

SECTION 124940
WINDOW ROLLER SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A.

Motorized shades

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Concealed wood blocking for mounting roller shades and accessories.
- B. Section 092116 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shades , fascias and related accessories.
- C. Section 095100 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shades, fascias and related accessories.
- D. Division 26 - Electrical for applicable Electrical Sections related to this Section.
- E. As this is a LEED NV v4 Project, refer to Section 018113 - Sustainable Design - Construction Requirements - LEED for Building Design and Construction v4 and Section 017419 - Construction Waste Planning and Management.

1.03 REFERENCE STANDARDS

- A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Where motorized shades are to be controlled by control systems provided under other sections, coordinate the work with other trades to provide compatible products.
 - 2. Coordinate the work with other trades to provide rough-in of electrical wiring as required for installation of hardwired motorized shades.
- B. Refer to Section 013000 - Administrative Requirements for requirements applicable to preinstallation meetings.
- C. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of all affected installers.
- D. Sequencing:
 - 1. Do not fabricate shades until field dimensions for each area/opening have been taken.
 - 2. Do not install shades until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories, including the following:
 - 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. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.
- C. Shop Drawings: Include plans, elevations, sections, details of installation, operational clearances, and relationship to adjacent work.
 1. Motorized Shades: Provide schematic system riser diagram indicating component interconnections. Include requirements for interface with other systems.
 2. Window Treatment Schedule: Use same room designations as indicated on Drawings and include opening sizes and key to typical mounting details.
- D. Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.
- E. Certificates for Motorized Shade System: Manufacturer's documentation that line voltage components are UL listed or UL recognized.
- F. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
- G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- H. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.
- I. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty-year 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 ten-year's experience installing products comparable to those specified in this section.
- C. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- D. 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. Individual testing of components will not be acceptable in lieu of system testing.
- E. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.
- F. Mock-Up: Provide a mock-up of one roller shade assembly for evaluation of mounting, appearance and accessories.
 1. Locate mock-up in window designated by Architect.
 2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.07 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 Drawings and in the Window Treatment Schedule.
- B. Handle and store shades in accordance with manufacturer's recommendations.

1.08 FIELD CONDITIONS

- A. Environmental Limitations: Do not install products under environmental conditions outside manufacturer's absolute limits.

- B. 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.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating twenty-five-year limited warranty.
- C. Standard Shadecloth: Manufacturer's standard twenty-five-year warranty.
- D. Roller Shade Motors and Motor Control Systems: Manufacturer's standard non-depreciating five-year warranty.
- E. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN

- A. Manufacturer and Type: MechoShade Systems, Inc. Contact:
Matthew Woods, Phone:704-293-5695; matthew.woods@mechosystems.com
 - 1. Motorized Shades: Mecho Whispershade IQ2+ w/ catch pin bracket and fascia.
 - a. Mounting: To be determined by architect.
 - b. Locations: Refer to plans for locations marked Motorized shades
 - c. Configuration: Single Solar shadecloth.
 - d. Shadecloths:
 - Fabric: ThermoVeil 1300 Series
 - Color: 1319 Silver Birch
 - 2. Single-Source Responsibility for Motorized Roller Shades: Design, engineering , and installation of motorized roller shade systems, motors, controls, and low voltage electrical control wiring specified in this Section shall be by a single manufacturer and their authorized installer/dealer. Architect will not produce a set of electrical drawings for the installation of control wiring for the motors or motor controllers of the motorized roller shades. Power wiring (line voltage) shall be provided in accordance with the requirements provided by the manufacturer. Coordinate the following with the Electrical Contractor and roller shade installer/dealer:
 - a. Contractor shall provide power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements, as indicated on the mechanical and electrical drawings.
 - b. Contractor shall coordinate with requirements of roller shade installer/dealer before inaccessible areas are constructed.
 - c. Electrical contractor shall run line voltage as dedicated home runs (of sufficient quantity, in sufficient capacity as required) terminating in junction boxes in locations and provide and run low voltage control wiring from motor controllers to switch/control locations designated by the Architect. All above-ceiling and concealed wiring shall be plenum-rated, or installed in conduit, as required by the electrical code having jurisdiction designated by roller shade dealer.
 - d. Roller shade installer/dealer shall provide and run all line voltage (from the terminating points) to the motors and program motors for operation.
 - e. Contractor shall provide conduit with pull wire in all areas, which might not be accessible to roller shade contractor due to building design, equipment location or schedule
- B. Substitutions:
None

2.02 MATERIALS

- A. Shade Bands: 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.
1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
 2. Shade Band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
 - b. Provide for positive mechanical engagement with drive / brake mechanism.
 - c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" "snap-off" spline mounting, without having to remove shade roller from shade brackets.
 - d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.
- B. Shade Fabrications:
1. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
 2. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
 3. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.
 4. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.
 5. Blackout shadebands, when used in side channels, shall have horizontally mounted, roll-formed stainless steel or tempered-steel battens not more than 3 feet (115 mm) on center extending fully into the side channels. Battens shall be concealed in an integrally-colored fabric to match the inside and outside colors of the shadebands, in accordance with manufacturer's published standards for spacing and requirements.
 - a. Battens shall be roll formed of stainless steel or tempered steel and concave to match the contour of the roller tube.
 - b. Batten pockets shall be self-colored fabric front and back RF welded into the shadecloth. A self-color opaque liner shall be provided front and back to eliminate any see through of the batten pocket that shall not exceed 1-1/2 inches (38.1 mm) high and be totally opaque. A see-through moire effect, which occurs with multiple layers of transparent fabrics, shall not be acceptable.

2.04 MOTOR OPERATED SHADES

- A. Shade Motors:
1. Tubular, asynchronous (non-synchronous) motors, with built-in reversible capacitor operating at 110v AC (60hz), single phase, temperature Class A, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each motor.
 2. Conceal motors inside shade roller tube.
 3. Maximum current draw for each shade motor of 2.3 amps.
 4. Use motors rated at the same nominal speed for all shades in the same room.
 5. Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly.
- B. Motorized Shade Hardware and Shade Brackets:
1. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade.
 2. Provide shade hardware system that allows for field adjustment of motor or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside, or outside mount).
 3. Provide shade hardware system that allows for operation of multiple shade bands offset by a maximum of 8-45 degrees from the motor axis between shade bands (4-22.5 degrees) on each side of the radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).
- C. Motor Control System:
1. Performance Requirements:
 - a. Quiet operation of up to 46dBa within 3 feet (1 m), open air.
 - b. Upper and lower stopping points (operating limits) of shade bands shall be programmed into motors via a hand held removable program module / configuration.
 - c. Intermediate stopping positions for shades shall allow for up to three repeatable and precise aligned positions.
 - d. Up to 103 available alignment points including 3-user programmable predefined intermediate positions, for a total of 5-defined and aligned positions. All shades on the same switch circuit with the same opening height shall align at each intermediate stopping position.
 - e. Two inherent methods of control:
 - 1) Cost effective, low voltage, hardwired dry-contact for local switch or 3rd party control operation.
 - 2) Expandable to 2-way communication network with IQ/485-NI to support whole building low-voltage control and integration.
 - f. Mecho-RF(TM) via Zigby(TM) wireless mesh, network communication available to reduce low voltage wiring and field labor associated costs.
 - g. Uniform or Regular Modes of Operation:
 - 1) Uniform mode shall allow for shades to only move to intermediate stop positions.
 - 2) Regular mode shall allow for shades to move to both intermediate stop positions, plus any position desired between the upper and lower limits as set by the installer.
 - h. MechoNet Wireless Controller MWC9-EN01-TP-WH or MWC9-EN01-PP-WH
 - i. MechoNet Wireless Daylight Sensor WDS9-EN01-TP
 2. Wall Switches:
 - a. IQ-Switch: in 5 or 10 buttons, single gang, low voltage.
 - b. Intelligent switches may be installed anywhere on the busline. Each IS shall be capable of storing one control level address to be broadcast along the busline.
 - c. An address that is transmitted by either a switch or central controller shall be responded to by those motors with the same address in their control table.

- d. IS shall provide for interface with other low voltage input devices via a set of dry contact terminals located on the switch.
- e. Standard switch or IS may control an individual, sub-group or group of motors in accordance with the address in each motor.

2.05 ACCESSORIES

- A. Fascia / Pockets, Closure and Mounts:
 - 1. Continuous removable extruded aluminum Pocket with Closure that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 - 2. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 - 3. Fascia shall be able to be installed across two or more shade bands in one piece.
 - 4. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 - 5. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
 - 6. Notching of fascia for manual chain shall not be acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive roller shades to assure surfaces have been properly prepared. .
- 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. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

END OF SECTION