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| **Solutions in Polycarbonate LLC** |  |
| **SkyTherm® Unit Skylight System Guide Specification** | |
|  | Ver. 0.81 Dated 02/15/2017 |

**SECTION 08 62 00 – UNIT SKYLIGHTS**

PART 1 – GENERAL

* 1. RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General and Supplemental Conditions, along with Division 01 Specification Sections, apply to this Section.
   1. SUMMARY
2. Section includes aluminum framed assemblies glazed with structural polycarbonate panels as follows:
3. Unit Skylights
4. Single Domed Curb Mounted
5. Double Domed Curb Mounted
6. Single Domed with attached Curb
7. Double domed with attached Curb
8. Related Sections:
9. Division 6 – Rough Carpentry : see wood curbs and nailers
10. Division 7 – Roof Accessories: see curbs, roof hatches, smoke vents
11. Division 7 – Flashing and Sheet Metal: metal flashing for skylights
12. Refer to Roofing Details for installation procedures in regards to the mounting and finishing of those products specified in this Section
    1. ACTION SUBMITTALS
13. Product Data: For both glazing, aluminum, finish, and gaskets
14. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work
15. Samples: Include both aluminum framing and glazing in color as specified

1.4 INFORMATIONAL SUBMITTALS

1. Product Test Reports:

1. Multiwall Polycarbonate Domes:

a. ASTM E84 – Flame Spread & Smoke Development

b. ASTM D635 – Burn Extent

c. D1929 – Spontaneous & Self-Ignition Temperature

d. NFRC 201 – Center of Panel SHGC

2. Unit Skylight:

a. NFRC 101 – System U-Value

b. ASTM E283 – Air Infiltration

c. ASTM E330 – Structural Loading

d. ASTM E331 – Water Infiltration

1. Warranty: Sample Warranty for project
2. Maintenance data

1.5 QUALITY ASSURANCE

1. Fire Testing: Provide reports for smoke and fire testing for identical flat sheets used in the process of thermoforming the dome units for the skylights
2. All ASTM Air, Water, and Structural testing must use thermally formed domes with the related aluminum extrusions in the test specimen.

1.6 WARRANTY

1. Special Warranty: System Manufacturer agrees to repair or replace components of the panel system that fail in materials or workmanship within warranty period.
2. Failures include the following:
3. Structural failures including but not limited to excessive deflection under established design loads.
4. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
5. Water infiltration.
6. Warranty period is **TEN YEARS** from date of installation to be indicated on Warranty.
7. Polycarbonate Panel Warranty: System Manufacturer’s warranty that agrees to replace domes that exhibit signs of defect in the material
8. Defects include, the following:
9. Yellowing in excess of 8% per ASTM D1003 from original pre-installed panels. The system manufacturer shall provide a 12” x 12” sample of the panel from the same material run as those panels provided for the project and to be catalogued and kept for reference by the building owner. This shall be the only means in which to validate the loss in light transmission and yellowing.
10. Delamination
11. Hail damage – No damage to the panel shall occur from hail that is 20mm in diameter and a velocity less than 12 M/S.
12. Aluminum Finish Warranty: System Manufacturer agrees to repair or replace aluminum components on which finishes fail within the specified warranty period.
13. Failures include, checking, crazing, peeling, chalking, and fading of finishes.
14. Mill – One Year from installation against excessive wear and deterioration subject to chemical environmental conditions which could accelerate the deterioration of the aluminum.
15. Anodized Finish – Five Years from installation
16. Powder Coat – 10 Years from Installation
17. Kynar Paint – 20 Years from installation

PART 2 – PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with the requirements of this Specification Section

1. Basis of Design: SkyTherm Unit Skylights System as manufactured by

Solutions in Polycarbonate, LLC

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Medina, Ohio 44256

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1. Other manufacturers wishing to provide materials for this project must submit an application for prior approval 15 days prior to the originally published bid date for the project and be approved per Addendum. The burden of proof as to the acceptable nature of the product for inclusion on the project is the sole responsibility of the submitting manufacture at the discretion of the architect. It is the responsibility of the submitting manufacturer to provide enough information and data with the request in order for the reviewing party to determine the suitability of the submitted product for inclusion on the project.

2.2 PERFORMANCE REQUIREMENTS

1. General Performance: Unit Skylights 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 Movement
4. Failure includes the following
5. Deflection exceeding specific limits
6. Water leakage
7. Thermal stresses transferred to the building structure
8. Structural Loads:
9. Wind Loads – Refer to Structural Notes on Drawings in Structural Section
10. Wind Speed – 90 mph
11. Importance Factor – 1
12. Exposure Category – B
13. Deflection Limits:
14. Unit Skylights – Limited to L/60 for structural aluminum framing components
15. Structural Testing Performance: Based upon ASTM D330
16. When tested at positive and negative wind load design pressures, assemblies do not show evidence of deflection exceeding specified limits.
17. When tested at 150% of positive and negative design wind load pressures, assemblies, including anchorage, do not show evidence of material failure, structural distress, and permanent deformation of main framing members exceeding 3% of span.
18. Test Durations: As required to satisfy current ASTM E330 requirements.
19. Water Penetration: Provide panel assemblies that do not evidence signs of water penetration through fixed glazing and framing areas when tested per ASTM E331 at a minimum static air pressure difference of 20% of positive wind load pressure but not less than **3.67psf.**
20. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to both aluminum framing and polycarbonate panels.
21. Temperature Change Range – 150 degrees Fahrenheit
22. Fall Protection: Skylight glazing must prevent worker fall thru from occurring by withstanding an imparted load on the center of the dome in such a manner as the dome will not collapse and the integrity of the skylight not be compromised to the point that personnel cannot accidentally pass thru the opening without using external or internal fall guards.
23. A static load of 400 pounds imparted on the center of glazing will not allow for the collapse of the glazing or permanent deflection after the load is removed. The 400-pound load cannot pass thru the skylight opening as simulating a worker falling thru the unit skylight.
24. A dynamic load of 1,200 foot pounds imparted on the center of glazing as dropped from a height of 6 foot over the supported unit skylight without collapse or falling thru the unit skylight.
25. Thermal Values: Tested values must be used to qualify the thermal performance of the skylight system. Calculated values are not acceptable.
26. U-Value Single Dome 0.38

Double Dome 0.23

1. SHGC Single Dome Based upon Color Selection

– Contact factory for value

Double Dome Based upon Color Selection

– Contact factory for value

2.3 ALUMINUM FRAMING SYSTEMS

1. Components: Multi-piece custom extruded aluminum framing as shown on drawings
2. Aluminum: Alloy and temper per manufacturer’s recommendation in order to meet structural loading as determined by the structural engineer.
3. Brackets, Clips, and Reinforcements: Components must be manufactured from extruded aluminum. Roll formed sheet metal is not acceptable.
4. Fasteners: All fasteners to be Stainless Steel.
5. Flashing: Aluminum sheet not less than 0.040” thick and pre-finished galvanized steel flashing not be less than 26 gauge.
6. Gaskets: Gaskets to be less than 60 Durometer in hardness, extruded with a compatible material for use with polycarbonate resin, and coating with a low friction treatment on the bearing surface. No butyl tapes are allowed.
7. Framing Sealants: Only neutral cure structural silicone sealants may be used. Urethane, or other type sealants may not be used.
8. Weep Hole: Weep holes must be pre-installed in the aluminum framing per manufacturer’s recommendations
9. Thermal Break: All framing must be properly isolated with a polyimide insulation to prevent the thermal transfer of temperatures to the interior of the space.

2.4 STRUCTURAL POLYCARBONATE PANELS

1. Description: Translucent extruded polycarbonate sheet with cellular cross section that provides isolated airspaces and that has a co-extruded layer of UV protection
2. Self-Ignition Temperature: 800 degrees Fahrenheit or more per ASTM D1929
3. Spontaneous Ignition Temperature: 950 degrees Fahrenheit or more per ASTM D1929
4. Flame Spread: Not more than 25 per ASTM E84 for Class A rating
5. Smoke Development: Not to exceed 450 per ASTM E84 for Class A rating
6. Burn Extent: Not to exceed 25mm per D635 for CC1 rating
7. Panel Thickness: Outer Dome = Nominal 16mm

Inner Dome (if required) = Nominal 16mm

1. Panel Color: Outer Dome = *Opal, Clear, Bronze (Choose One)*

Inner Dome (if required) = *Opal, Clear (Choose One)*

Custom colors upon request

1. Light Transmission: Based upon color selection – Contact factory for LT%
2. Panel Structure: Panel to utilize a honeycomb structure between outer layer skin structure. The top outer layer skin shall have a thickness of three times that of the bottom layer outer skin to prevent puncture. The dome shall not decrease in thickness in excess of 20% from its pre-formed panel thickness during the thermal forming process. Both outer and inner domes must be thermally formed into the dome configuration. Flat sheets MAY NOT BE USED for either outer or inner glazing.

2.6 ALUMINUM FINISHES (*choose one)*

1. Mill
2. Anodized: AAMA 611, AA-M12C22a31, Class II 0.010mm or thicker finish in (Clear, Bronze, Black, Champaign)
3. Powder Coat: Per AAMA 2604 in (choose color)
4. 70% Kynar 2-Coat Painted finish: (choose color)

PART 3 – EXECUTION

3.1 INSTALLATION

1. General
2. Manufacturer to supply written installation instructions for compliance by installing contractor.
3. Damaged components must be replaced and not installed on project.
4. Joints to utilize splice guides to insure alignment between components is straight and within tolerance.
5. All aluminum joints to be sealed with neutral cure structural silicone sealants.
6. Metal Protection: Where aluminum components will contact dissimilar materials, protect against galvanic reaction by painting surface with two coats of primer or a primer and finish coat.
7. Alignment: Install components plumb and true in alignment with established lines and elevations.

END OF SECTION 08 62 00