# 2450xpt Series 2” x 4 1/2” Flush Glazed Storefront

***3 Midwest Locations***

**Aurora, CO - Des Moines, IA - Manhattan, KS**

***2450xpt Series***

***2***

***”***

***x***

***4***

***½”***

***Flush***

***Glazed***

***Storefronts***

**GUIDE SPECIFICATIONS - SECTION 084313 ALUMINUM FRAMED STOREFRONTS**

**Manko Window Systems Inc. 2450xpt SERIES**

**SECTION 084313 ALUMINUM FRAMED STOREFRONTS**

**PART 1 GENERAL**

## 1.1 SUMMARY

A. Section Includes:

1. All exterior storefront systems furnished and installed as shown on drawings, specified in this section.
2. All labor, materials, tools, equipment and services needed to furnish and install Architectural Performance Class curtain walls.
3. Components furnished with installed curtain walls.
4. Installation accessories furnished and installed.
5. Single Source Requirement

a. All products listed in Section 08400; 08500; 08800; and 08900 shall be by the same manufacturer.

## 1.2 SYSTEM PERFORMANCE REQUIREMENTS

1. Design Wind Loads
	1. The design wind pressure for the project will be: (Specify)
		1. \_\_\_ psf positive and negative; \_\_\_ psf negative at corner zones
		2. Per wind pressure diagram
		3. Per local building codes
	2. All structural components, including meeting rails, mullions and anchors shall be designed accordingly, complying with deflection and stress requirements of Paragraph 1.02 B.

*[Determination of design load(s) is the sole responsibility of the building's Engineer of Record, considering code interpretation issues and/or prescriptive requirements not included in contract documents. Manko Window Systems, Inc. strongly recommends that design loads (in psf or Pa) specific to all relevant areas of the building be provided by the specifier.]*

1. Air, Water and Structural Performance Requirements
	1. When tested in accordance with cited test procedures, storefront systems shall meet or exceed the following performance criteria.
	2. Air Test Performance Requirements
		1. Air infiltration maximum 0.06 cfm per square foot at 6.24 psf pressure differential when tested in accordance with ASTM E283.
	3. Water Test Performance Requirements
		1. No uncontrolled water leakage at 8.00 psf static pressure differential as defined in AAMA 501 when tested in accordance with ASTM E331.
	4. Uniform Load Requirements
		1. A static air design load of 40 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 60 psf (1.5 times the specified design load), no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
	5. Thermal Transmittance (U-factor)
		1. The whole window U-Value based on NFRC 100 test sizes, thermal transmittance (U-Value) shall not exceed 0.31 BTU/hr/sf/degF. Glazing must be supported by Manko Window Systems, Inc. using EdgeTech “TriSeal Superspacer” to meet these requirements.
	6. Condensation Resistance (CRF)
		1. The condensation resistance (CR) based on NFRC 500 test sizes, shall not be less than 55.

*[DISCLAIMER: Condensation on interior surfaces of installed framing is affected by many variables, including component thermal performance, thermal mass of surrounding materials, interior trim coverage and air flow conditions, weather, and mechanical system design. Since many of these variables are outside of Manko Window Systems, Inc., we can make no representations or warranties against the formation of condensation, except on pre-defined configurations under controlled and steady-state laboratory conditions, as specified above.]*

## 1.3 SUBMITTALS

1. General Requirements
	1. Provide all submittals in a timely manner to meet the required construction completion schedule.

1. Shop Drawings
	1. Shop drawings must be prepared wholly by the window manufacturer, or a qualified engineering services firm under the direction of the manufacturer. Shop drawings for pre-engineered configurations may be prepared by installers authorized per 1.04 QUALITY ASSURANCE.
	2. Provide design details along with bid proposals to define system aesthetic and functional characteristics.
	3. Provide three photocopied sets of shop drawings, including half size details of all necessary conditions.

1. Samples
	1. Components: Submit samples of anchors, fasteners, hardware, assembled corner sections and other materials and components as requested by Architect.
	2. Finish: Submit color samples for Architect's approval as requested.

1. Test Reports and Calculations
	1. Submit certified independent laboratory test reports verifying compliance with all test requirements of 1.02 SYSTEM PERFORMANCE REQUIREMENTS as requested by Architect.

## 1.4 QUALITY ASSURANCE

A. Qualifications

1. Upon request, the window manufacturer will provide written confirmation that the installer is authorized to install window products to be used on this project.

## 1.5 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading

1. Materials will be packed, loaded, shipped, unloaded, stored and protected in accordance with AAMA CW-10.

## 1.6 WARRANTY

A. Aluminum Storefront Warranty

1. Products: Submit a written warranty, executed by the window manufacturer, for a period of 2 years (10 years for insulated glass seal failure) from the date of manufacture, against defective materials or workmanship, including substantial non-compliance with applicable specification requirements and industry standards, which results in premature failure of the curtain walls, finish, glass, or parts, outside of normal wear.
	1. In the event that curtain walls or components are found defective, manufacturer will repair or provide replacements without charge at manufacturer’s option.
	2. Warranty for all components must be direct from the manufacturer (non-pass through) and non-prorated for the entire term. Warranty must be assignable to the non-residential owner, and transferable to subsequent owners through its length.
2. Installation: Submit a written warranty, executed by the window installer, for a period of 2 years from the date of substantial completion, against defective materials or workmanship, including substantial non-compliance with applicable specification requirements, which result in premature failure.
	1. In the event that installation of windows or components is found to be defective, installer will repair or provide replacements without charge at the installer’s option.

**PART 2 PRODUCTS**

## 2.1 MANUFACTURERS

1. Acceptable Manufacturer
	1. Drawings and specifications are based on:
		1. Manko Window Systems, Inc. 2450xpt Series Thermally Broken Storefront Framing (2” x 4-1/2”).

 i. Base bid will be Manko Window Systems, Inc.

1. Substitutions
	1. Other manufacturers’ products that meet or exceed specified design requirements may be considered. Submit the following information with request for substitutions at least ten (10) working days prior to bid date.
		1. Test reports specified in 1.02 SYSTEM PERFORMANCE REQUIREMENTS
		2. Full proposal details and samples specified in 1.03 SUBMITTALS
		3. Copy of manufacturer's warranty specified in 1.06 WARRANTY
		4. Other information as requested for evaluation
	2. Substitute products not pre-approved by the Architect via addenda will not be considered.

## 2.2 MATERIALS

A. Aluminum (Framing and Components)

1. 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.
2. Aluminum sheet alloy 5005 H 32 (for anodic finish), meeting the requirements of ASTM B209 or alloy 3003 H 14 (for painted or unfinished sheet).
3. Member Wall Thickness: Each framing member shall provide structural strength to meet specified performance requirements.
4. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

## 2.3 COMPONENTS

1. Fasteners
	1. Where exposed shall be stainless steel.

1. Gaskets
	1. Glazing gaskets shall be extruded EPDM rubber.

1. Perimeter Anchors
	1. Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

1. Sealants
	1. All sealants shall comply with applicable provisions of AAMA 800 and/or Federal Specifications FS-TT-001 and 002 Series.
	2. Frame joinery sealants shall be suitable for application specified and as tested and approved by window manufacturer.

1. Glass
	1. Provide in accordance with Section 08800. Compliance with stated U-Value shall require MC37 LoE glass or equivalent, EdgeTech “TriSeal” superspacer airspacer, argon gas filled. (Specify Section 08800 accordingly)
	2. Sealed insulated glass shall meet ASTM E2190.

1. Glazing
	1. Provide in general accordance with Section 08800.
	2. Glazing method shall be in general accordance with the FGMA Glazing Manual for specified glass type, or as approved by the glass fabricator.

1. Glazing Materials
	1. Setting Blocks/Edge Blocking: Provide in sizes and locations recommended by FGMA Glazing Manual.
	2. Structural silicone sealant where used shall meet the requirements of ASTM C 1184.

1. Steel Components
	1. Provide steel reinforcements as necessary to meet the system performance requirements of 1.02.
	2. Concealed steel anchors and reinforcing shall be factory painted after fabrication with rust-inhibitive primer complying with Federal Specification TT-P-645.

1. Muntins: (Optional)
	1. Provide muntin grids as shown on architectural drawings.
	2. Finish to match window frames.

1. Access Panels: (Optional - Hinged)
	1. Miter all corners and mechanically stake over a solid aluminum corner block, leaving hairline joinery, then sealed weather tight.
	2. Access panel joinery shall not be exposed to the exterior.
	3. Access panels (when hinged) will be side-hinged and in-swing type.
	4. Hinged access panels will be hinged on the interior left jamb with the lock located on interior right jamb.
	5. Two locks will be provided at the interior right jamb of hinged access panels that exceed 40” in height.

1. Integral Venetian Blinds: (Optional)
	1. 5/8” wide aluminum slat blinds. Blind color shall be \_\_\_\_\_\_\_\_\_ (Select from manufacturer standard).
	2. Blind to be integrally mounted between the dual glazing.
	3. Tilt-control knob will be located on the interior face of access panel at the bottom of the right jamb. Raise and lower pull cords will be located between glass for access only when access panel is opened.
	4. Tilt-control knob will incorporate a “slip clutch” feature.

1. Sunshades: (Optional)
	1. Sunshades shall consist of outriggers, louvers, and fascia which may be selected from standard configurations, modified configurations, or custom configurations.
	2. Finish as specified in 2.06 FINISHES.

## 2.5 FABRICATION

1. General:
	1. Finish, fabricate and shop assemble frame and sash members into complete windows under the responsibility of one manufacturer.
	2. No bolts, screws or fastenings to bridge thermal barrier or impair independent frame movement.
	3. Fabricate to allow for thermal movement of materials when subjected to a temperature differential from -30 degrees F to +180 degrees F.

1. Frames:
	1. Mechanically fasten each horizontal into vertical mullions through screw spline construction leaving only hairline joinery, then seal weather tight.

1. Glass Drainage:
	1. Provision shall be made to insure that water will not accumulate and remain in contact with the perimeter area of sealed insulated glass.

1. Thermal Break Construction:
	1. Frame and sash members must include a thermal break applied in the manufacturer’s facility, using concealed low conductance poured-in-place polyurethane in a pre-treated cavity.
	2. After proper curing, the aluminum bridge section must be removed to provide a 1/4” separation between exterior and interior metal surfaces.

## 2.6 FINISHES

A. Finish of Aluminum Components

1. Finish of all exposed areas of aluminum windows and components shall be done in accordance with the appropriate AAMA Voluntary Guide Specification shown (select from below).

## Designation Description Standard Color

AAM12C21A31 Clear - Class II AAMA 611 Clear

AAM12C21A41 Clear - Class I AAMA 611 Clear

 AAM12C21A44 Electrolytically AAMA 611 Champagne, Light Bronze,

 Deposited – Class I Medium Bronze, Dark Bronze, Black

 Organic Paint AAMA 2603 As selected by Architect from

manufacturer’s standard colors -

Suitable for INTERIOR Finishes

 Organic Paint AAMA 2605 As selected by Architect from

manufacturer’s (Specify) standard or custom colors - suitable for INTERIOR or EXTERIOR finishes

**PART 3 EXECUTION**

## 3.1 EXAMINATION

 A. Site Verification of Conditions

1. Verify that building substrates permit installation of windows according to the manufacturer's instructions, approved shop drawings, calculations and contract documents.
2. Do not install windows until unsatisfactory conditions are corrected.

## 3.2 INSTALLATION

A. Erection of Aluminum Windows

1. Install windows with skilled tradesman in exact accordance with approved shop drawings, installation instructions, specifications, and AAMA 101/I.S.2.
2. Windows must be installed **plumb, square and level** for proper weathering and operation. Jambs must not be

“sprung”, bowed or warped during installation.

1. Aluminum that is not organically coated shall be insulated from direct contact with steel, masonry, concrete or other dissimilar metals by bituminous paint, zinc chromate primer, nonconductive shims or other suitable insulating material.

*[DISCLAIMER: Manko Window Systems, Inc. takes no responsibility for product selection or application, including, but not limited to, compliance with building codes, safety codes, laws, merchantability or fitness for a particular purpose, and further disclaims all liability for the use, in whole or in part, of these guide specifications in preparation of project specifications and/or other documents.*

*Guide specifications are subject to change at any time, without notice, and at Manko Window Systems, Inc. sole discretion.]*