

SECTION 12 24 00
WINDOW SHADES

SPEC WRITER NOTE: Delete between // // if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section includes cloth shades, vertical blinds and venetian blinds. Provide window shades complete, including brackets, fittings and hardware.

1.2 RELATED WORK:

- A. Color of //shade cloth // // and color of exposed parts of venetian blinds, (including tapes and cords) // // and color of vertical blinds //: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Lightproof Shades: Section 12 24 21, LIGHTPROOF SHADES.

1.3 QUALITY ASSURANCE:

- A. Manufacturer's Qualification: Submit evidence that the manufacture has a minimum of three (3) years' experience in providing item of type specified, and that the blinds have performed satisfactorily on similar installations. Submit qualifications.
- B. Submit qualifications for installers who are trained and approved by manufacturer for installation of units provided.
- C. Electrical Requirements:
 - 1. NFPA 70 Article 100.
 - 2. Listed and labeled in accordance with UL 325.
 - 3. Marked for intended use, and tested as a system.
 - 4. Individual testing of components is not acceptable in lieu of system testing.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - //1. Shade cloth, each type, 610 mm (24 inch) square, including cord and ring, showing color, finish and texture. //
 - //2. Vertical blind slats, 305 mm (12 inches) long, including chain and supporting channels, showing color and finish. //

- //3. Venetian blind slats, 305 mm (12 inches) long, including cord and tape, showing color and finish. //
- C. Manufacturer's literature and data; showing details of construction and hardware for:
- // Cloth and window shades //
- // Vertical blinds //
- // Venetian blinds //
- //D. Shop Drawings: Provide fabrication and installation details for cloth shades, including shade cloth materials, their orientation to rollers, and their seam and batten locations.
- //1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.// //
- E. Fire Testing: Submit report of flame spread and smoke developed during product material tests by independent testing laboratory.
- F. Manufacturer's warranty.

1.5 WARRANTY:

- A. Construction Warranty: Comply with FAR clause 52.246-21, "Warranty of Construction".
- B. Manufacturer Warranty: Manufacturer shall warranty their window shades for a minimum of five (5) // // years from date of installation and final acceptance by the Government. Submit manufacturer's warranty.

1.6 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. Federal Specifications (Fed. Spec.):
- AA-V-00200B.....Venetian Blinds, Shade, Roller, Window, Roller, Slat, Cord, and Accessories
- C. ASTM International (ASTM):
- A240/A240M-14.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- B221-14.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- B221M-13.....Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
- G21-13.....Determining Resistance of Synthetic Polymeric Materials to Fungi

- D. National Electric Manufacturer's Association (NEMA):
ICS 6-93(R2006).....Industrial Control and Systems Closures
- E. National Fire Protection Association (NFPA):
70-14.....National Electrical Code (NEC)
701-15.....Fire Tests for Flame Propagation of Textiles
and Films
- F. Underwriters Laboratories Inc. (UL):
325-06(R2013).....Door, Drapery, Gate, Louver, and Window
Operators and Systems

PART 2 - PRODUCTS

SPEC WRITER NOTE: Update material requirements to space with applicable requirements (types, grades, classes, and other related items) specified in the referenced Applicable Publications.

2.1 CLOTH SHADES:

- A. Light-Filtering Shade Cloth: Woven fabric, stain and fade resistant.
1. Type: // //.
 2. Weave: // Mesh // // Basketweave //.
 3. Thickness: // //.
 4. Weight: // // grams per square meter (// // ounces per square yard).
 5. Orientation on Shadeband: // Up the bolt // // Railroaded //.
 6. Openness Factor: // 1 // // 3 // // 5 // // 10 // // 11 // // 22 //
// // percent.
 7. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Submit report for testing of shade cloth materials identical to products provided.
 8. Drive-End Location: // Right side of inside face of shade // // Left side of inside face of shade // // As indicated on construction documents //.
- //9. Shade Cloth Anti-Microbial Characteristics: 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC9677, and ATCC9645. //
- //10. Cordless Shades: Provide roller containing spring operating mechanism sized to accommodate shade size indicated in construction documents. Provide with positive locking mechanism that can stop shade movement at each half-turn of roller and with manufacturer's standard pull.

- a. Pole: Manufacturer's standard type in length required to make operation convenient from floor level and with hook for engaging pull.
- //11. Motorized Operating System: Provide factory-assembled, shade-operator system of size and capacity and with features, characteristics, and accessories suitable for conditions indicated on construction documents, complete with electric motor and factory-prewired motor controls, power disconnect switch, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring for motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.
- a. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency and marked for intended location and application.
- b. Electric Motor: Manufacturer's standard tubular, enclosed in roller.
- 1) Electrical Characteristics: Single phase, // 24 // // 110 //
// 220 // V, 60 Hz.
- c. Remote Control: Electric controls with NEMA ICS 6, Type 1 enclosure for // surface // // recessed or flush // mounting. Provide the following for control activation of shades:
- //1) Wall mounted controls: // key pads // // switches //
// // // with hand held remote // that are able to electronically set and reconfigure shade open and close limits, shade preset positions, system groups and system subgroups at the control without rewiring and without access to the Electronic Drive Unit. //
- //2) Sun Sensor Controls: Programmable system activated by LEDs detecting daylight intensity and responding by automatically adjusting shades. //
- //3) Radio Controls: Digital system consisting of code-compatible universal coaxial receiver, // one (1) per shade and // two (2) // // // portable multiple-channel transmitters for operating up to // 2 // // 4 // // // shades individually, each with a single button to open and close shades. //
- //4) Infrared Controls: System consisting of concealed receiver complete with external eye and connecting modular cable, and

// two (2) // // // portable, multiple-channel transmitters with separate buttons to open and close up to // 12 // // // individual shades or groups of shades, to open and close all shades simultaneously, and to stop. //

//5) Timer Controls: Clock timer, // 24-hour // // 7 day // programmable. //

//6) // Provide switches that are adjustable and interlocked with motor controls and set to automatically stop the shade at fully raised and fully lowered positions. // // Provide low voltage switching. // //

//7) Operating Function: // Stop and hold shade at any position // // Stop and hold shade at open, midpoint, and closed positions // // Stop and hold shade at 3 predetermined positions including open, closed, and user-programmed position // // Stop and hold shade at 5 pre-determined positions including open, closed, and 3 user-programmed positions //. //

8) Provide the following options: // Group switching with integrated switch control; single face plate for multiple switch cut-outs. // // Capable of interface with // audiovisual // // multi-room // control system // // Capable of accepting input from building automation control system // // Override switch // // Backup gear and crank operator for manual operation during power failures with detachable handle, // 1.8 m (6 feet) long // // length required to make operation convenient from floor level // // Power failure memory for the life of the systems which protects presets //.

2.2 VENETIAN BLINDS:

- A. Fed. Spec. AA-V-00200B, // Type I, 51 mm (2 inch slat) // Type II, 25 mm (1 inch slats) // fabricated of aluminum. Pre-production sample is not required.
- B. Manual Lift-Operator and Tilt-Operator Locations: // Manufacturer's standard // // Right side and left side of headrail, respectively, // // Left side and right side of headrail, respectively, // // as indicated on construction documents //.

2.3 VERTICAL BLIND LOUVER BLADES:

- A. Provide vanes of // manufacturer's standard // // PVC-coated fiberglass mesh // // PVC-coated polyester mesh // free-hanging fabric with hemmed, nonraveling edges; stain and fade resistant.
- B. Provide louvers with a flame resistance rating complying with NFPA 701.

SPEC WRITER NOTE: Internal shades or blinds between windows panes are required at Mental Health and Behavioral Care Units.

//2.4 VENETIAN BLINDS AND SHADES ENCLOSED IN WINDOWS // FOR MENTAL HEALTH AND BEHAVIORAL CARE UNITS:

- A. Provide internal shades or blinds between windows panes where indicated on construction documents.
- B. Operating cords or ropes are not acceptable.
- C. Provide hardware flush with window frame.
- D. Provide tamperproof hardware. //

2.5 MATERIALS:

- A. Stainless Steel: ASTM A240/A240M.
- B. Extruded Aluminum: ASTM B221M (B221).
- C. Cords for // Venetian Blinds // // Cloth roller shades //: // No. 4 braided nylon or No. 4-1/2 braided cotton // // or #10 stainless steel chain // having not less than 80 kg (175 pounds) breaking strength.

2.6 FASTENINGS:

- A. Zinc-coated or cadmium plated steel or stainless steel fastenings of length and type recommended by manufacturer. Except as otherwise specified, provide fastenings for installation with various structural materials as follows:

Type of Fastening	Structural Material
Wood screw	Wood
Tap screw	Metal
Case-hardened, self-tapping screw in pre-drilled hole	Solid masonry, concrete
Screw or bolt in expansion shields	Solid masonry, concrete
Toggle bolts	Hollow blocks, gypsum wallboard, plaster

2.7 FABRICATION:

- A. Fabricate // cloth shades // // venetian blinds // // vertical blinds // to fit measurements of finished openings obtained at site.
- B. Cloth Shades: Rolling type, constructed of shade cloth mounted on rollers. Provide shade cloth with plain sides, and with hem at bottom to accommodate weight bar.
 - 1. Provide separate shades for each individual sash within opening. Provide shade length that exceeds height of window by 305 mm (12 inches) measured from head to sill, in addition to material required to make-up hem:
 - a. Provide rollers with spindles, nylon bearings, tempered steel springs, and other related accessories required for positive action.
 - b. Provide rollers of diameter and wall thicknesses required to accommodate operating mechanisms, weights, and widths of shadebands indicated without deflection.
 - c. Provide rollers with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
 - d. Secure shade cloth to rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade hangs plumb.
 - e. Secure shade cloth with zinc-coated steel or stainless steel machine screws spaced not over 228 mm (9 inches) on centers.
 - f. Do not attach shade cloth to rollers with tacks.
 - g. Provide hem bar of extruded aluminum for entire width of shade band. Heat seal hem bar on all sides to prevent removal.
 - h. Provide eyelets with clear openings large enough to accommodate cords, without cutting into cloth when set.
 - i. Provide cords of sufficient length to permit shades to be drawn to bottom of opening with ends looped and held with cord rings. Attach cords to hems through metal eyelets in center of slats in bottom hems.
- C. Venetian Blinds: Provide venetian blinds with // 25 mm (1 inch) // // 51 mm (2 inch) // width horizontal slats positioned within ladder tapes. Provide multiple blinds of same type in openings and divided at mullions.

1. Provide head-rails that enclose operating mechanism on three sides and ends.
 2. Provide enclosed bottom rails that prevent contact of tapes and sill at underside.
 - //3. In lobbies, provide aluminum bottom rails and head boxes. //
 4. Finish concealed metal work of head-rails including concealed mechanism, with one (1) shop coat of paint. Do not paint parts that have non-rusting finish, or parts where motion of friction occurs.
- D. Vertical Blinds: Provide traversing type with rotating louvers positioned between window head and sill rails. Include hardware, brackets, anchors, fastenings and accessories.
1. Provide head and sill rails of one (1) piece, extruded aluminum, full length with capped ends.
 2. Finishes:
 - a. At concealed surfaces, apply manufacturer's standard finish.
 - b. At exposed surfaces, provide a // baked-on enamel // // clear anodized // // color anodized // // // finish.
 3. Provide carrier trucks for head and sill rails for each louver blade, with two (2) aluminum or steel ball bearing wheels, mounted on acetal resin axles.
 - a. Provide mechanism to hold louvers fixed until reset by control.
 - b. Provide stainless steel, full hard, flexible spacer links to space and stabilize each truck by passing smoothly between stabilizer guides on each truck.
 - c. Do not provide glides or sliders.
 - d. Provide louvers that traverse at any angle without binding.
 4. Keep louvers taut between head and sill rails with a minimum of 0.45 Kg (1 pound), to a maximum of 1.13 Kg (2-1/2 pounds) of spring tension.
 5. Provide traversing by split draw, accomplished by anodized aluminum, spiral lead screw extending the full length of the channel, actuating a lead nut, and controlled by a nickel plated brass or stainless steel bead chain.
 - a. Arrange blinds to pack when traversed to not more than 11 mm (7/16-inch) per louver plus space for end caps and end spacer tubes.
 6. Overlap louvers not less than 10 mm (3/8-inch).

7. Manufacture louvers to operate manually in opposite direction from normal traverse, and fasten end louver by friction spacer or anti-creep pin.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Measure openings before fabrication. Do not scale construction documents.
- B. Cloth Shades: Mount window shades on end of face brackets, set on metal gussets, or casing of windows as required. Provide extension face brackets where necessary at mullions. // In existing buildings, provide brackets similar to those on existing windows.//
 1. Locate rollers in level position as high as practicable at heads of windows.
 2. Install shades to prevent infiltration of light over rollers.
 3. Where extension brackets are necessary for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.
 4. Place brackets and rollers so that shades do not interfere with window and screen hardware.
 - //5. Mount shades at wire mesh window guards on head rails of hinged frame. //
 - //6. Mount shades at detention, or protection screens on room side of head rail hinged frame, with face brackets located approximately 38 mm (1-1/2 inches) from outside edges. //
 - //7. Mount shade to allow clearances for window operation hardware. //
 - //8. Electrical Connections: Connect motor-operated shade cloth roller shades to building electrical system. //
 9. Shade installation methods not specifically described, are subject to approval of Contracting Officer Representative (COR).
- B. Venetian Blinds: Support blinds in level position by brackets and intermediate supports that -permit easy removal and replacement of units without damage to blind, or adjacent surfaces. Provide at least two (2) fasteners for each bracket or other support.
 1. Install blinds between jambs on window openings with steel trim. Mount brackets on trim reveal, flush with face of trim and secure with steel screws.
 2. Install blinds between jambs on window openings with wood trim. Mount brackets on trim or on wood plaster-mold set against plaster or other wall finish, and secure in place.

3. Mount brackets and intermediate supports of lobby blinds on face of trim members, and secure with stainless steel standard tap or thread-forming machine screws, or by cadmium-plated molley or toggle bolts. Penetrate screws and bolts through, and lock behind steel sub-frame.
4. Where blinds abut glass partitions of vestibules, extend head rails to trim at head of partition frame with slats sufficiently long to clear transom bars.
5. Furnish one (1) brush of an approved type for every 50 blinds provided, suitable for cleaning blinds.

C. Vertical Blinds:

1. Support blinds in level position that will permit easy removal and replacement of units without damage to blind or adjacent surfaces. Provide at least one (1) fastener for each 508 mm (20 inches) of width, with end screws maximum of 76 mm (3 inches) from end.

3.2 ADJUSTING:

- A. Adjust and shades to operate smoothly, free from binding or malfunction throughout entire operational range.

3.3 CLEANING AND PROTECTION:

- A. Clean shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions that ensure that shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged shades that cannot be repaired, in a manner approved by COR before time of Substantial Completion.

//3.4 DEMONSTRATION:

- A. Furnish services of factory-authorized service representative to train maintenance personnel to adjust, operate, and maintain motorized shade operation systems. //

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