

## **SECTION 12 24 13 ROLLER SHADES**

### **PART 1 GENERAL**

#### **1.01 REFERENCES**

A. The following is a list of standards which may be referenced in this section:

1. American International (ASTM): G21, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
2. National Fire Protection Association (NFPA):
  - a. 70, National Electrical Code.
  - b. 701, Fire Tests for Flame-Resistant Textiles and Films.

#### **1.02 SUBMITTALS**

A. Action Submittals:

1. Product Data:
  - a. Manufacturer's data sheets on each product clearly marked for products used on this Project, including:
    - 1) Preparation instructions and recommendations.
    - 2) Styles, material descriptions, dimensions of individual components, profiles, features, finishes, and operating instructions.
    - 3) Storage and handling requirements and recommendations.
    - 4) Mounting details and installation methods.
    - 5) Power and control wiring diagrams.
2. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams based on switching and operational requirements, and relationship to adjacent work.
3. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
4. Color Samples: Shade cloth sample and aluminum finish sample as specified.

B. Information Submittals:

1. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
2. Special Guarantee: Provide manufacturer's sample guarantee.

### 1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of 5 years' experience in manufacturing products comparable to those specified in this section.
- B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of 3 years' experience in installing products comparable to those specified in this section.

### 1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on the Drawings and in the approved Window Treatment Schedule.

### 1.05 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

## **PART 2 PRODUCTS**

### 2.01 MANUFACTURERS

- A. MechoSystems.
- B. Or equal.

### 2.02 GENERAL MATERIAL CHARACTERISTICS

- A. Physical Characteristics:
  - 1. Shade Type:
    - a. Motorized interior, independently operated, solar roller shades, fascias, room darkening side and sill channels, and related EDU control systems in exterior windows as scheduled.
    - b. Manual operating, chain drive, roller shades in exterior windows as scheduled.
- B. Functional Characteristics:
  - 1. Requirements for Electronic Hardware, Controls, and Switches: Roller shade hardware, shade fabric, Electronic Drive Unit (EDU), and all

related controls shall be furnished and installed as a complete two-way communicating system and assembly.

C. Performance Characteristics:

1. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn.
2. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system.
3. Anti-Microbial Characteristics: 'No Growth' in accordance with ASTM G21 results for fungi ATCC 9642, ATCC 9644, and ATCC 9645.

2.03 SHADE CLOTH

A. Manufacturers and Products:

1. MechoSystems; ThermoVeil Group.
2. Or equal.

B. Physical Characteristics:

1. Visually Transparent Single-Fabric Shade Cloth: Single thickness, nonraveling 0.037-inch thick vinyl fabric, linear woven shade cloth with dense vertical weave, flame retardant and fade resistant, 25 percent polyester and 75 percent PVC.
  - a. Dense Vertical Weave: 0.037 inch, 2 percent to 3 percent visually linear-weave pattern.
  - b. Color: As shown.

C. Functional Characteristics: None.

D. Performance Characteristics: Acoustic Performance of 030 NRC to 0.25 NRC.

2.04 SHADE BAND

A. Physical Characteristics: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

B. Functional Characteristics: None.

C. Performance Characteristics: None.

## 2.05 SHADE FABRICATION

- A. Fabricate units to completely fill openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
- B. Fabricate shade cloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shade cloth to roll true and straight without shifting sideways more than 1/8-inch in either direction per 8 feet of shade height due to warp distortion or weave design. Fabricate hem using bottom hem weights.

## 2.06 ROLLER SHADE COMPONENTS

- A. Access and Material Requirements:
  - 1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
  - 2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive, or operating support brackets.
- B. Motorized Shade Hardware and Shade Brackets:
  - 1. Physical Characteristics:
    - a. Provide shade hardware constructed of minimum 1/8-inch thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade. Plastic components without use of steel angle construction shall not be accepted.
    - b. Provide shade hardware system that allows for field adjustment of EDU or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside or outside mount).
  - 2. Functional Characteristics: None.
  - 3. Performance Characteristics: None.
- C. Manual Operated Chain Drive Hardware and Brackets:
  - 1. Physical Characteristics:
    - a. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
    - b. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.

- c. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
- d. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
- e. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degree total offset.
- f. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable.
- g. Provide shade hardware constructed of minimum 1/8-inch thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
- h. Drive Bracket/Brake Assembly:
  - 1) Manufacturer and Product:
    - a) MechoShade; Drive Bracket Model M5.
    - b) Or equal.
  - 2) Physical Characteristics:
    - a) Fully integrated with all accessories, including, but not limited to fascia, room darkening side/sill channels, center supports and connectors for multi-banded shades.
    - b) Drive sprocket and brake assembly shall rotate and be supported on a welded 3/8-inch (9.525-mm) steel pin.
    - c) The brake shall be an overrunning clutch design, which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 pounds (22 kg) in the stopped position.
    - d) The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and/or not permanently lubricated are not acceptable.
    - e) The entire assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and

reinstalled without effecting the roller shade limit adjustments.

- 3) Functional Characteristics: None.
- 4) Performance Characteristics: None.
- 2. Functional Characteristics: None.
- 3. Performance Characteristics: None.

D. Drive Chain:

- 1. Physical Characteristics: No. 10 qualified Type 304 stainless steel chain rated to 90-pound minimum breaking strength. Nickel plate chain shall not be accepted.
- 2. Functional Characteristics: Maintain consistent shade band alignment with bead stops affixed to the chain.
- 3. Performance Characteristics: Chain tensioning device complying with ANSI/WCMA A100.1-2022.

## 2.07 SHADE ELECTRONIC DRIVE SYSTEM

A. Electronic Drive Unit (EDU):

- 1. Physical Characteristics:
  - a. Tubular, asynchronous (nonsynchronous) motors, with built-in reversible capacitor operating at 120V ac (60-Hz), single-phase, temperature Class B, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each EDU.
  - b. Conceal EDU inside shade roller tube.
  - c. Maximum current draw for each shade EDU of 0.9 amps at 120V ac.
- 2. Functional Characteristics:
  - a. EDUs to include integrated control system configuration and communication capability.
  - b. EDUs shall be capable of daisy-chain wiring installation.
  - c. Use motors rated at the same nominal speed for all shades in the same room.
- 3. Performance Characteristics: Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly.

B. Control System:

- 1. Provide control system that supports two methods of control.
  - a. Manufacturers and Products:
    - 1) MechoSystems; WisperShade IQ2 System.
    - 2) Or equal.

2. Physical Characteristics:
  - a. Control system shall include the following:
    - 1) Local Dry Contact Control Inputs:
      - a) Upper and lower limit dry contact inputs.
      - b) Preset positions dry contact input.
    - 2) Splitter Module: One module per EDU, for interconnection of all EDUs, local switches, and master timer relays. Interconnection by means of standard Ethernet Cat 5e or Cat 6 cables and connectors.
    - 3) Support configuring the system under protected sequences so that a typical user would not change the setup. At a minimum, the configuration includes setting limits, setting custom presets, and configuring key modes of operation.
3. Functional Characteristics:
  - a. Upper and lower stopping points (operating limits) of shade bands shall be programmed into control system.
  - b. Alignment Positions: Each EDU shall support the required shade positions (including limits and presets) in a repeatable and precisely aligned manner.
    - 1) All shades on the same switch circuit with the same opening height shall align at each limit or preset (intermediate stopping position) when traveling from any position, up or down.
    - 2) Alignment of shades on adjacent EDUs shall not exceed plus or minus 0.25 inch when commanded to the same alignment position.
    - 3) Local Switch Presets: A minimum of three customizable preset positions shall be accessible over the local dry contact control inputs and over the network connection.
      - a) Upon setting the limits for the shade EDU these preset positions shall automatically default to 25 percent, 50 percent, and 75 percent of the shade travel.
      - b) These positions shall be capable of being customized to any position between and including the upper and lower limits of the shade. A removable program module/configurator or local switch shall be capable of customizing the position of these presets.
4. Performance Characteristics: None.

C. Wall Switches:

1. Physical Characteristics:
  - a. Five-button architectural flush mounted switches with metal cover plate and no exposed fasteners.
  - b. Connect local wall switches to control system components via low voltage (12V dc) Type 30 or Type 31 UTP eight-conductor cable

equipped with RJ-45 or RJ-11 type connectors supplied, installed, and certified under Division 26, Electrical.

2. Functional Characteristics: None.
3. Performance Characteristics: None.

## 2.08 ACCESSORIES

### A. Fascia:

1. Physical Characteristics:
  - a. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
  - b. Fascia shall fully conceal brackets, shade roller, and fabric on the tube.
  - c. Provide bracket/fascia end caps where mounting conditions expose outside of roller shade brackets.
  - d. Notching of fascia for manual chain not acceptable.
2. Functional Characteristics: None.
3. Performance Characteristics: None.

## **PART 3 EXECUTION**

### 3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Notify Contracting Officer of unsatisfactory preparation before proceeding.

### 3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the Project conditions.

### 3.03 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches to interior face of glass. Allow proper clearances for window operation hardware.
- B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

- C. Locate junction boxes and splitter modules, required for daisy-chain installation, above suspended ceiling.
- D. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

#### 3.04 TRAINING

- A. Installer to train Contracting Officer's maintenance personnel to adjust, operate, and maintain roller shade systems.

#### 3.05 PROTECTION

- A. Protect installed products until completion of Project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

#### 3.06 INSTALLATION SCHEDULE

- A. Install roller shades where indicated in Window Schedule as shown.

**END OF SECTION**

