SECTION 08 54 00
COMPOSITE WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory fabricated composite windows with fixed and operating sash.

B. Operating hardware.

C. Insect screens.

D. Removable insulated panels.

E. Removable mullions.

1.02 REFERENCE STANDARDS

A. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products; 2021.

B. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

C. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

D. ASTM C1036 - Standard Specification for Flat Glass; 2021.

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

G. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

H. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

I. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

J. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

K. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017 (Reapproved 2023).

1.03 SUBMITTALS

A. Product Data: Provide component dimensions, anchorage and fasteners, glass, internal drainage details, and material composition.

B. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, installation requirements, and removable components.

C. Submit two samples 12 by 12 inches in size illustrating window frame section, mullion section, screen and frame, factory finished surfaces, glazing, infill panels, glazing materials, and removable components.

D. Submit two samples of operating hardware.

E. Submit full-sized samples of each type of complete window unit.

F. Test and Evaluation Reports: Submit certified label or test report on products as indicated under performance requirements to validate product compliance.

G. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.

H. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

I. Manufacturer's Qualification Statement.

J. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.05 WARRANTY

A. Provide manufacturer's statement that it shall correct defective work within a ten year period after Date of Substantial Completion of installation as a part of any project.

B. Provide ten year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.01 WINDOW UNITS

A. Composite Windows: Hollow, extruded composite thermoplastic polymer composite material; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
   1. Configuration: As indicated on drawings.
   2. Window Product Type(s): AP - Awning, hopper, projected window and C - Casement window, in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
   3. Interior Color: White.
   4. Exterior Color: White.
   5. Frame Depth: 3-1/4 inch, minimum.
   6. Attachment Flange: Setback in accodance with conditions shown on drawings.
   7. Frame Joining System: Attachment system for horizontal and vertical multiple window frames in compliance with designated project requirements.
      a. Joining Strip: Kerfed and reinforced strip, fully integrated with window frame and sash for applying interior and exterior vinyl trim, end plugs, flange and gusset gasket, and galvanized steel gusset plates.
      b. Vinyl trim color to match exposed frame colors.
      c. Fasteners: Corrosion resistant screws as recommended by manufacturer for required applications.
   8. Glass Stops: Same material and color as frame, sloped for wash, factory applied.

2.02 COMPONENTS

A. Frames: Profile as indicated on the drawings; flush glass stops of screw fastened type.
   1. Type: Block type (for replacement windows).
   2. Frame Corners: Mitered and joined with nylon corner locks. B. Mullion: Profile as indicated on the drawings.

B. Sills: Profile as indicated on the drawings, brake formed aluminum; sloped for positive wash; fit under sash to 1/2 inch beyond wall face; one piece full width of opening.

C. Stools: 3/4 inch nominal thickness, metal clad wood; fit under sash to project 1/2 inch beyond interior wall face; one piece full width of opening.

D. Infill Panel: Internally reinforced, glazing edge sealed permitting internal air movement to glazing space, outside air barrier line:
   1. Panel Sheet: 1/16 0.08 inch thick to match the window frame.
   2. Outer Face: 1/16 inch thick to match window frame..

3. Core: glass or mineral fiber, rigid polystyrene, or rigid polyurethane insulation core with R-value of 5 ____.
4. Inner Face: 1/16 inch thick to match window frame.

E. Insect Screen Frame: Aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
1. Frame Color: Match window frame color.

F. Insect Screens: Stainless steel wire mesh, secured with vinyl spline.

G. Operable Sash Weather Stripping: Polypropylene; permanently resilient, profiled to effect weather seal.

H. Venting or Stationary Sash Weather Stripping: Vinyl; permanently resilient, profiled to effect weather seal.

I. Fasteners: Stainless steel.

J. Aprons: 0.040 inch thick aluminum, internally reinforced, edged and sealed.

K. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.03 PERFORMANCE REQUIREMENTS

A. Comply with AAMA/WDMA/CSA 101/I.S.2/A440 requirements in accordance with the following:

B. Performance Class (PC): AW.
1. Performance Grade (PG): 40, with minimum design pressure (DP) of 40.10 psf (1920 Pa).

C. Test and Evaluation Reports: Windows comply with AAMA/WDMA/CSA 101/I.S.2/A440 performance requirements as indicated by having AAMA, WDMA, or CSA certified label, or an independent test report for indicated products itemizing compliance and acceptable by authorities having jurisdiction.

2.04 DESIGN AND SIZE COMPONENTS TO SUPPORT ASSEMBLY DEAD LOADS, AND TO WITHSTAND LIVE LOADS CAUSED BY POSITIVE AND NEGATIVE WIND PRESSURE ACTING NORMAL TO PLANE OF WINDOW. D. DESIGN PRESSURE (DP): IN ACCORDANCE WITH NEW YORK CITY BUILDING CODE..

A. Measure performance of units by testing in accordance with ASTM E330/E330M, using test pressure equal to 1.5 times the design wind pressure and 10 second duration of maximum load.

B. Deflection: Limit member deflection to 1/200 of the longer dimension with full recovery of glazing materials.

C. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.

D. Overall Thermal Transmittance (U-value): 0.25, maximum, including glazing, measured on window sizes required for this project.

E. Forced Entry Resistance: Comply with ASTM F588 requirements for performance level 20 for window Type B.

F. Air Leakage: 0.3 cfm/sq ft (1.5 L/sec sq m) maximum leakage of window when tested at 1.57 psf (75 Pa) pressure difference in accordance with ASTM E283/E283M.

G. Vapor Seal: No vapor seal failure at interior static pressure of 1 inch, 72 degrees Fahrenheit, and 40 percent relative humidity.

H. Condensation Resistance Factor: CRF of 65 when measured in accordance with AAMA 1503.

I. Water Leakage: None, when measured in accordance with ASTM E331.

J. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

K. Air and Vapor Seal: Maintain continuous air and vapor barrier throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior face of air and vapor barrier materials.

L. Design Temperature Range: 120 degrees Fahrenheit.

2.05 GLASS AND GLAZING MATERIALS

2.06 INSULATED LITE CONSISITING OF CLEAR LOW-E COATED OR TRANSLUCENT FLOAT GLASS; KIND AN COMPLYING WITH

A. ASTM C1036, kind HS complying with ASTM C1048, or kind FT complying with ASTM C1048
   1. Utilize HS Glass in areas subject to impact.
   2. Utilize FT Glass within 18 inches of finished walking surfaces and in all doors.
   3. Utilize AN Glass unless required elsewhere.

B. Minimum glass thickness: 4mm

C. Provide Low-E coating

D. Provide Warm Edge Spacer

E. Provide translucent glazing only where indicated on plans.

2.07 HARDWARE

A. Casement and Awning Sash: Zinc die-cast steel rotary-gear operator with painted finish.
   1. Operator Linkage, Hinge Slide, and Hinge Arms: Manufacturer's standard, with heavy gauge arms.
   2. Sash Lock: Single actuations, galvanized steel and polymer components and with NYC DOH approved type restrictor..
   3. Operator Handle: Folding type, polycarbonate with integral color to match frame.

B. Pivot Window Operator: Lever action handle fitted to projecting sash arms with limit stops.

C. Window Opening Control Devices (WOCD): Provide operable window sash hardware that limits openings to only allow passage of 4 inch diameter rigid sphere or less, and are releasable to fully open through the use of keys or tools by NYCHA personnel.

D. Vent Limitation Hardware: Provide fixed vent limiter to limit sash clear opening to 4 inch, maximum.

E. Finish For Exposed Hardware: Match window finish.

2.08 FABRICATION

A. Factory fabricate framing, mullions and sash members with rigid corners and joints.

B. Supplement frame sections with internal reinforcement where required for structural rigidity. B. Form sills and stools in one piece. Slope sills for wash.

C. Form attachment flange at full perimeter of unit, unless noted otherwise.

D. Fabricate components with minimum clearances and shim spacing around perimeter of window assembly, and allowing for installation and dynamic movement of perimeter seal. E. Arrange fasteners to be concealed from view.

E. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

F. Assemble insect screen frame, miter and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.

G. Factory glaze window units.

2.09 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Intus Windows
   2. Or equal

REQUESTS FOR SUBSTITUTIONS WILL BE CONSIDERED IN ACCORDANCE WITH PROVISIONS OF SECTION 01 60 00 SUBSTITUTIONS.

PART 3 EXECUTION

3.01 INSTRUCTIONS

A. The following installation directions are provided for reference only, and to provide a context for installed window performance and testing.

3.02 INSTALLATION

A. Install composite window units in accordance with manufacturer's instructions.

B. Attach window frame and shims to perimeter of opening to accommodate construction tolerances and other irregularities.

C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

3.03 TOLERANCES

A. Maximum Variation from Level or Plumb: 1/16 inch per 3 feet or 1/2 inch per 100 feet, non-cumulative, whichever is less.

3.04 FIELD QUALITY CONTROL

A. Provide field testing of installed composite windows by independent laboratory in accordance with AAMA 502 and AAMA/WDMA/CSA 101/I.S.2/A440 during construction process and before installation of interior finishes.
   1. Field test for water penetration in accordance with ASTM E1105 using Procedure B cyclic static air pressure difference; test pressure shall not be less than 1.9 psf (91 Pa).
   2. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 6.27 psf (300 Pa).

B. Repair or replace fenestration components that have failed designated field testing, and retest to verify performance complies with specified requirements.

END OF SECTION