

SECTION 12 2400
WINDOW SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Window shades and accessories.
- B. Electric motor operators.
- C. Motor controls.

1.02 REFERENCE STANDARDS

- A. ASTM D4674 - Standard Practice for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Office Environments; 2002a (Reapproved 2010).
- B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.
- C. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of all affected installers.
- B. Sequencing:
 - 1. Do not fabricate shades until field dimensions for each opening have been taken.
 - 2. Do not install shades until final surface finishes and painting are complete.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
 - 1. Motorized Shades: Include power requirements and standard wiring diagrams.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details.
- D. Shop Drawings - Motorized Shades: Provide schematic system riser diagram indicating component interconnections. Include requirements for interface with other systems.
- E. Selection Samples: Include fabric samples in full range of available colors and patterns.
 - 1. Motorized Shades: Include finish selections for controls.
- F. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- G. Project Record Documents: Record actual locations of control systems and show interconnecting wiring.
- H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

1.07 WARRANTY

- A. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
 - 1. Shade Hardware: One year.

2. Electric Motors: One year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manually Operated Roller Shades:
 1. Draper, Inc: www.draperinc.com.
- B. Motorized Roller Shades, Motors and Motor Controls:
 1. Draper, Inc: www.draperinc.com.

2.02 WINDOW SHADE APPLICATIONS

- A. Shades: Sheer shades.
 1. Type: Roller shades.
 2. Color: Selected from Owner's standards..
 3. Mounting: Inside and outside, where indicated on drawings.
 4. Operation: Manual or motorized vertical roll-up, in locations indicated.
 5. Operation: Manual or motorized single-roller bottom-up, in locations indicated.

2.03 ROLLER SHADES

- A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
 1. Drop: Regular roll.
 2. Size: As indicated on drawings.
- B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation; PVC-free; 100 percent recycled.
 1. Sheer Shades: Reduce glare yet still reveal considerable details to the outside; no privacy; Openness Factor greater than 1 percent.
 2. Flammability: Pass NFPA 701 large and small tests.
- C. Roller Tube: As required for type of operation, extruded aluminum with end caps.
 1. Dimensions: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
 2. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
- D. Hembars and Hembar Pockets: Wall thickness designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
 1. Style: Exposed aluminum bottom bar, flat profile with closed ends, containing a spline groove top to receive and secure fabric end.
- E. Manual Operation: Clutch operated continuous loop; beaded ball chain.
- F. Motor Operation: Motor system housed inside roller tube, controlling shade movement via motor controls indicated; listed to UL 325.
 1. Audible Noise: Maximum 39 dBA measured 3 feet from the motor unit; no audible clicks when motor starts and stops.
 2. Motors: Size and configuration as recommended by manufacturer for the type, size, and arrangement of shades to be operated; integrated into shade operating components and concealed from view.
 3. Motor Type: Both AC and DC motors are acceptable; provide required transformers for DC motors.
 4. Control Compatibility: Fully compatible with the controls to be installed.

2.04 MOTOR CONTROLS

- A. Motorized shades to be controlled by wall-mounted controls, wireless (RF) handheld remote controls, and infrared handheld remote controls as specified below.
- B. Control Requirements:
 1. Unless specifically indicated to be excluded, provide all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system

- programming, etc. as necessary for a complete operating system that provides the control intent indicated.
2. Capable of stopping within accuracy of 0.125 inch at any point between open and close limits.
 3. Capable of assigning shades to groups and subgroups without rewiring.
 4. Capable of synchronizing multiple units of the same size to start, stop and move in unison.
- C. Wall-Mounted Controls: UV stabilized visible parts meeting ASTM D4674; furnished with backlit buttons; provided by shade manufacturer.
1. Control Functions:
 - a. Open: Automatically open controlled shade(s) to fully open position when button is pressed.
 - b. Close: Automatically close controlled shade(s) to fully closed position when button is pressed.
 - c. Raise: Raise controlled shade(s) only while button is pressed.
 - d. Lower: Lower controlled shade(s) only while button is pressed.
 - e. Stop shade(s) in motion by tap on any button.
 2. Finish: White.
 3. Button Engraving: Manufacturer's standard engraving, unless otherwise indicated.
- D. Wireless (Radio Frequency) Handheld Remote Control: Battery-powered; provided by shade manufacturer.
1. Wireless Range: 30 feet.
 2. Finish: White.
- E. Infrared Handheld Remote Control: Battery-powered; provided by shade manufacturer.
1. Control Functions:
 - a. Open: Automatically open controlled shade(s) to fully open position when button is pressed.
 - b. Close: Automatically close controlled shade(s) to fully closed position when button is pressed.
 - c. Raise: Raise controlled shade(s) only while button is pressed.
 - d. Lower: Lower controlled shade(s) only while button is pressed.
 - e. Stop shade(s) in motion by tap on any button.
 2. Finish: White.

2.05 ACCESSORIES

- A. Fascias: Size as required to conceal shade mounting.
 1. Style: As indicated on the drawings.
 2. Material and Color: To match shade.
- B. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
- C. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

2.06 FABRICATION

- A. Field measure finished openings prior to ordering or fabrication.
- B. Fabricate shades to fit openings within specified tolerances.
 1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.
 2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
 3. Horizontal Dimensions - Outside Mounting: Cover window frames, trim, and casings completely.
- C. Dimensional Tolerances: As recommended in writing by manufacturer.
- D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine finished openings for deficiencies that may preclude satisfactory installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

3.02 PREPARATION

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Installation Tolerances:
 - 1. Maximum Offset From Level: 1/16 inch.
- C. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.04 SYSTEM STARTUP

- A. Motorized Shade System: Provide services of a manufacturer's authorized representative to perform system startup.

3.05 CLEANING

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

3.06 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.
- B. Training: Train Owner's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

3.07 PROTECTION

- A. Protect installed products from subsequent construction operations.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 12 2400