



STATE OF NEW YORK
OFFICE OF GENERAL SERVICES
DESIGN AND CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242



ADDENDUM NO. 3 TO PROJECT NO. 44722

**GENERAL CONSTRUCTION WORK
REPLACE WINDOWS,
RECREATION BUILDING NORTH No. 86
RECREATION BUILDING SOUTH No. 87
WOODBOURNE CORRECTIONAL FACILITY
99 PRISON ROAD; P.O. BOX 1000
WOODBOURNE, NY 12788-1000**

August 6, 2014

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual.
Acknowledge receipt of this Addendum in the space provided on the Bid Form.

SPECIFICATIONS

1. SECTION 000110 TABLE OF CONTENTS:
ADD "085123 Steel Windows" to the list on page 000110 – 2.
ADD "085125 Steel Single Hung Windows" to the list on page 000110 – 2.
DELETE "085663 Steel Detention Windows" from the list on page 000110 – 2.
2. **ADD** attached SECTION 085123 STEEL WINDOWS.
3. **ADD** attached SECTION 085125 STEEL SINGLE HUNG WINDOWS.
4. **REMOVE** SECTION 085663 STEEL DETENTION WINDOWS

DRAWINGS

5. Drawing Number A-501 through A-505: **REPLACE** the phrase "STEEL DETENTION STYLE STEEL SINGLE HUNG WINDOW" with "STEEL SINGLE HUNG WINDOW".
6. Drawing Number A-501 through A-505: **REPLACE** the phrase "INSECT SCREEN" with "SAFETY SCREEN".
7. Drawing Number A-501 through A-505: **REPLACE** the phrase "TYPE M INSULATED SECURITY GLASS" with "TYPE M INSULATED GLASS".

END OF ADDENDUM

Margaret F. Larkin
Acting Director of Design

SECTION 085123

STEEL WINDOWS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Joint Sealers: Section 079200.
- B. Glass and Glazing: Section 088100.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall conform to the requirements of the "Steel Window Specifications" of the Steel Window Institute (SWI).

1.03 DESCRIPTION

- A. Window Classification and Weight:
 - 1. Heavy Intermediate.
 - a. Combined weight of outside frame and ventilator sections shall be a minimum of 3.7 lbs per lin ft and frame depth from front to back shall be minimum 1-7/16 inches.

1.04 PERFORMANCE REQUIREMENTS

- A. Heavy Intermediate and Heavy Custom Windows:
 - 1. Air Infiltration for Weatherstripped Ventilators (ASTM E 283): Maximum air leakage 1/2 cfm per lin ft of crack length when subjected to an exterior to interior static test pressure difference of 1.57 psf across window unit.
 - 2. Water Penetration for Weatherstripped Windows (ASTM E 331): 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.
 - 3. Structural Performance (ASTM E 330): No failure of locks, operating hardware, or other parts when subjected to an exterior to interior, and interior to exterior, static test pressure difference of 60 psf across window unit.

1.05 SUBMITTALS

- A. Waiver Of Submittals: The "Waiver Of Certain Submittal Requirements" in Section 01330 does not apply to this Section.
- B. Submittals related to this specification section shall be forwarded from the Contractor and/or his agent(s) as complete submittal packages. All information

required from this section, including Installer's Qualifications, Shop Drawings, Rough Opening Dimensions, Product Data, Samples, and Quality Control submittals shall be submitted as one complete package. Partial or incomplete submittal packages will be rejected.

- C. 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.
- D. 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.
- E. Product Data: Catalog sheets, specifications, and installation instructions.
- F. Samples:
 - 1. One complete window unit of each window type, with specified accessories. Deliver samples to Director's Representative at the Site for approval. These samples, if approved, will be available for Contractor pickup and may be used in the Work.
 - 2. Approved samples may be used for benchmark installations.
 - 3. Hardware: Each item required.
 - 4. Color Samples for Factory Finished Windows: Manufacturer's color for the specified finish listed in section 2.01, H. of this specification.
- G. Quality Control Submittals:
 - 1. Manufacturer's Qualifications Data:
 - a. Names and addresses of 5 similar projects that have been in operation for not less than 3 years producing custom steel windows.
 - b. Manufacturer's listed in section 1.02 are exempt from this submittal requirement.
 - 2. Installers Qualifications Data:
 - a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
 - b. Names and addresses of 3 similar projects that each person has worked on during the past 3 years.
 - 3. Test Reports:
 - a. Certified air leakage and water penetration test reports for each type of window unit required.
- E. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, including instructions for cleaning and touching-up finish, to the Director's Representative.

1.06 QUALITY ASSURANCE

- A. **Manufacturer's Qualifications:** The manufacturer of heavy intermediate windows shall be regularly engaged in the production of said windows, shall have furnished similar windows for 5 projects of comparable size, shall have been in operation for not less than 5 years, and shall be subject to the approval of the Director.
- B. **Installers Qualifications:** The persons installing the heavy intermediate windows, and their Supervisor, shall be personally experienced in window installation work, and shall have been regularly employed by a Company installing heavy intermediate windows for a minimum of 3 years.
- C. **Testing Agency:**
 - 1. Air infiltration and water penetration tests to be performed by a qualified independent testing laboratory.
- D. **Field Dimensioning and Existing Conditions Verification:**
 - 1. 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.
 - 2. Submit summary of findings, including any conditions which deviate with Contract Drawings.
- E. **Project Benchmark Installation:**
 - 1. Order the approved windows of each type for the benchmark installations only. Do not order the balance of the windows until the benchmark installations for each window type has been accepted.
 - 2. Maintain weather tightness, energy efficiency, and security throughout the removal of existing windows and the benchmark installations.
 - 3. Prior to the benchmark window installation remove one existing window of each type at locations approved by the Director's Representative. Remove hazardous materials, structural items, and other associated components as required.
 - 4. Photograph the existing window opening including the interior and exterior conditions of the remaining construction. Provide digital photos in an electronic format acceptable to the Director's Representative.
 - 5. Install each window type in its final location. Install windows with materials, fasteners, welds, joints, interior sealants, exterior sealants and other accessories required for the Work.
 - 6. Accepted benchmark installations shall be the standard of workmanship required for windows installed in similar conditions. Failure to maintain this standard will be cause for rejection of the Work.
 - 7. Maintain benchmark installations until the balance of the Work has been installed and accepted.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows in sturdy, protective crates or containers.
- B. Store and handle windows in a manner that will not cause damage to the finish.

1.08 MAINTENANCE

- A. Extra Materials: For every 20 windows installed (and fraction thereof), furnish window manufacturer's standard factory finish touch-up kit for the factory finish on windows.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Windows and Frames: Solid steel shapes made from new billet steel.
 - 1. Mullions: Solid steel shapes or plates with sheet steel covers, unless otherwise shown.
- B. Glazing Beads: Unless otherwise shown or specified, extruded aluminum, 6063 alloy T5 temper, with a minimum thickness of 0.06 inch; continuous screw-on type torx center-pin tamper resistant steel screws finished to match windows.
 - 1. Finish: Finish shall match windows.
- C.. Weatherstripping: Q-Lon Weather Seal by Schlegel or closed cell sponge neoprene.
- D. Accessories:
 - 1. Anchors: Anchors, clips, fittings, and related fasteners shall be galvanized or cadmium plated steel, unless otherwise approved.
 - 2. Window Cleaning Anchors: Non-magnetic stainless steel or nickel-copper alloy; ANSI A39.1.
- E. Sealing Mastic: Non-staining sealant material recommended by window manufacturer.

2.02 FABRICATION

- A. Corners of frames shall be mitered or coped and solidly welded. Exposed and contact surfaces shall be finished smooth flush with adjacent surfaces.
- B. Glazing: Windows shall be fabricated for outside glazing with glazing beads. Glazing beads shall be sized to suit the glass specified.
- C. Tolerance for Window Size (height and width) Dimensions: + 1/16 inch.
- D. Mullions: Fabricate to the design and profile shown on the Drawings. Finish mullions and covers to match windows.
- E. Anchor Accessories: Fabricate to shape and size, and furnish in quantity, as required to securely install and connect the Work of this Section to the construction shown.
- F. Fixed Window Units: Non-operable units of design and profile shown.

2.03 SHOP FINISHES

- A. 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.
- B. Shop Finish System: E-COAT System:
 - 1. 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.
 - 2. After pretreatment, a coat of PPG epoxy primer shall be electro-statically applied. (Type of primer depends on type of paint finish selected.)
 - 3. After prime coat, a top coat of PPG polyurethane shall be applied.
 - 4. All concealed steel members and perimeter anchors shall be protected by electro-galvanizing or zinc phosphate and prime painted.
- C. Shop Finish System: Bonderized and Polyester Powder Coat:
 - 1. Bonderizing: After shot blasting; all materials to be bonderized or pretreated by a four stage process as a preparation for receiving paint, as follows.
 - a. High pressure wash with degreaser applied at minimum 150 degrees Fahrenheit.
 - b. Warm water rinse.
 - c. Zinc or Iron phosphate applied at minimum 130 degrees Fahrenheit.
 - d. Warm water rinse with a non-chrome post treatment solution.
 - 2. Prime Paint: After bonderizing, a coat of zinc rich thermosetting epoxy prime paint shall be applied and oven baked
 - a. Bake at 325 degrees Fahrenheit.
 - b. Dry film thickness of primer to be a minimum of 1.5 mils.
 - 3. Finish Paint: After prime coat, a baked on polyester powder coat finish system shall be applied.
 - a. Bake at 410 degrees Fahrenheit.
 - b. Total dry film thickness to be a minimum of 3.0 mils.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive steel windows for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown or specified otherwise.
- B. Anchor window units securely in place, plumb, level, aligned, without warp.
- C. Seal metal to metal joints, screw heads, and unneeded fastener holes with sealing mastic.

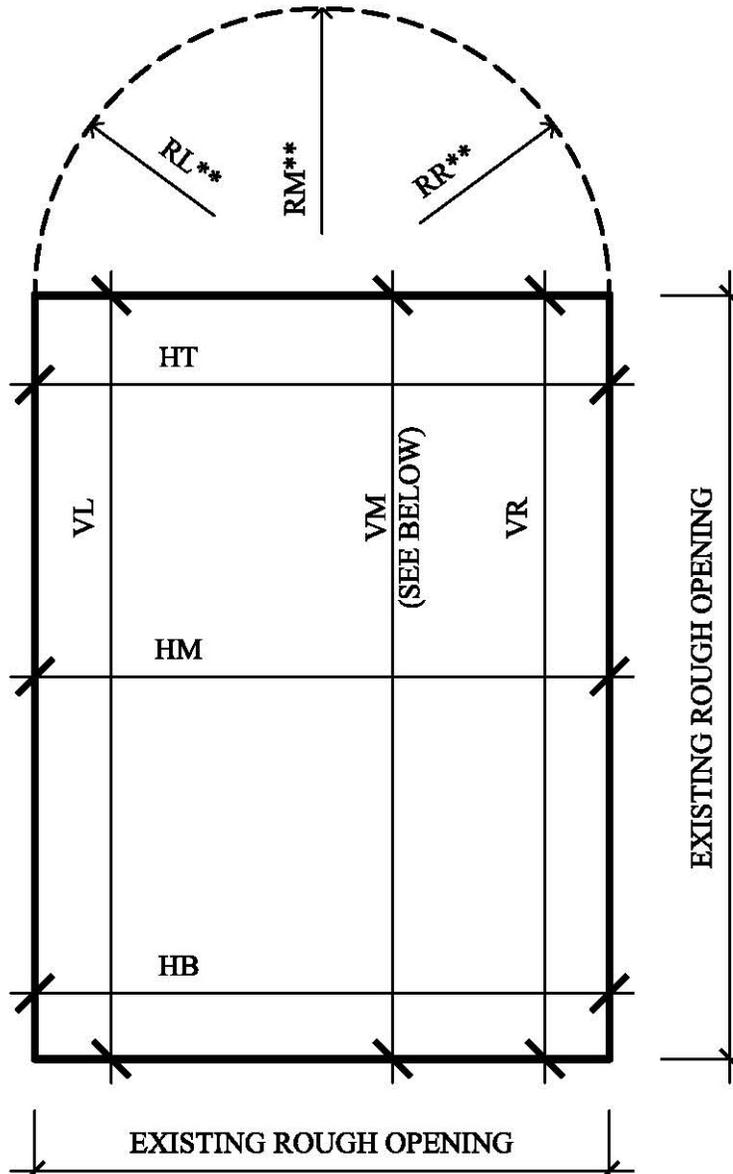
- D. Install one window cleaning anchor at each side edge of each window unit.

3.03 ADJUSTING AND CLEANING

- A. Clean window units promptly after completion of installation

END OF SECTION

**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 OUNDED FRAMES.

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

DATE SUBMITTED: _____

Rough Opening Dimension Verification Chart										
Mark	Window Description	Horizontal Dimensions			Vertical Dimensions			Radius Dimensions**		
		HT	HM	HB	VL	VM*	VR	RL	RM	RR
1										
2										
3										
4										
5										



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

SECTION 085125

STEEL SINGLE HUNG WINDOWS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Built-In Anchors: Section 055000.
- B. Joint Sealants: Section 079200.
- C. Glass and Glazing: Section 088100.

1.02 WINDOW TYPES AND DESCRIPTIONS

- A. Type SH-1 Window: Steel heavy intermediate single hung ventilating windows having a fixed sash at the top, an operable balanced vertical sliding ventilator at the bottom, and a fixed transom panel above at some locations. A fixed insect screen is located on the exterior side of the ventilator sash.
 - 1. Multiple units to be mulled together to create additional units.
- B. Acceptable Manufacturers:
 - 1. Optimum Window Mfg. Corp., 28 Canal Street, Ellenville, New York 12428, phone (845) 647-1900, www.optimumwindow.com.
 - 2. Hope's Windows, Inc, 84 Hopkins Avenue, P.O. Box 580, Jamestown, New York 14702, phone (716) 665-5124, www.hopeswindows.com.

1.03 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:
 - 1. Steel Window Specifications by the Steel Window Institute (SWI).
 - 2. 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).

1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer of heavy intermediate windows shall be regularly engaged in the production of said windows, shall have furnished similar windows for 5 projects of comparable size, shall have been in operation for not less than 5 years, and shall be subject to the approval of the Director.
- B. Installers Qualifications: The persons installing the heavy intermediate windows, and their Supervisor, shall be personally experienced in window installation work, and shall have been regularly employed by a Company installing heavy intermediate windows for a minimum of 3 years.
- C. Testing Agency:
 - 1. Air infiltration and water penetration tests to be performed by a qualified independent testing laboratory.

- D. Field Dimensioning and Existing Conditions Verification:
 - 1. 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.
 - 2. Submit summary of findings, including any conditions which deviate with Contract Drawings.

- E. Project Benchmark Installation:
 - 1. Order the approved windows of each type for the benchmark installations only. Do not order the balance of the windows until the benchmark installations for each window type has been accepted.
 - 2. Maintain weather tightness, energy efficiency, and security throughout the removal of existing windows and the benchmark installations.
 - 3. Prior to the benchmark window installation remove one existing window of each type at locations approved by the Director's Representative. Remove hazardous materials, structural items, and other associated components as required.
 - 4. Photograph the existing window opening including the interior and exterior conditions of the remaining construction. Provide digital photos in an electronic format acceptable to the Director's Representative.
 - 5. Install each window type in its final location. Install windows with materials, fasteners, welds, joints, interior sealants, exterior sealants and other accessories required for the Work.
 - 6. Accepted benchmark installations shall be the standard of workmanship required for windows installed in similar conditions. Failure to maintain this standard will be cause for rejection of the Work.
 - 7. Maintain benchmark installations until the balance of the Work has been installed and accepted.

1.05 PERFORMANCE REQUIREMENTS

- A. Allowable Tolerances: 1/16 inch +/- (1.5mm).

- B. Air Leakage:
 - 1. Meets or exceeds ASTM E 283, Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors.
 - 2. Maximum allowable air infiltration of 0.037 cfm/ft of crack length for operable units, and 0.06 cfm/ft for fixed units.

- C. Water Penetration:
 - 1. Meets or exceeds ASTM E 331, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 - 2. No water leakage at 2.86 psf pressure differential, with water application rate of 5 gal/hr/sf.

- D. Structural Test:
 - 1. Meets or exceeds ASTM E330.
 - 2. No damage at 60 psf.

- E. Evaluating Degree Of Rusting On Painted Steel Surfaces:
 - 1. Meets or exceeds ASTM D610.
- F. Evaluating Degree Of Blistering Of Paint Test:
 - 1. Meets or exceeds ASTM D714.
- G. Evaluation Of Painted Or Coated Specimens Subjected To Corrosive Environments Test:
 - 1. Meets or exceeds ASTM D1654.

1.06 SUBMITTALS

- A. Waiver Of Submittals: The “Waiver Of Certain Submittal Requirements” in Section 01330 does not apply to this Section.
- B. Submittals related to this specification section shall be forwarded from the Contractor and/or his agent(s) as complete submittal packages. All information required from this section, including Installer’s Qualifications, Shop Drawings, Rough Opening Dimensions, Product Data, Samples, and Quality Control submittals shall be submitted as one complete package. Partial or incomplete submittal packages will be rejected.
- C. 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.
- D. 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.
- E. Product Data: Catalog sheets, specifications, and installation instructions.
- F. Samples:
 - 1. One complete window unit of each window type, with specified accessories. Deliver samples to Director’s Representative at the Site for approval. These samples, if approved, will be available for Contractor pickup and may be used in the Work.
 - 2. Approved samples may be used for benchmark installations.
 - 3. Hardware: Each item required.
 - 4. Color Samples for Factory Finished Windows: Manufacturer’s color for the specified finish listed in section 2.01, H. of this specification.
- G. Quality Control Submittals:
 - 1. Manufacturer’s Qualifications Data:
 - a. Names and addresses of 5 similar projects that have been in operation for not less than 3 years producing custom steel windows.

- b. Manufacturer's listed in section 1.02 are exempt from this submittal requirement.
 - 2. Installers Qualifications Data:
 - a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
 - b. Names and addresses of 3 similar projects that each person has worked on during the past 3 years.
 - 3. Test Reports:
 - a. Certified air leakage and water penetration test reports for each type of window unit required.
- H. Contract Closeout Submittals:
 - 1. Operation and Maintenance Data: Two copies of owner's manual, including instructions for cleaning windows and touching-up finish.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows in sturdy, protective crates or containers.
- B. Store and handle windows in a manner that will not cause damage to the finish.

1.08 MAINTENANCE

- A. Maintenance Parts: For every 20 windows installed (and fraction thereof), furnish one each of the following:
 - 1. Window manufacturer's factory finish touch-up kit.
 - 2. 2 spiral balance assemblies.
 - 3. Sash sweep locks.
 - 4. Sash lift handles.
 - 5. Package and identify all parts, and deliver to site where Directed.
 - 6. Operable sash, painted and complete with glazing for each size window unit used.
- B. 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.
 - 1. Label kits to identify locations used.
- C. Security Fastener Tools: Furnish two (2) sets of tools required for installation, adjustment, operation, maintenance, and/or removal of security fasteners.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Hot Rolled Steel Sections; ASTM A 575.
- B. Steel Sheets: ASTM A 569 and ASTM A 568.
- C. Mild Steel Bars and Shapes: Open-hearth (or electric-furnace) mild steel.

- D. Galvanized Steel Sheet: ASTM A 526, with G90 hot-dip process zinc coating, complying with ASTM A 525.
- E. Frame:
 - 1. Material: Galvanized steel sheet.
 - 2. Thickness: 11 guage.
 - 3. Section Weight: 1.65 lbs/lf minimum.
- F. Sash/Ventilator:
 - 1. Material: Galvanized solid hot rolled steel shapes.
 - 2. Section Weight: 1.85 lbs/lf minimum.
- G. Glazing Beads: Formed steel glazing beads, screw-on type.
 - 1. Drill holes for screws before finishing. Space holes one inch from ends and 6 inches on center.
 - 2. Finish: Match window frame color specified below.
- H. Angular Safety Screen:
 - 1. Screen frame: Angle shape formed of A60 hot-dip process zinc coating sheet steel not less than #12 gauge.
 - 2. Screen Cloth Clamping Plate: Formed of sheet steel not less than #12 gauge.
 - 3. Screen Cloth:
 - a. Unless Otherwise Indicated: 0.028 inch diameter #304 stainless steel wire 12 x 12 double fold and hem the mesh at frame engagement.
- I. Weatherstripping: Pile Finseal or continuous EPDM, formed to fit into a spline joint.
- J. Factory Paint Finish:
 - 1. Pretreatment - Zinc phosphate (bonderized) treated in a multi-stage process or approved equal.
 - 2. Primer – E-COAT, PPG powercron 8000 or approved equal.
 - 3. Finish Coat – PPG two component Polyurethane or approved equal.
 - a. Custom Color, unless otherwise directed:
 - 1) Medium Bronze MP36366 (Hopes/Matthews).
 - 2) Old Bronze OP-PK612U4 (Optimum)
- K. Fasteners: Non-ferris brass or stainless steel screws.
 - 1. For Frame and Sash: Torx tamper-resistant truss head, finished to match window finish.
 - 2. For Glazing Bead: Plated Torx tamper-resistant truss head.
 - 3. For Safety Screen: Plated Torx tamper-resistant truss head.
- L. Fiberglass Batt Insulation: Glass or other inorganic fibers and resinous binders formed into flexible blankets, batts or rolls; ASTM C 665.
- M. Filler Panel: As manufactured by Mapes Architectural Products, 2929 Cornhusker Highway, P.O. Box 80069, Lincoln, NE 68504, (800) 228-2391.
 - 1. Exterior and Interior Finish: Aluminum, 22 gauge, smooth surface, primed for shop painting.
 - 2. Finish Substrate: Tempered Hardboard.

3. Core Material: Isocyanurate Insulation.
4. Panel Thickness: 1 inch.
5. Finish: Painted finish to match frames and sashes.

2.02 FABRICATION

- A. Fabricate windows in accordance with approved shop drawings.
- B. Prior to fabrication, all steel sections shall be cleaned by shot or bead blasting.
- C. Frames:
 1. Corners of frames shall be mitered or coped, then solidly welded. Exposed and contact surfaces are to be ground and finished smooth and flush with adjacent surfaces.
 2. Fill all voids and cavities with fiberglass batt insulation, taking care not to interfere with operable hardware.
 3. Provide steel channel stop to secure and center fixed sash.
 4. Provide weep holes in sill and screen bottom.
 5. Fastener Spacing: 30 inches on center, maximum.
- D. Sash/Ventilator:
 1. Corners of sash sections shall be mitered or coped, then solidly welded. Exposed and contact surfaces are to be ground and finished smooth and flush with adjacent surfaces.
 2. Perimeter sash frame section (fixed and operable) to have glazing rebates providing an unobstructed glazing surface of 1/2 inch.
 3. Perimeter sash frame section to have an integral groove for the reception of weather-stripping.
- E. Weatherstripping: Continuous strip inserted into the extruded groove of the sash frame section, and to be on the same plane around the perimeter.
 1. Secure strip to sash to prevent shifting or removal.
- F. Operating Mechanism: Heavy-duty pre-tensioned spiral balance.
 1. Balance mechanism to be custom tensioned to accommodate weight of sash unit and glazing specified.
 2. Balance mechanism to be concealed by a cover assembly and secured with security fasteners.
- G. Hardware:
 1. Bronze sweep lock. 2 required for sashes greater than 48 inches.
 2. Bronze lift handle. 2 per ventilating sash.
- H. Glazing:
 1. All sash frames to be designed for outside glazing.
 2. Glazing stops to be surface applied with security screws.
 3. Size glazing beads to match glazing rebates specified and to suit glass types specified.
 4. All windows to be pre-glazed at the shop of the window manufacturer.
- I. Filler Panels:
 1. All frames to be designed for inside installation of panels.
 2. Stops to be surface applied with security screws.

3. All windows to have panels pre-installed at the shop of the window manufacturer.
- J. Angular Safety Screen:
1. Screens shall be fixed, permanently fastened, and fabricated not to interfere with ventilator operation.
 2. Provide Angular Safety Screens at all ventilators unless specifically indicated otherwise.
 3. Angle frame sections shall be solidly welded at corners and all face and contact surfaces dressed smooth.
 4. 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.
 5. Screen shall be field attached with #10 screws, spaced 9 inches on centers and 1 inch from ends.

2.03 SHOP FINISHING

- A. 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.
- B. Shop Finish System: E-COAT System:
1. 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.
 2. After pretreatment, a coat of PPG epoxy primer shall be electro-statically applied. (Type of primer depends on type of paint finish selected.)
 3. After prime coat, a top coat of PPG polyurethane shall be applied.
 4. All concealed steel members and perimeter anchors shall be protected by electro-galvanizing or zinc phosphate and prime painted.
- C. Shop Finish System: Bonderized and Polyester Powder Coat:
1. Bonderizing: After shot blasting; all materials to be bonderized or pretreated by a four stage process as a preparation for receiving paint, as follows.
 - a. High pressure wash with degreaser applied at minimum 150 degrees Fahrenheit.
 - b. Warm water rinse.
 - c. Zinc or Iron phosphate applied at minimum 130 degrees Fahrenheit.
 - d. Warm water rinse with a non-chrome post treatment solution.
 2. Prime Paint: After bonderizing, a coat of zinc rich thermosetting epoxy prime paint shall be applied and oven baked
 - a. Bake at 325 degrees Fahrenheit.
 - b. Dry film thickness of primer to be a minimum of 1.5 mils.
 3. Finish Paint: After prime coat, a baked on polyester powder coat finish system shall be applied.
 - a. Bake at 410 degrees Fahrenheit.
 - b. Total dry film thickness to be a minimum of 3.0 mils.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine surfaces and conditions to receive windows for defects that will adversely affect the execution and quality of the Work.
 - 1. Check locations and conditions of required anchors.
 - 2. Openings shall conform with details and dimensions shown on the approved shop drawings.
 - 3. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install the Work of this Section in accordance with the manufacturer's printed instructions and approved shop drawings, except as shown or specified otherwise.
 - 1. Install safety screens at all operable sashes unless specifically indicated otherwise.
- B. Anchor window units securely in place, plumb, level, aligned, without warp or rack of frames or ventilators.
- C. Seal metal to metal joints, screw heads, and unneeded fastener holes with the approved sealant. Color to match window finish.
- D. Seal metal to masonry joints with the approved sealant and neatly pointed. Color as approved.
- E. Install safety screens in each ventilator sash opening.
 - 1. Screen frames to be secured on all sides to with security screws.

3.03 ADJUSTING

- A. Adjust ventilators and hardware for smooth operation and weather tight closure. Lubricate hardware and other moving parts.
- B. Touch-up welded and abraded surfaces with the window manufacturers' factory touch-up paint kit. Color to match factory applied finish. Do not use maintenance materials.

3.04 CLEANING

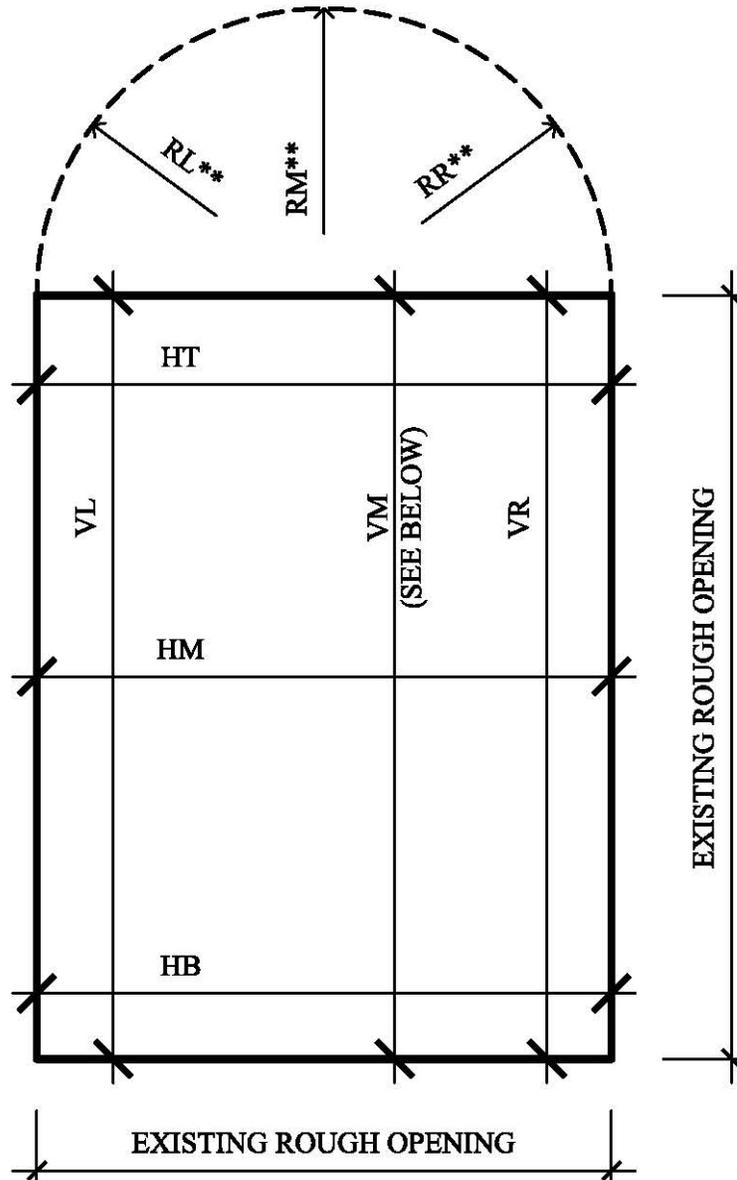
- A. Clean window units and glazing promptly after completion of installation

3.05 PROTECTION

- A. Protect installed windows units, interior and exterior, as necessary from adjacent work and cleaning operations.

END OF SECTION

**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: _____

Rough Opening Dimension Verification Chart										
Mark	Window Description	Horizontal Dimensions			Vertical Dimensions			Radius Dimensions**		
		HT	HM	HB	VL	VM*	VR	RL	RM	RR
1										
2										
3										
4										
5										



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