



## Retractable Roof System Specifications

SECTION 13 34 13.19

### RETRACTABLE ROOFING SYSTEM

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION

- 1.1.1 Provide the Libart Retractable Roofing System – SolaGlide™ (or similar) and included equipment as listed herein, of the size and dimensions indicated on the drawings. Finished size of the roofing system may vary slightly as approved by Architect to accommodate manufacturer's standard dimensions but shall not be less than the area indicated
- 1.1.2 Manufacturer to furnish materials and equipment necessary for the roofing system described in this section and contract drawings
- 1.1.3 No fabrication of the structure shall be done until drawings have been approved. Roofing System sub support structure dimensions shall conform to approved Roofing System drawings

##### 1.2 QUALITY ASSURANCE

- 1.2.1 Standards: Comply with International Building Code Standards 2003

##### 1.3 SUBMITTALS

- 1.3.1 Product data: After acceptance of presentation drawings submit fully detailed shop drawings for fabrication of roofing system, including the following:
  - Cross sections
  - Plan view with structure in closed and open position
  - Detail section of typical roofing framing members
  - Hardware
  - Mounting heights
  - Roofing layout with anchoring details to sub support structure (by others)
  - Anchorage and reinforcements

##### 1.4 DESIGN CRITERIA

- 1.4.1 Submit structural calculations for roofing system signed and stamped by a Professional Engineer licensed to practice in the location where the roofing system is to be erected, for review.
- 1.4.2 Structural Performance: Except as noted, and as minimum, roofing systems shall be designed in accordance with current AISI and AISC specifications and specifically The Aluminum Design Manual: Specifications for Aluminum Structures, Allowable Stress Design for design of structural members

### 1.4.3 Design Loads

- A Design structure to carry the following loads as specified by appropriate jurisdictional building code standard:
  - a. Dead Load: Structure and Equipment – 4 – 6 lbs per square foot depending on actual module dimensions
  - b. Snow Load: \_\_\_ lbs./sq. ft.
  - c. Wind Load: \_\_\_ mph, exp. \_\_\_\_\_
  - d. Special Loads: (If Applicable)
  - e. Applicable Building Code is International Building Code 2003(or appropriate jurisdictional code standard)
- B. Load Combinations
  - a. D.L. + S. L.
  - b. D.L. + W. L.
  - c. D.L. + ½ S.L. + W. L. or ( ½ W.L. + S.L.)

### 1.4.4 Engineering Certification

Provide written structural analysis prepared and certified by a Registered Professional Engineer in the state of:

\_\_\_\_\_, that the roofing system meets all of the above loads

## 1.5 DELIVERY, STORAGE AND HANDLING

Protect materials during delivery, storage and handling to comply with manufacturers directions and as required to prevent damage or deterioration.

# PART 2 – PRODUCTS

## 2.1 ROOFING SYSTEM

The Roofing System shall be pre-fabricated of extruded aluminum structure, PC glazing and mechanical and electrical system .

Quality standard shall be Libart SolaGlide™ as manufactured by Libart

## MATERIALS

### 2.1.1 Aluminum:

- A. Extrusions:
  - a) Primary Framing: Alloy 6061-T6
  - b) Secondary Framing: Alloy 6061-T6
- B. Roofing system to substructure attachment Plates:  
Alloy 6061-T6
- C. Finish: All exposed aluminum shall be finished with electro statically applied thermosetting powder coat corrosion resistant finish equal to ANSI/AAMA 2604 to a thickness of 50 – 65 microns

### 2.1.2 Aluminum Structure:

Roofing System is of manufacturer's extruded aluminum structural members (refer to extrusion profile schedule in drawings). All frame members will be visible. Design shall provide for uniform and set pattern, conforming to spacings indicated. Where design requirements can be met through use of manufacturer's standard components, such components shall be utilized. Structural members and connecting module extrusions shall be sized to meet required design criteria

### A. Connections:

- i) Stainless steel bolts (Type 304 hexagon cap SS 3/8"X3/4" DIN933) with size appropriate stainless steel lock type washers and tapped aluminum gusset plates with all field connections of module sub components to be bolted
  - ii) Stainless steel (18-8) 3/8" X 3/4" hexagonal bolts for field installed self-adjusting supporting brackets
- B. Structural Members:**
- i) 3 1/4" x 6 1/4" 6061-T6 thermally broken extrusions for multi bay roofing structures will be used as specified in engineering drawings and shall extend in each case from roof apex to outside vertical wall. Supporting sub-structure to be provided by others
  - ii) Structural members shall be precision punched or drilled to receive fittings for attaching aluminum sills, gutters, header extrusions, etc. as applicable
- C. Roof System Apex attachment extrusions:**  
Provide factory precision milled apex extrusion for roof system attachment. Attachment by means of stainless steel(18-8) 14 x 3/4" and 14 x 2" pan head screws or bolts as appropriate to sub structure and applicable live and dead loads
- D. Roof System wall attachment:**  
Each roof module shall terminate at its lowest point at a cross attachment thermally-broken gutter system extrusion capable of sufficient strength to tie roof modules together as well as act as a water run off collection point
- E. Condensation System:**  
Provide an integrated condensate channel collection system within the main mullions designed to divert condensation and weep moisture to the exterior
- F. Weather seals:**  
Brushes/seals/ pile weather-stripping to meet or **exceeded AAMA 701-2000 requirements between SolaGlide channels nad PC glazing and** to control air passage and water seepage between and under structure modules

### 2.1.3 Fasteners:

- A.** Non-load bearing screws and bolts shall be stainless steel (18-8)
- B.** All structure fasteners shall be type 304 stainless steel bolts. 3/8" or 1/2" as loads dictate
- C.** Provide stainless steel 3/8" or 7/16" threaded or lag bolts as required of sufficient strength and suitability to secure roofing system to structural substructure

### 2.1.4 Glazing Materials

- A.** Glazing shall be multi wall polycarbonate 4RS/16mm or 6RS/25mm as manufactured by General Electric – Lexan Thermoclear or Multilayer "X" Palram Sunlite Triple"X" 16mm or 25mm as manufactured by Palram Industries, Ltd. with CL solar control coating or equal compliant with BOCA Sec. 2604.1, 2406.1, 2601.3, 803.3.2, 803.4, IBC Sec 2606. Compliance with ANSI z97.1-84 Safety Specification and Method of test for Safety Glazing Materials Used in Buildings as well as conformity to CAN/ULC - S102.2 and ASTM E-84 (class A) ASTM D1929 (self ignition ~1000°F) and ASTM D635 (cc1); EN13501 (B-s2,d0). Light transmission properties of 73% for clear, 55% bronze, 57% opal and UV filter ability of 99.9%. All glazing shall be supplied as specified CL (Solar control) clear, bronze, opal, multi-layered or multilayer X or solar control polycarbonate

## PART 3 – AUTOMATION

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### 3.1 MOTOR OPERATION

Roofing System shall be opened and closed utilizing recessed steel-reinforced cog belt drive mechanism with flexible universal joint drives; self adjusting idler pulley system and multi bay inter connected linkage system allowing the flexibility to operate up to 8 bays from a single motor. Hubs, idler wheels, drive gears and pulleys are of stainless steel, aluminum or similar non corrosive maintenance-free materials. The two lower roof sections retract under the top roof section. Opening capability shall be approximately 66% of total roof area

- 3.1.1 Motor Specifications: Ditec DOD 14, 110/120 VAC / 60Hz , self contained control units and multi layer limit switching operated through a toggle dead-man switching system or equivalent
- 3.1.2 Control Specifications: control stations with access controlled momentary contact switches capable of opening individual sections or banks

## PART 4 EXECUTION

### 4.1 PREPARATION

- 4.1.1 Engineered structural supports to be supplied by others in accordance with SolaGlide™ Retractable Roof requirements
- 4.1.2 Coordinate and furnish anchorages, setting diagrams, templates and directions for installation of anchorages. Coordinate delivery of such items to project site

### 5.1 ERECTION

- 5.1.1 Erect roofing system and related components in accordance with manufacturer's written instructions and final shop and erection drawings, and as directed by manufacturer and if provided, manufacturer's site installation supervisor
- 5.1.2 Erector shall be an experienced crew trained by manufactures authorized installation specialist
- 5.1.3 No modification of roofing system or deviation from manufacturer's installation instructions shall be performed without manufacturer's written authorization

### 6.1 OPERATION

- 6.1.1 Roofing System retraction and closure shall be from 0% to 66% open position. Roof operable sections shall be capable of being held in any position of travel. Installation shall require "dead-man's" switch.

### 7.1 WARRANTY

- 7.1.1 **Structural:** All products manufactured by Libart. shall be new and guaranteed free from defects in material and workmanship for ten years from customer receipt. (Manufacturer shall submit warranty for approval with bid.)
- 7.1.2 **Glazing:** All glazing material carries the respective manufacturers' warranties as specified in their supplied documentation
- 7.1.3 **Mechanical & Electrical:** All electro-mechanical components (motors, belts, gears, chains, interlinks, pulleys and drive-shafts) are warranted by Libart for a period of two years free from manufacturing defects and workmanship

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