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POINT SUPPORTED GLAZING SYSTEMS

Guide Specification

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Engineering and drafting of production documents, including structural calculations of the entire point supported skylight system.
B. Fabrication and erection of point supported skylight materials.
C. Fabrication and erection of the aluminum gutter system including, when applicable, insulation and pitched liners.
D. Applied finish of aluminum sheet, if required.
E. Skylight glass and glazing.
F. Skylight related flashings.

1.02 RELATED SECTIONS

A. Structural Steel: *Division 05*
B. Space Frames: *Division 05*
C. Metal Fabrications: *Division 05*
D. Flashing and Sheet Metal: *Division 07*
E. Glazing: *Division 08*
F. Glazed Curtain Walls: *Division 08*
G. Roofing: *Division 07*
H. Sealants: *Division 07*

1.03 REFERENCES

A. American National Standards Institute (ANSI): Z 97.1 -2004 Safety Glazing Materials Used in Buildings -Safety Performance Specifications and Methods of Test.
B. American Society for Testing and Materials (ASTM):
   1. C1036: Specification for Flat Glass.
   2. C1048: Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
   3. C1172: Standard Specification for Laminated Architectural Flat Glass
C. Consumer Product Safety Commission (CPSC): 16CFR 1201 - Architectural Glazing Standards and Related Material.

1.04 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Point-supported structural glass system: Laminated butt glazed joints with field applied silicone, supported by ball and joint rotules with 10 degree rotation capacity to anchor perpendicular to the plane of the glass.
   2. Glass fittings, rotules are available with button or countersunk (flush) heads. Note under hung systems are not available with countersunk (flush) rotules.
   3. Spider fittings shall be fabricated from 316 series stainless steel and have a smooth, machined finish.
   4. Spider arms are designed to resist all stipulated design loads.
   5. Glass joints consist of silicone sealant with an inner extruded silicone compression seal.
   6. The support structure, for connecting spider fittings, must be held to within (+/-) 1/4-in. of all theoretical locations and must be capable of withstanding loads imposed by the glass system. The deflection of the support structure should not exceed (+/-) 1/4-in. The point supported glass system does not provide lateral bracing for support structure.
   7. *Optional* stainless steel (316 series) pedestal post for incorporating a sloped surface.
   8. *Optional* aluminum rain gutters (gutter drains, downspouts, and splash blocks – by others)

1.05 SUBMITTALS

A. Submit [____] copies of shop drawings showing plans, elevations and sections as required to fully describe the skylight construction for the Architect's approval prior to starting fabrication.
B. Submit structural calculations prepared by a [civil] [____] engineer qualified in the design of point-supported sloped glazed systems licensed in (state where skylight is to be installed) [____].
C. With regard to structural silicone joinery, submit, only if specifically requested:
   1. Certification that adhesion of sealant to samples of glass is adequate when tested in accordance with ASTM C794.
   2. Certification that materials in contact with sealant are compatible with sealant after being exposed to 2,000-4,000 micro watt ultra-violet radiation for twenty-one (21) days.
D. Submit [____] 12-in. x 12-in. samples of each type of glass.
E. Submit [____] sets of as-built drawings and cleaning and maintenance manuals upon completion of skylight installation.

1.06 QUALITY ASSURANCE

A. Work of this Section, including design, engineering, fabrication, finishing, preparation at the job site, erection and glazing of the skylight system shall be the responsibility of the skylight manufacturer. The manufacturer shall be regularly engaged in the preceding phases of construction of skylights and able to demonstrate that he has performed successfully on comparably sized projects and of comparable design complexity over at least the previous ten (10) years.

1.07 WARRANTY

A. Submit manufacturer's warranty certifying that skylight work was furnished and installed in accordance with the Contract Documents.
B. Certify that the system is free of defects in design, material, and construction for a period of five (5) years from the Date of Skylight Completion.
C. Warrant glass against defective materials, delamination, and defects in manufacture per the glass manufacturer's standard five (5) year warranty from date of manufacture. Glass breakage is not warranted.

D. Warrant sealant for a period of five (5) years per sealant manufacturer's standard warranty of merchantable quality. Warranty shall certify that cured sealant:
   1. Will not become brittle or crack due to weathering or normal expansion and contraction of adjacent surfaces.
   2. Will not harden beyond a Shore A, Durometer of 50, nor soften below a minimum of 10 points.
   3. Will not change color significantly when used with compatible back-up materials.
   4. Will not bleed significantly.

E. Warrant finish per the manufacturer's standard warranties from date of application.

F. Optional extended warranties may be purchasable on some products at an additional cost.

G. Warranty service becomes effective only following payment in full for the contract amount.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Contract documents are based on products manufactured by Super Sky Products Enterprises, LLC;
   10301 N. Enterprise Drive; Mequon, WI 53092; Phone (800) 558-0457, (262) 242-2000;
   Fax (262) 242-7409; *www.supersky.com*.

B. Other manufacturers will be considered when the following conditions have been met.
   1. Optional manufacturers must pre-qualify to bid not less than fourteen (14) days prior to the bid closing date.
   2. Complete details are submitted for review by the Architect showing compliance to the drawings and Contract Documents.
   3. Structural calculations, showing loads applied to the support structure, based on the design loads of this specification are submitted for review.
   4. Prospective manufacturers submit notarized certification that they have successfully performed in the phases of design, manufacture and installation of skylight projects comparable in nature over at least the previous ten (10) years.

2.02 MATERIALS

A. Point Supported Structural Glass Fittings:
   1. Spiders and rotules manufactured from 316 series stainless steel with machined finish.
   2. Aluminum rain gutters, if required.

B. Fasteners:
   1. For Anchoring Spiders to Support Structure: ASTM F593, 316 series stainless steel fasteners.

C. Flashing:
   1. [5005 H34 Aluminum] [Copper] [Stainless Steel], [.040-in.] [____] minimum thickness.
   2. Sheet metal flashings/closures/claddings are to be furnished shop formed to profile in min. 10-ft. lengths. When lengths exceed 10-ft., field trimming of the flashing and field forming the ends is necessary to suit as-built conditions. Sheet metal ends are to overlap 6-in. to 8-in. minimum, set in a full bed of sealant and riveted if required.

D. Exposed metal finish [interior and exterior] [interior] [exterior] to comply with the following:

The following is a listing of all types of finishes that can be specified, therefore, only those finishes that apply should be used in an individual specification.

   1 High Performance Pigmented Organic Coatings: AAMA 2605-05 [2-coat] [3-coat] [4-coat] min. 70% PVDF fluropolymers [standard] [custom] [mica] [exotic] [metallic].
   2. Pigmented Organic Coatings: AAMA 2604-05 [2-coat] min. 50% PVDF fluropolymers [standard] [custom] [mica].
   3. Anodized Coatings:
      a. AAMA 611-98 Architectural Class I clear anodized Type AA-M10C22A41: **215-R1**.

b. AAMA 611-98 Architectural Class I electrolytically deposited color anodized Type AA-M10C22A44: [light bronze] [medium bronze] [dark bronze] [black].

E. Glass:
1. Standard Certification Requirements:
   a. Tempered Glass: ASTM C1048, with a minimum surface compression of 10,000 psi. Tempered glass should be heat-soaked for 2 hours at 536 ºF in accordance with EN14179.
   b. Heat Strengthened Glass: ASTM C 1048, with a surface compression of 5,500 (+/-) 1500 psi for 1/4-in. glass, and 6,500 (+/-) 1500 psi for 5/16-in. and 3/8-in. glass.
   c. Laminated Glass: Two lites interleaved with polyvinyl butyral (PVB). Units must meet criteria of ANSI Z97.1- 1984 and CPSC 16 CFR 1201 for safety glazing. Provide PVB layer of 0.060-in. Solutia RA or RB for all glass units (poured or cast in resin laminates will not be allowed). A coating, and/or frit is applied to the inside face of the laminate is also available.
   d. Exposed edges are polished.
2. Performance Requirements:
   a. Probability of breakage not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass upon first application of design wind and live load pressures. For glass selection, design wind pressure for a one minute duration. For loads of longer duration use standard engineering practices for glass selection.
   b. Probability of breakage due to anticipated thermal stress not to exceed 8/1000 for vertical glass and 1/1000 for sloped glass.
   c. Probability of breakage due to anticipated spontaneous breakage from nickel sulfide inclusions not to exceed 5/1000.
3. Glazing Unit Composition:
   a. Sloped glass units are to be [____].
   b. Vertical glass units are to be [____].

Specifier should consult Glass and Glazing Specification, for glass make-up, sizes and compositions. Composition breakdown goes here.

Specifier to designate surface of color coat.

F. Sealants:
1. Weather Seal Joints: Silicone sealants applied in accordance with manufacturer's recommendations.
2. Silicone sealant performance requirements:
   a. Hardness: ASTM D2240, Type A, Durometer 30.
   b. Ultimate Tensile Strength: ASTM D412, 170 psi.
   c. Tensile at 150% Elongation: ASTM D412, 80 psi.
   d. Joint Movement Capability after fourteen (14) Day Cure: ASTM C719, (+/-) 50%.
   e. Peel Strength (aluminum, glass, concrete) after twenty-one (21) Day Cure: ASTM C794, 50 ppi.

PART 3 EXECUTION

3.01 EXAMINATION

A. Upon arrival to the jobsite for installation of the specified work, the manufacturer’s erector is to examine the structure and substrate to determine that they are properly prepared, dimensionally accurate, and ready to receive the skylight work included herein. Report any discrepancies to the General Contractor. Correction of faulty work to be at the expense of the responsible party/s. The skylight manufacturer is not responsible for faulty structure or substrate.

3.02 PREPARATION

A. Skylight manufacturer and manufacturer's erector excludes all field measuring, demolition, removal, replacement, or re-work of any existing material.

3.03 INSTALLATION

A. Installation of materials in strict accordance with the approved shop drawings and requirements.
B. Install skylight system under the direction of the skylight manufacturer's designated erector.
C. Stainless steel fittings to be mounted to the support steel. Design of device per contract documents for aesthetic and all structural criteria.
D. Erect system plumb and true, in proper alignment and relation to established lines and grades as shown on approved shop drawings.
E. Use high performance silicone sealants to seal joints between glass panels in conjunction with an extruded silicone compression seal on the underside.
F. Apply sealing materials in strict accordance with sealant manufacturer's instructions. Before application, remove mortar dirt, dust, moisture and other foreign matter from surfaces it will contact. Mask adjoining surfaces to maintain a clean and neat appearance. Tool sealing compounds to fill the joint and provide a smooth finish.
G. Furnishing of temporary covering and weather-proofing of the skylight openings, if required by the General Contractor, and removal of the protective measures during and after the skylight installation is excluded by the manufacturer and the manufacturer's erector. ANY TEMPORARY COVERINGS THAT MAY BE REQUIRED ARE NOT TO OBSTRUCT OR INTERFERE WITH THE SKYLIGHT INSTALLATION IN ANYWAY.

3.04 TOLERANCES

A. All parts of the work, when completed, shall be within the following tolerances:
   1. Maximum variation from plane or location shown on approved shop drawings: 1/8-in. per 12-ft. length, or 1/2-in. in total length.
   2. Maximum offset from true alignment between two members abutting end-to-end, edge-to-edge in line or separated by less than 3-in.:1/32-in.
   3. Steel support frame for point supported glazing must be limited to +/- 1/4" from theoretical locations including outer most steel edge.

3.05 FIELD QUALITY CONTROL

A. Water Leakage: Field check in accordance with AAMA 501.2 in proportionate areas. There shall be no uncontrolled water leakage as defined in AAMA 501.2. Water supply to the skylights, with adequate water pressure, is to be furnished by the General Contractor. Tests are to be conducted upon completion of the installation with no remobilization or down time included to accommodate either water supply availability or witness personnel schedules. Testing is to be performed by the manufacturer's authorized personnel with a maximum of five (5) man-hours for set-up, testing and clean-up. Independent laboratory testing and reports, if required, are to be ordered and directed by the Owner and/or General Contractor.

3.06 CLEANING

A. Install glass and associated metal to avoid soiling or smudging the finish.
B. Clean glass and hardware at time of installation. Final cleaning, if required, subsequent to completion of project, is not to be performed by the manufacturer.

3.07 PROTECTION

A. The skylight manufacturer does not provide, nor does it include any temporary protection of the skylight and its materials after the installation is complete. Protection of the skylight from ongoing

work by other trades shall be the responsibility of the General Contractor. The manufacturer is responsible only for the damage caused by the personnel under its control and responsibility.

END OF SECTION