

**SECTION 08 56 66  
DETENTION WINDOW SCREENS**

SPEC WRITER NOTE: Delete text between  
// \_\_\_\_\_ // not applicable to project.  
Edit remaining text to suit project.

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

SPEC WRITER NOTE: See VA Architectural  
Design Manual 4.11 for guidance on  
permitted uses of detention screens and  
security screens.

- 1. Detention screens for interior and exterior installations at exterior windows in existing buildings.

SPEC WRITER NOTE: See VA Program Guide  
PG-18-3, Topic 14 for guidance on  
security screens required locations.

- 2. Security screens for exterior windows.

**1.2 RELATED REQUIREMENTS**

SPEC WRITER NOTE: Update and retain  
references only when specified elsewhere  
in this section.

- A. Finish Color: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Sustainability Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. American Welding Society (AWS):  
D1.1/D1.1M-15.....Structural Welding Code - Steel
- C. ASTM International (ASTM):  
A653/A653M-20.....Steel Sheet, Zinc-Coated (Galvanized) or  
Zinc-Iron Alloy-Coated (Galvannealed) by the  
Hot-Dip Process  
A780/A780M-09(2015).....Repair of Damaged and Uncoated Areas of Hot-Dip  
Galvanized Coatings
- D. Master Painters Institute (MPI):

No. 18.....Primer, Zinc Rich, Organic

**1.4 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and fabrication and installation details.
  - 2. Indicate anchorage details and door operator clearance requirements.
  - 3. Details: Drawn 1/2 full scale.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
- D. Sustainable Construction Submittals:

SPEC WRITER NOTE: Retain sustainable construction submittals appropriate to product.

- 1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
- E. Certificates: Indicate products comply with specifications.
  - 1. Wire cloth.
- F. Qualifications: Substantiate qualifications comply with specifications.
  - 1. Manufacturer.

**1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  - 1. Experienced and specializing in manufacturing detention and security screens.
  - 2. Minimum three years documented experience manufacturing products specified in this section.
- B. Welders and Welding Procedures Qualifications: AWS D1.1/D1.1M.
- C. Mockups:
  - 1. Prepare full sized mockup of each screen assembly including wire cloth, perimeter frame, and hardware.
  - 2. Approved mockups may be incorporated into project.

**1.6 WARRANTY**

SPEC WRITER NOTE: Always retain construction warranty. FAR includes

Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Wire Cloth: Woven wire, double crimped.
  - 1. Wire: 0.7 mm (0.028 inch) diameter Type 304 stainless steel with 15 kg/mm (800 pounds per lineal inch) tensile strength.
  - 2. Mesh: 12 x 12 per 25 mm (in.).
- B. Screen Framing: ASTM A653/A653M; A90 galvanized sheet steel.

**2.2 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide each product from one manufacturer.
- C. Sustainable Construction Requirements:

SPEC WRITER NOTES:

- 1. Specify products containing greatest recycled content practicable to maximize material recovery. See EPA Comprehensive Procurement Guidelines (CPG) for guidance about individual products and available recycled content. Section 01 81 13 sets overall project recycled content requirements.
- 2. Steel recycled content depends upon furnace type. AISC reports industry wide 32 percent for basic oxygen furnace and 93 percent for electric arc furnace.

- 1. Steel Recycled Content: 30 percent total recycled content, minimum.

SPEC WRITER NOTE: Specialty Steel Industry of North America (SSINA) reports average 75 - 85 percent recycled content for stainless steel.

- 2. Stainless Steel Recycled Content: 70 percent total recycled content, minimum.

**2.3 HARDWARE**

- A. Operating Hardware: Extra heavy-duty type.
- B. Locks: Concealed locking system consisting of one, bit-key operated locking mechanism with minimum of two operable bolts.

- C. Lock Bolts: Concealed 13 mm (1/2 inch) diameter case-hardened steel.
  - 1. Locate bolts near top and bottom of screen.
  - 2. Design bolts to engage adjustable strike or keepers in sub-frame.
- D. Cylinder: Steel construction bit key including three brass tumblers having beryllium copper springs.
- E. Lock Case: Two-piece, steel construction having three brass pedestal bearing supports attached to lower half of case to support slide bar, tumblers, case and cover. Fabricate slide bar from steel with hardened steel guide tumbler block.
- F. Bit Key: Forged steel or solid bronze with chromium or cadmium plated finish; non-removable, except when lock bolts are extended.
  - 1. // Key locks alike. // Design locks allowing operation by existing attendant's key established for the VA Medical Center. //

SPEC WRITER NOTE: Insert quantity of keys requested by Contracting Officer's Representative in subparagraph below.

- 2. Provide // \_\_\_\_\_ // bit keys.

#### **2.4 FABRICATION - GENERAL**

- A. Fabricate screens without the use of muntins, allowing units to be mounted flush with surrounding construction.
- B. Fabricate scribe members from 1.5 mm (0.06) thick sheet steel and install at head and jambs of openings.
- C. Where lightproof shade occurs, limit swing of screen to 90 degrees.
- D. Frames: Continuously weld corners of fixed and hinged frames, without outside reinforcements or projections. Finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
- E. Drill and tap fixed frames for adjustment against scribe members. Drill head rail of hinged frames on room side for installation of shade brackets. Locate holes on center line of rail, 38 mm (1-1/2 inches) outside edges of stiles.
- F. Reinforce frames lighter than 2.5 mm (0.10 inch) thick steel at locks and hinges with steel plates minimum 5 mm (3/16 inch) thick.
- G. Provide rubber cushion plugs (bumpers) on lock between fixed and hinged frames. Locate bumpers 150 mm (6 inches) from top and bottom on side of frame where lock bolts or slides occur.

SPEC WRITER NOTE: Delete following paragraph for interior screen units if building windows are not operable.

- H. Secure one piece metal tubular sleeve within hinged frame of units, to provide for passage of window operator crankshafts and crank handles specified in window specifications. Size internal diameter of sleeves to give a 3 mm (1/8 inch) clearance for socket and of crank handles. Flare sleeves uniformly (but not cut) at free end and to clear crankshafts when frame is swung open. Secure sleeves by either spot welding or concealed screws. Grind end of sleeve flush with frame. Round exposed edges of drilled hole in frame and dress smooth. Clearance between free end of sleeve and interior surface of frame (fixed or movable) may not exceed 1 mm (1/32 inch.).

SPEC WRITER NOTE: Revise paragraphs 2.5 & 2.6 for types of screens below as required.

## **2.5 FABRICATION - DETENTION WINDOW SCREENS**

- A. Provide wire screen retainer-clevises or coil compression spring shock absorbers approximately 200 mm (8 inches) on centers on four edges of wire cloth panel. Position screen panels within assembled hinged frame to provide a minimum of 8 mm (5/16 inch) free movement space at each edge. Adjust leaf-spring main clevis or coil-spring shock absorbers to permit minimum overall screen panel movement of 16 mm (5/8 inch) in both width and height.
- B. Interior Screen Unit - Type "A": Fixed sub-frame of minimum 2 mm (0.08 inch) thick steel channel shapes with a "Z" (zee) or angle sill and with hinged main frame of 3 mm (0.13 inch) steel. Attach screen panel to housing mechanism by means of leaf-springs. Design frame to form supplemental covers totally concealing hinges, locks, springs and operating mechanism when unit is closed:
1. Leaf-Springs: Attach 4.5 mm (0.18 inch) thick steel flat leaves, in sets of two, to hinged frame and screen panel by means of two wire cloth retainer clevises and a main clevis, held in suspension by an adjusting screw.
  2. Screening Attachment: Fold wire screening around 100 mm (4 inch) long steel bar and clamp between arms of wire screen retainer clevis of equal length, by means of screws or studs spaced maximum 75 mm (3 inches) on centers.

- C. Interior Screen Unit - Type "B": Fixed sub-frame of minimum 3.5 mm (0.14 inch) thick unequal leg steel channel frame with "Z" (zee) shaped sill member and with a built-up hinged main frame housing mechanism. Design unit to be flush on room side and to be free from protruding edges and fastener heads.
1. Fabricate built-up hinged frame minimum 2.5 mm (0.10 inch) thick steel, formed to a modified channel shape and reinforced by four free and continuous "Z" (zee) shaped screen retainer members, minimum 0.4 mm (0.016 inch) thick welded to inner web surfaces, 1.2 mm (0.05 inch) thick forced cover plate secured to channel and retainer members with machine screws spaced maximum 300 mm (12 inches) on centers. Design assembled hinged frame to conceal lock, hinges and all operating mechanism when closed.
  2. Shock Absorbers: Slotted and tapped round steel yoke, over which coil compression spring is restrained by bolt and washer and screen retainer member, assembled and completely housed with channel. Penetrate screen retainer member with slotted end of yoke to engage shock distributing bar and wire cloth panel.
  3. Wire Cloth Attachment: Wrap screening around electro-plated steel shock distributing bars running continuously around screening panel perimeter. Overlap screening beyond spacing distributing bar minimum 13 mm (1/2 inch). Insert assembly within yoke slots of shock absorbers and hold in position by stainless steel pins of length sufficient to engage both thicknesses of cloth at full pin diameter.

## 2.6 FABRICATION - SECURITY SCREENS

- A. Reinforce hinged frames greater than 1200 mm (4 feet) in height horizontally or vertically, or both if width exceeds 1500 mm (5 feet).
- B. Screens Unit - Type "C": Fixed sub-frame of 2.2 mm (0.09 inch) thick steel channels with a "Z" (zee) shaped sill and hinged main frame of 3 mm (0.12 inch) thick steel. Design frames to form supplemental cover totally concealing hinges and lock when unit is closed.
- C. Screen Unit - Type "D": Fixed sub-frame of minimum 2.5 (0.1 inch) thick "Z" (zee) shaped members and hinged main frame.
  1. Fabricate hinged frames of minimum 2.5 mm (0.1 inch) thick channel shaped members having an extended inner flange. Form flange edge with a right angle return forming a channel to receive wire cloth retaining strip.

2. Wire Cloth Attachment: Bend screening to fit over the screen frame and attach using a 1.5 mm (0.06 inch) thick retaining angle, continuous for entire perimeter. Clamp screening between retaining angle and return edge of hinged frame with hardened steel machine screws spaced approximately 125 mm (5 inches) on center.

## **2.7 FINISHES**

- A. Finish exposed surfaces after fabrication.
  1. Do not paint wire cloth.
- B. Apply two coats baked-on enamel to entire surface of screen framing before installing wire cloth.
- C. Galvanized Steel Finish:
  1. Prepare galvanized surfaces according to ASTM A780/A780M.
  2. Powder-Coat Finish: Manufacturer's standard two-coat finish system consisting of the following:
    - a. One coat primer.
    - b. One coat thermosetting topcoat.
    - c. Dry-film Thickness: 0.05 mm (2 mils) minimum.
    - d. Color: Refer to Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Stainless Steel: NAAMM AMP 500; No. 4 polished finish.
- E. Finish exposed surfaces after fabrication.

## **2.8 ACCESSORIES**

- A. Welding Materials: AWS D1.1/D1.1M, type to suit application.
- B. Fasteners: Stainless steel, type and size as recommended by screen unit manufacturer.
- C. Galvanizing Repair Paint: MPI No. 18.
- D. Touch-Up Paint: Match shop finish.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
  1. Verify openings are correctly sized, plumb, and square.
- B. Protect existing construction and completed work from damage.

### **3.2 INSTALLATION - GENERAL**

- A. Install products according to manufacturer's instructions // and approved submittal drawings //.

1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

**3.3 INSTALLATION**

- A. Drill, tap or cut metal window trim and other materials as required for proper installation of screen units.
- B. Install screen units allowing easy removal without damage to new or existing work and to effectively exclude insects.
- C. Secure screen units to metal windows with fasteners, spaced at approximately 375 mm (15 inches) on centers.
- D. Adjust screens for proper operation and locking.
- E. Touch up damaged factory finishes.

**3.4 PROTECTION**

- A. Protect screens from construction operations.
- B. Repair damage.

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