SECTION 085662 - STEEL DETENTION WINDOWS

See additional information at the end of this section.

This spec section is used for all A60 Galvannealed Sheet Steel Security Windows in correctional or mental health facilities made primarily of steel (not aluminum, wood, or other materials), including DOCCS Standard Type 3 Windows. Selection of DOCCS window types and details must be confirmed with an OGS Div. of Design Detention specialist during the design phase Steel detention windows using G90 Galvanized Hot Rolled Steel should use OGS Spec Section 085663. Steel windows for other non-security environments should use OGS Spec Section 085123.

1. GENERAL
	* + 1. RELATED WORK SPECIFIED ELSEWHERE
				1. Built-In Anchors: Section 055000.
				2. Joint Sealants: Section 079200.
				3. Glass and Glazing: Section 088100.
				4. Security Glass and Glazing: Section 088853.
			2. MANUFACTURERS
				1. Manufacturers:

Hope’s Windows, Inc., 84 Hopkins Avenue, P.O. Box 580, Jamestown, New York 14702, (716) 665-5124, [www.hopeswindows.com](http://www.hopeswindows.com).

Optimum Window Mfg. Corp., 28 Canal Street, Ellenville, New York 12428, (845) 647-1900, [www.optimumwindow.com](http://www.optimumwindow.com).

Or equal.

* + - 1. REFERENCES
				1. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:

Steel Window Specifications by the Steel Window Institute (SWI).

Structural Welding Code - Steel, AWS D1.1 and Structural Welding Code - Sheet Steel, AWS D1.3, as applicable, by the American Welding Society (AWS Codes).

* + - 1. WINDOW TYPES AND DESCRIPTIONS

Modify paragraphs below when windows are placed adjacent to each other as multiple window units. Provide additional editing throughout this specification, particularly at fabrication and operation descriptions. Paragraph below is based on Hope’s Series STB10 Medium Detention Fixed Over Multiple Awning (Jalousie Style) windows.

* + - * 1. Type 3 Detention Windows: Steel medium security detention windows, thermally-enhanced, factory glazed, with horizontal steel detention bars spaced 6 inches on center and top-pivoted awning type ventilators linked together to operate in unison by a concealed operating mechanism controlled with manually operated fixed cone knob. A fixed angular safety screen is located to the interior covering the ventilated area.

Paragraph below is based on Hope’s Series STB10 Maximum Detention (if provided with vertical bars) or Medium Detention (if provided without vertical bars) Fixed Over Awning Windows. Note horizontal bar between fixed and awning remains in both types cone knobs are generally used but removable hand cranks are used in all medical environments.

* + - * 1. Type 3A Detention Windows: Steel maximum (with vertical bars) or medium (without vertical bars) security, thermally-enhanced, factory glazed, ventilating detention windows with top pivoted awning-type ventilator. The awning-type ventilator is operated by a concealed operating mechanism controlled with a manually operated fixed cone knob or with a removable hand crank. A fixed angular safety screen is located to the interior covering the ventilated area.

Omit paragraph below when using Window Type 3A without vertical bars

Type 3A windows with bars shall consist of freely-rotating tool-resisting vertical steel bars concealed within vertical steel tubes and within the window jambs, not exceeding 5” on center, located behind (towards the interior of) the ventilator.

Paragraph below is based on Hope’s Series STB30 Maximum Detention Awning Windows. This window type is typically used at isolation rooms or other spaces not wanting or requiring ventilation (confirm code compliance).

* + - * 1. Type 3B Detention Windows: Steel maximum security, thermally-enhanced, factory glazed, non-ventilating fixed detention windows having one fixed light of glass.

Omit paragraph below when using Window Type 3B without vertical bars.

Type 3B windows with bars shall consist of freely-rotating tool-resisting vertical steel bars concealed within vertical steel tubes and within the window jambs, not exceeding 5” on center.

Paragraph below is based on Hope’s Series STB20 Maximum Detention Casement Windows.

* + - * 1. Type 3C Detention Windows: Steel maximum security, thermally-enhanced, factory glazed, casement style ventilating detention windows. A fixed angular safety screen is located to the interior covering the ventilated area.

Omit paragraph below when using Window Type 3A without vertical bars.

Type 3C windows with bars shall consist of freely-rotating tool-resisting vertical steel bars concealed within vertical steel tubes and within the window jambs, not exceeding 5” on center, located behind (towards the interior of) the ventilator.

Paragraph below is based on Hope’s Series STB70 Maximum or Medium Detention Fixed Windows.

* + - * 1. Type Fixed Guard Tower Windows: Steel maximum or medium security, thermally-enhanced, factory glazed, fixed detention windows with ballistic resistant glazing, without vertical bars and without detention screens.

Paragraph below is based on Hope’s Series STB70 Maximum or Medium Detention Awning Windows.

* + - * 1. Type Operable Guard Tower Windows: Steel maximum or medium security, thermally-enhanced, factory glazed, sliding steel frame detention windows with ballistic resistant glazing and without detention screens.
			1. PERFORMANCE REQUIREMENTS
				1. Air Leakage: Meet or exceed ASTM E 283, Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors. Maximum allowable air infiltration and exfiltration 1/2 cfm/lin ft of crack perimeter when subjected to an exterior to interior static test pressure difference of 1.57 psf across window unit.
				2. Water Penetration: Meet or exceed ASTM E 331, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference. No water leakage for 15 minutes when window is subjected to a rate of flow of 5 gal/sq ft/hr with test pressure difference across window unit of 2.86 psf.

Retain paragraph below when Window Types 3A, 3B, or 3C are specified with bars and are used. Not required for Window Type 3.

* + - * 1. Impact Test: Meet or exceed the requirements listed below from ASTM F1592-01 “Standard Test Methods for Detention Hollow Metal Vision Systems.”

Impact Blows - Must withstand a minimum of 600 blows at each impact location (1200 total blows per frame without rail bar, 1800 total blows per frame with rail bar).

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.

* + - 1. SUBMITTALS

(Provide submittal index. Organize submittal in the order listed below in this article and articles 1.5 and 1.7)

* + - * 1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Submittals related to this specification section shall be forwarded from the Contractor and/or their agent(s) as complete submittal packages. All information required from this section, including Installer’s Qualifications, Shop Drawings, Product Data, Samples, and Quality Control submittals shall be submitted as one complete package. Partial or incomplete submittal packages will be rejected.
				5. Shop Drawings: Show window types, quantities, fabrication details, and connections to adjacent construction, including existing jamb, head, and sill conditions, and all associated dimensions. Include documentation of rough in field dimensions obtained for each window location. Include details of screens, hardware, insulation, and glazing details.
				6. Rough Opening Dimensions: Provide a completed ‘Rough Opening Dimensioning Verification Chart’ documenting all windows (chart attached at the end of this specification). This informational submittal will be reviewed and returned as ‘Acknowledged’ only as the Contractor is solely responsible for fully verifying and coordinating this data.
				7. Product Data: Catalog sheets, specifications, and installation instructions.
				8. Samples:

One complete window unit of each window type, with specified accessories. This sample, if approved, will be available for Contractor pickup and may be used in the Work.

Retain subparagraph above for large projects, below for small projects. Delete screen from subparagraph below if none required.

Corner sample of frame, ventilator, detention members, and screen showing materials and construction of each window type.

Hardware: Each item required.

Color Samples for Factory Prefinished Windows: Manufacturer’s color for the specified finish listed in section 2.01, O. of this specification.

* + - * 1. Quality Control Submittals:

Manufacturer’s Qualifications Data:

Names and addresses of 5 similar projects that have been in operation for not less than 3 years producing custom steel windows.

Manufacturer’s listed in section 1.02 are exempt from this submittal requirement.

Installers Qualifications Data:

Name of each person who will be performing the Work and their employer's name, business address and telephone number.

Names and addresses of 3 similar projects that each person has worked on during the past 3 years.

Test Reports:

Certified air leakage and water penetration test reports for each type of window unit required.

Retain next two paragraphs below when Window Types 3A, 3B, or 3C are specified with bars and are used. Not required for Window Type 3.

Certified impact test reports for each type of window unit required.

tool-resistant steel test reports for each type of window unit required verifying conformance with ASTM A627-03.

* + - * 1. Contract Closeout Submittals:

Operation and Maintenance Data: Two copies of owner’s manual, including instructions for cleaning windows and touching-up finish.

* + - * 1. Re-Evaluation Fee: In accordance with the General Conditions 07213 Article 4.7. In accordance with Article 4.7 of the General Conditions, a re-evaluation processing fee of $250 will be levied against the Contractor for each re-evaluation of a Submittal or Submittal Package submission that was returned for failure to comply with the submittal requirements relative to completeness, content or format.
			1. QUALITY ASSURANCE
				1. Detention Windows Manufacturer’s Qualifications: The manufacturer shall be regularly engaged in the production of custom steel windows, shall have furnished steel windows for 5 projects of similar scale to that of this project, and that have been in operation for not less than 3 years. Window manufacturer shall be subject to the approval of the Director.
				2. Installers Qualifications: The persons installing the windows and their Supervisor shall be personally experienced in steel window work and shall have been regularly employed by a company that installs steel detention windows as a primary source of work for a minimum of 3 years.
				3. Testing Agency:

Air infiltration and water penetration tests shall be performed by a qualified independent testing laboratory.

Retain next two paragraphs below when Window Types 3A, 3B, or 3C are specified with bars and are used. Not required for Window Type 3.

Tool-resisting steel certification tests shall be performed by a qualified independent testing laboratory.

Impact testing certifications shall be performed by a qualified independent testing laboratory.

* + - * 1. Field Dimensioning and Existing Conditions Verification:

Field verify all existing window opening conditions, including all rough opening dimensions. Document dimensions and confirm how variations in rough opening dimensions will be incorporated into selection of final window sizes.

Submit summary of findings, including any conditions which deviate with Contract Drawings.

* + - * 1. Project Benchmark Installation:

Prior to installation of windows, fully remove one existing window unit at each location where a new window type is scheduled to be provided. This shall include removal of the existing window unit(s), including removals of any hazardous materials, structural items, or other associated components required in conjunction with the Work. The existing window selected for removal must not create a security breech and the locations selected shall be approved by the Director’s Representative prior to removal of any window or associated component.

Obtain digital photographs to document the existing window opening adequate to fully document the interior and exterior conditions of the remaining construction. Provide the digital photos to, and in an electronic format acceptable by, the Director’s Representative.

Weather tightness, energy efficiency, and security shall be maintained after the removal of the existing window removal.

After approval by the Director’s Representative, install a single window unit of each window type scheduled for the project, in its/their final location(s). Install window(s) with all materials, fasteners, welds, joints, interior and exterior sealants, and all other accessories required for the Work.

Do not start the remainder of the window installation until the Director’s Representative has approved each benchmark window installation.

Approved windows will be the standard of workmanship required for all windows installed in like conditions. Failure to maintain this standard will be cause for rejection of the Work.

Maintain approved windows until all Work has been installed and approved.

* + - 1. DELIVERY, STORAGE, AND HANDLING
				1. Deliver windows in sturdy, protective crates or containers.
				2. Store and handle windows in a manner that will not cause damage to the finish.
			2. MAINTENANCE MATERIALS
				1. Touch-up Kit: For every 20 windows installed (and fraction thereof), furnish detention window manufacturer’s factory finish touch-up kit for the factory finish on windows. Store touch-up kits at the site where directed.

Label kits to identify locations used.

* + - * 1. Security Fastener Tools: Furnish two (2) sets of tools for installing, adjusting, and/or removing security fasteners
1. PRODUCTS
	* + 1. MATERIALS
				1. Ventilator Jambs, Sill Rails, and other components composed of hot rolled steel sections: ASTM A575.

Omit the words “vented and” in paragraph below when only Window Type 3B is used.

* + - * 1. head and jamb frame members shall be formed from sheet steel not less than #12 gauge. Frames shall be channel shaped and carry through the vented and fixed portions continuously from bottom of sill to top of frame at each jamb. Frames shall be thermally-enhanced with a rigid vinyl or EPDM separator between the interior and exterior frame. Frame members shall have profiles and dimensions as indicated on drawings.
				2. Sill box shall be formed from sheet steel not less than #12 gauge and have profile and dimensions as indicated on the drawings.

Delete paragraph below when only Window Types 3B and/or 3C are used.

* + - * 1. Horizontal impost member shall consist of two channel shaped members formed from sheet steel not less than #12 gauge and have profiles and dimensions as indicated on drawings.

Delete paragraph below when only Window Type 3 is used or when Window Types 3A, 3B, or 3C are used without vertical steel bars.

* + - * 1. Vertical impost tubes:

Tubes shall be 1-1/2 inch x 2 inch x #11 gauge wall steel tube with an electrodeposited coating of zinc in accordance with ASTM B633, Fe/Zn 25.

Omit the term ‘ventilator’ in paragraph ‘J’ below when only Window Type 3B is used.

* + - * 1. Ventilator jamb, sill and head rails shall be one-piece sections and shall provide internal and external metal-to-metal weathering contacts around the entire perimeter. Jamb and sill rails shall be hot-rolled steel sections, not less than 1/8 inch thick and 1-3/4 inches deep and weighing not less than 2 pounds per lineal foot and shall have electrodeposited coating of zinc in accordance with ASTM B633, Fe/Zn 25. Head rail shall be cold rolled formed from #12 gauge steel and 1-3/4 inches deep.

Delete paragraph below when only Window Types 3B and/or 3C are used.

* + - * 1. Ventilator contact applied to horizontal impost shall be a hot-rolled steel section not less than 1/8 inch thick and 1-5/8 inches deep and shall have electrodeposited coating of zinc in accordance with ASTM B 633, Fe/Zn 25. Ventilator contacts applied to frame at jambs shall be formed from sheet steel not less than #12 gauge and 1-5/8 inches deep.
				2. Plates and Covers:

Removable access plates of sheet steel not less than #12 gauge having 3/4 inch caulking returns, shall be provided at interior head and jambs.

Sill access cover shall be of sheet steel not less than #12 gauge.

Plates and covers shall be attached with #10 Torx Taptite truss head plated steel tamper resistant screws, spaced 9 inches on centers, 1 inch from ends.

Delete paragraph below when only Window Type 3B is used.

Removable crank handle shaft cover plates of sheet steel not less than #12 gauge steel, 2 inch diameter, with felt air infiltration washer, and fastened with (2) #10 Torx Taptite truss head plated steel tamper resistant screws.

* + - * 1. Glazing:

Glazing beads shall be #12 gauge sheet steel sheet applied with #8 Torx Taptite truss head plated steel tamper resistant screws, spaced 9 inches on centers. Windows shall be factory glazed by window manufacturer.

Delete subparagraph below when only Window Type 3B is used.

Ventilators shall be prepared for outside glazing against 15/16 inch high rabbet at sill and jambs and inserting glass in channel groove at head.

* + - * 1. Glazing Beads: Formed steel glazing beads, screw-on type.

Drill holes for screws before finishing. Space holes one inch from ends and 6 inches on center.

Finish: Match window frame color specified below.

Delete paragraph below when only Window Type 3B is used.

* + - * 1. Weatherstripping: Q-Lon Weatherseal (TM) by Schlegel, or equal.

Delete paragraph below when only Window Type 3B is used.

Modify paragraph below when multiple adjacent units are used.

* + - * 1. Operating mechanism:

Operator Power Unit: Fabricated in aluminum housing, with 16 pitch, self-locking, and machine cut steel worm and cast iron gear, with 40:1 ratio.

Flanged type bronze bushings for both worm shaft and countershaft, with a protective cover and factory lubricated.

Linkage arms: Steel not less than 3/16" x 1-3/8" and located at both jambs of each ventilator.

Vertical connecting bars: Steel not less than 3/16" x 1-1/4" with provision for adjustment and located at both jambs of each unit.

Brass or bronze bearings: Provided at all wearing points on the pivotal bars and linkage mechanism.

Provide four (4) removable crank handles and turn over to the Director's Representative.

Delete subparagraph below if no sill more than 6 feet above finished floor.

Remote Window Operators: Manual controlled surface mounted window operators designed for ventilators indicated.

Controls: Crank operated rotary control box delivering forward and backward motion to a steel flexible cable traveling through surface mounted steel conduit.

Crank Handle: Removable.

* + - * 1. Perimeter Anchors: 1-1/4 inch x 1-1/4 inch hot-rolled steel angles or formed plate, both 3/16 inch thick.

Delete paragraph below when only Window Type 3B is used.

* + - * 1. Angular Safety Screen:

Frame: Angle shape formed of sheet steel not less than #12 gauge.

Screen Cloth Clamping Plate: Formed of sheet steel not less than #12 gauge.

Screen Cloth:

Retain subparagraph below on all SHU units and/or medical buildings.

Unless Otherwise Indicated: 0.054 inch diameter #304 stainless steel wire 8 x 8 double fold and hem the mesh at frame engagement.

Retain subparagraph below if above subparagraph above is deleted.

Unless Otherwise Indicated: 0.028 inch diameter #304 stainless steel wire 12 x 12 double fold and hem the mesh at frame engagement.

* + - * 1. Paint Finish:

Pretreatment – Iron or Zinc phosphate (bonderized) treated in a multi-stage process or approved equal.

Primer – E-COAT, PPG powercron 8000, Zinc Rich primer or approved equal.

Finish Coat - PPG Polyurethane, Super Durable Powder by Tiger Drylac, or approved equal.

Color below is NYS DOCCS Standard unless matching an adjacent window color. Verify approval of final color with team leader.

Custom Color: Medium Bronze MP36366 (Hopes/Matthews).

* + - * 1. Fasteners: Stainless steel, unless otherwise specified.

Exposed Fasteners: Plated Torx tamper-resistant truss head for exposed screws and bolts, finished to match windows.

* + - * 1. Sealing Mastic/Cap Bead: Non-staining sealant material recommended by window manufacturer.
				2. Rigid Insulation: Rigid cellular polyurethane or polyisocyanurate thermal insulation boards surfaced with aluminum foil on both sides; minimum aged R value of 3.6 @ 75 degrees F per 1/2 inch thickness meeting the requirements of ASTM C591-11.
				3. Rigid Insulation Adhesive: Type recommended by the rigid insulation manufacturer.
				4. Open-Cell Polyurethane Foam Insulation: ASTM C 1029, Type II, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84, compatible with adjacent rigid or spray-foam insulation and/or other adjacent materials.
				5. Cold Galvanizing Compound: Single component compound giving 93 percent pure zinc in the dried film, and meeting the requirements of SSPC-Paint 20 (rev. 2002).

Omit paragraph below only when either Window Type 3B or 3C are specified without vertical steel bars.

* + - * 1. Tool-Resisting Steel: Homogeneous tool-resisting steel.

Round Bars: ASTM A 627-03, grade 4.

* + - 1. FABRICATION
				1. Fabricate windows in accordance with approved shop drawings.
				2. All formed frame members and muntins shall have detailed profile shapes and dimensions as indicated on drawings.
				3. Frame members shall be coped and welded at corners the full depth of the frame for maximum strength and weather tightness, and exposed face welds dressed smooth.
				4. Sill box channel section shall be coped at ends then welded to the jamb frame members the full depth of the frame and exposed face welds dressed smooth.
				5. Horizontal impost sections shall be stitch welded together to form a tube and coped at the ends, then welded to the jamb frame members the full depth of the frame and exposed face welds dressed smooth. Fillet welds shall not be dressed.

Delete paragraph below for Window Type 3 or when Window Types 3A, 3B, And/or 3C are used without vertical steel bars.

* + - * 1. Vertical impost tubes:

Type 3 Detention Windows: Shall penetrate and be securely welded to the sill box and be welded to the horizontal impost and penetrate and be securely welded to the frame head member. Fillet welds shall not be dressed.

Delete paragraph below for Window Type 3 or when Window Types 3A, 3B, And/or 3C are used without vertical steel bars.

* + - * 1. Locate 7/8 inch round tool-resisting steel detention bars concealed in jamb members and encased in vertical tubular imposts. Locate 1/4 inch by 2 inch flat tool-resisting steel detention bars concealed in and secured to head and sill frame members. Round bars shall penetrate flat bars and be secured with steel washers welded near ends. Round bars shall rotate freely and shall be spaced not more than 5" on center. Flat bars shall be securely attached to frame members and round bars shall be spaced not more than 5" on center.
				2. All removable plates and covers on the interior shall be field attached with #10 screws, spaced not more than 9 inches on center and 1 inch from ends.
				3. Ventilator jamb and sill bars shall be machine welded and exposed face welds and contact surfaces dressed smooth. The ventilator head rail and jamb bars shall be coped and welded together. Then both the head rail and jamb bars rigidly welded to the 7/8 inch round pivotal detention bar near each jamb. Head rail to have intermediate welds at maximum spacing of 12 inches.
				4. Ventilator frame contacts at head and jambs shall be securely attached to the adjacent frame members.
				5. Operable Hardware:

The 7/8 inch round pivotal bar shall have a welded linkage arm near each end. The linkage arms 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.

The flat connecting bars at each jamb shall be connected to a bell crank by means of an adjustable link, which provides for the adjustment of ventilators.

The bell crank shall be welded to each end of a 3/4 inch round power shaft.

The 3/4 round power shaft shall be connected to the power with an overload safety device.

Sill box type units shall have the power unit centered and concealed in the sill box. The power shaft with a bell crank welded at each end shall extend to both jambs. A brass or bronze support bearing shall be adjacent to each bell crank.

Opening and closing of the ventilators shall be accomplished by rotating the operating cone continuously in either direction.

The 3/4 inch round power shaft, power unit, bell cranks, adjustor links and connecting bars are removable from the window.

Delete paragraph below when only Window Type 3B is used.

* + - * 1. Weatherstripping shall be factory applied in an integral dovetail self-locking groove located in the same plane around the interior contact surface of each ventilator. Weatherstripping that relies on adhesive for application, or screw applied weatherstripping will not be acceptable.

A 1-3/4 inch by 1/8 inch thick felt gasket with a 7/16 inch square center hole and tension spring, shall be provided behind each cone knob to prevent air infiltration.

Delete paragraph below only when Window Type 3B is used.

* + - * 1. Angular Safety Screen:

Screens shall be fixed, permanently fastened, and fabricated not to interfere with ventilator operation.

Provide Angular Safety Screens at all ventilators unless specifically indicated otherwise.

Angle frame sections shall be solidly welded at corners and all face and contact surfaces dressed smooth.

Double fold and hem the screen cloth at the frame edge and securely attach with #10 Torx Taptite truss head plated steel tamper resistant screws, spaced 4 inches on centers, 1 inch from ends, which penetrate the angle frame, wire cloth and clamp plate.

Screen shall be field attached with #10 screws, spaced 9 inches on centers and 1 inch from ends.

* + - * 1. Thermally-enhanced construction:

Frames shall be designed and fabricated with a ¼” vinyl or EPDM separator sandwiched between the interior and exterior frame.

Interior and exterior frames shall be factory attached with 10/24 x ¾” Torx machine screws spaced at 9” on centers.

* + - 1. SHOP FINISHING
				1. All materials shall be either chemically or mechanically cleaned to remove mill scale, dirt, oil and other foreign matter. Provide one of the two approved shop finish systems listed below.
				2. Shop Finish System: E-COAT System.

After fabrication; windows, covers, plates, screen frames and glazing beads shall be bonderized in a 13 stage E-COAT process, as a preparation for receiving paint.

After pretreatment, a coat of PPG epoxy primer shall be electro-statically applied. (Type of primer depends on type of paint finish selected.)

After prime coat, a top coat of PPG polyurethane shall be applied.

All concealed steel members and perimeter anchors shall be protected by electro-galvanizing or zinc phosphate and prime painted.

* + - * 1. Shop Finish System: Bonderized and Polyester Powder Coat

Bonderizing: After shot blasting; all materials to be bonderized or pretreated by a four-stage process as a preparation for receiving paint, as follows.

High pressure wash with degreaser applied at minimum 150 degrees Fahrenheit.

Warm water rinse.

Zinc or Iron phosphate applied at minimum 130 degrees Fahrenheit.

Warm water rinse with a non-chrome post treatment solution.

Prime Paint: After bonderizing, a coat of zinc rich thermosetting epoxy prime paint shall be applied and oven baked.

Bake at 325 degrees Fahrenheit.

Dry film thickness of primer to be a minimum of 1.5 mils.

Finish Paint: After prime coat, a baked on polyester powder coat finish system shall be applied.

Bake at 410 degrees Fahrenheit.

Total dry film thickness to be a minimum of 3.0 mils.

1. EXECUTION
	* + 1. EXAMINATION
				1. Verification of Conditions: Examine surfaces to receive detention windows for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

Check locations and conditions of required built-in anchors.

* + - 1. INSTALLATION
				1. Install the Work of this Section in accordance with the manufacturer’s printed instructions, except as shown or specified otherwise.

Delete subparagraph below if only Window Types 3B is used.

Install Angular Safety Screens at all ventilators unless specifically indicated otherwise.

* + - * 1. Anchor window units securely in place, plumb, level, aligned, without warp or rack of frames or ventilators.

Secure the window sill box to the 5/16 inch by 6-3/4 inch steel plate at sill and to the 4 inch by 3/8 inch steel imbed with 1/4 inch diameter screws, spaced 9 inches on center and 2 inches from ends. Tack weld screw heads to window sill box.

Field weld windows to plate embeds at head and jambs using 1-1/4 inch x 1-1/4 inch x 3/16 inch x 1-1/2 inch long angle clips furnished.

Welds: Minimum of 3/16 inch by 1 inch long and 18 inches on centers.

Unless noted otherwise on drawings, interior and exterior perimeter sealant joints around head and jambs shall not exceed 3/8” (+/- 1/8”). Should perimeter sealant joint at any location fall out of tolerance, Contractor shall provide at no cost to the State an applied 12 gauge color matched steel angle around the perimeter at all 3 sides. At interior locations, perimeter locations shall extend to all windows located within the room or space in which the deviation occurs.

* + - * 1. Seal metal to metal joints, screw heads, and unneeded fastener holes with sealing mastic.

Designer to carefully coordinate spray foam insulation locations on drawings. Confirm and/or edit paragraph below where factory applied insulation may be more easily installed in lieu of spray foam.

* + - * 1. Fill all voids around head, jambs, and sill with spray foam insulation or as indicated on drawings. Insulation shall not interfere with operable hardware.

Delete paragraph below if remote window operators are not retained in Part 2.

* + - * 1. Locate remote window operators in locations indicated.
			1. ADJUSTING
				1. Touch-up welded and abraded surfaces with a coating of cold galvanizing compound and multiple finish coats to match color and sheen of exposed factory applied finish.

Delete paragraph below only if Window Type 3B is used.

* + - * 1. Adjust ventilators and hardware for smooth operation and weathertight closure. Lubricate hardware and other moving parts.
			1. CLEANING
				1. Clean window units promptly after completion of installation.
			2. PROTECTION
				1. Protect installed windows and finish as necessary from adjacent work and cleaning operations.

END OF SECTION 085662

**ROUGH OPENING DIMENSIONING GUIDE – EXISTING WINDOW ELEVATION**

**VIEW LOOKING FROM INTERIOR**



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| HT: | HORIZONTAL TOP |  | VL: | VERTICAL LEFT |  | RL: | RADIUS LEFT\*\* |
| HM: | HORIZONTAL MIDDLE |  | VM: | VERTICAL MIDDLE\* |  | RM: | RADIUS MIDDLE\*\* |
| HB: | HORIZONTAL BOTTOM |  | VR: | VERTICAL RIGHT |  | RR: | RADIUS RIGHT\*\* |

\* VERTICAL MIDDLE DIMENSION REQUIRED WHERE WINDOW DIMENSION EXCEEDS 6’-0”

\*\* RADII DIMENSION(S) REQUIRED WHERE WINDOW INCLUDES CIRCULAR OR ROUNDED FRAMES

AUTHOR OF THIS DOCUMENT: SUBMIT THIS CHART (or one similar) AS A PROJECT INFORMATION SUBMITTAL

DATE SUBMITTED: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



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| --- | --- | --- | --- | --- | --- | --- | --- |
| HT: | HORIZONTAL TOP |  | VL: | VERTICAL LEFT |  | RL: | RADIUS LEFT\*\* |
| HM: | HORIZONTAL MIDDLE |  | VM: | VERTICAL MIDDLE\* |  | RM: | RADIUS MIDDLE\*\* |
| HB: | HORIZONTAL BOTTOM |  | VR: | VERTICAL RIGHT |  | RR: | RADIUS RIGHT\*\* |

\* VERTICAL MIDDLE DIMENSION REQUIRED WHERE WINDOW DIMENSION EXCEEDS 6’-0”

\*\* RADII DIMENSION(S) REQUIRED WHERE WINDOW INCLUDES CIRCULAR OR ROUNDED FRAMES

The remainder of this document is for information only; not to be included in project specifications.

There are only a few manufacturers of steel detention windows, however, this section has been prepared to allow as much competition as possible for steel detention windows with the basic quality and features we generally require.

Thermal performance of steel windows is close to that of thermally-broken aluminum windows. Thermal expansion of steel windows is half that of aluminum windows, which reduces sealant failure and vent operation problems.

When steel detention windows are used for a project, weatherstripped, thermally-enhanced, factory prefinished windows are required, unless specific project conditions warrant otherwise. If so, please contact the Team Leader.

END OF INFORMATION.