

Special Specification 5043

Sandwich Panel Canopy System



1. DESCRIPTION

Furnish, fabricate and install sandwich panel canopy system. A sandwich panel system is the complete system consisting of the factory prefabricated structural insulated translucent sandwich panels, aluminum installation system, structural aluminum box beam superstructure, flexible flashing, fasteners, sealants, components, hardware, cable connections, conformance to aesthetic lighting system, and support posts.

2. MATERIALS

For the installation of all canopy system, use new materials that comply with the details shown on the plans, the requirements of this Item.

2.1. **Basis of Design.** Basis of Design specifications for the sandwich panel canopy system are as follows:

2.1.1. **Option 1.** Kalwall Insulated Translucent Fiberglass Sandwich Panel System, fabricated by Structures Unlimited, Inc.

2.1.2. **Option 2.** Approved equivalent according to the following specifications:

- Panel Components:
 - Face Sheets: Translucent Architectural Grade glass fiber reinforced thermoset resins
 - Exterior Face Sheets:
 - 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 of weathering (simulated South Florida testing) and unaffected by abrasion or scratching
 - Flame Spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 15 and smoke developed no greater than 450 when tested in accordance with UL 723.
 - 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. Erosion Protection: Integral, embedded-glass erosion barrier.
 - Appearance: Smooth, 0.070" thick, White
 - Interior Face Sheets:
 - 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.
 - Burn Extent, ASTM D 635: 1.0 inch max.
 - Appearance: Smooth, 0.045" thick, White
 - Grid Core: I-Beam
 - 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"

- Laminate Adhesive:
 - 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".
 - 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.
 - Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
 - 50% Relative Humidity at 68° F: 540 PSI
 - 182° F: 100 PSI
 - Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
 - Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI
- Panel construction:
 - 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.
 - Thickness: 2 3/4"
 - Light transmission: 20 %
 - Solar heat gain coefficient: .38
 - Panel U-factor: .53U
 - Grid pattern: Nominal size 12" x 24"; pattern Shoji
 - Standard panels shall deflect no more than 1.9" at 30 PSF in 10'-0" span without a supporting frame by ASTM E 72.
 - Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.
- Canopy System:
 - Roof system shall be UL listed as a Class A Roof by UL 790, which requires periodic unannounced factory inspections and retesting by Underwriters Laboratories.
 - Canopy system shall be designed according to ASCE 7-10 with wind speed of 120 mph.
 - 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.
- Battens and Perimeter Closure System:
 - Closure system: Extruded aluminum 6063-T6 and 6063-T5 alloy in accordance with ASTM B 221 and temper clamp-tite screw type closure system.
 - Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
 - Fasteners: Various series stainless steel screws for aluminum closures, excluding final fasteners to the building.

- Finish: Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards.
- Superstructure and Posts:
 - The superstructure and posts shall be pre-fabricated of extruded aluminum alloy 6005-T5, 6005A-T61 or 6061-T6 box beams in accordance with ASTM B 221. 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.
 - Finish: Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604. Color to be selected from manufacturer's standards.
 - Aluminum structural system design and calculations must be furnished in accordance with the Aluminum Association *2015 Aluminum Design Manual's* "Specifications for Aluminum Structures" and the applicable building code. Design calculations must be prepared and stamped by a Texas Licensed Professional Engineer.

2.1.3.

Submittals.

- Provide 2 sets of submittals of the manufacturer's product data, including construction details, material descriptions, profiles and finishes of components.
- Provide shop drawings and design calculations showing plans, elevations and details prepared and stamped by a Texas Licensed Professional Engineer.
- Provide Manufacturer's color charts.
 - Submit samples for verification
 - Sandwich panels: 14" x 28" unit &
 - Factory finished aluminum: 5" long
- Provide installer certificate, signed by installer, certifying compliance with project qualification requirement.
- Submit product certified test reports from a qualified independent testing agency indicating compliance with project performance requirements.

2.1.4.

Warranty. Submit manufacturers and installer's written warranty agreeing to repair or replace panel system work, which fails in materials and workmanship within one year of the date of installation. 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 work.

3.**CONSTRUCTION**

The manufacturer shall be responsible for the configuration and fabrication of the complete sandwich panel canopy system, including the aluminum box beam superstructure and the supporting posts, and shall meet the layout requirements (dimensions and spacing) shown on the plans. The aesthetic lighting layout and mounting designs including the location of the conduit(s) and fixtures shall be coordinated with the respective suppliers and installers and may require modifications to the canopy system.

3.1.

Preparation. Examine substrates, supporting structure and installation conditions.

- Metal Protection:
 - Prepare foundations, curbs, footings and/or lintels isolating dissimilar materials from aluminum system, which may cause electrolysis.
 - 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

- 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.
- Install foundations, curbs, footings and/or lintels designed to withstand the thrust generated by the canopy.

Perform work in accordance with the details shown on the plans and the requirements of this Item. Use established industry safety practices when installing the canopy. Prevent scarring or marring of materials. Replace damaged components. Repair damaged areas.

- 3.2. **Installation.** Furnish and install Sandwich Panel Canopy System. Install the complete system, including the support posts, in accordance with the manufacturer's suggested installation recommendations, approved shop drawings, details, dimensions and requirements as shown on the plans. Install cables, conduit, j-boxes and other equipment necessary for fixture connection in a manner that minimizes visibility from pedestrian and roadway traffic.

After others have completed work on adjacent areas, carefully inspect translucent panel installation and make adjustments necessary to ensure proper installation.

- 3.3. **Cleaning.** Clean the canopy system immediately after installation in accordance with manufacturer's written instructions.

4. MEASUREMENT

This item will be measured by the lump sum for each bridge.

5. PAYMENT

The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price for "Install Sandwich Panel Canopy System." This price is full compensation for materials, fabrication, finishing, transportation, erection, field modifications, coordination with the lighting suppliers and installers, equipment, labor, tools and incidentals necessary to complete the work.