SECTION 08630

Sun Valley Skylights + Windows + Doors
GENERAL SPECIFICATIONS
METAL FRAMED SKYLIGHTS

PART 1 - GENERAL

1.01 SCOPE

A. Design and fabrication of entire skylight system to include all extruded aluminum framing, anchors, and flashing metals.

B. Glazing and glazing materials including gaskets, sealants, setting blocks, backer rods, and related materials.

C. Finish on metal components.

D. Installation of the metal framed skylight system.

1.02 RELATED WORK

A. Section 05120: Structural Steel.

B. Section 05500: Metal Fabrications.

C. Section 06100 Rough Carpentry: Wood Curbs

D. Section 07620: Sheet Metal Flashing and Trim.

E. Section 08800: Glazing.

1.03 REFERENCES

A. The Aluminum Association, Inc. (AA): SAS-30, Specifications for Aluminum.

B. American Architectural Manufacturers Association (AAMA).

1. 501.1: Standard Test Method for Metal Curtain Walls for Water Penetration Using Dynamic Pressure.
2. 501.2: Field Check of Metal Curtain Walls for Water Leakage.
3. 2604: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
4. 606.1: Voluntary Guide Specifications and Inspection Methods for Integral Color Anodic Finishes for Architectural
5. Aluminum.
6. 607.1: Voluntary Guide Specification and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
7. 809.2: Voluntary Specification for Non-Drying Sealants.
8. GDSG-1: Glass Design for Sloped Glazing.
9. SDGS-1: Structural Design Guidelines for Aluminum Framed Skylights.
10. TSSGG-1: Two Sided Structural Glazing Guidelines for Aluminum Framed Skylights.

11. TIR-A9-1991: Metal Curtain Wall Fasteners.

C. American Society for Civil Engineers (ASCE).

1. ASCE 7-95: Minimum Design Loads in Buildings and Other Structures.

D. American Society for Testing and Materials (ASTM).

1. A 193: Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service.
2. A 307: Specification for Carbon Steel Externally Threaded Standard Fasteners.
3. B 209: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. B 211: Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.
5. B 221: Specification for Aluminum-Alloy Extruded Bar, Rod, Wire, Shape and Tube.
6. C 1036: Specification for Flat Glass.
7. C 1048: Specification for Heat-Treated Flat Glass.
8. E 283: Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
9. E330: Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air
10. Pressure Difference.
11. E331: Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air
12. Pressure Difference.
13. E 773: Test Method for Seal Durability of Sealed insulating Glass Units.
14. E 774: Specification for Sealed Insulating Glass Units.

E. Glass Association of North America (GANA): Glazing Manual.

F. Insulating Glass Certification Council (IGCC): Classification of Insulating Glass Units.

G. U.S. Consumer Product Safety Commission (CPSC): 16 CFR 1202 Architectural Glazing Standards and Related Materials.

1.04 SYSTEM DESCRIPTION

A. Design Requirements:

1. Units shall be fabricated from aluminum extrusions specifically designed for the application utilizing the appropriate skylight system as defined by the Architect or SVSWD shop drawings.
2. Extruded aluminum framing members shall have an integral gutter system for positive drainage of condensation to the exterior of the skylight through perimeter weep holes located at the sill.
3. The skylight system shall utilize flush glazed exterior joints on all horizontal mullions and at sill below a 1:12 (5 degree) slope.

4. Rafters shall have a screw slot designed for the attachment of exterior retainer bars with stainless steel screws at 9” on center.

5. Large assemblies shall be fully welded shop fabricated sections with visible interior welds finished or ground smooth wherever possible.

6. Field connections of frames shall be concealed where possible and exposed fasteners shall be finished to match frame finish.

B. Performance Requirements:

1. Structural members, glazing material and connections shall be designed, fabricated and installed in accordance with the local building code, ASCE 7-95 (section 2.4) and are designed or engineered to support the following structural loads:

a. Self-supporting load of 10 pounds per square foot.

b. Maximum Ground Snow Load of 50 pounds per square foot.

c. Minimum Live Load of 20 pounds per square foot.

d. Wind loads resulting from a 120MPH, 3-second gust speed with pressure determined by ASCE 7-95 “Minimum Design Loads for Buildings and other Structures.”

2. The deflection on any structural member in the plane normal to glass surface when subjected to the specified loads shall not exceed L/175 of its clear span. Deflection within the length of any individual glass panel shall not exceed ¾”.

3. Parallel to glazing plane deflection of framing member when carrying full design load shall not exceed an amount reducing the glazing unit bite below 75% of the design dimension and shall not reduce the edge clearance to less than 1/8” nor shall it damage or impair the function of any joint seal.

4. Provide for expansion and contraction of components resulting from an ambient temperature change of 180 degrees F (+/- 90 degrees F) without causing buckling, excessive stresses on glazing, structural elements or fasteners, failure of seals, reduction of performance or other detrimental effects.

5. No water penetration shall occur when system is tested in accordance with ASTM E 331 using a differential static air pressure of 20% of inward acting (positive) design wind load, but not less than 10 psf. Water penetration is defined as the appearance of uncontrolled water other than condensation occurring on the interior surface of any part of the skylight.

6. Air infiltration shall be limited to not more than 0.01cfm. per square foot of assembly when tested in accordance with ASTM E 283 at 6.24psf. static air pressure difference.

7. Where permitted by code, a 1/3 increase in allowable stress for wind or seismic load shall be acceptable, but not in combination with any reduction applied to combined loads. In no case shall the allowable values exceed the yield stress.

1.05 SUBMITTALS

A. Shop drawings as required to fully describe the skylight system shall be submitted and approved by the architect prior to starting any fabrication.

B. Submit structural calculations (where applicable) by a licensed structural engineer (qualified in the design of self-supporting sloped glazed structures) in accordance with the Aluminum Association's Specifications for Aluminum Structures (SAS-30).

C. Assembly mock-ups or frame sections, color charts, finish samples and glazing samples shall be submitted and approved by the architect prior to starting any fabrication when required.

D. Submit manufacturer's written warranty as outlined in paragraph 1.07 of this specification.

1.06 QUALITY ASSURANCE

A. The skylight manufacturer shall be responsible for the design, fabrication, and installation of the skylight assembly.

B. Substitute manufacturers will be considered only when all of the following conditions have been satisfied:
1. Alternate manufacturers must be approved by architect to bid not less than twenty (20) days prior to bid date.
2. Detailed drawings for alternate skylight system are submitted to architect for review.
3. Structural calculations, showing sizes of framing members and loads applied to the support structure, based on the design loads of this specification are submitted for review.
4. Alternate manufacturers must furnish evidence of their ability to perform, including a list of projects of similar design and complexity within the last ten (10) years.
5. Alternate manufacturers must have a minimum of ten (10) years' experience in the fabrication and installation of custom aluminum framed skylights.
6. Alternate manufacturer has maintained a current Los Angeles Fabricator's License for a minimum of the last five (5) years for projects within Los Angeles County when structural aluminum welding is required.

1.07 WARRANTY

A. The skylight frame system shall be warranted for a period of 5 years after substantial completion against defects in materials and workmanship. Units installed by SVSWD or an authorized dealer are warranted to be waterproof for 10 years.

B. All glazing shall be warranted pursuant to the glazing manufacturer's standard warranties. Glass breakage is not covered by these warranties.

C. All aluminum finishes are warranted pursuant to the supplier's standard warranty.

D. The structural sealant is warranted for 10 years in accordance with the sealant manufacturer's standard warranty.

E. Motorized products are warranted for 1 year by SVSWD plus any applicable manufacturer warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

Metal framed skylights shall be manufactured by:

Sun Valley Skylights + Windows + Doors
12884 Pierce Street, Pacoima, California 91331
800-649-9878 / 818-686-0032 / fax 818-686-0042
http://sunvalleyskylights.com

2.02 MATERIALS

A. Framing members:
1. Extruded aluminum shall have minimum mechanical properties equal to or greater than 6063-T5 alloy and temper.
2. Snap on covers and miscellaneous non-structural trim shall be the minimum thickness recommended by the manufacturer.

B. Flashing:
1. ASTM B 209 5005-H34 or 5052-H34 aluminum, .040” minimum thickness, stainless steel or galvanized steel. Exposed flashing shall typically be finished to match skylight framing.

C. Fasteners and Anchors:
1. Exposed fasteners shall be stainless steel, cadmium plated or zinc coated, unless otherwise noted.

D. Glazing Material:

1. Standard certification requirements:
2. Float Glass: ASTM C 1036.

3. Heat Treated Glass: ASTM C1048, with surface stress of 5000psi, +/- 1500psi.

4. Laminated Glass: Two lites of equal thickness bonded with a polyvinyl butyral (PVB) interlayer, meeting criteria of ANSI Z97.1-1984 and CPSC 16 CFR 1201 for safety glazing.

5. Insulating Glass: CBA rated by the Insulating Glass Certification Council when tested in accordance with ASTM E 773 and E 774. Dual edge seals with silicone secondary seal. Exteriorlite is to be heat strengthened or tempered; interior lite to be heat strengthened laminated glass.

6. Performance Requirements:

7. Probability of breakage not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass upon first application of design pressures or due to anticipated thermal stresses.

E. Glazing Unit Composition (typical). Architect to select

1. Laminated Glass: two 1/8”, 3/16” or 1/4” clear, tinted or Low-E heat-strengthened lites with a (.030) (.060) polyvinyl butyral (P.V.B.) interlayer. Thicker assemblies may be used when required.

2. Non Low-E – Insulated glass consisting of a ¼" clear or tinted heat strengthened or tempered lite, a ½" dual sealed airspace over a laminated lite (thickness to be determined per glass size) with a (.030) (.060 polyvinyl butyral (P.V.B.) interlayer.

3. Low-E - Insulated glass consisting of a ¼" clear heat-strengthened or tempered lite, a ½" dual sealed airspace over a laminated lite (thickness to be determined per glass size) with a (.030) (.060) polyvinyl butyral (P.V.B.) interlayer. A low-e coating is applied to surface #2 (Coating will be applied to surface #3 of the inboard lite when tinted glass is used on the exterior).

F. Glazing Gaskets:
1. Gaskets shall be continuous and shall be an extruded EPDM, silicone compatible rubber, shore A hardness: 70 (+/-5), tensile strength: 950 psi, color: black.

G. Sealants:
1. Selection of sealants shall be the responsibility of the skylight manufacturer.
2. All surfaces shall be cleaned and primed within the sealant manufacturers guidelines.

H. Finishes: All exposed aluminum shall receive one or more of the following finishes (architect to select)

a. Powder Coated-exterior grade (standard or custom color).
b. Fluoropolymer coating (2-coat): 70% Kynar ® resin base fluoropolymer finish in compliance with AAMA 2604.
c. Class I anodized- Clear or Bronze.
d. Metal Clad with Stainless Steel, Copper or Bronze

2.03 FABRICATION

A. Skylights shall be shop fabricated in welded sections to the greatest extent possible or fully welded assemblies. Field spliced sections shall have welded end plates or dams. All field connections shall be concealed where possible and exposed fasteners shall be finished to match frame.

B. All welding shall be done by (TIG) inert gas process per Qualified Weld types as approved by the City of Los Angeles Fabricator's License #1637 issued to Sun Valley Skylights, Inc.

C. Skylight System to be fabricated with extrusions that have integral condensation gutters and weep systems allowing any water penetration to drain to the outside.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Metal framed skylights shall be installed by **Sun Valley Skylights + Windows + Doors** or an authorized third party.

B. Prior to installation, installer, shall notify the general contractor of obvious deficiencies or dimensional errors in the support system, construction or adjacent trades. No installation work shall proceed until all errors and deviations are corrected. Written authorization may be given to proceed with the as-built construction along with any price corrections.

C. Building structure must be able to withstand forces and loads from skylight and where applicable Sun Valley Skylights shall supply custom structural engineering for review and acceptance by Project Engineer.

D. Skylight materials shall be installed in strict accordance with manufacturer's installation instructions and drawings.

E. Install skylights plumb, level and true to line, without warp or rack of frames or panels and anchor securely in place in accordance with approved shop drawings.

F. Contact areas between dissimilar metals shall be isolated with a protective coating or plastic strip to prevent electrolytic corrosion.

G. Upon completion of installation, installer shall remove all labels, part number markings and excess sealants from skylight components. Weep system shall be clear of any and all obstructions.

3.02 FIELD TESTING

A. A basic water test without Static Air Pressure Difference can be conducted by Sun Valley Skylights in accordance with AAMA 501.2 testing procedures without any additional charge to the customer. However, if a test is required by a qualified testing lab, customer will bear the costs of professional testing and any re-testing that might be required.

B. Testing to be conducted after a period of 10 days from the date of the installation but prior to interior finishes being installed, in the presence of the Owner or the Project Contractor & Architect and/or an SVS

Representative.

C. Procedure for Testing: The nozzle will be held 1-foot away from the glass and slowly moved back and forth for the duration of the 5-minute test, but must not be shot into the weep hole system. A constant pressure of water between 30-35 psi is applied. During the test, a member of the testing team will be inside to monitor the walls and check for any leakage. Any amount of water greater than ½ ounce over the course of 5 minutes will be deemed a failure and is to be repaired.

D. Water leakage is defined as any uncontrolled water that appears on any normally exposed interior surfaces, that is not contained or drained back to the exterior, or that can cause damage to adjacent materials or finishes. Note: Water in the drainage gutters is normal.

E. If a leak is found, the wall must first dry completely, be sealed, and will be re-tested.

3.03 PROTECTION AND FINAL CLEANING

A. Final cleaning and physical protection of all installed materials shall be the responsibility of the general contractor. Refer to SVSWD recommend maintenance and cleaning documents.

END OF SECTION