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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 typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies corrugated and multi-wall structured polycarbonate sheets as typically used in glazing, roofing and cladding applications. These products are manufactured by Suntuf, Inc. 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 08840  
 PLASTIC GLAZING**

**PART 1 GENERAL**

1.01 SUMMARY

- A. Section Includes: [Corrugated] [And] [Multi-wall structured] Polycarbonate Sheets.

Specifier Note: Revise paragraph below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but it is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Add section numbers and titles per CSI *MasterFormat* and specifier's practice. In the absence of related sections, delete paragraph below.

- B. Related Sections:
1. Division 8 Section: Glazing, for glass and related glazing materials.
  2. Division 8 Section: Security Glazing, for glazing resistant to forced entry and ballistics, including laminated glass.
  3. Division 8 Section: Metal Framed Skylights.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain References 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 1 References Section may establish the edition date of standards. This article does not require compliance with standard. It is a listing of all references used in this section.

1.02 REFERENCES

- A. ASTM International:
1. ASTM D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
  2. ASTM D1003 Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
  3. ASTM E424 Standard Test Methods for Solar Energy Transmittance and Reflectance (Terrestrial) of Sheet Materials.

- B. Underwriters Laboratories, Inc. (UL):
1. UL 580 Tests for Uplift Resistance of Roof Assemblies.

Specifier Note: Subparagraph below pertains to SunSky and Suntuf Polycarbonate products.

2. UL Construction No. 167 - File Number R18450.

Specifier Note: Subparagraph below pertains to SunSky Polycarbonate products.

3. UL Classified/File Number R18450, classified by UL as to uplift resistance only, Class 90, as shown by UL Construction No. 167.

- C. International Conference of Building Officials (ICBO Evaluation Service):

1. Acceptance Criteria AC16 Plastic Skylights.

- D. Miami Dade County (Florida) Product Control:

1. Approved Acceptance Number 98-0212.01.

- E. City of Los Angeles, California:

1. Research Report RR25298.

- F. BBA British Board of Agreement:

1. Certificate No. 01/3837.

Specifier Note: Retain, edit or delete text below to suit project requirements.

- G. U.S. Testing Company, Inc. (SGS):

1. SGS Report #155380-3.
2. SGS Report #155380-2.
3. SGS Report #165711-1.
4. SGS Report #164711-2.
5. SGS Report #164711-3.

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 required to link components of a system together and to interface with other systems.

### 1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Provide polycarbonate glazing which has been manufactured, fabricated and installed to meet the following criteria:

1. Design Loads for Wind: [Specify design load for wind].
2. Design Loads for Snow: [Specify design load for snow].
3. Maximum Allowable Deflection: [Specify maximum allowable deflection].

- B. Performance Requirements: Provide polycarbonate glazing sheets capable of withstanding normal temperature changes, wind loading and impact loading without failure, including loss or breakage by failure of sealants or gaskets to remain watertight and airtight, deterioration of plastic sheet and glazing materials or other defects.

Specifier Note: Retain, edit or delete text below to suit project requirements.

1. Conform to results of SGS ASTM E84 test (Class A, 25 or less) for SUNLITE 8 mm and 10 mm.
2. Conform to results of SGS ASTM D635 (CC1) for SUNLITE SL 8 mm, 10 mm and 16 mm.

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 1 Submittal Procedures Section.

**1.04 SUBMITTALS**

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data and installation instructions, including:
  - 1. Material weight.
  - 2. Wind load capacity.
  - 3. Light transmission.
  - 4. Shading coefficient.
  - 5. Thermal expansion.
  - 6. Methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
- C. Shop Drawings: Provide drawings indicating details of fabrication and installation.
- D. Samples: Submit selection and verification samples, including available product finishes, colors and thicknesses.
- E. Quality Assurance/Control Submittals: Submit the following:
  - 1. Test Reports: Material test results for compliance of plastic glazing with specified requirements.
  - 2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.
- F. Closeout Submittals: Submit the following:
  - 1. Warranty documents specified herein.

Specifier Note: Article below should include statements of prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 1 Quality Assurance Section.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

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 1 Regulatory Requirements Section. Repetitive statements should be avoided.

- B. Regulatory Requirements and Approvals: [Specify applicable requirements of regulatory agencies].
  - 1. [Code agency name]:
    - a. [Report or approval number].

Specifier Note: Retain paragraph below if preinstallation meeting is required.

- C. Preinstallation Meetings: [Specify requirements for meeting].

Specifier Note: Article below should include specific protection and environmental conditions required during storage. Coordinate article below with Division 1 Product Requirements Section.

**1.06 DELIVERY, STORAGE & HANDLING**

- A. General: Comply with Division 1 Product Requirement Section.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
  - 1. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
  - 1. Store horizontally on a flat pallet in a dry, clean and shaded location.
  - 2. Avoid storage with unsupported overhanging panel ends or edges.

3. Handle panels with care to avoid scratches, edge damage and puncturing.
4. Leave panels in original packaging until time of installation.

Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.

1.07 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.
  1. Provide limited warranty covering loss of light transmission and loss of mechanical properties due to weathering.

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

2. Warranty Period: 10 years beginning with Date of Substantial Completion.

Specifier Note: Retain article below if additional material for maintenance and repair will be required.

1.08 MAINTENANCE

- A. Extra Materials: Provide [A recommended percentage of] [Specify percentage.] additional material for use by owner in building maintenance and repair.

**PART 2 PRODUCTS**

Specifier Note: Suntuf, Inc., manufactures high performance co-extruded polycarbonate materials that resist the effects of solar UV radiation. Thermal insulation capabilities of SUNLITE offer energy savings in service temperatures from -40 - 250 degrees F (-40 - 121 degrees C). SUNLITE panels are self-extinguishing with no emission of toxic gasses.

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 [CORRUGATED] [AND] [MULTI-WALL STRUCTURED] POLYCARBONATE SHEETS

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.

- A. Manufacturer: Suntuf, Inc.
  1. Contact: 9735 Commerce Circle, Arcadia West Industrial Park, Kutztown, PA 19530; Telephone: (800) 999-9459, (610) 285-9918; Fax: (610) 285-2859; E-mail: [suntuf@suntuf.com](mailto:suntuf@suntuf.com); Web site: [www.suntuf.com](http://www.suntuf.com).
- B. Proprietary Products/Systems: Multi-wall Structured Polycarbonate Sheets, including the following:
  1. Suntuf SUNLITE Sheets:
    - a. Material: Multi-wall polycarbonate sheets.
    - b. Color: [Clear] [Bronze] [Opal (white diffused)] [Sky Blue (transparent)] [Sea Green (transparent)].

Specifier Note: Manufacturer offers co-extruded solar control options in 2 colors. Minimum order quantities apply. Retain, edit or delete subparagraph below to suit project requirements and specifier practice.

- c. Solar Control Options: [Solar Metallic] [Solar Ice] [SUNLITE UV2, UV protection on 2 sides] [SUNLITE Plus, anti-condensation treatment on 1 side].
- d. Profile, Thickness, R-Value: [Twin Wall, 5/32 inch (4 mm), 1.49] [Twin Wall, 1/4 inch (6 mm), 1.62] [Twin Wall, 5/16 inch (8 mm), 1.72] [Twin Wall, 3/8 inch (10 mm), 1.89] [Triple Wall, 5/16 inch (8 mm), 1.99] [Triple Wall, 5/8 inch (16 mm), 2.36] [Structured, 1 inch (25 mm), 3.33] [Structured, 1 1/4 inches (32 mm), 3.79].

- e. Percent Light Transmission (ASTM D1003): [Specify light transmission.].
  - f. Percent Light Reflection (ASTM E424): [Specify light reflection.].
  - g. Percent Light Absorption: [Specify light absorption.].
  - h. Percent Direct Solar Transmission (ASTM E424): [Specify direct solar transmission.].
  - i. Percent Solar Reflection (ASTM E424): [Specify solar reflection.].
  - j. Percent Solar Absorption (ASTM E424): [Specify solar absorption.].
  - k. Total Solar Transmission (ASTM E424): [Specify solar transmission.].
  - l. Total Solar Reflection (ASTM E424): [Specify solar reflection.].
  - m. Shading Coefficient (ASTM E424): [Specify shading coefficient.].
- C. Proprietary Products/Systems: Corrugated Polycarbonate Sheets, including the following:
- 1. Suntuf SunSky Corrugated Polycarbonate Sheets:
    - a. Material: Corrugated polycarbonate sheets.
    - b. Color, Light Transmission: [Clear, 90% light transmission] [Soft White, 85% light transmission, 100% light diffusion] [Solar Control Metallic Silver, 20% light transmission, measurable heat reduction].
    - c. Profile: [7.2 inches (183 mm)] [9 inches (229 mm)] [12 inches (305 mm)] corrugation.
    - d. Width, Thickness: [38 inches (965 mm), 0.032 inch (0.8 mm)] [24 inches (610 mm), 0.060 inch (1.5 mm)].

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

## 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

Specifier Note: Specify subordinate or secondary items that aid and assist primary products specified above or are necessary for preparation or installation of those items.

## 2.03 ACCESSORIES

- A. Provide glazing and installation accessories as follows:
  - 1. Compression Gaskets:
    - a. Material: Extruded or molded gaskets of [EPDM] [Siliconized EPDM] [Neoprene] [Santoprene] complying with ASTM [Specify and reference applicable ASTM standards.]. Do not use PVC gaskets in any fashion.
    - b. Profile: Profile and hardness required to maintain a watertight seal [Specify profile.].
    - c. Manufacturer: Acceptable to glazing and sealant manufacturers.
  - 2. Setting Blocks:
    - a. Material: EPDM blocks as required for compatibility with glazing sealant and plastic glazing and of hardness recommended by glazing manufacturer.
    - b. Manufacturer: Acceptable to glazing and sealant manufacturers.
  - 3. Compressible Filler Rods:
    - a. Material: Closed cell of waterproof jacketed rod stock of synthetic rubber or plastic foam.
    - b. Manufacturer: Acceptable to glazing and sealant manufacturers.

Specifier Note: Sealants which are ammonia releasing or solvent based will chemically attack these polycarbonate materials. Use manufacturer recommended or approved silicones only.

- 4. Glazing and Building Sealants:

Specifier Note: Solvent based sealants or sealants that release ammonia will chemically attack these polycarbonate materials. Specify silicone based sealants recommended by manufacturer only.

- a. Material: Silicone sealant.
- b. Material Standard: [Specify and reference ASTM standard].
- c. Manufacturer: [GE/Bayer Multisil] [Dow Corning 795 and 3793 Silicone Building Sealant].
- 5. Pre-Formed Tape Sealant:
  - a. Material: Preformed, butyl-rubber-based tape for glazing purposes, with or without continuous spacer rod as recommended by manufacturer.
  - b. Material Standard: [Specify and reference ASTM standard].
  - c. Manufacturer: Acceptable to glazing and sealant manufacturers.
- 6. Attachment Profiles:
  - a. Material and Profile: [Basic inverted-H polycarbonate connecting profile] [Two-part polycarbonate connecting profile] [Combination metal and plastic two-part connecting profile] [Wood connecting profiles] [Metal connecting profiles].

Specifier Note: Use of properly installed fasteners and washers is important to ensure optimal system performance. Consult manufacturer or SUNLITE Installation Guide.

- 7. Fasteners:
  - a. Material: Corrosion protected steel.
  - b. Screw Type: [Self-tapping] [Self-drilling] [Wood screw] [Metal screw] with manufacturer-approved washer.
  - c. Size: Comply with manufacturer's recommendations for specific application.

Specifier Note: Describe items that must be shop manufactured, fabricated or assembled before being delivered to the site.

#### 2.04 FABRICATION

- A. Shop Assembly: [Specify requirements for shop fabricated components.].

Specifier Note: Specify requirements for quality control at offsite fabrication plants.

#### 2.05 SOURCE QUALITY CONTROL

- A. Fabrication Tolerances: [Specify fabrication tolerances.].
- B. Tests, Inspection: [Specify requirements for testing and inspection at off-site plants.].
- C. Source Quality: Obtain plastic glazing materials from a single manufacturer.

### 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. Comply with the instructions and recommendations of the multi-wall structured polycarbonate sheets manufacturer, including:
  - 1. Manufacturer's product data.
  - 2. Product technical bulletins.
  - 3. Product catalog.
  - 4. Installation instructions.
  - 5. Product carton instructions.

Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

#### 3.02 EXAMINATION

A. Site Verification of Conditions:

1. Verify that site conditions are acceptable for installation of polycarbonate sheets.
  - a. Examine and verify that frame openings are correct size and conform to recommendations of the polycarbonate sheet manufacturer.
2. Do not proceed with installation of polycarbonate sheets until unacceptable conditions are corrected.

Specifier Note: Specify actions required to physically prepare the surface, area or site or to incorporate the primary products of the section.

3.03 PREPARATION

A. Protection: Protect plastic surfaces from abrasion and damage during handling and installation.

B. Surface Preparation:

1. Remove burrs and other projections from glazing channel surfaces.
2. Immediately before glazing, clean glazing channels and framing members with a compatible solvent and wipe dry. Do not allow solvent to pool in glazing channels.
3. Remove coatings not permanently bonded to substrates by peeling back factory applied protective masking a sufficient distance for edge engagement.
4. Remove lacquer from metal surfaces where elastomeric sealants are to be used.

Specifier Note: Coordinate article below with manufacturer's recommended installation requirements. Retain, edit or delete text to suit project and specifier practice.

3.04 INSTALLATION

A. General:

1. Use standard workshop equipment such as circular saws and jigsaws.
2. Blow dust from channels immediately after sawing and seal (each end) with recommended sealing or "vent" tape.
3. Drill with a hand or power drill using metal working bits.
4. Install panels with rib channels in the direction of the slope.
5. Comply with manufacturer's recommendations for edge engagement and expansion allowance.
6. Employ sealants and glazing accessories that have been approved by manufacturer of plastic glazing sheet only.
7. Remove protective masking immediately after glazing operations are completed.

B. Special Techniques: [Specify spacing, patterns, unique treatments.].

C. Interface with other Work: [Specify anchorage, separation, bonding.].

D. Site Tolerances: [Specify allowable variations.].

E. Tape Glazing:

1. Position tapes on fixed stops.
2. Install tapes continuously.
3. Do not stretch tapes to fit opening.
4. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped.
5. Seal joints in tapes with compatible sealant.

F. Gasket Glazing:

1. Fabricate compression gaskets to fit openings exactly.
2. Secure compression gaskets in place with joints located at corners to compress gaskets, producing a weathertight seal.
3. Seal gasket joints with compatible silicone sealant.

**G. Sealant Glazing:**

1. Install continuous spacers between plastic glazing panels and glazing stops to maintain panel clearances.
2. Prevent sealant from extruding into weep systems until sealants cure.
3. Secure spacers in position for optimum sealant performance.

Specifier Note: Manufacturer recommends use of 100% silicone sealant.

4. Force sealants into glazing channels to eliminate voids.
5. Tool exposed surfaces of sealants.

Specifier Note: Specify the final actions required to clean installed equipment or other completed work to properly function or perform. Coordinate article below with Division 1 Execution Requirements (Cleaning) Section. These cleaning procedures are optional. Retain, edit or delete text below per project requirements and specifier's practice.

**3.05 CLEANING****A. After installation and before Owner acceptance, comply with the following cleaning procedure:**

1. Rinse panel surfaces with clean, lukewarm water to remove all loose dust particles.
2. Do not use a synthetic cloth, abrasive cleaners, scrapers, squeegees, highly alkaline detergents, sharp instruments or dry cleaning with rags or brushes.
3. Using a mild detergent (no abrasives or solvents), wash the panel with a soft sponge or brush soaked in detergent solution.
4. Rinse panel surfaces with clean, lukewarm water and dry with a clean cotton cloth to avoid spotting.

Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.

**3.06 PROTECTION**

- A. Protect installed work from damage due to subsequent construction activity on the site.

**END OF SECTION**