

SECTION 12 24 13
ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 DESCRIPTION

Roller cloth shades and motorized operators are specified in this section. Window shades shall be furnished complete, including brackets, fittings and hardware. Reuse existing controls. Provide shade manufacturer from 5th floor project; MechoShade Systems, Inc., Long Island City, NY, no substitutions.

Install roller window shade interface at 5th floor controller.

Include roller window shade control interface software on the DDC laptops and provide cable to interface with roller window shade system controller. Provide training on operation of software for roller window shade operations.

1.2 QUALITY CONTROL

- A. Design, engineering, and installation of motorized roller shade systems, motors, controls, and low voltage electrical control wiring specified in this Section shall be from a single manufacturer and its authorized installer/dealer.
- B. Fire-Test-Response Characteristics:
 - 1. Meet requirements of Fed. Spec. CCC C 521E for fire retardancy, NFPA 701 Small Scale and NFPA 701 Large Scale requirements.
 - 2. Meet requirements of ASTM E 84 90 for the following: Flame Spread 17, Smoke Density Index 118.
- C. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC 9645.
- D. Shade cloth seconds or shade cloth manufactured using reprocessed materials are not acceptable.

1.3 SUBMITTALS

- A. Submit according to Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Shade cloth, each type, 600 mm (24 inch) square, showing color, finish and texture.
- C. Manufacturer's literature and data; showing details of construction and hardware for:
 - 1. Cloth and window shades
 - 2. Motorized Shade Operators: Include operating instructions.

3. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.
- D. Shop Drawings: Submit shop drawings indicating location and extent of roller shades, opening sizes, tolerances required, installation of shade at window opening, method of attachment, clearances and operation.
 1. Motorized Shade Operators: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
 2. Wiring Diagrams: Power, system, and control wiring.
- E. Manufacturer's Certificate:
 1. Certificate that products of this Section match that used on the previously completed, 5th floor project.

1.4 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
B221/B221M-07Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Shade Cloth: Visually transparent single-fabric shade cloth, 0.010 diameter non-raveling vinyl/polyester yarn, fabric thickness 0.025 inches; extra dense twill weave, 2-3 percent openness; 16.0 ounce per square foot weight; no mildew growth per GM9309-P; no microbial growth per G21-02; 343 lbf warp and 122 lbf fill tensile strength per ASTM D5035; color to match 5th floor; MechoShade's "ThermoVeil 1000 Series."
- B. Staples: Not permitted.
- C. Extruded Aluminum: ASTM B221/B221M.
- D. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.
- E. Shade Hardware
 1. Provide shade hardware allowing for 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 shade bands without having to remove shade tube, drive or operating support brackets.
 3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.
- F. Roller Shade Pocket for Recessed Mounting in Acoustical Tile, or Drywall Ceilings: Provide extruded aluminum shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable bottom closure panel sized appropriately to provide access to shades; white color.
1. Provide "Vented Pocket" such that there will be a minimum of four 1 inch diameter holes per foot allowing solar gain to flow above ceiling line; unless indicated otherwise.

2.2 SHADE BANDS

- A. Construction of shade band includes fabric, hem weight, hem-pocket, shade roller tube, and attachment of shade band to roller tube. Sewn hems and open hem pockets are not acceptable.
- B. 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.
- C. Shade Band and Shade Roller Attachment:
 1. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection.
 2. Provide for positive mechanical engagement with drive / brake mechanism.
 3. 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.

2.3 MOTORIZED DRIVE COMPONENTS

- A. Motorized Shade Hardware and Shade Brackets:
 1. Provide shade hardware constructed of minimum 1/8-inch thick plated steel, or heavier, thicker, as required to support 150 percent of 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 motor axis between shade bands (4-22.5 degrees) on each side of radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).
- B. Motorized System: Tubular asynchronous and concealed inside an extruded aluminum tube with asymmetrical channels to which shade and mounting spline are affixed. Internal limit switches shall be readily removable without having to remove motor or shade tube assembly. Provide MechoShade's "ElectroShade, Electro/3."
- C. Control System: Interface with Owner's existing system. Provide new components as required for operable system; including a manual switch override. Provide a four-zone system; northeast, southeast, northwest, and southwest zones. Provide MechoShade System's PC-based "AAC SolarTrac Window Management System" with "AAC Brightness Override Module" and "Shadow Override." Each zone will be individually addressable. Reuse existing roof-mounted radiometer. Provide remote access software to enable performance monitoring from remote location. VA will provide the desktop PC.
- D. Wall Switches:
1. Six-button architectural flush mounted switches with metal cover plate and no exposed fasteners. Provide one wall switch per room unless indicated otherwise.
 2. Connect local wall switches to control system components via low voltage (12V DC) 4-conductor modular cable equipped with RJ-11 type connectors supplied, installed and certified under Division 26 - Electrical.
 3. Connect master wall switches to control system components via low voltage (12V DC) 6-conductor modular cable equipped with RJ-12 type connectors supplied, installed and certified under Division 26 - Electrical.

2.4 FABRICATION

- A. Fabricate cloth shades to fit measurements of finished openings obtained at site from head to sill and jamb-to-jamb.

B. Cloth Window Shades: Rolling type, constructed of shade cloth mounted on rollers. Shade cloth shall have plain sides, and with hem at bottom to accommodate wood slat. Separate shades are required for each individual sash within opening. Length of shades shall exceed height of window approximately 300 mm (12 inches) measured from head to sill, in addition to material required to make-up hem:

1. Provide rollers with spindles, nylon bearings, tempered steel springs, and all other related accessories required for positive action. Provide rollers of diameter recommended by shade manufacturer. Roller tubes less than 2.55 inches for motorize shades are not acceptable.
2. Fasten/adhere shade cloth to extruded aluminum rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade will hang plumb. Use of adhesive, adhesive tapes, staples, rivets, and tacks is prohibited.
3. Wood slats shall be smooth, tapered, and inserted in the bottom hem of the shade cloth.
4. Eyelets shall have clear openings large enough to accommodate chains. Edges of eyelets shall not cut into cloth when set.

C. For railroaded shade bands, provide seams in railroaded multi-width shade bands as required to meet size requirements and according to seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when width, height, or weight of shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure proper tracking of railroaded multi-width shade bands.

D. 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 shade bands.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive work. Do not commence fabrication until field measurements are confirmed.
- B. Ensure structural supports are correctly placed. Provide necessary measurements and templates to window manufacturer to prepare for shade installation.

- C. Ensure cut-outs and preparatory work is done correctly. Ensure power panels and circuits of sufficient size and proper type(s) to accommodate roller shade requirements. Correct discrepancies which would affect proper installation and operation of shade system. Install after discrepancies are corrected.
- D. Beginning of installation means acceptance of substrate and existing conditions.

3.2 INSTALLATION

- A. Cloth Window Shades: Mount window shades on end of face brackets, set on metal gussets, or casing of windows as required, located so shade band is not closer than 2 inches to interior face of glass. Provide extension face brackets where necessary at mullions.
- B. Locate rollers in level position as high as practicable at heads of windows to prevent infiltration of light over rollers.
- C. Where extension brackets are necessary, on mullions or elsewhere, for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.
- D. Place brackets and rollers so that shades will not interfere with window and screen hardware.
- E. Shade installation methods not specifically described, are subject to approval of Resident Engineer.

3.3 CLEANING AND PROTECTION

- A. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- B. Clean shade surfaces just prior to occupancy.
- C. 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.
- D. Replace damaged roller shades that cannot be repaired, in a manner approved by Resident Engineer before time of Substantial Completion.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to commission installation and to train Owner's maintenance personnel to adjust, operate, and maintain roller shades. Provide 16 hours of service.

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