance with the Aluminum Association "Specifications for Aluminum Structures" and the applicable building code. Design calculations must be prepared and stamped by a Licensed Professional Engineer.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure and installation conditions.
- B. Do not proceed with structural canopy installation until unsatisfactory conditions have been corrected by the general contractor.

3.2 PREPARATION

A. Metal Protection:

- 1 The general contractor shall prepare foundations, curbs, footings and/or lintels isolating dissimilar materials from aluminum system, which may cause electrolysis.
 - 2 Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 3 Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.
- B. The general contractor shall install foundations, curbs, footings and/or lintels designed to withstand the thrust generated by the canopy.
 - C. Anchor Bolts shall be supplied and installed by the general contractor. Canopy anchoring system will be per manufacturer's requirements.
 - D. The general contractor shall provide temporary enclosures required.

3.3 INSTALLATION

- A. Install the canopy system in accordance with the manufacturer's installation recommendations and approved shop drawings.
- B. After other trades have completed work on adjacent material, carefully inspect translucent panel installation and make adjustments necessary to ensure proper installation.

3.4 CLEANING

- A. Clean the canopy system immediately after installation.
- B. Refer to manufacturer's written recommendations.

END OF SECTION 107316