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

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

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

1. GENERAL
   1. SUMMARY
      1. Section Includes:
         1. Manually operated roller shades with single rollers.
   2. SUBMITTALS
      1. Product Data: For each type of product.
         1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
      2. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

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, 10 inches (250 mm) long.

Coordinate "Qualification Data" Paragraph below with qualification requirements in Section 014000 "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

* + 1. Qualification Data: For Installer.

Retain "Product Certificates" Paragraph below to require submittal of product certificates from manufacturers.

* + 1. Product Certificates: For each type of shadeband material, signed by product manufacturer.
    2. Maintenance Data: For roller shades to include in maintenance manuals.
  1. QUALITY ASSURANCE
     1. Installer Qualifications: Fabricator of products.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
  3. FIELD CONDITIONS
     1. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
     2. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Owner of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  4. WARRANTY
     1. Roller Shade, Hardware, Chain and Shadecloth: Manufacturer’s standard non-depreciating 10-year limited warranty from date of Substantial Completion.

1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures, see Section 016000 "Product Requirements."

* 1. MANUFACTURERS
     1. Basis-of-Design Product: Subject to compliance with requirements, provide Skyco Phifer Sheerweave or comparable product by one of the following:
        1. Hunter Douglas Contract.
        2. MechoShade
        3. Or Approved equal
     2. Source Limitations: Obtain roller shades from single source from single manufacturer.
  2. MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

Retain "Chain-and-Clutch Operating Mechanisms," "Crank-and-Gear Operating Mechanisms," or "Spring Operating Mechanisms" Paragraph below or, if more than one type of manual operating mechanism is required, show locations of each on Drawings or in a window-treatment schedule.

* + 1. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
       1. Bead Chains: Stainless steel
          1. Loop Length: Full length of roller shade.
          2. Limit Stops: Provide upper and lower ball stops.
          3. Chain-Retainer Type: Clip, jamb mount.

Retain "Spring Lift-Assist Mechanisms" Subparagraph below for heavy roller shades; verify availability with manufacturers and manufacturers' weight-limit recommendations. MechoShade's literature states that lift-assist mechanisms are required for shades with single rollers where shadebands weigh more than 10 lb (4.5 kg).

* + - 1. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.
         1. Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criteria are more stringent.
    1. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
       1. Roller Drive-End Location: Right side of inside face of shade.

Coordinate direction of roll with fascia, headbox, or shade-pocket design.

* + - 1. Direction of Shadeband Roll: Regular, from back of roller.
      2. Shadeband-to-Roller Attachment: Removable spline fitting integral channel in tube.

Types and sizes of mounting hardware vary among manufacturers. Revise "Mounting Hardware" Paragraph below if specific types of hardware (e.g., extended brackets or slim-profile brackets) are required. Where hardware dimensions are critical, indicate installation conditions and size constraints on Drawings.

* + 1. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

If retaining "Roller-Coupling Assemblies" Paragraph below, indicate locations and quantities of rollers joined with coupling assemblies on Drawings or in a window-treatment schedule.

* + 1. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.
    2. Shadebands:

Coordinate option retained in "Shadeband Material" Subparagraph below with requirements specified in "Shadeband Materials" Article.

* + - 1. Shadeband Material: Light-filtering fabric.

Revise "Shadeband Bottom (Hem) Bar" Subparagraph below if wood bar is acceptable for roller shades with spring operating systems.

* + - 1. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

Bottom bars vary among manufacturers; insert requirements for specific type and shape in "Type" Subparagraph below.

Methods of sealing light gaps at bottoms of shades vary among manufacturers. Exposed bottom bars with integral light seals are available from MechoShade.

* + 1. Installation Accessories:

Retain "Front Fascia" or "Exposed Headbox" Subparagraph below for exposed roller enclosures. Retain "Exposed Headbox" Subparagraph for light-blocking shades.

* + - 1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

Shapes and heights of fasciae vary among manufacturers.

* + - * 1. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open.

If retaining "Endcap Covers" Subparagraph below, verify availability with manufacturers. Depending on manufacturer and manual operating system, endcaps might be required for mounting shades or attaching fasciae or headboxes.

* + - 1. Endcap Covers: To cover exposed endcaps.

Retain "Recessed Shade Pocket" Subparagraph below for roller enclosure installed above the ceiling.

Retain "Side Channels" and "Bottom (Sill) Channel or Angle" subparagraphs below for light-blocking shades.

* 1. SHADEBAND MATERIALS
     1. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
        1. Material to be Greenguard certified.

If more than one light-filtering or light-blocking shadeband fabric is required, copy and re-edit applicable paragraph below and insert a unique designation for each fabric.

* + 1. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
       1. Source: Roller shade manufacturer.
       2. Colors: As noted on Drawings.
  1. ROLLER-SHADE FABRICATION
     1. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
     2. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

Retain "Between (Inside) Jamb Installation" or "Outside of Jamb Installation" Subparagraph below. Alternatively, retain both subparagraphs and show locations of each on Drawings or in a window-treatment schedule. Coordinate clearance requirements with distance between shades and glass, glass type, and placement of heating/cooling air supplies to avoid heat buildup and possible damage to glass.

If retaining "Between (Inside) Jamb Installation" Subparagraph, see "Product Characteristics" Article in the Evaluations for a discussion of GANA recommendations.

* + - 1. Outside of Jamb Installation: Width equal to column to column or column to wall dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm), with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
    1. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:
       1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than manufacturer’s recommended ratio, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

1. EXECUTION
   1. EXAMINATION

Retain option in first paragraph below for motorized operators.

* + 1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.
    2. Proceed with installation only after unsatisfactory conditions have been corrected.
  1. ROLLER-SHADE INSTALLATION
     1. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

Coordinate requirements for distance between roller shades and glass with glass type and placement of heating/cooling air supplies to avoid heat buildup and possible damage to glass. Generally, retain first option in "Opaque Shadebands" Subparagraph below. See "Product Characteristics" Article in the Evaluations.

* + - 1. Shadebands: Located so shadeband is not closer than 2 inches (51 mm) to interior face of glass. Allow clearances for window operation hardware.
  1. ADJUSTING
     1. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
  2. CLEANING AND PROTECTION
     1. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
     2. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
     3. Replace damaged roller shades that cannot be repaired, in a manner approved by Owner, prior to Substantial Completion.

**END OF SECTION**