SECTION 107313 - AWNINGS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			2. SUMMARY
				1. Section Includes:

Fixed awnings.

Manually operated retractable awnings.

Motorized retractable awnings.

* + - * 1. Related Requirements:

Retain Subparagraph below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 108316 "Banners" for ornamental fabrics for interior or exterior use.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.

Include styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, and finishes for awnings.

Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

* + - * 1. Shop Drawings:

Include plans, elevations, sections, mounting heights, and attachment details.

Detail fabrication and assembly of awnings[**, including seam layout, spacing, and orientation of awning fabric**].

Include diagrams for power, signal, and control wiring.

Show locations for blocking, reinforcement, and supplementary structural support.

Graphics: Show text message, font, character sizes, and other graphic forms; character, word, and line spacing; margin widths; position of copy; and other information related to graphic design.

Retain "Samples" Paragraph below for single-stage Samples, with a subordinate list if applicable. Retain "Samples for Initial Selection" and "Samples for Verification" Paragraphs for two-stage Samples.

* + - * 1. Samples: For each exposed product and for each color and texture specified.
				2. Samples for Initial Selection: For each type of exposed finish.

Include Samples of graphics[**on fabric**] and accessories involving color or finish selection.

* + - * 1. Samples for Verification: For the following:

Awning Fabric: 12-inch- square section of fabric from dye lot to be used for the Work, with specified treatments applied. Mark face of fabric.

Graphics: Not less than 12-inch- square section showing graphics application method.

Seam, Edge, and Corner Condition: Not less than 12-inch- long section showing seam, edge, and corner treatment.

Valance: Full-size unit, not less than 12 inches long.

Frame Finish: Not less than 6-inch lengths.

* + - * 1. Product Schedule: For awnings. Use same designations indicated on Drawings.

Retain "Welding certificates" Paragraph below if retaining "Welding Qualifications" Paragraph in "Quality Assurance" Article and if awning frame connections are welded.

* + - * 1. Welding Certificates.
				2. Sample Warranty: For special warranty.
			1. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: For awnings to include in operation and maintenance manuals.
			2. QUALITY ASSURANCE
				1. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

The Industrial Fabrics Association International has a Master Fabric Craftsman certification program. For large or complex projects, consider including certification as a requirement. Verify availability of certified fabricators in the Project's locale.

* + - * 1. Installer Qualifications: Fabricator of products.

Retain "Welding Qualifications" Paragraph below if shop or field welding is required. If retaining, also retain "Welding certificates" Paragraph in "Informational Submittals" Article.

* + - * 1. Welding Qualifications: Qualify procedures and personnel according to the following:

AWS D1.1, "Structural Welding Code - Steel."

AWS D1.2, "Structural Welding Code - Aluminum."

* + - 1. WARRANTY
				1. Special Warranty: Manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures including framework.

Deterioration of fabric including seam failure.

Deterioration of metals, metal finishes, and other materials beyond normal weathering.

Retain first Subparagraph below for retractable awnings; delete for fixed awnings.

Faulty operation of operator.

Verify available warranties and warranty periods for units and components.

Awning Warranty Period: [**Five**] years from date of Substantial Completion.

Fabric Warranty Period: [**Three**] [**Five**] [**Eight**] [**12**] years from date of Substantial Completion.

Delete "Thread Warranty Period" Subparagraph below if seams and hems are not sewn. Consult fabricators for thread durability. Second option below is an example for 100 percent expanded PTFE thread.

Thread Warranty Period: [**Five**] [**Eight**] years from date of Substantial Completion.

Options in "Graphics Warranty Period" Subparagraph below are examples that primarily apply to cast-vinyl and calendered-vinyl graphic materials, respectively; consult fabricators for other graphic applications.

Graphics Warranty Period: Outdoor durability not less than [**five**] [**three**] years from date of Substantial Completion.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS
				1. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

Differential values in "Temperature Change" Subparagraph below (for aluminum in particular) are suitable for most of the United States.

Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

Retain "Fire-Test-Response Characteristics" Paragraph below if fire-tested fabrics are not required by authorities having jurisdiction for exterior installation or are not needed for added public safety. If flame-resistant fabrics are required for exterior installations, they must have integral flame resistance or chemical treatments tested for exterior use because topically applied treatments may not withstand outdoor weathering conditions. See the Evaluations.

* + - * 1. Fire-Test-Response Characteristics: Provide awning fabrics with the fire-test-response characteristics indicated, as determined by testing identical products according to test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

Flame-Resistance Ratings: Passes NFPA 701.

Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency for Flame-Spread Index of 25 or less.

Permanently attach label to each awning fabric indicating whether fabric is inherently and permanently flame resistant or is treated with flame-retardant chemicals, and whether it requires retreatment after designated time period or cleaning.

* + - 1. FABRIC <**Insert product designation**>

Copy this article and re-edit for each fabric type.

Coordinate characteristics in "Fabric" Paragraph below with selected fabric. Retain this Paragraph if a proprietary fabric is not listed in "Products" Paragraph. If using a fabric inset for graphics, copy "Fabric" Paragraph to specify the inset fabric.

* + - * 1. Fabric:

Fiber Content: [**Vinyl-laminated or -coated polyester mesh**] [**Vinyl-laminated or -coated polyester**] [**Acrylic-coated polyester**] [**Resin-coated polyester**] [**Vinyl-coated polyester/cotton blend**] [**Acrylic-coated polyester/cotton blend**] [**Resin-coated polyester/cotton blend**] [**Solution-dyed acrylic**] [**Solution-dyed modacrylic**] [**Expanded PTFE**].

Revise "Weight" Subparagraph below if another quantity measure such as denier is used to describe fabric.

Weight: <**Insert value**>.

Width: <**Insert dimension**>.

Retain or delete "Solar-Optical Properties," "Openness Factor," and "UV-Light Blockage" Subparagraphs below to suit Project. These options affect solar heat gain and UV-light exposure.

Solar-Optical Properties: <**Insert requirements**>.

Openness Factor: <**Insert number**> percent.

UV-Light Blockage: <**Insert number**> percent.

Mildew Resistance: Showing no growth when tested according to ASTM G21.

Retain or delete "Shrinkage" and "Stretch Factor" Subparagraphs below and insert others to suit Project. Not all manufacturers have these test reports available for all fabrics.

Shrinkage: Not greater than [**0.1**] [**0.5**] [**1**] percent according to ASTM D1204.

Stretch Factor: Not less than [**0.4**] [**1**] [**4**] percent according to ASTM D4851.

Water-soluble dyes and inks must be laminated to preserve stability.

Applied Treatment: [**Stain resistant**] [**Mildew resistant**] [**Polymer, flame resistant**] [**Water repellent**] [**Lamination**].

Generally, delete "Pattern and Color" Subparagraph below if described by product designation or style; revise if more than one pattern and color is required.

Pattern and Color: [**Match Director’s Representative's samples**] [**As selected by Director’s Representative from manufacturer's full range**] [**As indicated in an awning schedule**].

Retain "Seam Thread" Paragraph below if seams and hems are sewn. Consult fabricators for thread use and durability. Proprietary name for first option below is "Tenara."

* + - * 1. Seam Thread: [**100 percent expanded PTFE**] [**100 percent bonded polyester**], UV-light, mildew, and rot resistant.
				2. Decorative Trims: [**Borders**] [**Braid and bindings**] [**Cords**] [**Fringe**] [**Patterned edge; scalloped**] [**Patterned edge; V-shaped**] [**Streamers**] [**Tassels**] [**Welting**].

Colors: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's samples**] [**Matching or coordinating with awning fabric color**] [**As selected by Director’s Representative from manufacturer's full range**] [**As indicated in an awning schedule**].

* + - * 1. Fringe: [**As indicated by manufacturer's designation for style and color**] [**As indicated in awning schedule**].
			1. AWNING FRAME AND ACCESSORY MATERIALS

Revise "Steel" Paragraph below if stainless-steel members are needed for corrosion resistance.

* + - * 1. Steel:

Steel Plates, Shapes, and Bars: ASTM A36.

Steel Tubing: ASTM A500.

Galvanized Steel Tubing: ASTM A787.

Steel Pipe: ASTM A53, Standard Weight (Schedule 40).

* + - * 1. Aluminum: Alloy and temper recommended by awning manufacturer for type of use and finish indicated and with not less than the strength and durability properties of alloy and temper required by structural loads.

Aluminum Plate and Sheet: ASTM B209.

Aluminum Extrusions: ASTM B221.

Extruded Structural Pipe and Round Tubing: ASTM B429, standard weight (Schedule 40).

Drawn Seamless Tubing: ASTM B210.

* + - * 1. Anchors, Fasteners, Fittings, Hardware, and Installation Accessories: Complying with performance requirements indicated and suitable for exposure conditions, supporting structure, anchoring substrates, and installation methods indicated. Corrosion-resistant or noncorrodible units; weather-resistant, [**tamperproof, vandal- and theft-resistant,**]compatible, nonstaining materials. Provide as required for awning assembly, mounting, and secure attachment. Number as needed to comply with performance requirements and to maintain uniform appearance; evenly spaced. Where exposed to view, provide finish and color as selected by Director’s Representative from manufacturer's full range.

Fasteners and anchors in "Wood Screws," "Lag Bolts," "Bolts," and "Expansion Anchors" Subparagraphs below are examples only; consult fabricators and Project's structural engineer.

Wood Screws: ASME B18.6.1.

Lag Bolts: ASME B18.2.1.

Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM F3125,Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers, zinc coated.

Verify safety factors in "Expansion Anchors" Subparagraph below with Project's structural engineer and revise testing methods if required by authorities having jurisdiction.

Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing according to ASTM E488 conducted by a qualified independent testing and inspecting agency.

Revise "Material" Subparagraph below if another material is suitable for anchors for Project.

Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

Verify safety factors in "Adhesive-Bonded Anchors" Subparagraph below with Project's structural engineer and revise testing methods if required by authorities having jurisdiction.

Adhesive-Bonded Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing according to ASTM E1512 conducted by a qualified independent testing and inspecting agency.

Revise "Material" Subparagraph below if another material is suitable for anchors for Project.

Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

Descriptions in "Grommets" and "Lacing" Subparagraphs are examples only.

Grommets: [**Zinc-coated brass, No. 2**] [**Stainless steel, No. 2**].

Lacing: [**100 percent polyester, braided No. 4**].

* + - * 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

Retain "Bituminous Paint" Paragraph below if aluminum is used in fabricating awnings.

* + - * 1. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.
			1. AWNING FABRIC FABRICATION

This article consists of examples only. Retain, revise, or delete to suit Project.

* + - * 1. Fabrication: Reinforce wear points and hardware attachment points with [**nonwoven**] [**mesh**] [**polypropylene mesh**] webbing. Seam fabrics [**in locations indicated on the Drawings and**] as follows:

Generally, retain or revise "Fabric Edges and Seams" Subparagraph below for most fabrics.

Fabric Edges and Seams: Fold and stitch selvedge and cut fabric edges.

First two "Fabric Edges and Seams" Subparagraphs below may be suitable for some polymer-coated fabrics. Selection of method to finish edges and seams depends on fabric type and strength required; consult fabricator.

Fabric Edges and Seams: Hot cut and sealed.

Fabric Edges and Seams: Radio-frequency welded.

Fabric Edges and Seams: Adhesively bonded.

Fabric Edges and Seams: Manufacturer's standard hemming and seaming methods.

Retain one of two "Fabric Attachment" Subparagraphs below for fixed awnings. Method is determined by manufacturer for retractable awnings. Awnings may be attached through grommets and hems, along the inside of hemmed edge pockets, or by hardware applied to edges.

Fabric Attachment: [**Manufacturer's standard.**] [**Hem pockets.**] [**Screws.**] [**Staples.**]

Fabric Attachment: Grommets.

Grommet Spacing: 6 inches o.c..

Retain "Fabric Insets" Paragraph below if required for graphics; revise to suit fabrication method.

* + - * 1. Fabric Insets: [**Heat-sealed**] [**Sewn-in**] process.

Coordinate graphic processes in "Graphic Application" Paragraph below with each fabric, fabrication method, awning design, and awning location.

* + - * 1. Graphic Application: [**Hand painting**] [**Silk-screen printing**] [**Heat color transfer**] [**Vinyl film with pressure-sensitive adhesive backing**] [**PVDF film with pressure-sensitive adhesive backing**] [**PVF film with pressure-sensitive adhesive backing**] [**Radio-frequency, heat-sealed vinyl film**] [**Eradication**] [**Cut-out lettering**].

Graphic Image: [**As indicated on Drawings**] [**As indicated in awning schedule**].

Retain "Text Message" Subparagraph below if text is not indicated on Drawings.

Text Message: [**As indicated on Drawings**] [**As indicated in an awning schedule**].

Text Font: [**Helvetica**] <**Insert style**>.

Character Size: Minimum [**1-inch-**] [**1-foot-**] <**Insert dimension**> high characters.

Character Colors: <**Insert colors**>.

Retain "Vinyl Film" Subparagraph below if vinyl film is used for graphics, and revise options to reflect different thickness and revise film appearance to suit Project.

Vinyl Film: [**Calendered-vinyl film, not less than 3 mils thick, with pressure-sensitive adhesive backing**] [**Cast-vinyl film, not less than 2 mils thick, with pressure-sensitive adhesive backing**] [**Cast-vinyl reflective film, not less than 2 mils thick, with pressure-sensitive adhesive backing**].

* + - 1. FIXED AWNING FABRICATION
				1. Manufacturers: Subject to compliance with the requirements, available manufacturers offering products that maybe incorporated into the work include, but are not limited to the following:

4th Generation Awning Company

Capitol Awning Company.

Geneva Awning and Tent Works, Inc.

Approved equivalent.

* + - * 1. General:

Frame Fabrication: Fabricate awning frames from [**steel**] [**aluminum**]. Preassemble in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

Form exposed work true to line and level with accurate angles and surfaces and straight edges.

Retain one of first two Subparagraphs below. Most commercial awnings are welded.

Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Fabricate slip-fit connections exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

Weld corners and connections continuously. Obtain fusion without undercut or overlap. Remove welding flux immediately. At exposed corners and connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure awnings in place and to properly transfer loads.

Retain "Steel Finish" or "Aluminum Finish" Paragraph below to match material used to fabricate frames. Revise "Steel Finish" or "Aluminum Finish" Paragraph if high-performance finish is required; confirm availability with manufacturers.

* + - * 1. Steel Finish: [**Galvanized mill finish; apply galvanizing repair paint to welds.**] [**Manufacturer's standard primed and top-coated decorative**] [**Baked-enamel or powder-coat**] finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

Color choices for finishes may only be available in a limited number. Consult with manufacturers.

Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

* + - * 1. Aluminum Finish: [**Mill**] [**Manufacturer's standard primed and top-coated decorative**] [**Baked-enamel or powder-coat**] finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

Color choices for finishes may only be available in a limited number. Consult with manufacturers.

Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

* + - 1. MANUALLY OPERATED RETRACTABLE AWNINGS <**Insert product designation**>
				1. Manufacturers: Subject to compliance with the requirements, available manufacturers offering products that maybe incorporated into the work include, but are not limited to the following:

4th Generation Awning Company

Capitol Awning Company.

Geneva Awning and Tent Works, Inc.

Approved equivalent.

Option in "Type" Paragraph below is available from some manufacturers. Retracting arms are attached to torsion bar, which holds the full load of the extended awning. Confirm availability with manufacturers.

* + - * 1. Type: Retractable awning, fabricated form aluminum, with hinged arms attached to [**steel**] torsion bar with tensioning system designed to keep fabric taut in any position.

First two options in "Fabric Roll Protection" Paragraph below are available from some manufacturers, and are an integral part of the design. Third option typically attaches to mounting brackets.

* + - * 1. Fabric Roll Protection: [**Cassette design to fully enclose**] [**Semi-cassette design to partially enclose**] [**Sheet metal hood to protect**] fabric roll when awning is retracted.

Retain "Manual Operator" Paragraph below if awnings are manually operated; revise to suit Project.

* + - * 1. Manual Operator: Provide gear and crank operator.

Manual Operator Assist Mechanism: Manufacturer's standard spring assist for operating heavy awnings.

Crank Handle: Two, detachable.

Awning Coupler System: Designed for simultaneously operating multiple awnings with a single crank. Provide system [**for each group of awnings**] [**where indicated on Drawings**] [**where indicated in an awning schedule**].

If needed for Project, retain first option in "Operating Function" Subparagraph below only after verifying availability with manufacturers. For gear and crank operators, positive-stop devices can govern preset positions.

Operating Function: [**Stop and hold awning at any position in ascending or descending travel**] [**Stop and hold awning at fully open or fully closed positions only**].

* + - * 1. Mounting Brackets: Configured for mounting to surface indicated, with adjustable pitch.

Most common finish is baked-enamel or powder-coat.

* + - * 1. Finish: [**Manufacturer's standard primed and top-coated decorative**] [**Baked-enamel or powder-coat**] finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

* + - 1. MOTORIZED RETRACTABLE AWNINGS <**Insert product designation**>
				1. Manufacturers: Subject to compliance with the requirements, available manufacturers offering products that maybe incorporated into the work include, but are not limited to the following:

4th Generation Awning Company

Capitol Awning Company.

Geneva Awning and Tent Works, Inc.

Approved equivalent.

Option in "Type" Paragraph below is available from some manufacturers. Retracting arms are attached to torsion bar, which holds the full load of the extended awning. Confirm availability with manufacturers.

* + - * 1. Type: Retractable awning, fabricated form aluminum, with hinged arms attached to [**steel**] torsion bar, with tensioning system designed to keep fabric taut in any position.

First two options in "Fabric Roll Protection" Paragraph below are available from some manufacturers, and are an integral part of the design. Third option typically attaches to mounting brackets.

* + - * 1. Fabric Roll Protection: [**Cassette design to fully enclose**] [**Semi-cassette design to partially enclose**] [**Sheet metal hood to protect**] fabric roll when awning is retracted.
				2. Motorized Operator: Provide factory-assembled, motorized, retractable-awning operator designed for retracting awnings of type, size, weight, construction, use, and operation frequency indicated.
				3. Mounting Brackets: Configured for mounting to surface indicated, with adjustable pitch.
				4. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Generally, retain option in "Control Equipment" Paragraph below for systems with low-voltage components (low-voltage motors or switches) or digital control (group, individual/group, sensor, radio, infrared, timer, and microprocessor controllers).

* + - * 1. Control Equipment: Comply with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6[**with NFPA 70, Class 2 control circuit, maximum 24-V ac or dc**].
				2. Electric Motors: UL-approved or -recognized, totally enclosed, insulated motor, complying with NEMA MG 1, with thermal-overload protection and internal limit switches; sized by awning manufacturer to start and operate size and weight of awning considering service factor or considering Project's service conditions without exceeding nameplate ratings.

Service Factor: According to NEMA MG 1 unless otherwise indicated.

Motor Characteristics: Single phase, [**24**] [**110**] [**220**] V, 60 Hz.

Coordinate wiring requirements and electrical characteristics of motors with building electrical system.

Motor Mounting: Within manufacturer's standard roller enclosure.

Retain first option in "Remote Controls" Paragraph below for controls mounted in interior locations, and second option for controls mounted in exterior, wet, or humid locations. Hazardous conditions, depending on classification, may require NEMA Type 7, 9, or 12 modifications. NEMA Types 7 and 9 control devices should be wired to be intrinsically safe.

* + - * 1. Remote Controls: Electric controls with NEMA ICS 6, [**Type 1**] [**Type 4**] enclosure for [**surface**] [**recessed or flush**] mounting. Provide the following devices for remote-control activation of awnings:

Generally, retain one of "Keyed Control Stations" or "Control Stations" Subparagraphs below.

Keyed Control Stations: [**Maintained**] [**Momentary**]-contact, three-position, switch-operated control station with open, close, and off functions. Provide two keys per station.

Control Stations: [**Maintained**] [**Momentary**]-contact, three-position, [**toggle**] [**rocker**]-style, wall-switch-operated control station with open, close, and center-off functions.

Function: [**Individual**] [**Group**] [**Combined individual and group**].

Color: [**Ivory**] [**White**] [**As indicated in an awning schedule**].

Retain "Sun Sensor Controls," "Radio Controls," "Timer Controls," and "Microprocessor Controls" Subparagraphs below as required for Project.

Sun Sensor Controls: Programmable system activated by LEDs detecting daylight intensity and responding by automatically adjusting awnings.

Radio Controls: Digital system consisting of code-compatible universal coaxial receiver, [**one per awning**] [**where indicated on Drawings**].

Single Channel Radio Transmitters: Portable single-channel transmitters for operating a single motor with a single button to open and retract awning; provide units.

Multi-Channel Radio Transmitters: Portable multi-channel transmitters for operating [**two**] [**four**] [**up to 12**] awnings individually, each with a single button to open and close awnings; provide two units.

Timer Controls: Clock timer, [**24-hour**] [**seven-day**] programmable for regular events.

Microprocessor Controls: Electronic programmable means for setting, changing, and adjusting control features. Provide unit isolated from voltage spikes and surges.

* + - * 1. Operating Features: Include the following:

Confirm availability of each feature below with manufacturers.

Capable of accepting input from building automation control system.

Retain first Subparagraph below only for sensor-, radio-, or timer-controlled systems.

Override switch.

Backup gear and crank operator for manual operation during power failures with detachable handle, [**6 feet long**] [**manufacturer's standard length**] [**length required to make operation convenient from ground level**] [**length as indicated on Drawings**].

Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop awning at fully raised and fully lowered positions.

Preset Position Function: [**Stop and hold awning at any position**] [**Stop and hold awning at three predetermined positions including open, closed, and one user-programmed position**].

Most common finish is baked-enamel or powder-coat.

* + - * 1. Finish: [**Manufacturer's standard primed and top-coated decorative**] [**Baked-enamel or powder-coat**] finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

Color choices for finishes may only be available in a limited number. Consult with manufacturers.

Color: [**As indicated by manufacturer's designations**] [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**].

Insert accessories. Examples of accessories available from some manufacturers include infrared heaters, lighting, and drop shades; typically mounted to front edge of awning.

1. EXECUTION
	* + 1. EXAMINATION

Retain first option in first Paragraph below for retractable awnings. Retain second option if coordination with lighting layout is required to suit Project.

* + - * 1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, [**operational clearances, accurate locations of connections to building electrical system,**] [**lighting,**] and other conditions affecting performance of the Work.
				2. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. INSTALLATION

Retain option in "General" Paragraph below for motorized retractable awnings.

* + - * 1. General: Install awnings[**and motor controls**] at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.
				2. Install awnings after other finishing operations, including joint sealing and painting, have been completed.

Retain one of first two Paragraphs below for fixed awnings only. Most commercial awnings are welded.

* + - * 1. Slip fit frame connections accurately together to form hairline joints, and tighten to secure.
				2. Weld frame connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.

Field Welding: Comply with the following requirements:

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

Obtain fusion without undercut or overlap.

Remove welding flux immediately.

At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

* + - * 1. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.

Retain "Corrosion Protection" Paragraph below if using aluminum in fabricating awnings.

* + - * 1. Corrosion Protection: Coat concealed surfaces of aluminum that come in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.
				2. Coordinate awning installation with flashing and joint-sealant installation so these materials are installed in sequence and in a manner that prevents exterior moisture from passing through completed exterior wall and roof assemblies.
			1. ADJUSTING
				1. Adjust hardware and moving parts to function smoothly, and lubricate as recommended by retractable-awning manufacturer.
			2. CLEANING AND PROTECTION
				1. Touch up factory-applied finishes to restore damaged or soiled areas.
				2. Galvanized Surfaces: Clean field welds, connections, and abraded areas and repair galvanizing to comply with ASTM A780.
			3. DEMONSTRATION

Retain first option in Paragraph below if retractable awnings are motorized and factory-authorized training is required. Manually operated retractable awnings do not require factory-authorized training.

* + - * 1. Engage a Company Field Advisor to train Facility’s maintenance personnel to adjust, operate, and maintain retractable awnings.

END OF SECTION 107313