DETENTION / SECURITY WINDOWS
SECTION 08660

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Table of Contents

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SECURITY PRODUCTS
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Jamestown, NY 14702
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OPTIMUM WINDOW MANUFACTURING CORP.
28 Canal Street
Ellenville, NY 12428
845-647-1900
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DETENTION / SECURITY WINDOWS

STEEL MAXIMUM / MODERATE TOP PIVOTED AWNING DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to steel top pivoted awning windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.5 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. Interior and exterior perimeter subframes and imposts (where required) shall be manufactured from galvannealed steel not less than 12 gauge. Profiles shall conform to approved shop drawings.
B. Ventilator jamb and sill sections shall be hot rolled steel. Sections shall not weigh less than 1.65 pounds per foot and be not less than 1-7/16" front to back.
C. Ventilator head rail shall be specially formed from galvannealed steel not less than 12 gauge.
D. Detention bars shall be 7/8" round and/or ¼" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
E. Glazing beads shall be extruded aluminum alloy 6063-T5 with a minimum thickness of 0.055" or 12 gauge steel.
F. Weather-stripping shall be manufacturer's standard.
G. The power shall be a worm gear self-locking type with bronze bearings and provide continuous operation in either direction.
H. All linkage arms shall be steel not less than 3/16" x 1-3/8" and located at both jambs of each ventilator.
I. All vertical connecting bars shall be steel not less than 3/16" x 1-1/4" and located at both jambs of each unit.
J. Brass or bronze bearings shall be provided at all wearing points on the pivotal bars and linkage mechanism.
K. Bead and trim screws shall be tamper resisting #10 truss or button head plated steel.
L. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth

of the frame. Exposed face welds shall be dressed smooth.

C. All removable covers or trim, either exterior or interior, shall be field attached with screws, spaced not more than 9" on centers at the interior and spaced not more than 12" on centers at the exterior.
D. The horizontal 7/8" round detention bars, spaced not more than 6" on centers, shall penetrate the vertical ¼" x 2" flat detention bars concealed within the jambs.
E. The ventilator jamb and sill bars shall be solidly welded and all exposed face welds and welds on contact surfaces dressed smooth. The head rail shall be coped and welded to the jamb bars. The jamb and head bars shall be welded to the 7/8" round pivotal bars.
F. Operating Hardware
    1. The 7/8" round pivotal bar shall be continuous and have a weld linkage arm near each end. The linkage arm at each jamb shall be attached to a flat connecting bar by a pivot pin controlling the ventilator in unison to a maximum opening of 50 degrees.
    2. The linkage arms of the lower ventilator shall be connected to bell cranks at each jamb by means of adjustable links, which provide for adjustment of ventilators.
    3. A bell crank shall be welded to each end of the ¾" diameter power shaft.
    4. The ¾" power shaft shall be connected to the power with an overload safety device.
    5. The power unit shall be located and concealed within the subframe of the window.
    6. Opening and closing of the ventilator shall be accomplished by rotating the operating cone or crank in either direction.
    7. The ¾" diameter shaft, power unit, bell cranks, and adjustable links shall be removable from the window.
G. Weather-stripping shall be factory applied in a groove and in the same plane around the interior contact surface of the ventilator.
H. All windows shall be designed for outside glazing.
I. Screens (optional) – See separate screen section for available screen types and specifications.
J. Anchors shall be welded to the perimeter frame member or the ¼" x 2" detention flat at a maximum spacing of 18" on center.
K. After assembly, windows shall be iron or zinc phosphate treated using a five-stage process and painted using acrylic polyurethane enamel or powder coated.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Windows specified under this section shall be installed by experienced personnel.
B. Install windows in strict accordance with the approved shop drawings.
C. Set windows plumb, level and true to line, without warp or rack of frames or ventilators.
D. Anchor windows securely to surrounding construction with minimum 1" long welds at anchor points.
E. The exterior joints between the windows, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STEEL MAXIMUM / MODERATE SIDE PIVOTED CASEMENT DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to steel side pivoted casement windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.5 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. The perimeter framing and removable covers shall be manufactured from galvannealed steel not less than 12 gauge. Profiles shall conform to approved shop drawings.
B. Ventilator head, jamb and sill sections shall be hot rolled steel. Sections shall weigh not less than 1.65 pounds per foot and be not less than 1-7/16" front to back.
C. Vertical tubes shall be 1-1/2" x 1-1/2" steel, with a wall thickness of 11 gauge (other tube sizes available).
D. Detention bars shall be 7/8" round and/or ¼" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
E. Glazing beads shall be extruded aluminum alloy 6063-T5 with a minimum thickness of 0.055" or 12-gauge steel.
F. Weather-stripping shall be manufacturer's standard.
G. The power shall be a worm gear self-locking type with bronze bearings and provide continuous operation in either direction.
H. All linkage arms shall be steel not less than 3/16" x 1-3/8" and located at the sill.
I. The ventilator shall be hung on a 7/8" round continuous mild steel bar.
J. Brass or bronze bearings shall be provided at all wearing points on the pivotal bars and linkage mechanism. A thrust washer shall be provided at the head to support the ventilator weight. A steel seal retainer with an O-ring seal shall be provided at the sill to prevent leakage around the pivotal bar.
K. Bead and trim screws shall be tamper resisting #10 truss or button head plated steel.
L. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth

of the frame. Exposed face welds shall be dressed smooth.

C. All removable covers or trim, either exterior or interior, shall be field attached with screws, spaced not more than 9" on centers at the interior and spaced not more than 12" on centers at the exterior.

D. Vertical 1-1/2" x 1-1/2" x 11 gauge steel tubes shall be solidly welded to the frame member. The 7/8" round detention bars, spaced not more than 6" on center, shall be concealed in the frame jambs and the vertical tubes and penetrate the horizontal ¼" x 2" flat detention bars, concealed within the head and sill frame members. The grid components shall be securely welded together and the flat detention bars securely attached to the frame members.

E. The ventilator bars shall be solidly welded and all exposed face welds and welds on contact surfaces dressed smooth. The jamb bar shall be welded to the 7/8" round pivotal bars.

F. Operating Hardware
   1. The 7/8" round pivotal bar shall be continuous and have a weld linkage arm at the sill. The linkage arm shall be connected to a bell crank, fastened to the ¾" power shaft, by means of an adjustable connecting link.
   2. The ventilator shall operate to a maximum opening of 50 degrees.
   3. The power unit shall be located and concealed within the sill box of the window.
   4. Opening and closing of the ventilator shall be accomplished by rotating the operating cone or crank in either direction.
   5. The power unit with power shaft, bell crank and adjustable connecting link shall be removable from the window.

G. Weather-stripping shall be factory applied in a groove and in the same plane around the interior contact surface of the ventilator.

H. All windows shall be designed for outside glazing.

I. Screens (optional) – See separate screen section for available screen types and specifications.

J. Anchors shall be welded to the perimeter frame member or the ¼" x 2" detention flat at a maximum spacing of 18" on center.

K. After assembly, windows shall be iron or zinc phosphate treated using a five-stage process and painted using acrylic polyurethane enamel or powder coated.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.

B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Windows specified under this section shall be installed by experienced personnel.

B. Install windows in strict accordance with the approved shop drawings.

C. Set windows plumb, level and true to line, without warp or rack of frames or ventilators.

D. Anchor windows securely to surrounding construction with minimum 1" long welds at anchor points.

E. The exterior joints between the windows, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.

F. All windows shall be completely checked and adjusted after installation and before glazing to assure proper fit of ventilator to frame and to assure operating mechanism works freely and satisfactorily.

G. Any abraded surface of the window finish shall be cleaned and touched up with air dry paint, as approved and furnished by the window manufacturer, in a color to match factory applied finish.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.

B. Window installer shall leave the window surfaces clean after installation.

C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STEEL FIXED DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to steel windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.15 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).
Impact Test
ASTM F1592-12 – Glazing Test – The glazing and panels shall remain in place. No damage to the extent that forcible entry can be achieved. Frame Test – No welded joints or the entire frame joint shall completely separate. The wall anchoring shall retain the frame in place throughout the test procedure to the extent that forcible entry cannot be achieved.

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. Perimeter frames and imposts (where required) shall be manufactured from galvannealed steel not less than 12 gauge. Profiles shall conform to approved shop drawings.
B. Detention bars shall be 7/8" round and/or 1/4" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
C. Security tubes (where required) shall be 2" x 1-1/2" not less than 14 gauge steel.
D. Glazing beads shall be steel angle not less than 14 gauge.
E. Bead and trim screws shall be tamper resisting #10 truss or button head plated steel.
F. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth of the frame. Exposed face welds shall be dressed smooth.
C. Security tubes shall be solidly welded to the frame members.
D. Detention members shall be concealed in frame and tube members. Round detention bars shall penetrate the flat bars. All concealed detention bars shall be galvanized or iron-phosphate treated using a five-step process and prime painted.
E. Anchors shall be welded to the perimeter frame member or the 1/4" x 2" detention flat at a maximum spacing of 18" on center.

F. After assembly, windows shall be iron or zinc phosphate treated using a five-stage process and painted using acrylic polyurethane enamel or powder coated.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Install windows in strict accordance with the approved shop drawings.
B. Set windows plumb, level and true to line, without warp or rack of frames.
C. All necessary manufacturer's standard steel anchors shall be included. Any required embedded or cast-in anchors shall be provided by the General Contractor in accordance with the window manufacturer's approved shop drawings.
D. Exterior metal-to-metal joints between windows, trim, and mullions shall be properly sealed watertight with an approved sealant by the window installer.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STEEL THERMAL BREAK FIXED DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to steel thermal break windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.15 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).
Impact Test
ASTM F1592-12 – Glazing Test – The glazing and panels shall remain in place. No damage to the extent that forcible entry can be achieved.
Frame Test – No welded joints or the entire frame joint shall completely separate. The wall anchoring shall retain the frame in place throughout the test procedure to the extent that forcible entry cannot be achieved.

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. Interior and exterior perimeter subframes and imposts (where required) shall be manufactured from galvannealed steel not less than 12 gauge. Profiles shall conform to approved shop drawings.
B. Thermal break shall be 1/4" x 3/4" rigid vinyl plastic.
C. Detention bars shall be 7/8" round and/or ¼" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars shall be tool resisting steel.
D. Security tubes (where required) shall be 2" x 1-1/2" not less than 14 gauge steel.
E. Glazing beads shall be steel angle not less than 14 gauge.
F. Bead and trim screws shall be tamper resisting #10 truss or button head plated steel.
G. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth of the frame. Exposed face welds shall be dressed smooth.
C. Security tubes shall be solidly welded to the frame members.
D. Detention members shall be concealed in frame and tube members. Round detention bars shall penetrate the flat bars. All concealed detention bars shall be galvanized or iron-phosphate treated using a five-step process and prime painted.

E. Anchors shall be welded to the perimeter frame member or the ¼" x 2" detention flat at a maximum spacing of 18" on center.
F. After assembly, windows shall be iron or zinc phosphate treated using a five-stage process and painted using acrylic polyurethane enamel or powder coated.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Install windows in strict accordance with the approved shop drawings.
B. Set windows plumb, level and true to line, without warp or rack of frames.
C. All necessary manufacturer's standard steel anchors shall be included. Any required embedded or cast-in anchors shall be provided by the General Contractor in accordance with the window manufacturer's approved shop drawings.
D. Exterior metal-to-metal joints between windows, trim, and mullions shall be properly sealed watertight with an approved sealant by the window installer.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STEEL MAXIMUM / MODERATE DETENTION GUARD WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to steel guard windows (fixed, project-in or project-out), closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.5 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. The guard frame and muntin sections shall be hot rolled steel from purpose made profiles:
   1. The guard frame shall be 1-3/4" deep front to back and weigh not less than 2.3 pounds per lineal foot.
   2. The muntins shall be bulb tee type 1-3/4" deep front to back, with a maximum 1" wide sight line flange, and weigh not less than 1.9 pounds per lineal foot.
   3. Guard frame and muntin sections shall have integral rolled putty retention 3/8" glazing rabbets.
   4. Frame section shall provide a wall bearing at perimeter of 1/2".
B. Moderate detention bars shall be mild steel and maximum detention bars shall be tool resisting steel.
C. Interior applied ventilators, bottom hinged, swing-in:
   1. Ventilator housing to be cold formed channel shaped sections at head and jambs with a special cold formed section at the sill. All sections to be formed from 12 gauge steel.
   2. Ventilator frames shall be hot rolled steel sections, minimum 1-5/16" front to back.
   3. Ventilators shall be hot rolled steel sections, minimum 1-5/16" front to back, providing a minimum 5/16" glazing rabbets and weighing not less than 1.5 pounds per lineal foot.
   4. Ventilator frame and ventilators shall provide double weathering contacts.
   5. The design shall provide a space for inserting and securing an insect screen between guard and ventilator.
D. Exterior applied ventilators, top hinged, swing-out:
   1. Ventilator frames shall be hot rolled steel sections, minimum 1-5/16" front to back.
   2. Ventilators shall be hot rolled steel sections, minimum 1-5/16" front to back, providing a minimum 5/16" glazing rabbets and weighing not less than 1.5 pounds per lineal foot.
   3. Ventilator frame and ventilators shall provide double weathering contacts.

4. For maximum detention windows, a vent retainer formed from 12 gauge steel shall be added.

E. Windows shall be prepared for outside putty glazing (optional glazing beads of extruded aluminum or steel bars are available).
F. Optional channel surrounds shall be formed from 10 gauge steel.
G. Weather-stripping shall be manufacturer's standard.
H. Hardware shall be as follows:
   1. For interior bottom hinged ventilators – bronze spring catch.
   2. For exterior top hinged ventilators – bronze cam lock.
   3. All ventilators shall have steel or aluminum – bronze pivots or butt type hinges.
   4. Steel pivot side arms with bronze friction shoes to limit ventilator opening to 45 degrees.
I. Insect screens are available. Consult window manufacturer for details and specifications.
J. Screws shall be tamper resisting #10 truss or button head plated steel.

Fabrication

A. Fabricate windows in accordance with the approved shop drawings.
B. Frame corners and muntin to frame intersections shall be tenoned, riveted or welded. Intersections of muntins shall be mechanically interlocked to obtain maximum strength without bending or distorting either section. All guard frame and muntin intersections shall have 1/16" joints provided across inside and outside faces which, after assembly, shall be deep welded solid. Welds may project not more than 1/16" and shall not be ground, except where optional glazing frames are attached. Maximum muntin spacing shall not exceed 6-3/8" x 9-3/8" on centers.
C. When maximum detention is desired, 1/2" x 1/2" square tool-resisting steel detention bars shall be furnished as follows:
   1. Vertical – The detention bar is welded to the exterior face of the vertical bulb tee muntin. In addition, the detention bar overlaps and is welded to the exterior face of the perimeter guard frame section.
   2. Horizontal – The detention bars penetrate the stem of the vertical bulb tee muntins and perimeter guard frame sections. The detention bars are welded intermittently to the underside of the stem of the horizontal bulb tee muntins and securely welded to the perimeter guard frame sections.
   3. All welds attaching the detention bar shall be 1" long, spaced not more than 9" apart.
D. Interior applied ventilator (bottom hinged, swing-in):
   1. The ventilator housing, ventilator frame and ventilator perimeter members shall be mitered and/or coped and welded at corners.
   2. The ventilator frame shall be welded intermittently to the ventilator housing.
   3. The ventilator housing unit shall be factory welded to the guard frame and/or muntin grid with intermittent stitch welds 1" long and factory sealed to provide an integral unit.
E. Exterior applied ventilator (top hinged, swing-out):
   1. The ventilator frame members shall be mitered and/or coped and welded at corners.
   2. The vent retainer required for maximum detention windows shall be coped and welded at corners and attached to the ventilator frame with intermittent stitch welds 1" long.
   3. The ventilator frame and retainer shall be factory welded to the guard frame and/or muntin grid with intermittent stitch welds 1" long and factory sealed to provide an integral unit.
F. Operating Hardware
   1. All ventilators shall be hung on steel or aluminum-bronze pivots with leaves welded to the ventilator frame and to the ventilator.
   2. Steel pivot side arms with friction and limiting device shall be attached to the ventilator jambs.
   3. Spring catch for bottom hinged ventilator and cam fastener for top hinged ventilator shall be attached with tamper resistant screws.
G. Weather-stripping shall be factory applied in a groove and in the same plane around the interior contact surface of the ventilator.
H. All windows shall be designed for outside or inside glazing.
I. After assembly, windows shall be iron or zinc phosphate treated using a five-stage process and painted using acrylic polyurethane enamel or powder coated.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.

B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Windows specified under this section shall be installed by experienced personnel.
B. Install windows in strict accordance with the approved shop drawings.
C. Set windows plumb, level and true to line, without warp or rack of frames.
D. Anchor windows securely to surrounding construction with minimum 1" long welds at anchor points.
E. The exterior joints between the windows, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.
F. All windows shall be completely checked and adjusted after installation and before glazing to assure proper fit of ventilator to frame and to assure operating mechanism works freely and satisfactorily.
G. Any abraded surface of the window finish shall be cleaned and touched up with air dry paint, as approved and furnished by the window manufacturer, in a color to match factory applied finish.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STAINLESS STEEL MAXIMUM / MODERATE TOP PIVOTED AWNING DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included

Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to stainless steel top pivoted awning windows, closures, trim, anchors and factory applied finishes (if required).

Related Work

A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements

Windows shall meet or exceed the following standards:

Air Infiltration Test

ASTM E283-04(2012) – Maximum air infiltration 0.5 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).

Water Penetration Test

ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).

Tool Resisting Steel Bars

Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).

Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).

Submittals

Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers

Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials

A. Interior and exterior subframes and imposts (where required) shall be formed from stainless steel not less than 12 gauge.
B. Ventilator head, jambs and sill sections shall be stainless steel.
C. Detention bars shall be 7/8" round and/or 1/4" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
D. Glazing beads shall be stainless steel not less than 16 gauge.
E. Weather-stripping shall be manufacturer's standard.
F. The power shall be a worm gear self-locking type with bronze bearings and provide continuous operation in either direction.
G. All linkage arms shall be plated steel not less than 3/16" x 1-3/8" and located at both jambs of each ventilator.
H. All vertical connecting bars shall be plated steel not less than 3/16" x 1-1/4" and located at both jambs of each unit.
I. Brass or bronze bearings shall be provided at all wearing points on the pivotal bars and linkage mechanism.
J. Bead and trim screws shall be tamper resisting #10 truss or button head stainless steel.
K. Anchors shall be 3/16" plated steel angle or plate.

Fabrication

A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth of the frame. Exposed face welds shall be dressed smooth.
C. All removable covers or trim, either exterior or interior, shall be field attached with screws, spaced not more than 9" on centers at the interior and spaced not more than 12" on centers at the exterior.
D. The horizontal 7/8" round detention bars, spaced not more than 6" on centers, shall penetrate the

vertical 1/4" x 2" flat detention bars concealed within the jambs.

E. The ventilator shall be face or back welded and all exposed welds shall be dressed smooth. The ventilator shall be welded to the 7/8" round pivotal bars.

F. Operating Hardware
   1. The 7/8" round pivotal bar shall be continuous and have a weld linkage arm near each end. The linkage arm at each jamb shall be attached to a flat connecting bar by a pivot pin controlling the ventilator in unison to a maximum opening of 50 degrees.
   2. The linkage arms of the lower ventilator shall be connected to bell cranks at each jamb by means of adjustable links, which provide for adjustment of ventilators.
   3. A bell crank shall be welded to each end of the 3/4" diameter power shaft.
   4. The 3/4" power shaft shall be connected to the power with an overload safety device.
   5. The power unit shall be located and concealed within the subframe of the window.
   6. Opening and closing of the ventilator shall be accomplished by rotating the operating cone or crank in either direction.
   7. The 3/4" diameter shaft, power unit, bell cranks, and adjustable links shall be removable from the window.
   8. Apply zinc-rich coating to all welds of the plated steel linkage parts.

G. Weather-stripping shall be factory applied.

H. All windows shall be designed for outside or in-swing glazing.

I. Screens (optional) – See separate screen section for available screen types and specifications.

J. Anchors shall be welded to the perimeter frame at a maximum spacing of 18" on center.

K. Stainless steel shall have a #2 finish.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.

B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Windows specified under this section shall be installed by experienced personnel.

B. Install windows in strict accordance with the approved shop drawings.

C. Set windows plumb, level and true to line, without warp or rack of frames or ventilators.

D. Anchor windows securely to surrounding construction with minimum 1" long welds at anchor points.

E. The exterior joints between the windows, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.

F. All windows shall be completely checked and adjusted after installation and before glazing to assure proper fit of ventilator to frame and to assure operating mechanism works freely and satisfactorily.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.

B. Window installer shall leave the window surfaces clean after installation.

C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STAINLESS STEEL MAXIMUM / MODERATE SIDE PIVOTED CASEMENT DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included

Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to stainless steel side pivoted casement windows, closures, trim, anchors and factory applied finishes (if required).

Related Work

A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements

Windows shall meet or exceed the following standards:

Air Infiltration Test

ASTM E283-04(2012) – Maximum air infiltration 0.5 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).

Water Penetration Test

ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).

Tool Resisting Steel Bars

Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).

Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).

Submittals

Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers

Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials

A. The perimeter framing and removable covers shall be formed from stainless steel not less than 12 gauge. Profiles shall conform to approved shop drawings.
B. Ventilator head, jamb and sill sections shall be stainless steel.
C. Vertical tubes shall be 1-1/2" x 1-1/2" stainless steel, with a wall thickness of not less than 14 gauge (other tube sizes available).
D. Detention bars shall be 7/8" round and/or 1/4" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
E. Glazing beads shall be stainless steel not less than 16 gauge.
F. Weather-stripping shall be manufacturer's standard.
G. The power shall be a worm gear self-locking type with bronze bearings and provide continuous operation in either direction.
H. All linkage arms shall be plated steel not less than 3/16" x 1-3/8" and located at the sill.
I. The ventilator shall be hung on a 7/8" round continuous mild steel bar.
J. Brass or bronze bearings shall be provided at all wearing points on the pivotal bars and linkage mechanism. A thrust washer shall be provided at the head to support the ventilator weight. A steel seal retainer with an a-ring seal shall be provided at the sill to prevent leakage around the pivotal bar.
K. Bead and trim screws shall be tamper resisting #10 truss or button head stainless steel.
L. Anchors shall be 3/16" plated steel angle or plate, galvanized after fabrication.

Fabrication

A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth of the frame. Exposed face welds shall be dressed smooth.

C. All removable covers or trim, either exterior or interior, shall be field attached with screws, spaced not more than 9" on centers at the interior and spaced not more than 12" on centers at the exterior.
D. Vertical stainless steel tubes shall be solidly welded to the frame member. The 7/8" round detention bars, spaced not more than 6" on center, shall be concealed in the frame jambs and the vertical tubes and penetrate the horizontal 1/4" x 2" flat detention bars, concealed within the head and sill frame members. The grid components shall be securely welded together.
E. The ventilator bars shall be solidly welded and all exposed face welds and welds on contact surfaced dressed smooth. The jamb bar shall be welded to the 7/8" round pivotal bars.
F. Operating Hardware
    1. The 7/8" round pivotal bar shall be continuous and have a weld linkage arm at the sill. The linkage arm shall be connected to a bell crank, fastened to the 3/4" power shaft, by means of an adjustable connecting link.
    2. The ventilator shall operate to a maximum opening of 50 degrees.
    3. The power unit shall be located and concealed within the sill box of the window.
    4. Opening and closing of the ventilator shall be accomplished by rotating the operating cone or crank in either direction.
    5. The power unit with power shaft, bell crank and adjustable connecting link shall be removable from the window.
G. Weather-stripping shall be factory applied.
H. All windows shall be designed for outside or inside glazing.
I. Screens (optional) – See separate screen section for available screen types and specifications.
J. Anchors shall be welded to the perimeter frame at a maximum spacing of 18" on center.
K. Stainless steel shall have a #2 finish.

PART 3 – EXECUTION

Inspection
A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation
A. Windows specified under this section shall be installed by experienced personnel.
B. Install windows in strict accordance with the approved shop drawings.
C. Set windows plumb, level and true to line, without warp or rack of frames or ventilators.
D. Anchor windows securely to surrounding construction with minimum 1" long welds at anchor points.
E. The exterior joints between the windows, trim and mullions shall be properly sealed watertight with an approved sealant and neatly pointed.
F. All windows shall be completely checked and adjusted after installation and before glazing to assure proper fit of ventilator to frame and to assure operating mechanism works freely and satisfactorily.

Cleaning
A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STAINLESS STEEL FIXED DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to stainless steel windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.15 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).
Impact Test
ASTM F1592-12 – Glazing Test – The glazing and panels shall remain in place. No damage to the extent that forcible entry can be achieved.
Frame Test – No welded joints or the entire frame joint shall completely separate. The wall anchoring shall retain the frame in place throughout the test procedure to the extent that forcible entry cannot be achieved.

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. Perimeter frames and imposts (where required) shall be formed from stainless steel not less than 14 gauge. Profiles shall conform to approved shop drawings.
B. Detention bars shall be 7/8" round and/or 1/4" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
C. Security tubes (where required) shall be 1-1/2" x 1-1/2" not less than 14 gauge stainless steel (other tube sizes available).
D. Glazing beads shall be stainless steel angle not less than 14 gauge.
E. Bead and trim screws shall be tamper resisting #10 truss or button head stainless steel.
F. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, face or back welded at the corners the full depth of the frame. Exposed face welds shall be dressed smooth.
C. Security tubes shall be solidly welded to the frame members.
D. Detention members shall be concealed in frame and tube members. Round detention bars shall penetrate the flat bars. All concealed detention bars shall be galvanized or iron-phosphate treated using a five-step process and prime painted
E. Anchors shall be welded to the perimeter frame member or the 1/4" x 2" detention flat at a maximum spacing of 18" on center.

F. Stainless steel shall have a #2 finish.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Install windows in strict accordance with the approved shop drawings.
B. Set windows plumb, level and true to line, without warp or rack of frames or ventilators.
C. All necessary manufacturer's standard steel anchors shall be included. Any required embedded or cast-in anchors shall be provided by the General Contractor in accordance with the window manufacturer's approved shop drawings.
D. Exterior metal-to-metal joints between windows, trim, and mullions shall be properly sealed watertight with an approved sealant by the window installer.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

DETENTION / SECURITY WINDOWS

STAINLESS STEEL THERMAL BREAK FIXED DETENTION WINDOW

SECTION 08660 05/17 – 2018 Revised

PART 1 – GENERAL

Work Included
Furnish and install detention/security windows as shown in the contract drawings. Work shall include but not be limited to stainless steel thermal break windows, closures, trim, anchors and factory applied finishes (if required).

Related Work
A. Glass, glazing, and glazing materials: Section 08800
B. Perimeter caulking and sealing: Section 07900
C. Anchors built-in or masonry embeds: Section 05500

Quality Assurance, Performance Requirements
Windows shall meet or exceed the following standards:

Air Infiltration Test
ASTM E283-04(2012) – Maximum air infiltration 0.15 CFM/FT of crack length with a pressure differential across the windows of 1.56 PSF (25 MPH).
Water Penetration Test
ASTM E331-00(2016) – No water penetration for 15 minutes when the window is subjected to a rate of flow of 5 Gal./Hr./Sq.Ft. with a pressure differential of 2.86 PSF (33 MPH).
Tool Resisting Steel Bars
Cutting Test – Test tool resisting steel detention bars for cutting resistance according to ASTM A627-03(2011).
Deflection and Drop-Weight Test – Test round tool resisting steel detention bars for structural integrity according to ASTM A627-03(2011).
Impact Test
ASTM F1592-12 – Glazing Test – The glazing and panels shall remain in place. No damage to the extent that forcible entry can be achieved.
Frame Test – No welded joints or the entire frame joint shall completely separate. The wall anchoring shall retain the frame in place throughout the test procedure to the extent that forcible entry cannot be achieved.

Submittals
Submit shop drawings showing window and installation details, including anchorage, fastening, and recommended sealing methods. Show dimensioned elevations with opening and window sizes. Upon request, provide test reports for all pertinent standards.

PART 2 – PRODUCTS

Approved Manufacturers
Detention/Security windows shall be provided by a manufacturer and/or distributor of steel windows whose products meet the Steel Window Institute's performance specifications for detention/security windows, as set forth herein or in effect from time to time.

Materials
A. Interior and exterior perimeter subframes and imposts (where required) shall be manufactured from stainless steel not less than 14 gauge.
B. Thermal break shall be 1/4" x 3/4" rigid vinyl plastic.
C. Detention bars shall be 7/8" round and or 1/4" x 2" flat steel bars. Moderate detention bars shall be mild steel and maximum detention bars are tool resisting steel.
D. Security tubes (where required) shall be formed from 14 gauge stainless steel.
E. Glazing beads shall be stainless steel angle not less than 14 gauge.
F. Bead and trim screws shall be tamper resisting #10 truss or button head stainless steel.
G. Anchors shall be 3/16" plated steel angle or plate.

Fabrication
A. Fabricate windows in accordance with the approved shop drawings.
B. Frame members shall be mitered and/or coped, and welded at the corners the full depth of the frame. Exposed welds shall be dressed smooth.
C. Security tubes shall be solidly welded to the frame members.
D. Detention members shall be concealed in frame and tube members. Round detention bars shall penetrate the flat bars. All concealed detention bars shall be galvanized or iron-phosphate treated using a five-step process and prime painted
E. Anchors shall be welded to the perimeter frame member or the 1/4" x 2" detention flat at a maximum spacing of 18" on center.
F. Stainless steel shall have a #2 finish.

PART 3 – EXECUTION

Inspection

A. Window openings shall conform to details and dimensions shown on the approved shop drawings.
B. Conditions which may adversely affect the window installation must be corrected by the General Contractor prior to installation.

Installation

A. Install windows in strict accordance with the approved shop drawings.
B. Set windows plumb, level and true to line, without warp or rack of frames.
C. All necessary manufacturer's standard steel anchors shall be included. Any required embedded or cast-in anchors shall be provided by the General Contractor in accordance with the window manufacturer's approved shop drawings.
D. Exterior metal-to-metal joints between windows, trim, and mullions shall be properly sealed watertight with an approved sealant by the window installer.

Cleaning

A. The General Contractor shall be responsible for protecting the windows and related materials during storage on the job and during and after installation.
B. Window installer shall leave the window surfaces clean after installation.
C. Any protection necessary due to the cleaning of materials adjacent to the windows shall be the responsibility of the General Contractor.

SCREENS FOR DETENTION WINDOWS FIXED SCREENS – SECURITY AND GUARD TYPES OPERABLE SCREENS – GUARD AND DETENTION TYPES

(Add To Window Specifications As Required)

05/17 – 2018 Revised

FIXED STEEL ANGLE FRAME SECURITY SCREEN

Materials

A. Screens – Furnish fixed steel angle frame security screens as shown on drawings and specified herein:
   1. Screen frames shall be steel angles formed from 12 gauge galvanized steel.
   2. Steel clamp strip shall be 12 gauge galvanized steel.
   3. Screen cloth shall be stainless steel, type 18-8, alloy #302 or #304, woven 12 mesh to the inch from 0.028" diameter wire, double crimped. Other types and sizes of screen cloths are available, consult manufacturer.

Fabrication

A. Screens
   1. Screen frame shall be welded solid at corners and welds dressed smooth.
   2. Secure screen cloth to frame using special security screws spaced 4" on centers, which penetrate the frame, screen cloth and clamp strip.
   3. The screen frame and clamp strip shall be factory finished to match window finish.

FIXED STEEL TUBULAR FRAME SECURITY SCREEN

Materials

A. Screens – Furnish fixed steel tubular frame security screens as shown on drawings and specified herein:
   1. Screen frames shall be fabricated from 3/4" x 1-1/2" x 0.083" wall steel tubes.
   2. Braces shall be furnished, where required.
   3. Screen cloth shall be stainless steel, type 18-8, alloy #302 or #304, woven 12 mesh to the inch from 0/028" diameter wire, double crimped. Other types and sizes of screen cloth are available, consult manufacturer.

Fabrication

A. Screens
   1. Screen frame shall be mitered and machine welded at corners and dressed smooth.
   2. Braces shall be furnished where required.
   3. Hem screen cloth at edges and secure to screen frame with special security screws spaced 4" on centers. Screws shall penetrate the double thickness of screen cloth at hemmed edges and frame.
   4. The screen frame and braces shall receive a factory applied finish to match window finish.

FIXED STEEL GUARD SCREEN

Materials

A. Screens – Furnish fixed steel guard screen as shown on drawings and specified herein:
   1. Subframe, if required, shall be unequal leg channel formed from 12 gauge steel.
   2. Scribe angles, if required, shall be formed from 18 gauge steel.
   3. Screen frame shall be channel shaped, formed from 12 gauge steel and shall not exceed 2-1/2" x 1-3/8".
   4. Concealment plates shall be 12 gauge steel.
   5. Braces, if required, shall be steel tubes.
   6. Screen cloth shall be stainless steel, type 18-8, alloy #302 or #304, woven 10 mesh to the inch from 0.047" wire, double crimped. Other types and sizes of screen cloth are available, consult manufacturer.

Fabrication

A. Screens
   1. Subframe, when required, shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   2. Screen frames shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   3. Braces shall be furnished where required.
   4. Form screen cloth at edges to fit over screen frame and secure to screen frame with special security screws spaced 4" on centers. Screws shall penetrate the concealment place, screen cloth and screen frame.
   5. Screen frame, concealment plates, braces and subframe (when required) shall receive a factory applied finish to match window finish.

OPERABLE STEEL GUARD SCREEN

Materials

A. Screens – Furnish operable guard screens as shown on drawings and specified herein:
   1. Subframe, if required, shall be unequal leg channel formed from 12 gauge steel.
   2. Scribe angles, if required, shall be formed from 18 gauge steel.
   3. Screen frame shall be channel shaped, formed from 12 gauge steel and shall not exceed 2-1/2" x 1-3/8".
   4. Concealment plates shall be 12 gauge steel.
   5. Braces, if required, shall be steel tubes.
   6. Screen cloth shall be stainless steel, type 18-8, alloy #302 or #304, woven 10 mesh to the inch from 0.047" wire, double crimped. Other types and sizes of screen cloth are available, consult manufacturer.
   7. Hardware
      a. Hinges shall be plated steel 0.060" thick continuous type with 3/16" diameter brass pin.
      b. Locking system shall consist of case hardened 1/2" diameter steel bolts, bitt key lock and operating mechanism.

Fabrication

A. Screens
   1. Subframe, when required, shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   2. Screen frames shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   3. Braces shall be furnished where required.
   4. Locking system including bitt key lock, lock bolts and operating mechanism shall be factory installed. All lock bolts shall operate simultaneously. All locking hardware shall remain completely concealed when the screen is open or closed.
   5. Form screen cloth at edges to fit over screen frame and secure to screen frame with special security screws spaced 4" on centers. Screws shall penetrate the concealment place, screen cloth and screen frame.
   6. Hinge shall be screw attached to screen frame and window frame or subframe.
   7. Screen frame, concealment plates, braces and subframe (when required) shall receive a factory applied finish to match window finish.

OPERABLE STEEL DETENTION SCREEN

Materials

A. Screens – Furnish operable steel detention screen as shown on drawings and specified herein:
   1. Subframe, if required, shall be unequal leg channel formed from 12 gauge steel.
   2. Scribe angles, if required, shall be formed from 18 gauge steel.
   3. Screen frame shall be reinforced, open channel type with removable concealment plate:
      a. Open channel frame shall be formed from 12 gauge steel.
      b. Reinforcement shall be "Z" shaped formed from 12 gauge steel.
      c. Concealment plate shall be 16 gauge steel.
   4. Screen cloth shall be stainless steel, type 18-8, alloy #302 or #304, woven 10 mesh to the inch from 0.047" wire, double crimped.
   5. Hardware
      a. Hinges shall be plated steel 0.060" thick continuous type with 3/16" diameter brass pin.
      b. Bitt key lock.
      c. Lock bolts shall be 1/2" diameter case hardened steel.
   6. Support Assembly
      a. Shock absorber yoke shall be 5/8" diameter steel, zinc plated.
      b. Shock absorber spring shall be #10 gauge oil tempered steel wire, 175 lbs. per 1/2" of movement and electroplated.
      c. Escutcheon pin shall be #12 x 7/8" stainless steel.
      d. Adjustment bolt shall be 3/8" hex head, plated steel.

Fabrication

A. Screens
   1. Subframe, when required, shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   2. Screen frames shall have all corners solidly welded and exposed welds and contact surface welds dressed smooth.
   3. Reinforcement "Z" members shall be stitch welded to screen frame.
   4. Support Assembly
      a. The screen cloth shall be supported by steel shock distributing bars around which the screen cloth is wrapped.

b. The bars and screen cloth shall fit within the yoke slots of shock absorbers and shall be held in place by stainless steel escutcheon pins.
c. Each shock absorber shall be individually mounted on an adjustable coil spring.
d. Shock absorbers shall be spaced not more than 8" apart.

5. Concealment plates shall be screw applied to the back of the screen frame and shall conceal locking mechanism and support assembly.
6. Locking system including bitt key lock, lock bolts, and operating mechanism shall be factory installed. All lock bolts shall operate simultaneously. All locking hardware shall remain completely concealed when the screen is open or closed.
7. Hinge shall be screw attached to screen frame and window frame or subframe.
8. Screen frame, concealment plates and subframe, when required, shall receive a factory applied finish to match window finish.

SCREENS FOR GUARD WINDOWS - The screen types specified above are not normally used for guard windows - consult manufacturer.