SECTION  – domed unit skylights

1. General
   1. summary
      1. This Section includes the following:
         1. Sealed double acrylic dome skylights for **[flat] [and] [sloped]** roof applications.
      2. Related Requirements:
         1. Section 07 31 13 – Asphalt Shingles.
         2. Section 07 52 16.13 – SBS Modified Bituminous Membrane Roofing - Mop/Torch.
         3. Section 07 92 00 – Joint Sealants.
   2. PERFORMANCE REQUIREMENTS
      1. General: Provide skylights capable of withstanding loads and thermal and structural movements indicated without failure. Failure includes the following:
         1. Deflection exceeding specified limits.
         2. Thermal stresses transferred to the building structure.
         3. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing.
         4. Noise or vibration created by thermal and structural movement and wind.
         5. Loosening or weakening of fasteners, attachments, and other components.
         6. Sealant failure.
      2. Structural Loads: Provide skylights, including anchorage, capable of withstanding the effects of the following design loads when supporting full dead loads in accordance with NBC Climatic Design Data (30-year probability):
         1. Wind Loads.
         2. Snow Loads.
         3. Rain Loads.
         4. Live Loads.
         5. Seismic Loads.
      3. Structural Performance: Provide skylights, including anchorage, capable of withstanding test pressure indicated without material and deflection failures and permanent deformation of structural members exceeding 0.2 percent of span when tested according to ASTM E 330.
         1. Test Pressure: 150 percent of positive and negative wind load design pressures.
         2. Test Duration: As required by design wind velocity; fastest 1 mile (1.609 km) of wind for relevant exposure category.
      4. Thermal Movement: Provide skylights that allow for thermal movements resulting from the change (range) in ambient and surface temperatures by preventing buckling, sealant failure, and other detrimental effects.
      5. Air Infiltration: Provide skylights with maximum air leakage of 0.03 L/s per sq. m (0.06 cfm/sq. ft.) of surface when tested according to ASTM E 283 at a minimum static air pressure differential of 300 Pa (6.24 lbf/sq. ft.).
      6. Water Penetration: Provide skylights that do not evidence water penetration when tested according to ASTM E 331 at a minimum differential static pressure of 20 percent of positive design wind load, but not less than 300 Pa (6.24 lbf/sq. ft.).
   3. SUBMITTALS
      1. Submit submittals in accordance with Section 01 33 00 – Submittal Procedures.
      2. Action Submittals: Provide the following submittals before starting any work of this Section:
         1. Product Data: Include construction details, material descriptions, dimensions, and profiles of components, and finishes for skylights.
         2. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
            1. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
         3. Samples for Verification: For each exposed curb frame finish required, provide 305mm x 305mm (12" x 12") long samples.
         4. Preconstruction Test Reports: Indicate and interpret test results for compliance with requirements.
         5. Product Test Reports: From a qualified testing agency indicating skylights comply with requirements, based on comprehensive testing of current products.
         6. Sealant Compatibility and Adhesion Test Reports: From sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with sealants; include sealant manufacturer's interpretation of test results for sealant performance and recommendations for primers and substrate preparation needed for adhesion.
         7. Field Test Reports: Indicate and interpret test results for compliance with requirements.
   4. quality assurance
      1. Installer Qualifications: An experienced installer to assume engineering responsibility who has specialized in installing dome unit skylights similar to those indicated for this Project and who is acceptable to manufacturer.
         1. Engineering Responsibility: Preparation of Shop Drawings, testing program development, test result interpretation, and comprehensive engineering analysis by a qualified professional engineer, registered in the place of the Work.
      2. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
      3. Preinstallation Conference: Arrange a pre-construction meeting in accordance with Section 01 31 19 – Project Meetings.
      4. Review methods and procedures related to skylights including, but not limited to, the following:
         1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
         2. Review structural load limitations.
         3. Review skylight curb structural requirements.
         4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
         5. Review required testing procedures.
         6. Review weather and forecasted weather conditions and procedures for unfavorable conditions.
         7. Review protection of adjacent roof areas.
   5. WARRANTY
      1. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
      2. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of skylights that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
         1. Structural failures.
         2. Sealant failures.
         3. Failure of systems to meet performance requirements.
         4. Deterioration of finishes, and other materials beyond normal weathering.
         5. Water leakage; defined as uncontrolled water appearing on normally exposed interior surfaces of skylights from sources other than condensation. Water controlled by flashing and gutters and drained back to the exterior and that cannot damage adjacent materials or finishes is not water leakage.
         6. Warranty Period: Five (5) years from date of Substantial Completion.
2. Products
   1. manufacturerS
      1. Basis-of-Design products are named in this Section; additional manufacturers offering similar aluminum framed entrance and storefront systems may be incorporated into the work provided they meet the performance requirements established by the named products.
      2. Acceptable Materials Manufacturers: Subject to compliance with requirements specified in this Section and as established by the Basis of Design Materials, manufacturers offering products that may be incorporated into the Work include; but are not limited to, the following:
         1. Artistic Skylight Domes
   2. FRAMING MATERIALS - FLAT ROOF APPLICATION
      1. Curb Frame: Rigid vinyl, high-impact extruded vinyl curb frame, incorporating 10 deg sloped condensation gutter with drainage to exterior, co-extruded rubber draft seal.
      2. Retaining Cap Frame: Extruded aluminum, 6063-T5 alloy, complete with heliarc welded corners.
      3. Curb Construction: 2-piece construction of 1.27mm (0.05") outer and inner wall, mill finished, complete with 50mm (2") thick rigid styrofoam insulation and 75mm (3") aluminum mounting flange.
         1. Height: **[229mm (9")][305mm (12")][As indicated on Drawings.]**
   3. FRAMING MATERIALS - SLOPED ROOF APPLICATION
      1. Curb Frame: Extruded aluminum, 6063-T5 alloy curb frame, complete with heliarc welded corners and extruded rigid vinyl thermal break incorporating 5 deg sloped condensation gutter with drainage to exterior, co-extruded rubber draft seal.
      2. Retaining Cap Frame: Extruded aluminum, 6063-T5 alloy, complete with heliarc welded corners.
   4. ACCESSORIES
      1. Fasteners and Accessories: Manufacturer's standard corrosion resistant, nonstaining, nonbleeding fasteners and accessories; compatible with adjacent materials.
         1. Movement Joints: Provide slip joint linings, spacers, and sleeves of material and type recommended by manufacturer.
      2. Framing System Gaskets and Joint Fillers: Manufacturer's standard permanent gaskets and joint fillers for sliding, compression, and non-moving joints.
      3. Framing System Sealants: Compatible with components with which sealants come in contact and recommended by skylight and sealant manufacturers for this use.
      4. Bituminous Paint: Cold applied asphalt mastic paint complying with SSPC Paint 12, except containing no asbestos, and formulated for 30 mil (0.8 mm) thickness per coat.
   5. DOME UNIT MATERIALS
      1. Sealed, double acrylic domes, meeting CAN/CGSB 63.14M-89 Plastic Skylights, and having the following properties:
         1. Size: As indicated on the Drawings
         2. Acrylic Dome Colour:
            1. Clear.
            2. Bronze.
            3. White.
            4. Grey.
         3. Basis of Design Model:
            1. Sloped Roof Application: Model FF Dome Curb Mount Skylight by Artistic Skylight Domes Ltd.
            2. Flat Roof Application: Model CL Insulated Curb Skylight by Artistic
      2. Glazing Gaskets: Manufacturer's standard pressure glazing gaskets of elastomer type and hardness selected by skylight and gasket manufacturers to comply with requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.
      3. Spacers, Edge Blocks, and Setting Blocks: Manufacturer's standard permanent nonmigrating type of elastomer type and hardness selected to comply with requirements.
      4. Weather seal Sealant: Neutral curing silicone sealant recommended by skylight and sealant manufacturers for this use.
   6. FABRICATION
      1. Framing Components:
         1. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
         2. Fabricate components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
         3. Fabricate components to accommodate expansion, contraction, and field adjustment, and to provide for minimum clearance and shimming at skylight perimeter.
         4. Fabricate components to ensure that dome is thermally and physically isolated from framing members.
         5. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
         6. Fit and assemble components to greatest extent practicable before finishing.
         7. Fit and secure joints with screw and spline, internal reinforcement, or welding.
         8. Reinforce members as required to retain fastener threads.
         9. Where fasteners are exposed to view from interior, countersink bolt or screw heads and finish to match framing.
         10. Before shipping, shop assemble, mark, and disassemble components that cannot be permanently shop assembled.
      2. Prepare framing to receive anchor and connection devices and fasteners.
3. Execution
   1. examination
      1. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting skylight performance.
         1. Proceed with installation only after unsatisfactory conditions have been corrected.
   2. PREPARATION
      1. Metal Protection:
      2. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
      3. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
      4. Where aluminum will contact pressure treated wood, separate dissimilar materials by methods recommended by manufacturer.
   3. INSTALLATION
      1. General: Comply with manufacturer's written instructions for protecting, handling, and installing skylight components.
         1. Fit frame joints to produce hairline joints free of burrs and distortion.
         2. Rigidly secure non-movement joints.
         3. Accommodate thermal and mechanical movements.
         4. Install framing components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
         5. Coordinate installation of insulation and flashings at skylight perimeters to maintain continuity of thermal and water barriers.
         6. Set continuous curbs and flashings in a full sealant bed, unless otherwise indicated. Comply with requirements in Section 07 92 00 – Joint Sealants.
      2. Erection Tolerances: Install skylight components true in plane, accurately aligned, and without warp or rack. Adjust framing to comply with the following tolerances:
         1. Variation from Plane: Limit variation from plane or location shown to 3mm in 3m (1/8" in 10'); 6mm (1/4") over total length.
         2. Alignment: Where surfaces abut in line and at corners and where surfaces are separated by less than 75mm (3"), limit offset from true alignment to less than 0.8mm (1/32"); otherwise, limit offset from true alignment to 3mm (1/8").
   4. FIELD QUALITY CONTROL
      1. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field quality control tests and to prepare test reports.
      2. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field quality control tests and to prepare test reports.
      3. Sealant Adhesion Tests: Test installed sealant in a minimum of two areas and as follows:
         1. Test structural silicone sealant according to field adhesion test method described in AAMA CW 13, "Structural Sealant Glazing Systems (A Design Guide)."
         2. Test weatherseal sealant as recommended in writing by sealant manufacturer.
      4. Water Spray Test: Test skylights for compliance with requirements according to procedures in AAMA 501.2.
      5. Air Infiltration: Test skylights according to AAMA 503, which requires testing according to ASTM E 783.
         1. Static Air Pressure Differential: 75 Pa (1.57 lbf/sq. ft.) minimum.
         2. Air Leakage: 0.03 L/s per sq. m (0.06 cfm/sq. ft.) of surface maximum.
      6. Water Penetration: Test skylights for compliance with requirements according to AAMA 503, which requires testing according to ASTM E1105.
         1. Uniform Static Air Pressure Difference: 20 percent of positive design wind load, but not less than 300 Pa (6.24 lbf/sq. ft.).
      7. Repair or replace Work that does not meet requirements or that is damaged by testing; repair or replace to comply with specifications.
   5. CLEANING
      1. Clean skylights inside and outside, immediately after installation and after sealants have cured, according to manufacturer's written recommendations.
         1. Remove temporary protective coverings and strippable coatings from prefinished metal surfaces. Remove labels and markings from all components.
      2. Remove excess sealant according to sealant manufacturer's written recommendations.

END OF SECTION