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This BDS-Specification utilizes the Construction Specifications Institute (CSI) Project Resource Manual (PRM), including *MasterFormat™*, *SectionFormat™*, and *PageFormat™*. A BDS-Specification is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specification. Optional text is indicated by brackets []; delete notes in final copy of specification.

This BDS-Specification specifies retractable fabric roofs and canopy cover systems as manufactured by ShadeFX Canopies Inc.

SECTION 107316.23 FABRIC CANOPIES – SHADEFX

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Retractable fabric roof and canopy cover systems.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete footings, anchor bolts.
- B. Section 099113 - Exterior Painting: Paint finish on framing members.
- C. Section 262726 - Wiring Devices: Finish requirements for wall controls specified in this section.

1.03 ABBREVIATIONS AND ACRONYMS

- A. PVDF: Polyvinylidene Fluoride.

1.04 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.
- B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- D. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes 2019a.
- E. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire 2019.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

- G. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube 2022.
- H. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi 2015, with Editorial Revision (2021).
- I. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films 2023, with Errata.
- K. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on fabric covering, color fastness, stitching and seaming methods, attachment devices to framing system.
 - 1. Motorized Retractable Covering: Include power requirements and standard wiring diagrams for specified products.
- C. Shop Drawings: Indicate retractable canopy layout, sizes, connection attachments, anchorage, size and type of fasteners, graphic images, patterns, and accessories.
 - 1. Motorized Retractable Covering: Provide schematic system riser diagram indicating component interconnections. Include requirements for interface with other systems.
- D. Samples:
 - 1. Covering: Submit 12 by 12 inch (300 by 300 mm) sample of covering with representative hemstitch detail, seam with reinforcement, and attachment devices to framing system.
 - 2. Framing: Submit two samples, ____ inches (____ mm) long of framing members, elbow; prefinished.
- E. Design Data: Submit comprehensive structural analysis of design for specified loads. Stamp and sign calculations by professional engineer.
- F. Designer's qualification statement.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.
- I. Executed warranty.
- J. Specimen warranty.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide 12-year manufacturer warranty for _____. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ShadeFX; Retractable Canopies: www.shadefxcanopies.com/#sle.
- B. Substitutions: Not permitted.

2.02 CANOPIES - GENERAL

- A. Configuration: As indicated on drawings.
- B. Concrete Footings: See Section 033000 for additional requirements.
- C. Design Criteria:
 - 1. Comply with requirements for Contractor's design-related professional design services indicated in Section 014000 - Quality Requirements.
 - 2. Design Loads: As indicated on drawings.
 - 3. Design Loads:
 - a. Wind: ___ psf (___ kPa) positive, ___ psf (___ kPa) negative; minimum.
 - b. Live: ___ psf (___ kPa); minimum.
 - c. Thermal Movement: Plus/minus 1/8 inch (3.175 mm), maximum.
- D. Provide complete system ready for erection at project site.

2.03 RETRACTABLE FABRIC ROOF AND CANOPY COVER SYSTEMS

- A. Retractable Fabric Canopy System: Motor-operated sliding folding fabric cover assembly with mounting brackets, hardware, and accessories.
 - 1. Configuration: Pergola or shade structure attached to building.
 - 2. Cover Performance Criteria: Provides shade and ____; water resistant.
 - 3. Type: Flat cover.
 - 4. Size: As indicated on drawings.
 - 5. Fabric Cover Assembly: Single fabric panel; fabric cover suspended from wings supported by one track and stabilizers; retracts by sliding across opening and folding on one side.
 - a. Mounting: Suspended below supporting structure; parallel to rafters.
 - b. Stabilizers: Angle stabilizers.
 - c. Support Tube Deflection: 3-5/16 inches (84.1 mm).
 - d. High-End Deflection: 1/2 inch (12.7 mm).
 - e. Low-End Deflection: 6 inches (152.4 mm).
 - f. Fabric Support Tubes: Aluminum.
 - 1) Spacing: Manufacturer's standard.
 - g. Sliding Hardware: Fabric support tube wheeled carriers, driven by manual or motorized toothed belt in one centered, slotted track drive beam.
 - h. Slotted Track Drive Beams: Aluminum.
- B. Retractable Fabric Roof System: Motor-operated sliding folding fabric cover assembly with mounting brackets, hardware, and accessories.
 - 1. Configuration: Freestanding pergola or shade structure.
 - 2. Cover Performance Criteria: Provides shade and ____; water resistant.
 - 3. Type: Flat cover.
 - 4. Size: As indicated on drawings.
 - 5. Fabric Cover Assembly: Single fabric panel; fabric cover mounted on top of wings supported by one track; retracts by sliding across opening and folding on one side.
 - a. Mounting: Screwed to top of supporting structure; parallel to rafters.
 - b. Stabilizers: G-channel stabilizers.
 - c. Fabric Support Tubes: Aluminum.
 - 1) Spacing: Manufacturer's standard.
 - d. Sliding Hardware: Fabric support tube wheeled carriers, driven by motorized toothed belt in one centered, slotted track drive beam.
 - e. Slotted Track Drive Beams: Aluminum.
- C. Adjustable Freestanding Retractable Canopy: Wand-operated sliding folding fabric cover assembly with mounting brackets, hardware, and accessories.
 - 1. Configuration: Freestanding shade structure.
 - 2. Cover Performance Criteria: Provides shade and ____; water resistant.

3. Type: Adjustable cover capable of tilting 20 degrees forward and 20 degrees backward from flat position.
4. Size: As indicated on drawings.
5. Fabric Cover Assembly: Single fabric panel; fabric cover suspended from wings supported by one track and stabilizers; retracts by sliding across opening and folding on one side.
 - a. Mounting: Suspended below supporting structure.
 - b. Fabric Support Tubes: Aluminum.
 - 1) Spacing: Manufacturer's standard.
 - c. Sliding Hardware: Fabric support tube wheeled carriers, driven by manually-operated toothed belt in one centered, slotted track drive beam.
 - d. Slotted Track Drive Beams: Aluminum.

2.04 OPERATING DEVICES

- A. Manual Operation for Retractable Fabric Covering:
 1. Control wand; powder-coated metal wand with removable handle.
 2. Rope; exit location on left side.
- B. Motorized Operation for Retractable Fabric Covering: Listed or recognized in UL 325.
 1. Comply with NFPA 70.
 2. Electrical Components: Listed, classified, and labeled as suitable for purpose intended. Provide FCC compliant components where applicable.
 3. Motors: Size and configuration as recommended by manufacturer for type, size, and arrangement of covering; integrated into covering operating components and concealed from view; fully compatible with controls.
 4. Voltage: 2 A, 120 V, 60 Hz.
 5. Controls:
 - a. Provide required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, or system programming as necessary for complete operating system that provides control intent indicated.
 - b. Provide components and connections necessary to interface with other systems as indicated.
 - c. Wireless Controls Range: 30 feet (9 m).
 - d. Control Functions:
 - 1) Extend Automatic: Automatically move controlled coverings to fully extended position when button is pressed.
 - 2) Retract Automatic: Automatically move controlled coverings to fully retracted position when button is pressed.
 - 3) Extend Manual: Extend controlled coverings only while button is pressed.
 - 4) Retract Manual: Retract controlled coverings only while button is pressed.
 - 5) Stop: Ceases operation of covering in motion.
 - 6) Presets: For selection of predetermined covering positions.
 - 7) Multiple Covering Groups: Provide individual controls for each covering group as indicated.
 - e. Wall Controls: Provided by covering manufacturer.
 - 1) Number of Channels: One.
 - 2) Finish: White.
 - 3) Product: Somfy Systems, Inc; DecoFlex 1 Channel RTS WireFree Wall Switch: www.somfysystems.com/#sle.
 - f. Wall Controls: See Section 262726.
 - g. Handheld Remote Controls: Battery powered; wireless, radio frequency; provided by covering manufacturer.
 - 1) Number of Channels: One.
 - 2) Finish: White.
 - 3) Quantity: As indicated on drawings.

- 4) Product: Somfy Systems, Inc; Situo 1 RTS Pure Single Channel Remote: www.somfysystems.com/#sle.
- h. Home Automation Interface: Dry contact interface capable of communication between third-party automation system and canopy; provided by covering manufacturer.
- i. Mobile Device Controls: Software application allowing control of canopy from mobile devices.
 - 1) Application: Manufacturer's standard.
 - 2) Application: Somfy Systems, Inc; TaHoma App: www.somfysystems.com/#sle.
- j. Motor Accessories: Wind sensor with radio receiver.

2.05 ALUMINUM FRAMING

- A. Aluminum Outriggers, Fascia, Diagonal Supports, Mounting Brackets, and Base Plate Covers: ASTM B211/B211M, 6061 alloy, T6 temper.
- B. Framing: ____-inch (____ mm) diameter tubing, complying with ASTM B241/B241M.
- C. Fittings: Elbows, T-shapes, wall brackets; cast aluminum.
- D. Mounting: Aluminum base plates for screwing into concrete.

2.06 FABRIC COVERINGS

- A. Covering Materials: Comply with applicable code for fire resistance ratings for roof covering.
 - 1. Vinyl Laminated Polyester: 11.3 oz/sq yd (383 gm/sq m), resistant to ultraviolet light, mildew, and water, flame resistant treated; ____ color as selected.
 - a. Products:
 - 1) Trivantage; HarborTime: www.trivantage.com/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: Not permitted.
 - 2. Solution Dyed Acrylic: 9.25 oz/sq yd (240 gm/sq m), resistant to ultraviolet and color degradation, mildew and water resistant; ____ color as selected.
 - a. Products:
 - 1) Sunbrella; ____: www.sunbrella.com/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: Not permitted.
 - 3. PVDF Coated Polyester: 14.45 oz/sq yd (490 gm/sq m), resistant to ultraviolet light, mildew, and water, flame resistant treated; ____ color as selected.
 - a. Products:
 - 1) Serge Ferrari; ____: www.sergeferrari.com/#sle.
 - 2) _____.
 - 3) _____.
 - 4) Substitutions: Not permitted.
 - 4. Performance Requirements:
 - a. Flammability: Pass NFPA 701 large and small tests.
 - 5. Covering Attachment: Manufacturer's standard method.

2.07 FABRICATION - FRAMING

- A. Shop fabricate to greatest extent possible; disassemble if necessary for shipping.
- B. Accurately form components to suit each other and to building structure.
- C. Fit and shop assemble components in largest practical sizes for delivery to site.
- D. Fabricate components with joints tightly fitted and secured.
- E. Fabricate anchors and related components of same material and finish as framing, except where specifically noted otherwise.

- F. Continuously seal joined pieces by intermittent welds and plastic filler.
- G. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.08 FABRICATION - COVERING

- A. Provide covering in one piece wherever possible, sized and configured to suit framing.
- B. Fabricate covering in accordance with manufacturer's instructions.

2.09 ALUMINUM FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42, integrally colored anodic coating not less than 0.7 mil (0.018 mm) thick.
- B. High-Performance Organic Coatings: AAMA 2604, multiple coats, thermally cured fluoropolymer system.
- C. Pigmented Organic Coatings: AAMA 2603, polyester or acrylic baked enamel finish.
- D. Painted Finish: Refer to Section 099113.
- E. Finish Color: As indicated on drawings.
- F. Finish Color: As selected by Architect from manufacturer's standard range.

2.10 ACCESSORIES

- A. Fixed Gutters: Integrated into support structure.
- B. Lighting: Integrated into support structure.
- C. Speakers: Integrated into support structure.
- D. Exposed Fasteners: Flush countersunk galvanized steel screws or bolts; consistent with design of system.
- E. Concealed Fasteners: Noncorrosive; as recommended by retractable fabric roof manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate anchors are acceptable and are ready to receive work.
- B. Examine foundations and anchor bolts for location and elevation; notify Architect of inaccuracies. Correct unacceptable conditions before beginning installation.
- C. Examine rough-in of required electrical services prior to placement of retractable canopy.

3.02 INSTALLATION - FRAMING

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects.
- C. Anchor framing to structure with manufacturer's standard anchors and related components.

3.03 INSTALLATION - FABRIC COVERING

- A. Install in accordance with manufacturer's instructions.
- B. Install covering over framing members, stretched taut without creases or folds.
- C. Attach covering and fasten securely.

3.04 TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch (6 mm) per story, noncumulative.
- B. Maximum Misalignment from True Position: 1/4 inch (6 mm).

END OF SECTION