

SECTION 085123 – FIRE-RATED WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel windows assembled from hot-rolled sections.
2. Steel windows assembled from cold-rolled sections.
3. Wood window frames covered with galvanized steel sheet metal; a.k.a. “Kalamein”.

B. Related Sections:

1. Section 061000 – Rough Carpentry.
2. Section 076200 – Sheet Metal Flashing and Trim.
3. Section 079200 – Joint Sealants.

C. Reference and Industry Standards

1. The following reference standards shall be applicable to this Section:
 - a. New York City Energy Conservation Code **current** edition.
 - b. New York City Building Code **current** edition, as amended, inclusive of:
 - Chapter 16 Structural Design
 - Chapter 24 Glass and Glazing
 - c. The current Enterprise Green Communities (EGC) Criteria, and the current New York City Overlay.
 - d. Industry Standards
 - ASTM (American Society for Testing and Materials)
 - BSA (NYC Board of Standards and Appeal)
 - MEA (NYC DOB Materials and Equipment Acceptance)
 - SWI (Steel Window Institute)

D. The current NYC Overlay of the current Enterprise Green Communities Criteria:

1. Mandatory Requirements: See the NYC Overlay of the EGC reference standard for full specifications.
 - a. All projects must achieve compliance with the mandatory criteria measures that are applicable:
 - Criterion 6.4: Healthier Material Selection
 - Criterion 6.9: Managing Moisture: Roofing and Wall Systems

- Criterion 6.10: Construction Waste Management
- Criterion 7.7: Ventilation

2. Optional Project Requirements for Certification Points

- a. Additionally, rehab projects are required to achieve **55** optional points. Criteria with optional points related to this Specification Section include, but may not be limited to:

- Criterion 6.1: Ingredient Transparency for Material Health
- Criterion 6.2: Recycled Content and Ingredient Transparency
- Criterion 6.4: Healthier Material Selection
- Criterion 6.7: Regional Materials
- Criterion 6.10: Construction Waste Management
- Criterion 7.7: Ventilation

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product data.
- B. Shop Drawings: For windows.
- C. Samples: Manufacturer's standard color sheets, showing full range of available colors for units with factory-applied color finishes.

1.4 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:
1. Product test reports.
- B. Sample warranties.
- C. Documentation indicating MEA and BSA product approvals or Letter of Approval from Office of Technical Research and Certification (OTCR), NYC Department of Buildings.
- D. Documentation for compliance with Enterprise Green Communities Criteria.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.
- B. Warranty documentation.

1.6 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace components of hot-rolled steel windows that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period:
 - a. Window: Five (5) years from date of Substantial Completion.
 - b. Finish: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire Rating: 45-minute assemblies with ¼-inch wire glass complying with NFPA 80 and 257.
 - 1. Windows shall bear an affixed fireproof label certifying that it meets or exceeds fire test standards for New York City, and has been approved by the New York City Department of Buildings Material and Equipment Acceptance (MEA) unit and/or the New York City Board of Standards and Appeals (BSA).
- B. Structural Wind Loads: See cited Building Code references.
- C. Deflection Limits: Design glass framing system to limit deflection of glass edges in a direction perpendicular to glass plane to less than 1/175 of glass-edge length for each individual glazing light or 3/4 inch, whichever is less, at design pressures.
- D. Air Leakage for Weather-Stripped Sash: Not more than 0.37 cfm/ft. of sash crack length at a differential pressure across the windows of 6.24 lbf/sq. ft. when tested in accordance with ASTM E283.
- E. Water Penetration for Weather-Stripped Sash: No leakage for 15 minutes when window is subjected to a rate of flow of 5 gal./h/sq. ft. with a differential pressure across the window of 2.86 lbf/sq. ft. when tested in accordance with ASTM E331.
- F. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of current New York City Energy Code below a height of 95 feet from ground level.
- G. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of current New York City Energy Code.

2.2 HOT-ROLLED AND COLD-ROLLED WINDOW MATERIALS

- A. Types: Provide the following window types in locations indicated in Scope-of-Work [**and/or as indicated on Drawings**].
 - 1. Vertical-Slider / Single- [**Double-**] Hung.

- B. Hot-Rolled Steel Windows: Provide frame and sash members formed from hot-rolled, new billet steel sections. Provide combined weight of frame and sash members and depth of frame or sash members according to the SWI specifications category for hot-rolled steel windows.
- C. Cold-Rolled Steel Windows: Provide frame and ventilator members mechanically formed from metallic-coated, low-carbon, cold-rolled steel sheet complying with ASTM A 653.
- D. Window Finish: Baked enamel or powder coat.
 - 1. Color and Gloss: [**As selected by Design-Professional-of-Record from manufacturer's full range**] [**As selected by Owner from manufacturer's full range**].
- E. Glazing Stops: Provide manufacturer's standard glazing stops. Finish glazing stops with same finish as window units if fabricated of steel; otherwise, provide manufacturer's standard finish. Match color to window units.
- F. Weather Stripping: Manufacturer's standard compressible weather stripping, complying with AAMA 701/702, ASTM C509, or ASTM C864 and designed for permanently resilient sealing under compression and for complete concealment when sash is closed.

2.3 KALAMEIN WINDOW MATERIALS

- A. Types: Provide the following window types in locations indicated in Scope-of-Work [**and/or as indicated on Drawings**].
 - 1. Vertical-Slider / Single- [**Double-**] Hung.
- B. Sash and frame of White Pine clad in galvanized steel, complete with sash weights and sash hardware
- C. Completely glazed with ¼-inch clear [**frosted**] wire glass.
- D. Wire pattern shall be [**Georgian**] [**Misco**].

2.3 HARDWARE

- A. General: Provide manufacturer's standard hardware, with operating components of stainless steel, carbon steel complying with AAMA 907, brass, bronze, or other corrosion-resistant material designed to smoothly operate, tightly close, and securely lock hot-rolled steel window sash; and sized to accommodate sash weight and dimensions.
- B. Self-Closing Hardware: Windows shall be equipped with automatic heat closure devices (heat-activated fusible links).
- C. Lift Handles and Sweep Locks: Windows 24 to 36 inches wide shall be outfitted with two handles and one sweep lock. Windows wider than 36 inches shall be outfitted with two handles and two sweep locks.

2.5 INSECT SCREENS

- A. Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, fully integrated with window. Locate screens on outside of window and provide for each operable exterior sash. Comply with SMA 1201.
- B. Glass-Fiber Mesh Fabric: Complies with ASTM D3656; **[18-by-14 or 18-by-16] [20-by-20 or 20-by-30]** count per sq. in. mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration.

2.4 ACCESSORIES

- A. Fasteners: Provide fasteners of bronze, brass, stainless steel, or other metal that are warranted by manufacturer to be noncorrosive and compatible with trim, hardware, anchors, and other components of hot-rolled steel windows.
- B. Anchors, Clips, and Window Accessories: Provide units of stainless steel, hot-dip zinc-coated steel, bronze, brass, or iron complying with ASTM A123. Provide units with sufficient strength to withstand design pressure indicated.

2.7 FABRICATION

- A. Fabricate hot-rolled steel windows of type and in sizes indicated to comply with SWI standards. Include a complete system for assembly of components and anchorage of window units.
- B. Prepare windows for site glazing.
- C. Subframes and Operable Sash: Formed of hot-rolled steel of profile indicated. Miter or cope corners, and weld and dress joints smooth.
- D. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- E. Provide weep holes and internal water passages to conduct infiltrating water to the exterior.

PART 3 - EXECUTION

3.1 INSTALLATION OF WINDOWS

- A. Comply with manufacturer's written instructions for installing windows, hardware, operators, accessories, and other components.
- B. Install windows level, plumb, square, true to line, without distortion or impediment to thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Separate corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials according to ASTM E2112.

- D. Adjust operating sashes, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts as recommended in writing by manufacturer.
- E. Clean factory-finished steel surfaces immediately after installing windows. Comply with manufacturer's written instructions for final cleaning and maintenance. Avoid damaging protective coatings and finishes.
- F. Protect window surfaces from contact with contaminating substances resulting from construction operations. Remove contaminants immediately in accordance with manufacturer's written instructions.
- G. Refinish or replace windows with damaged finish.

END OF SECTION 085123