SECTION 08 5 1 13
ALUMINUM WINDOWS

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

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

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. AAMA 701/702 - Performance Specification for Pile Weatherstrips (AAMA 701) and Polymer Weatherseals (AAMA 702); 2023.

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

F. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

G. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

H. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

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

J. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

L. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).

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

N. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.

O. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

P. 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).

Q. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference; 2000 (Reapproved 2024).

R. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

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

T. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

U. NFRC 102 - Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems; 2023.

V. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

W. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

X. NFRC 500 - Procedure for Determining Fenestration Product Condensation Index Ratings; 2023.

1.02 RELATED DOCUMENTS

A. The Contractor is referred to the Instructions to Bidders and General Conditions, NYCHA Contracts; the Special Notice to Contractors; the Form of Proposal; the Form of Bid Bond; Division 01 - General Requirements of the Contract Specifications; the Contract Drawings and all Amendments and Addenda thereto; all of which govern the Work of this Section.

1.03 SCOPE OF WORK

A. Furnish and install aluminum windows as shown in Drawings, schedules, and as per specifications stipulated herein, including factory-installed glass and glazing, hardware, anchors, screens, and seals. Aluminum double hung windows shall be furnished completely fitted and assembled with glass, weatherstripping and all necessary hardware.

B. Contractor shall verify with NYCHA development management any additional items to be installed, including but not limited to security gratings on the lower floor(s) and child window guards in addition to the 4” window stop feature.

C. Windows shall be furnished in the quantities shown on the Drawings and/or schedules, with additional attic stock of all windows, screens, hardware, etc., provided in quantities as directed by the Authority.

1.04 RELATED SECTIONS

A. Section 01 73 29 – Cutting and Patching

B. Section 02 41 00 – Selective Demolition and Removals

C. Section 05 05 00 – Metal Fabrications

D. Section 06 20 00 - Carpentry

E. Section 07 90 00 - Joint Sealants

F. Section 09 91 00 – Painting and Finishing

1.05 SUBMITTALS

A. Submit administrative requirements under provisions of Section 01 33 00 Submittals.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

C. Preparation instructions and recommendations.

D. Storage and handling requirements and recommendations.

E. Installation methods.

F. Percentages of pre- and post-consumer recycled content included in all components.

1.06 SHOP DRAWINGS:

A. Elevation for each style window specified indicating its size, glazing type, muntin type and design.

B. Manufacturer's head, jamb and sill details and section views for each window type specified.

1.07 SCHEDULES:

A. Provide a window schedule indicating the type, size, color, and operation of each unit specified. Coordinate with window mark types found in the Contract Drawings.

B. Selection Samples: For each finish product specified, including sealants, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

C. Verification Samples: For each finish product specified, samples may be subsequently installed on the project.

D. Test Reports: Submit certified independent testing agency reports indicating window units meet or exceed specified performance requirements.

E. SYSTEM DESCRIPTION

A. OPERATION: DOUBLE-HUNG, WITH TILT-IN SASH FOR CLEANING. NOTE THAT TILT-IN FEATURE SHALL COMPLY WITH MAXIMUM CHILD FALL-SAFETY OPENINGS WHERE APPLICABLE.

B. AAMA RATING: CLASS CW-PG50-H WHEN TESTED ACCORDING TO AAMA/WDMA/CSA 101/I.S.2/A440-08 AT THE GATEWAY SIZE OF 56" X 91".

C. CONSTRUCTION: 3 1/4 INCH FRAME DEPTH. WALL THICKNESS: 0.062"/0.078" FRAME/SILL; 0.062" SASH. FACTORY FINISHED EXTRUDED ALUMINUM FRAME AND SASH MEMBERS WITH INTEGRAL RIGID STRUCTURAL THERMAL BREAK.

D. GLAZING: 7/8 INCH INSULATING GLASS; BLACK REUSABLE FLEXIBLE RIGID NON-METALLIC CHANNEL GASKET.

A. DESIGN CONSIDERATIONS

5.02 TECHNICAL SPECIFICATIONS FOR REPLACEMENT WINDOWS AND GLASS DOORS ARE TO BE BASED UPON NAFS- NORTH AMERICAN FENESTRATION STANDARD/ SPECIFICATION FOR WINDOWS, DOORS, AND SKYLIGHTS, AAMA/ WWDA/ CSA101/ I.S.2 A440-08 (OR SUBSEQUENT, LATEST REVISION) CO-PUBLISHED BY AMERICAN ARCHITECTURAL MANUFACTURES ASSOCIATION, WINDOW AND DOOR MANUFACTURES ASSOCIATION, AND CANADIAN STANDARDS ASSOCIATION. AS INDICATED IN ITS TITLE, THIS DOCUMENT IS APPLICABLE WITHOUT PREFERENCE TO ALUMINUM, VINYL, FIBERGLASS, PVC AND WOOD WINDOWS AND DOORS.

5.03 ALL REPLACEMENT WINDOWS AND DOORS SHALL MEET MINIMUM ENERGY PERFORMANCE REQUIREMENTS AS SPECIFIED IN THE ENERGY CONSERVATION CODE OF NEW YORK STATE. THE CONSULTANT SHALL SPECIFY R AND U VALUES THAT COMPLY WITH THE NYS ENERGY CODE. SPECIFICATIONS SHALL REQUIRE THE SUBMISSION OF THERMAL RATING DOCUMENTATION FOR THE WINDOWS.

5.04 UNLESS OTHERWISE DIRECTED BY THE OWNER, WINDOWS ARE TO BE EQUIPPED SO THAT SASH CAN BE REMOVED FROM THE WINDOW FRAME FOR MAINTENANCE PURPOSES BY BUILDING STAFF ONLY, AND CANNOT BE REMOVED BY TENANTS. IF WINDOWS HAVING TILT-OUT TYPE SASH ARE PROVIDED, SPRING LOADED GUIDES ARE TO BE IMMOBILIZED WITH TAMPER-PROOF SCREWS OR ARE TO BE REPLACED WITH FIXED GUIDES SECURED WITH TAMPER-PROOF (SPANNER-HEAD OR TRI-WING TYPE) SCREWS, REMOVABLE ONLY BY MAINTENANCE STAFF.

A. HARDWARE:

BALANCES:

6.01 BALANCES SHALL PROVIDE A POSITIVE LIFTING FORCE THROUGH THE FULL RANGE OF SASH TRAVEL. SASH TRAVEL SHALL BE LIMITED ON OVERSIZE UNITS.

6.02 WHEN PROPERLY ADJUSTED, BALANCES SHALL HOLD THE SASH STATIONARY AT ANY OPEN POSITION.

6.03 BALANCES SHALL BE FACTORY CALIBRATED BLOCK AND TACKLE.

HEAD LOCK: AUTOMATIC ALUMINUM SPRING-LOADED HEAD LOCK SHALL SECURE TOP SASH IN CLOSED POSITION.

SILL LOCK: CONTINUOUS AUTOMATIC ALUMINUM SPRING-LOADED SILL LOCK SHALL SECURE BOTTOM SASH IN CLOSED POSITION.

TILT LATCHES: CUSTODIAL-OPERATED LOCKING TAMPER-PROOF TILT LATCHES

LIFT HANDLES: INTEGRAL CONTINUOUS LIFT HANDLES ON BOTTOM SASH.

LIMIT STOPS: JAMB-MOUNTED OR OTHER LIMIT STOPS ON ALL OPERATING SASH. SET LIMIT LOCKS IN APARTMENT WINDOWS AT 4", UNLESS OTHERWISE EXPLICITLY DIRECTED IN WRITING BY NYCHA.

A. WEATHERSTRIPPING:

SASH: HIGH-DENSITY WOVEN PILE SHALL BE USED IN COMBINATION WITH CONTINUOUS POLYETHYLENE RIGID SEAL TO MINIMIZE AIR INFILTRATION.

SECURELY STAKE AND JOIN AT CORNERS. PROVIDE DRAINAGE TO EXTERIOR AS NECESSARY.

A. PERFORMANCE REQUIREMENTS

AIR, WATER AND STRUCTURAL PERFORMANCE REQUIREMENTS: WHEN TESTED IN ACCORDANCE WITH CITED TEST PROCEDURES, WINDOWS SHALL MEET OR EXCEED THE FOLLOWING PERFORMANCE CRITERIA, AS WELL AS THOSE INDICATED IN AAMA 101 AND 101/I.S.2/A440-08 FOR PERFORMANCE GRADE OF UNIT SPECIFIED UNLESS OTHERWISE NOTED HEREIN.

14.01 AIR TEST PERFORMANCE REQUIREMENTS:

A. Performance: Air infiltration maximum 0.30 cfm per square foot at 1.57 psf pressure differential when tested in accordance with ASTM E283 for sliding sealed products.

14.02 WATER TEST PERFORMANCE REQUIREMENTS:

A. No uncontrolled water leakage at 10 psf static pressure differential when tested in accordance with ASTM E331 and ASTM E547.

14.03 STRUCTURAL TEST PERFORMANCE REQUIREMENTS:

A. Uniform Load Deflection Test
   1. No deflection of any unsupported span L of test unit (framing rails, muntins, mullions, etc.) in excess of L/175 at both a positive and negative load of design test pressure when tested in accordance with ASTM E330.
   2. Structural reinforcing that is not standard on units being furnished is not allowed.

B. Uniform Load Structural Test:
   1. Unit to be tested at 1.5 x design test pressure, both positive and negative, acting normal to plane of wall in accordance with ASTM E330.
   2. No glass breakage; permanent damage to fasteners, hardware parts, or anchors; damage to make windows inoperable; or permanent deformation of any main frame or ventilator member in excess of 0.2% of its clear span.

FORCED ENTRY RESISTANCE TEST: ASTM F588, TYPE AND GRADE AS INDICATED FOR EACH PRODUCT.

THERMAL PERFORMANCE REQUIREMENTS

16.01 EACH WINDOW SASH OR NEW WINDOW SHALL BE LABELED WITH THE MANUFACTURER'S LABEL GIVING THE ANSI/AAMA DESIGNATION THAT IT COMPLIES WITH.

16.02 "U" VALUE (CO-EFFICIENT OF HEAT TRANSFER): IGU (INSULATION GLASS UNIT) U-FACTOR SHALL BE NO MORE THAN 0.28. THE OVERALL U-FACTOR SHALL BE NO MORE THAN 0.40. COMPUTED THERMAL TRANSMITTANCE.

16.03 COMPUTED SOLAR HEAT GAIN COEFFICIENT (SHGC) SHALL NOT EXCEED 0.48 FOR THE WHOLE WINDOW ASSEMBLY.

A. QUALITY ASSURANCE

MANUFACTURER QUALIFICATIONS: ALL WINDOWS SPECIFIED IN THIS SECTION SHALL BE SUPPLIED BY A MANUFACTURER WHICH HAS BEEN FABRICATING/MANUFACTURING COMMERCIAL GRADE ALUMINUM WINDOWS OF SIMILAR QUALITY AND PERFORMANCE FOR A MINIMUM OF TEN (10) YEARS.

INSTALLER QUALIFICATIONS: ALL PRODUCTS LISTED IN THIS SECTION ARE TO BE INSTALLED BY A SINGLE INSTALLER WITH A MINIMUM OF FIVE (5) YEARS DEMONSTRATED EXPERIENCE IN INSTALLING WINDOWS OF THE SAME TYPE AND SCOPE AS SPECIFIED, PREFERABLY AAMA CERTIFIED INSTALLERS.

PROVIDE TEST REPORTS FROM AAMA ACCREDITED LABORATORY CERTIFYING THAT WINDOW UNITS ARE FOUND TO BE IN COMPLIANCE WITH AAMA/WDMA/CSA 101/I.S.2/A440-08 AND PERFORMANCE STANDARDS LISTED ABOVE.

19.01 TEST REPORTS SHALL BE ACCOMPANIED BY VERIFIED "NOTICE OF PRODUCT CERTIFICATION" TO ASSURE PRODUCT IS ACTIVE AND CURRENTLY LISTED AT THIRD PARTY VALIDATION (NAMI) ACCREDITED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

19.02 ALL TESTING SHALL BE CONDUCTED USING AAMA/WDMA/CSA 101/I.S.2/A440-08 GATEWAY PERFORMANCE MINIMUM SPECIFIED TEST SIZES.

A. DELIVERY, STORAGE, AND HANDLING

STORE PRODUCTS IN MANUFACTURER'S UNOPENED PACKAGING UNTIL READY FOR INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PROTECT UNITS AGAINST DAMAGE FROM THE ELEMENTS, CONSTRUCTION ACTIVITIES AND OTHER HAZARDS BEFORE, DURING, AND AFTER INSTALLATION.

A. PROJECT CONDITIONS

MAINTAIN ENVIRONMENTAL CONDITIONS (TEMPERATURE, HUMIDITY, AND VENTILATION) WITHIN LIMITS RECOMMENDED BY MANUFACTURER FOR OPTIMUM RESULTS. DO NOT INSTALL PRODUCTS UNDER ENVIRONMENTAL CONDITIONS OUTSIDE MANUFACTURER'S ABSOLUTE LIMITS.

A. WARRANTY

22.02 WINDOWS: WINDOWS FURNISHED ARE CERTIFIED AS FULLY WARRANTED FOR AGAINST ANY DEFECTS IN MATERIAL OR WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION.

22.03 FINISH: THE PIGMENTED FINISH ON WINDOWS AND COMPONENT PARTS INCLUDING PANNING, TRIM, AND MULLIONS, ARE CERTIFIED AS COMPLYING, AT A MINIMUM, WITH AAMA 2603, AND FULLY WARRANTED AGAINST CHIPPING, PEELING, CRACKING, OR BLISTERING FOR A PERIOD OF TEN (10) YEARS FROM THE DATE OF INSTALLATION.

22.04 GLASS: GLASS SHALL BE WARRANTED FROM VISUAL OBSTRUCTION DUE TO INTERNAL MOISTURE FOR A MINIMUM OF TEN (10) YEARS.

22.05 BALANCES: BALANCES SHALL BE WARRANTEED FOR A MINIMUM OF FIVE (5) YEARS.

22.06 INSTALLATION LABOR SHALL BE GUARANTEED BY THE INSTALLER FOR, BUT NOT LIMITED TO, LEAKING AROUND SITE APPLIED SEALANTS, POOR ANCHORAGE OF MATERIALS INTO EXISTING CONDITIONS, AND OTHER INSTALLATION APPLICABLE WORKMANSHIP FOR PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE.

PART 2 - PRODUCTS

23.01 MANUFACTURERS

ACCEPTABLE MANUFACTURERS:

24.01 CRYSTAL WINDOW & DOOR SYSTEMS, LTD., 31-10 WHITESTONE EXPRESSWAY, FLUSHING, NY 11354; TEL: 718. 961.7300; TEL: 800. 472.9988; FAX: 718.460.4594; WEB: WWW.CRYSTALWINDOWS.COM.

24.02 KAWNEER COMPANY, INC. ,555 GUTHRIDGE CT., NORCROSS, GA 30092, (770) 734-1560, WWW.KAWNEER.US.

24.03 GRAHAM ARCHITECTURAL PRODUCTS CORP., PA (800) 755-6274, WWW.GRAHAMWINDOWS.COM.

24.04 CHAMPION WINDOWS, SYOSSET, NY (516) 921-6200, WWW.CHAMPIONWINDOWS.COM.

24.05 ECKER MANUFACTURING CORP., NEW YORK, NY, WWW.ECKERWINDOWS.COM.

24.06 EFCO CORP., MONETT, MO (800) 221-4169, WWW.EFCOCORP.COM.

24.07 WINTECH

24.08 OR EQUAL.

NOTE: ALL WINDOWS SHALL BE A PRODUCT OF A SINGLE MANUFACTURER.

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

26.01 ALUMINUM

EXTRUDED ALUMINUM PRIME BILLET 6063-T5 OR 6063-T6 ALLOY FOR PRIMARY COMPONENTS; 6063-T5, 6063-T6, OR 6061-T6 FOR STRUCTURAL COMPONENTS; ALL MEETING THE REQUIREMENTS OF ASTM B221.

ALUMINUM SHEET ALLOY 5005 H 32 (FOR ANODIC FINISH), MEETING THE REQUIREMENTS OF ÅSTM B209 OR ALLOY 3003 H 14 (FOR PAINTED OR UNFINISHED SHEET).

28.01 THERMAL BARRIER:

STRUCTURAL THERMAL BARRIER:

29.01 STRUCTURAL THERMAL BARRIER SHALL CONSIST OF POURED-IN-PLACE POLYURETHANE POLYMER THAT SHALL TRANSFER SHEAR DURING BENDING AND PROVIDE COMPOSITE ACTION BETWEEN FRAME COMPONENTS.

NON-STRUCTURAL THERMAL BARRIERS:

30.01 NON-STRUCTURAL THERMAL BARRIERS ARE USED ONLY IN CONJUNCTION WITH STRUCTURAL THERMAL BARRIERS. THE PURPOSE OF NON-STRUCTURAL THERMAL BARRIERS IS TO ENHANCE THERMAL PERFORMANCE OF THE PRIMARY STRUCTURAL THERMAL BARRIERS BY INHIBITING HEAT TRANSFER THROUGH THERMAL RADIATION AND CONVECTION. NON-STRUCTURAL THERMAL BARRIERS SHALL NOT BE USED AS PRIMARY LOAD CARRYING MEMBERS.

30.02 RIGID NON-STRUCTURAL THERMAL BARRIERS SHALL BE CONSTRUCTED OF EXTRUDED RIGID NON-METALLIC MATERIAL, WITH LITTLE/VINYL CONTENT.

30.03 GLASS

GLASS SHALL BE OF MANUFACTURE APPROVED BY THE AUTHORITY AND SHALL BEAR THE MANUFACTURER'S LABEL AS TO QUALITY.

31.01 SHEET GLASS GENERALLY SHALL BE "B" QUALITY FLAT DRAWN GLASS, DOUBLE STRENGTH, MADE IN 7/8" INCH (MINIMUM) SEALED INSULATED UNITS.

31.02 PROVIDE A SINGLE SHEET OF 1/4" WIRE GLASS OR IGU WITH A PANE OF WIRE GLASS FOR ALL PUBLIC HALL WINDOWS.

31.03 BATHROOM WINDOWS SHALL HAVE ONE LAYER ROUGH HAMMERED GLASS AS PART OF THE SEALED INSULATED UNITS.

GLAZING MATERIALS:

32.01 VERTICAL GLAZING: DESIGN GLASS TO RESIST DESIGN WIND PRESSURE BASED ON GLASS TYPE FACTORS FOR SHORT-DURATION LOAD.

32.02 THICKNESS: WHERE GLASS THICKNESS IS INDICATED, IT IS A MINIMUM. PROVIDE GLASS LITES IN THICKNESSES AS NEEDED TO COMPLY WITH REQUIREMENTS INDICATED.

32.03 STRENGTH: WHERE FLOAT GLASS IS INDICATED, PROVIDE ANNEALED FLOAT GLASS. WHERE FULLY TEMPERED GLASS IS INDICATED, PROVIDE KIND FT HEAT-TREATED FLOAT GLASS.

32.04 THERMAL AND OPTICAL PERFORMANCE PROPERTIES: PROVIDE GLASS WITH PERFORMANCE PROPERTIES SPECIFIED, AS INDICATED IN MANUFACTURER'S PUBLISHED TEST DATA, BASED ON PROCEDURES INDICATED.

A. U-Factors: Total-glazing values, according to NFRC 100 and expressed as BTU/sq.ft x h x deg F (W/sq. m x K).

B. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 7.4 computer program.

C. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

32.05 FLOAT GLASS: ÅSTM C 1036, TYPE 1, QUALITY-Q3, CLASS 1 (CLEAR) UNLESS OTHERWISE INDICATED.

32.06 COATED GLASS: ASTM C1376, TYPE 1, QUALITY-Q3, CLASS 1 (CLEAR) UNLESS OTHERWISE INDICATED, OF KIND AND CONDITION INDICATED.

32.07 LAMINATED GLASS: ÅSTM C 1172, TYPE 1, QUALITY-Q3, CLASS 1 (CLEAR) UNLESS OTHERWISE INDICATED, OF KIND AND CONDITION INDICATED.

INSULATING GLASS UNITS:

33.01 FACTORY-ASSEMBLE UNITS CONSISTING OF SEALED LITES OF GLASS SEPARATED BY A PPG INTERCEPT SPACER SYSTEM CONSISTING OF A ONE-PIECE, METALLIC, U-CHANNEL DESIGN THAT CREATES AN EFFECTIVE THERMAL BARRIER TO HELP REDUCE CONDUCTED HEAT LOSS THROUGH THE WINDOW.

33.02 INSULATING GLASS UNITS SHALL BE SEALED WITH AN INTEGRAL DESICCANT MATRIX AND A BUTYL SEALANT EXTRUDED AROUND THE ENTIRE PERIMETER OF THE SPACER TO ACHIEVE A SEAL. THE SEALANT APPLIED IS TO BE DUAL SEAL EQUIVALENT (DSE). INTERSPACE TO BE FILLED WITH AIR OR ARGON GAS AS REQUIRED BY THERMAL COMPUTER SIMULATION.

33.03 INSULATING GLASS TYPES: LOW-E COATED, INSULATING GLASS UNITS.

33.04 OVERALL UNIT THICKNESS: 7/8" (22MM).

33.05 THICKNESS OF EACH GLASS LITE: 3/32", 1/8", 3/16" OR ¼" INCH, OR AS INDICATED ON DRAWINGS.

33.06 INTERSPACE CONTENT: AIR OR ARGON GAS.

33.07 LOW-E COATING: SPUTTERED ON SECOND OR THIRD SURFACE, PYROLITIC ON FOURTH SURFACE.

33.08 GLASS WINTER NIGHTTIME U-VALUE: 0.26 MAXIMUM.

33.09 SOLAR HEAT GAIN COEFFICIENT: 0.46 MAXIMUM.

33.10 PROVIDE SAFETY GLAZING LABELING.

A. WINDOW ACCESSORIES

PROVIDE THE FOLLOWING ACCESSORIES AS SPECIFIED IN THE CONTRACT DRAWINGS. FINISH TO MATCH WINDOW FRAMES OR AS SELECTED BY THE ARCHITECT:

A. Wrap Around Panning
B. Preset Panning
C. Snap Trim/Clips
D. Expanders
E. Receptors
F. Subsills and Subsill Anchors
G. Mullions and Mullion Covers
H. Exterior Sills
I. Interior Stools
J. Muntins
K. Hardware: All windows shall be provided with a catch lock between sashes. Window hardware, including but not limited to locks, catches, strikes, and channel stops, having component parts which are exposed shall be of aluminum, stainless steel or other non-corrosive materials compatible with aluminum and of sufficient strength to perform functions for which they are used. Cadmium or zinc plated steel, where used shall be in accordance with ASTMA 165 or B 633. Nickel chrome-plated steel, where used, shall be in accordance with ASTM B456. Horizontal Slider windows shall have two (2) zinc die cast sweep-type lock and

integral keeper for positive locking. Steel components including attachment fasteners shall be 300 series stainless steel except as noted.

L. FINISHES

CONFORMING TO AAMA 2604-05 SPECIFICATION, FINISH ON ALL EXTRUDED ALUMINUM SHALL CONSIST OF ZERO OR NEAR-ZERO VOC, ORGANIC POWDER COAT WITH A BAKED-ON SUPER-DURABLE THERMOSETTING POLYESTER RESIN, ELECTRO-STATICALLY APPLIED ON FIVE-STAGE PRE-TREATED ALUMINUM SURFACE. EQUIVALENT TO 50% KYNAR POLYVINYLIDENE FLUORIDE LIQUID PAINT FINISHES. POWDER COAT MATERIAL TO BE AS MANUFACTURED BY SHERWIN WILLIAMS, PPG POWDER COATINGS, OR EQUAL.

COLOR TO BE SELECTED FROM MANUFACTURER'S STANDARD COLOR CHART AND AS APPROVED BY NYCHA REPRESENTATIVE AND DEVELOPMENT REPRESENTATIVE(S).

A. INSECT SCREENS

SCREEN FRAMES SHALL CONSIST OF TUBULAR EXTRUDED ALUMINUM PROFILES WITH FINISH TO MATCH WINDOW FRAMES, 1" X 7/16" AND NOT LESS THAN 1/16" THICK WITH REMOVAL SPLINES TO HOLD WIRE CLOTH.

WIRE CLOTH SHALL BE OF FIBERGLASS (18 X 16) WITH PVC SPLINE. SCREENS SHALL BE FULL HEIGHT AND FASTENED TO WINDOW FRAME BY MEANS OF APPROVED TYPE CLIPS AND TAMPER-RESISTANT SCREWS.

A. SEALANTS

B. All windows shall installed with weather stripping as per manufacturer's recommendations. All weather-strip shall be recycled gaskets.

C. Sealants shall comply with applicable provisions of AAMA 800 and/or Federal Specifications FS-TT-001 and 002 Series.

D. Frame joinery sealants shall be suitable for application specified and as tested and approved by window manufacturer.

PART 3 - EXECUTION

39.01 SCHEDULE OF WORK

A. SCHEDULE OF WORK

40.01 PROVIDE WATERTIGHT AND SECURE PROTECTION OF THE MASONRY OPENINGS PRIOR TO INSTALLATION OF THE NEW WINDOWS.

40.02 THE CONTRACTOR IS TO PREPARE, IN COOPERATION WITH THE OWNER, A SCHEDULE FOR THE SEQUENCE OF INSTALLATION. THIS SCHEDULE SHOULD BE REGULARLY REVIEWED AND, IF NECESSARY, UPDATED.

40.03 THE OWNER AND TENANTS SHOULD BE GIVEN 48 HOURS ADVANCE NOTICE BY THE CONTRACTOR OF INTENT TO START WORK.

EXAMINATION

DO NOT BEGIN INSTALLATION UNTIL ALL SUBSTRATES AND ADJACENT SURFACES HAVE BEEN PROPERLY PREPARED.

NOTIFY NYCHA OF UNSATISFACTORY PREPARATION OR ANY CONDITIONS THAT MIGHT PREVENT PROPER INSTALLATION BEFORE PROCEEDING.

PREPARATION

CLEAN SURFACES THOROUGHLY PRIOR TO INSTALLATION.

PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULT FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.

INSTALLATION

INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

DO ALL NECESSARY DRILLING, TAPPING, CUTTING, ETC. TO PROPERLY INSTALL WINDOWS.

49.01 ALL EXPOSED SCREWS AND ANCHORS SHALL BE TAMPER-RESISTANT.

REMOVAL AND HANDLING OF EXISTING WINDOWS SHALL BE DONE IN A SAFE AND PRUDENT MANNER, SAFEGUARDING PERSONS, PROPERTY, AND THE BUILDING ITSELF. IN ANY LOCATION, NEW WINDOWS SHALL BE INSTALLED ON THE SAME DAY THAT THE EXISTING WINDOWS ARE REMOVED.

THE USE OF HEAD EXPANDERS AND FIN-EXPANDERS WILL NOT BE PERMITTED.

NEW ALUMINUM STOOL CLADDING WHERE SHOWN 0.078 INCH THICK SHALL BE FIRMLY FIXED TO EXISTING BY MEANS OF CAULKING. FINISH FOR NEW STOOL SHALL MATCH THAT OF THE NEW WINDOWS. STOOL SHALL ALSO BE HELD IN PLACE WITH STAINLESS STEEL SCREWS AS SHOWN ON CONTRACT DRAWINGS.

THE CONTRACTOR SHALL CAREFULLY ADJUST SASH BALANCES AND HARDWARE FOR ALL WINDOWS. ALL WINDOWS SHALL WORK FREELY AND SMOOTHLY AND THE ENTIRE WINDOW INSTALLATION SHALL BE IN PROPER CONDITION.

SAMPLE INSTALLATION

AFTER APPROVAL OF SUBMISSIONS, PROVIDE THE FOLLOWING SAMPLE INSTALLATIONS:

55.01 INSTALL NO LESS THAN ONE (1) MOCK-UP OF EACH WINDOW ASSEMBLY AS SHOWN, COMPLETE AS SPECIFIED/SHOWN IN THIS CONTRACT.

55.02 AFTER THE INSTALLATION HAS BEEN INSPECTED AND WRITTEN APPROVAL HAS BEEN RECEIVED FROM THE AUTHORITY, ALL SUBSEQUENT INSTALLATIONS SHALL CONFORM THEREWITH IN EVERY MATERIAL ASPECT.

55.03 NO MATERIAL SHALL BE FABRICATED OR DELIVERED TO SITE UNTIL THE SAMPLE INSTALLATION OF THE WINDOW HAS BEEN APPROVED.

ANCHORAGE

A. ANCHOR WINDOW UNITS AND/OR ASSEMBLIES SUFFICIENTLY TO MAINTAIN PERMANENT POSITIONS WHEN SUBJECTED TO NORMAL THERMAL MOVEMENT, SPECIFIED BUILDING MOVEMENT, AND SPECIFIED WIND LOADS.

PROTECTION

PROTECT INSTALLED PRODUCTS UNTIL COMPLETION OF PROJECT.

FINAL OPERATING ADJUSTMENT SHALL BE MADE AFTER GLAZING WORK IS COMPLETE. OPERATING SASH AND VENTILATOR SHALL OPERATE SMOOTHLY AND SHALL BE WEATHER TIGHT WHEN IN LOCKED POSITION.

TOUCH-UP, REPAIR OR REPLACE ALL DAMAGED PRODUCTS AND SURFACES, INTERIOR AND EXTERIOR, BEFORE SUBSTANTIAL COMPLETION.

DISPOSAL OF DEBRIS

REMOVE ALL GARBAGE OFF SITE AND LEGALLY DISPOSE OF EXISTING WINDOWS AND DEBRIS GENERATED FROM THE INSTALLATION OF THE NEW WINDOWS. COMPLY WITH ALL APPLICABLE WASTE MANAGEMENT AND/OR RECYCLING REQUIREMENTS.

FIELD TESTING

TESTING AGENCY: WHERE APPLICABLE AND REQUIRED BY NYCHA, ENGAGE A QUALIFIED TESTING AGENCY TO PERFORM TESTS AND INSPECTION.

65.01 TESTING AND INSPECTING AGENCY WILL INTERPRET TESTS AND STATE IN EACH REPORT WHETHER TESTED WORK COMPLIES WITH OR DEVIATES FROM REQUIREMENTS.

TESTING SERVICES: TESTING AND INSPECTING OF INSTALLED WINDOWS SHALL TAKE PLACE AS FOLLOWS:

66.01 TESTING METHODOLOGY: TESTING OF WINDOWS FOR AIR INFILTRATION AND WATER RESISTANCE SHALL BE PERFORMED ACCORDING TO AMA 502.

66.02 AIR-INFILTRATION TESTING:

A. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/ 1.S.2/A440 performance class indicated.

B. Allowable Air-Leakage Rate: 1.5 times the applicable AMA/WDMA/CSA 101/ 1.S.2/A440 rate for product type and performance class rounded down to one decimal place.

66.03 WATER-RESISTANCE TESTING:

A. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/1.S.2/A440 performance grade indicated.

B. Allowable Water Infiltration: No water penetration.

66.04 TESTING EXTENT: THREE WINDOWS OF EACH TYPE AS SELECTED BY ARCHITECT AND A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY. WINDOWS SHALL BE TESTED AFTER PERIMETER SEALANTS HAVE CURED.

66.05 TEST REPORTS: PREPARED ACCORDING TO AAMA 502.

WINDOWS WILL BE CONSIDERED DEFECTIVE IF THEY DO NOT PASS TESTS AND INSPECTIONS.

PREPARE TEST AND INSPECTION REPORTS.

ADJUSTMENT AND CLEAN UP

ADJUST ALL PRODUCTS, SASH, VENTS, AND HARDWARE AFTER INSTALLATION, AS NECESSARY TO PROVIDE PROPER OPERATION AND A WEATHER TIGHT INSTALLATION.

REMOVE ANY LABELS AND DIRT FROM THE WINDOW.

END OF SECTION 08 5 1 13