

**SECTION 12 24 00
WINDOW SHADES**

 SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. 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. //Cloth shades, // vertical blinds // and venetian blinds // are specified in this section. Window shades must be furnished 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.

1.3 QUALITY CONTROL

- A. Manufacturer's Qualification: Provide evidence that the manufacture of blinds are a major product, and that the blinds have performed satisfactorily on similar installations.

1.4 SUSTAINABILITY REQUIREMENTS

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 13, SUSTAINABLE DESIGN REQUIRMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // _____// requirements.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
- //1. Shade cloth, each type, 600 mm (24 inches) square, including cord and ring, showing color, finish and texture.//
 - //2. Vertical blind slats, 300 mm (12 inches) long, including chain and supporting channels, showing color and finish.//
 - //3. Venetian blind slats, 300 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:

//1. Cloth and window shades.//

//2. Vertical blinds.//

//3. 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.

1.6 WARRANTY:

A. Construction Warranty: Comply with FAR clause 52.24621, "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.

1.7 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society for Testing and Materials (ASTM):

A167-99(2014)	Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
B221-21	Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
D635-22	Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position

D648-18 Deflection Temperature of Plastics Under
Flexural Load in the Edgewise Position

C. National Fire Protection Association (NFPA):

70-23 National Electrical Code (NEC)
701-23 Fire Tests for Flame Propagation of Textiles
and Films

PART 2 - PRODUCTS

SPEC WRITER NOTES:

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

2.1 SHADE CLOTH MATERIALS

A. Light-Filtering Shade Cloth: Woven Fabric, Stain and Fade Resistant

1. Type: // Single Roller // Double Roller.//
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: //0 // // 1 // // 3 // // 5 // // 10 //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. Accessories:
 - a. Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners.
 - b. Color: As selected by Architect from Manufacturer's full range.
- //10. Shade Cloth Anti-Microbial Characteristics: 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC9677, and ATCC9645. //
- //11. 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.

//12. 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 //.

B. Cords for Roller Shades: #10 stainless steel, continuous loop beaded ball chain, having not less than 80 kg (175 pounds) breaking strength.

C. Stainless Steel: ASTM A167.

D. Extruded Aluminum: ASTM B221.

2.2 VENETIAN BLINDS

A. //50 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 // // Left side and right side of headrail// // as indicated on construction documents //.
- C. Cords for Venetian Blinds: No. 4 braided nylon or No. 4-1/2 braided cotton having not less than 175 pounds breaking strength.
- D. Color as selected by Architect from Manufacturer's Full Range.

2.3 VERTICAL BLIND LOUVER BLADES

- A. Rigid polyvinyl chloride, light stable, not less than 0.6 mm (0.025 inch) thick, 90 mm (3-1/2 inches) wide, and with beaded edges on each side of not less than 1.2 mm (0.050 inch).
- B. Louvers to withstand 80°C (180 degrees F) head chamber for thirty minutes without distortion, shrinkage, or stretching for no more than one half of one percent as tested by ASTM D648.
- C. Louvers to be opaque and of plain finish, and permanently flame retardant as tested by ASTM D635.
- D. Color as selected by Architect from Manufacturer's Full Range

2.4 FASTENINGS

- A. Zinc-coated or cadmium plated metal, aluminum or stainless steel fastenings of proper length and type.
- B. Except as otherwise specified, provide fastenings for use with various structural materials as follows:

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

2.5 FABRICATION

- A. Fabricate // cloth shades // venetian blinds // vertical blinds // to fit measurements of finished openings obtained at site.
- B. Cloth Window Shades:
 1. Rolling type, constructed of shade cloth mounted on rollers.

2. Shade cloth to have plain sides, and with hem at bottom to accommodate weighted hem bar.
3. Separate shades are required for each individual sash within opening.
4. Length of shades to exceed height of window approximately 300 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 all other related accessories required for positive action.
 - b. Provide rollers of diameter recommended by shade manufacturer.
 - c. Secure shade cloth to aluminum rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade will hang plumb. Do not use tacks or staples.
 - d. Secure shade cloth with zinc-coated steel or stainless steel machine screws spaced not over 228 mm (9 inches) on centers.
 - e. Provide hem bar of extruded aluminum for entire width of shade band. Heat seal hem bar on all sides to prevent removal.
 - g.
 - h. Continuous loop beaded ball chain to be of sufficient length to permit shades to be drawn to bottom of opening with ends looped and secured to wall with hooks.

C. Venetian Blinds:

1. Venetian blinds to have // 25 mm (1 inch) // 50 mm (2 inch) // width horizontal slats positioned within ladder tapes.
2. Multiple blinds in openings are to be of same type and divided at mullions.
3. Head-rails to fully enclose operating mechanism on three sides and ends.
4. Bottom rails to be fully enclosed to prevent contact of tapes and sill at underside.
5. Finish concealed metal work of head-rails including concealed mechanism, with one shop coat of paint. Do not paint parts that have non-rusting finish, or parts where motion of friction occurs.

D. Vertical Blinds: Traversing type with rotating louvers positioned between window head and sill rails, and including hardware, brackets, anchors, fastenings and accessories.

1. Provide one piece, extruded aluminum head and sill rails, full length with capped ends.
 - a. Provide manufacturer's standard finish for concealed surfaces.
 - b. Match finish on windows for exposed surfaces.
2. Provide carrier trucks for head and sill rails for each louver blade, with two, aluminum or steel, ball bearing wheels, mounted on acetal resin axles.
3. Louvers to be held fixed until reset by control.
4. Stainless steel, full hard, flexible spacer links to space and stabilize each truck by passing smoothly between stabilizer guides on each truck; no glides or sliders not allowed.
5. Louvers to traverse at any angle without binding.
6. Louvers to be kept taut between head and sill rails with a minimum of one to a maximum of 1 Kg (2-1/2 pounds) of spring tension.
7. Traversing to be split draw and accomplished by an 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; blinds must pack when traversed to not more than 11 mm (7/16-inch) per louver plus space for end caps and end spacer tubes.
8. Louvers to overlap not less than 9 mm (3/8-inch).
9. Louvers to operate manually in opposite direction from normal traverse, and end louver must be firmly fixed by a friction spacer or anti-creep pin.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Measure all openings before fabrication. Do not scale construction drawings.
- B. Cloth Window 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 to prevent infiltration of light over rollers.
 2. Where extension brackets are necessary, on mullions or elsewhere, for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.

3. Place brackets and rollers so that shades will not interfere with window and screen operation hardware.
 4. //Mount shades at wire mesh window guards on head rails of hinged frame. //
 5. //Mount shades at detention, or protection screens on head rail (room side) of hinged frame, with face brackets located approximately 38 mm (1-1/2 inches) from outside edges. //
 6. //Electrical Connections: Connect motor-operated shade cloth roller shades to building electrical system.//
 7. Shade installation methods not specifically described, are subject to approval of COR.
- C. Venetian Blinds: Support blinds in level position by brackets and intermediate supports that will permit easy removal and replacement of units without damage to blind, or adjacent surfaces. Provide at least two 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 with screws.
 3. Mount brackets and intermediate supports of 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 through and lock screws and bolts 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. Provide one brush (for each 1 to 50 blind) of an approved type, 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.
 2. Provide at least one fastener for each 500 mm (20 inches) of width, with end screws maximum of 75 mm (three inches) from end.

3. Protect vertical blinds against defacements, warpage of slats, or bending of rails. Remove and replace warped or damaged slats, or bent rails.
4. Repair scratches or other defacements at the Contractor's expense and as approved by the COR.

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.

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