

HISTORIC AND DESIGN REVIEW COMMISSION

December 07, 2022

HDRC CASE NO: 2022-549
ADDRESS: 2118 W KINGS HWY
LEGAL DESCRIPTION: NCB 6825 BLK 0 LOT 5
ZONING: R-6, H
CITY COUNCIL DIST.: 7
DISTRICT: Monticello Park Historic District
APPLICANT: Kelly Williams
OWNER: Kelly Williams
TYPE OF WORK: Installation of exterior storm windows
APPLICATION RECEIVED: November 06, 2022
60-DAY REVIEW: Not Applicable due to City Council Emergency Orders
CASE MANAGER: Jessica Anderson

REQUEST:

The applicant requests a Certificate of Appropriateness to install exterior storm windows.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 2, Exterior Maintenance and Alterations

6. Architectural Features: Doors, Windows, and Screens

A. MAINTENANCE (PRESERVATION)

- i. *Openings*—Preserve existing window and door openings. Avoid enlarging or diminishing to fit stock sizes or air conditioning units. Avoid filling in historic door or window openings. Avoid creating new primary entrances or window openings on the primary façade or where visible from the public right-of-way.
- ii. *Doors*—Preserve historic doors including hardware, fanlights, sidelights, pilasters, and entablatures.
- iii. *Windows*—Preserve historic windows. When glass is broken, the color and clarity of replacement glass should match the original historic glass.
- iv. *Screens and shutters*—Preserve historic window screens and shutters.
- v. *Storm windows*—Install full-view storm windows on the interior of windows for improved energy efficiency. Storm window may be installed on the exterior so long as the visual impact is minimal and original architectural details are not obscured.

B. ALTERATIONS (REHABILITATION, RESTORATION, AND RECONSTRUCTION)

- i. *Doors*—Replace doors, hardware, fanlight, sidelights, pilasters, and entablatures in-kind when possible and when deteriorated beyond repair. When in-kind replacement is not feasible, ensure features match the size, material, and profile of the historic element.
- ii. *New entrances*—Ensure that new entrances, when necessary to comply with other regulations, are compatible in size, scale, shape, proportion, material, and massing with historic entrances.
- iii. *Glazed area*—Avoid installing interior floors or suspended ceilings that block the glazed area of historic windows.
- iv. *Window design*—Install new windows to match the historic or existing windows in terms of size, type, configuration, material, form, appearance, and detail when original windows are deteriorated beyond repair.
- v. *Muntins*—Use the exterior muntin pattern, profile, and size appropriate for the historic building when replacement windows are necessary. Do not use internal muntins sandwiched between layers of glass.
- vi. *Replacement glass*—Use clear glass when replacement glass is necessary. Do not use tinted glass, reflective glass, opaque glass, and other non-traditional glass types unless it was used historically. When established by the architectural style of the building, patterned, leaded, or colored glass can be used.
- vii. *Non-historic windows*—Replace non-historic incompatible windows with windows that are typical of the architectural style of the building.
- viii. *Security bars*—Install security bars only on the interior of windows and doors.
- ix. *Screens*—Utilize wood screen window frames matching in profile, size, and design of those historically found when the existing screens are deteriorated beyond repair. Ensure that the tint of replacement screens closely matches the original screens or those used historically.

- x. *Shutters*—Incorporate shutters only where they existed historically and where appropriate to the architectural style of the house. Shutters should match the height and width of the opening and be mounted to be operational or appear to be operational. Do not mount shutters directly onto any historic wall material.

FINDINGS:

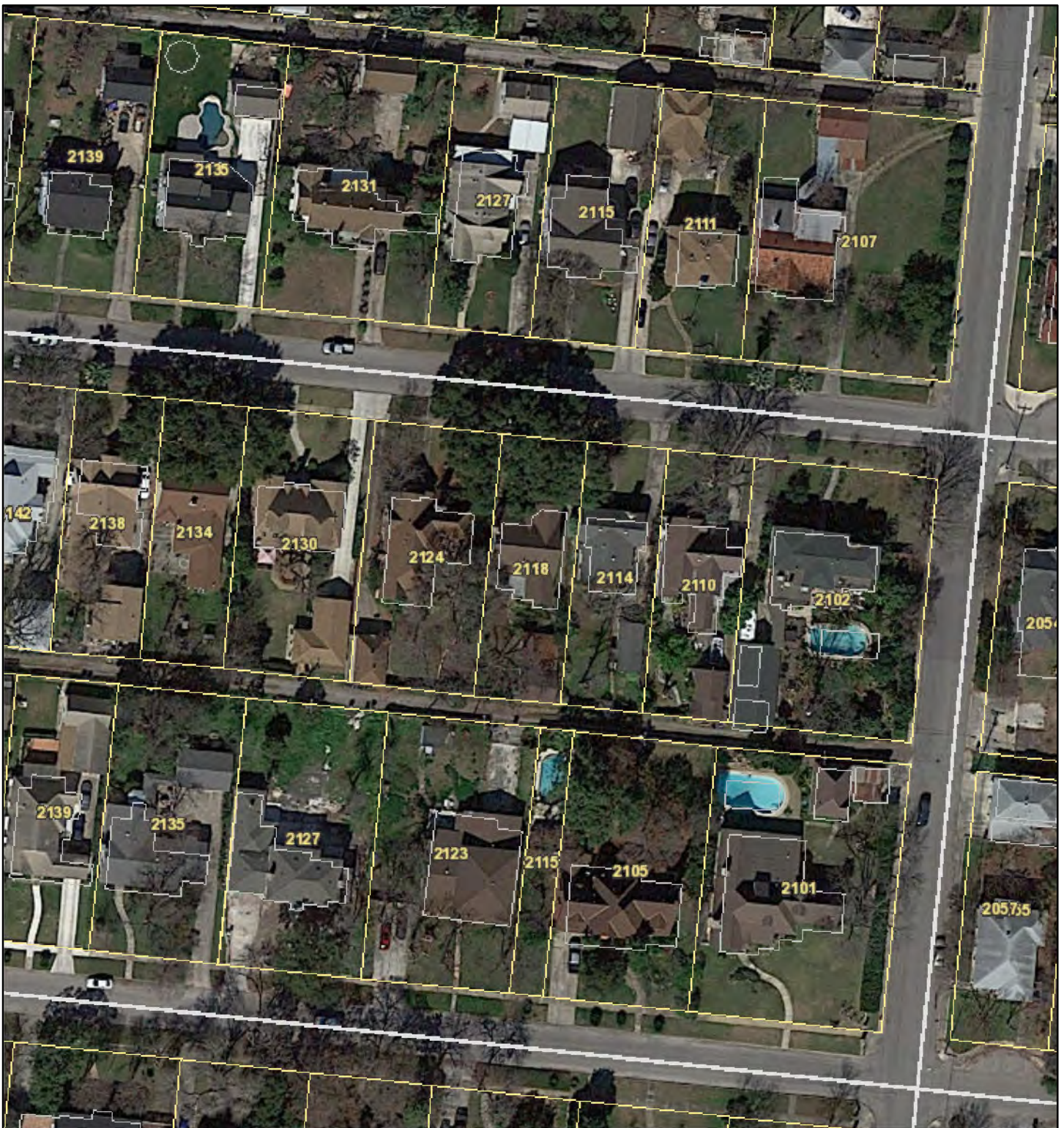
- a. The property at 2118 W Kings Hwy is a single-story Tudor Revival home built c. 1936. The house is primarily brick-clad, with siding in gables, and a composition shingle roof. Windows are wood and one-over-one. The primary elevation is dominated by a front-facing gable with recessed porch and a front door under a smaller adjacent gable. The property contributes to the Monticello Park historic district.
- b. **STORM WINDOWS.** The applicant requests to install metal-sash storm windows with screens. Historic Design Guidelines for Exterior Maintenance and Alterations 6.A.v states that full-view storm windows should be installed on the interior of the window, while exterior storm windows may be installed on the exterior if there is minimal visual impact. Staff finds the proposed storm windows do not conform to guidelines.

RECOMMENDATION:

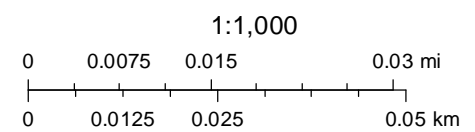
Staff recommends approval of the request to install exterior storm windows based on finding b, with the following stipulation:

- i. That the applicant proposes a storm window product with a thinner profile that mimics the appearance of a traditional wood screen so as to minimize visual impact.
- ii. That the storm window be inset within the historic frame.

City of San Antonio One Stop



December 1, 2022









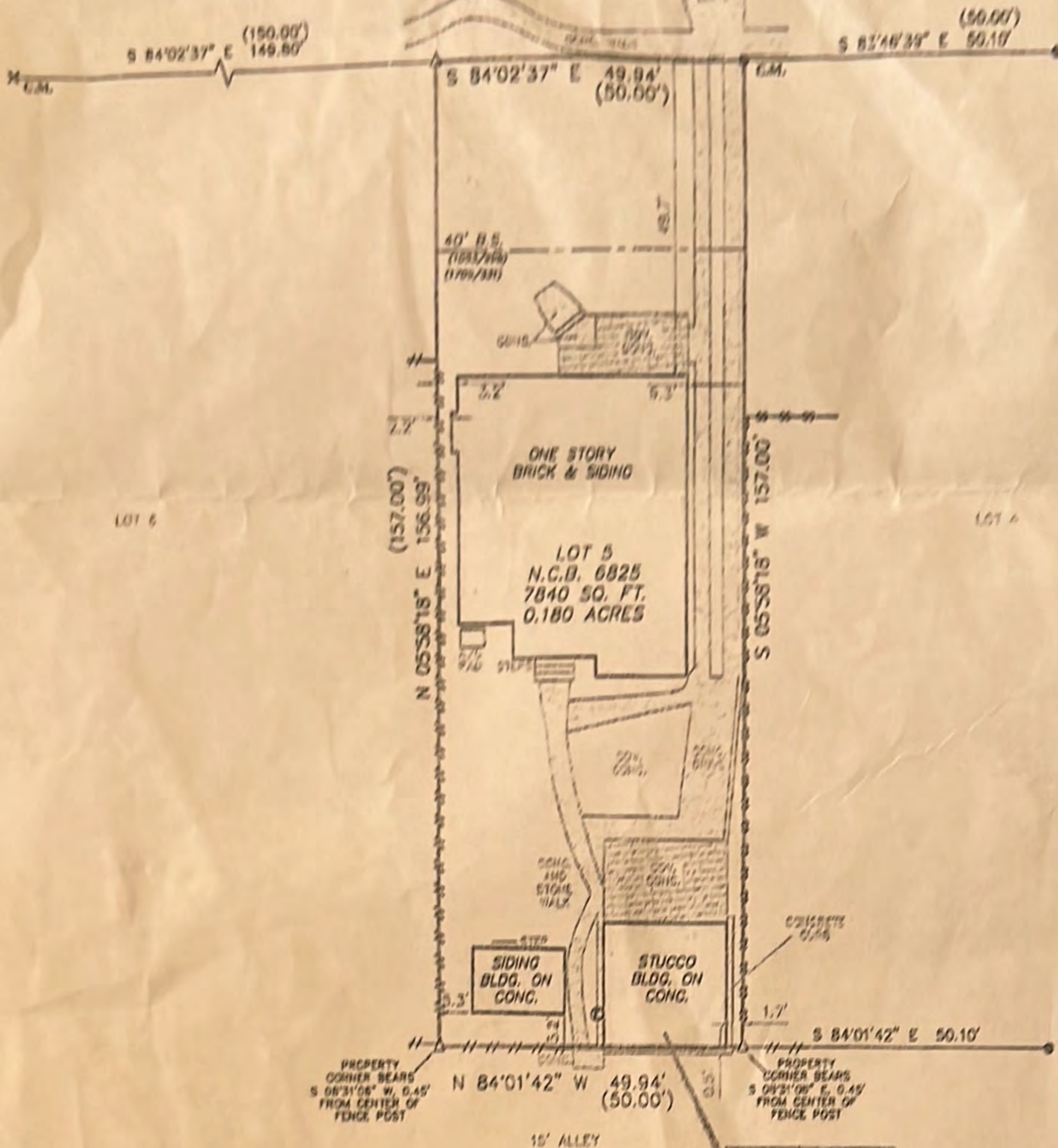






W. KINGS HWY (50' R.O.W.)

SCALE: 1"=20'



NOTE:
BEARINGS SHOWN HEREON ARE BASED ON ACTUAL GPS OBSERVATIONS, TEXAS STATE PLANE COORDINATES, SOUTH CENTRAL ZONE, GRID.

NOTE:
THIS PROPERTY IS SUBJECT TO RESTRICTIVE COVENANTS, EASEMENTS, AGREEMENTS, AND/OR SETBACK LINES (IF ANY) AS FOLLOWS: VOLUME 980, PAGE 35, DEED AND PLAT RECORDS OF BEXAR COUNTY, TEXAS; VOLUME 987, PAGE 303, VOLUME 1213, PAGE 434, VOLUME 1473, PAGE 225, VOLUME 1757, PAGE 576, DEED RECORDS, BEXAR COUNTY, TEXAS.

THIS SURVEY IS
ACKNOWLEDGED AND
IS ACCEPTED:



FLOOD ZONE INTERPRETATION: IT IS THE RESPONSIBILITY OF ANY INTERESTED PERSONS TO VERIFY THE ACCURACY OF FEMA FLOOD ZONE DESIGNATION OF THIS PROPERTY WITH FEMA AND STATE AND LOCAL OFFICIALS, AND TO DETERMINE THE EFFECT THAT SUCH DESIGNATION MAY HAVE REGARDING THE INTENDED USE OF THE PROPERTY. The property made the subject of this survey appears to be included in a FEMA Flood Insurance Rate Map (FIRM), identified as Community No. 450235, Panel No. 030311, which is dated 05/19/2020. By sealing from that FIRM, it appears that all or a portion of the property may be in Flood Zone(s).
 Because this is a boundary survey, the surveyor did not take any actions to determine the Flood Zone status of the surveyed property other than to interpret the information set out on FEMA's FIRM, as described above. THIS SURVEYOR DOES NOT CARRY THE LIABILITY OF THIS INTERPRETATION OF THE FLOOD ZONES, which may not agree with the interpretations of FEMA or State or local officials, and which may not agree with the Trust's actual conditions. More information concerning FEMA's Special Flood Hazard Areas and Zones may be found at: <https://www.fema.gov/portal>.

Property Address:

2118 W KINGS HWY

Property Description:

LOT 5, NEW CITY BLOCK 6825, WOODLAWN PARK, FIRST UNIT, AN ADDITION TO CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS ACCORDING TO THE MAP OR PLAT THEREOF RECORDED IN VOLUME 980, PAGE 35, DEED AND PLAT RECORDS OF BEXAR COUNTY, TEXAS.

Owner:

MORGAN LYNN BOOTH GRILL



I, RUDOLF J. PATA, JR., Registered Professional Land Surveyor, State of Texas, do hereby certify that the above plat represents an actual survey made on the ground under my supervision, and there are no discrepancies, conflicts, shortages in area or boundary lines, or any encroachment or overlapping of improvements, to the best of my knowledge and belief, except as shown herein.

RUDOLF J. PATA, JR.
Registered Professional Land Surveyor
Texas Registration No. 5388

FIRM REGISTRATION NO.
1011790

**Westar
Alamo**

LAND SURVEYORS, LLC.

P.O. BOX 1845 BOERNE, TEXAS 78005
PHONE (210) 372-8900 FAX (210) 372-9999

LEGEND

- Δ = CALCULATED POINT
- = 1/2" IRON ROD
- = RECORD INFORMATION
- = BUILDING SETBACK
- = CONTROLLING MONUMENT
- = "x" ON CONCRETE
- = WOOD FENCE
- = CHAIN LINK FENCE
- = ELECTRIC METER

DWCE:JA

RYD:RJP

Q.F. NO. SAT-08-4000082105532H

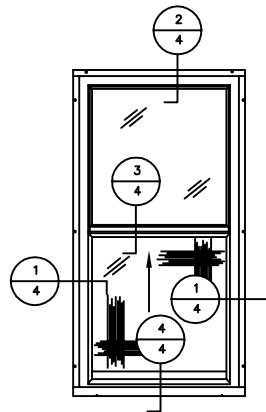
JOB NO. 111840 TITLE COMPANY: ALAMO TITLE

DATE: 01/03/2022



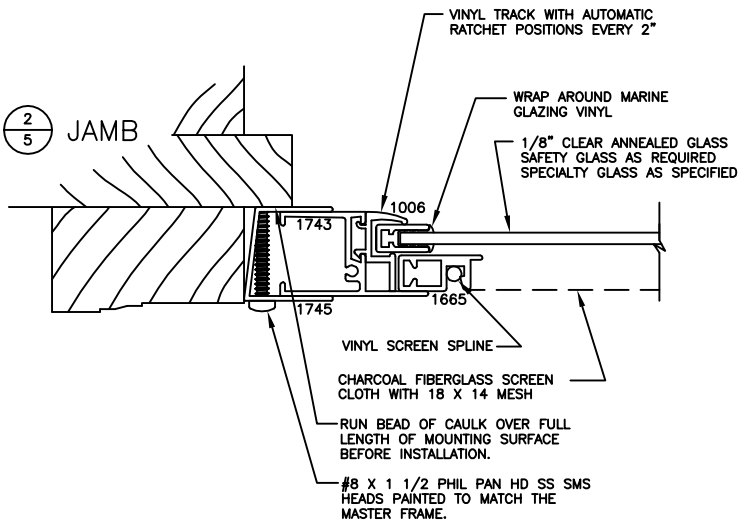
HIGH PERFORMANCE SECONDARY
GLAZING WINDOWS & DOORS

Mon-Ray, Inc
7900 Excelsior Blvd, Suite 140
Hopkins, MN 55343
763-544-3646 Fax 763-546-8977
www.monray.com



2-LITE DH

INTERIOR



EXTERIOR

EXTERIOR

MEETING RAIL

#8 x 1 1/2 PHIL PAN HD SS SMS
HEADS PAINTED TO MATCH THE
MASTER FRAME.

RUN BEAD OF CAULK OVER
FULL LENGTH OF MOUNTING
SURFACE BEFORE INSTALLATION

CHARCOAL FIBERGLASS SCREEN
CLOTH WITH 18 X 14 MESH.

VINYL SCREEN SPLINE

SILL

HEAD

POLYPROPYLENE PILE WITH
FIN BARRIER RUNNING
THE CENTER.

WRAP AROUND MARINE
GLAZING VINYL

1/8" CLEAR ANNEALED GLASS
SAFETY GLASS AS REQUIRED
SPECIALTY GLASS AS SPECIFIED

WRAP AROUND MARINE
GLAZING VINYL

WRAP AROUND MARINE
GLAZING VINYL

1/8" CLEAR ANNEALED GLASS
SAFETY GLASS AS REQUIRED
SPECIALTY GLASS AS SPECIFIED

WRAP AROUND MARINE
GLAZING VINYL

CONTINUOUS EXTRUDED
LIFT HANDLE

NON-MAGNETIC STAINLESS
STEEL PINLOCK ASSEMBLY

#8 X 3/8 PHIL PAN HD SS SMS
HEADS PAINTED TO MATCH THE
MASTER FRAME.
(SECURES MASTER FRAME TO
SILL EXPANDER)

CAULK FULL SILL AFTER INSTALLATION
LEAVE TWO (2) 1/4" WEEP HOLES
OPEN.

INTERIOR

504-DH-001
8/30/04
JEB

Product Model No. 504-DH 2-LITE
DOUBLE HUNG STORM WINDOW WITH FLUSH FRAME
#1745 EXPANDER @ HEAD & JAMB & #2404 EXPANDER @ SILL

TYPICAL
INSTALLATION
DETAIL

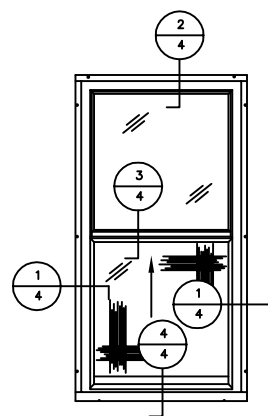
GLAZED WITH 1/8" CLEAR ANNEALED GLASS

SCALE
1:2
8-1/2 x 11



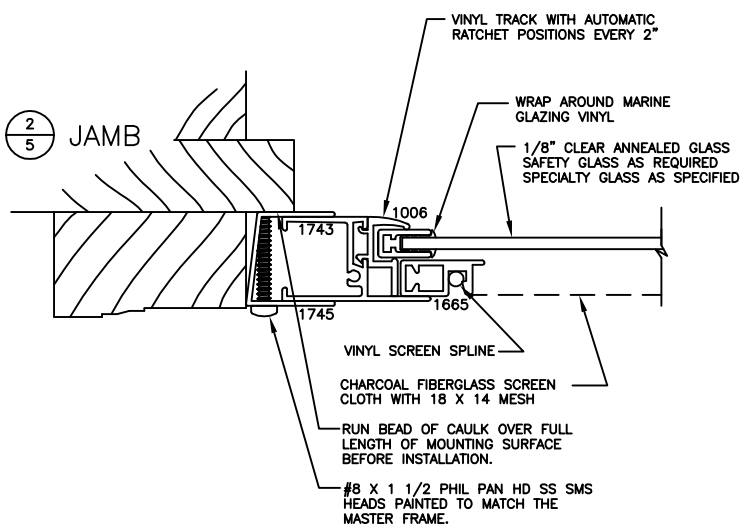
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2-LITE DH

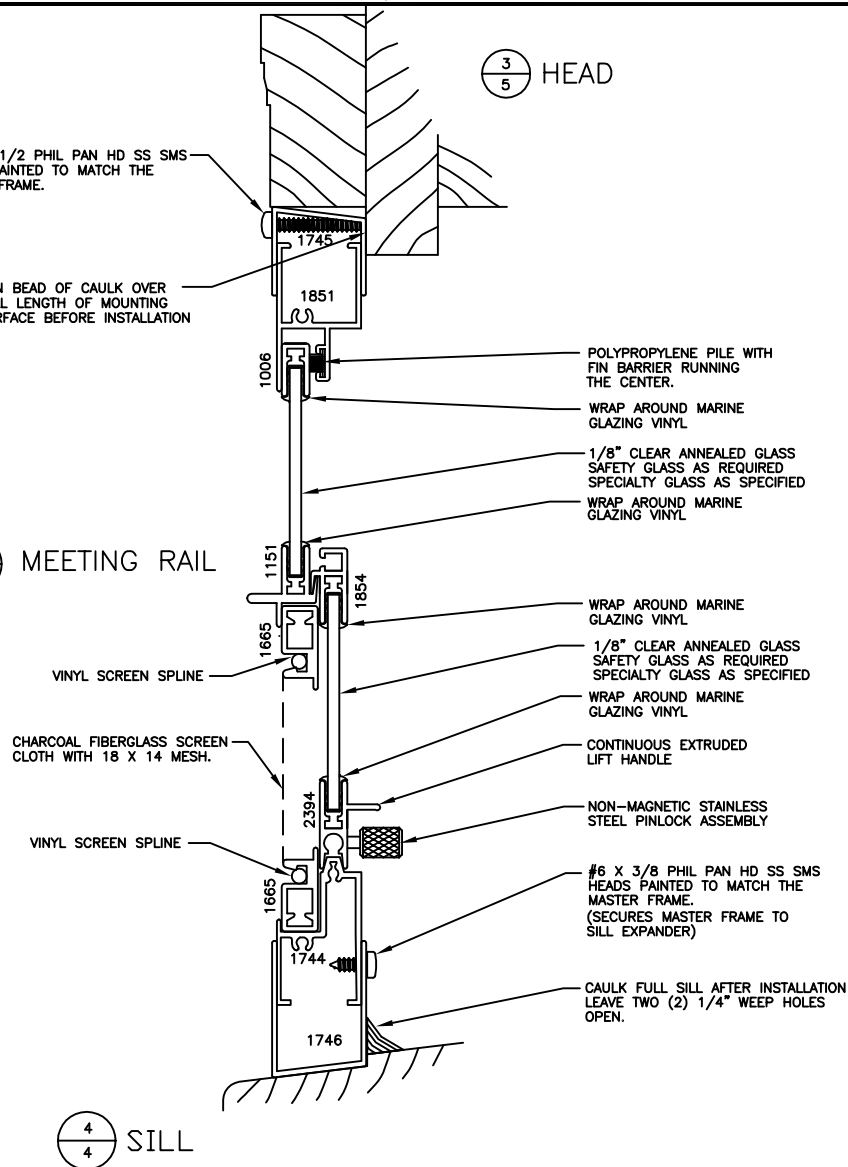
INTERIOR



EXTERIOR

EXTERIOR

MEETING RAIL



INTERIOR

SILL

504-DH-012
8/30/04
JEB

Product Model No. 504-DH 2-LITE
DOUBLE HUNG STORM WINDOW WITH FLUSH FRAME
#1745 EXPANDER @ HEAD & JAMB & #1746 EXPANDER @ SILL

TYPICAL
INSTALLATION
DETAIL

GLAZED WITH 1/8" CLEAR ANNEALED GLASS

SCALE
1:2
8-1/2 x 11

ARCHITECTURAL SPECIFICATIONS

Section 08580 or 08593
2004 Master Format Section 08 51 69 or 08 56 73

Mon-Ray 500 & 600 Series High Performance Aluminum Storm Windows

PART 1 GENERAL

1.00 SCOPE

- A. This is a high performance acoustical storm window Specification. The Specification provides the Bidders with rigid standards for product materials, workmanship and performance that must be complied with in every respect.
- B. It is the intent of this Specification to provide the Owner with proper product materials, workmanship, design, application, performance, installation and warranty coverage. The Specification describes specific test requirements, system performance, quality assurance tests, and product material requirements required to meet the Owner's desired acoustical performance level.

1.01 WORK INCLUDED

- A. Furnish and install high performance acoustical aluminum storm windows, complete with hardware, and related components as shown in drawings and specified in this Section.
- B. All storm windows are to be Mon-Ray Series 500 or 600 as manufactured by Mon-Ray, Inc. Other manufacturers requesting approval to bid their product will be viewed as alternate bids and must submit a request for approval 10 days prior to bid for consideration.

1.02 REFERENCES

- A. ANSI/AAMA 1002.10-93 "Voluntary Specifications for Insulating Storm Products for Windows and Sliding Glass Doors
- B. ASTM E 283 "Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors"
- C. ASTM E 330 "Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference"
- D. ASTM E 331 "Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Air Pressure Difference"
- E. AAMA 502 "Voluntary Specification for Field Testing of Windows and Sliding Glass Doors"
- F. ASTM E 90 "Laboratory Measurement of Airborne Sound Transmission of Building Partitions"
- G. ASTM E 413 "Determination of Sound Transmission Class (STC)"

1.03 SYSTEM PERFORMANCE

- A. Test Unit Size: Test units shall be the sizes listed below. Sill of the test buck shall have a 13 degree slope to the exterior. (See Appendix "A" for test buck details)

- | | |
|---|-------------------------|
| 1. Fixed panel and removable panel storm windows: | 4'0" wide x 4'0" high |
| 2. Horizontal sliding storm windows: | 6'0" wide x 4'0" high |
| 3. Vertical sliding storm windows: | 3' 8" wide x 5' 2" high |

- B. Air Leakage Test: The storm window shall be subjected to an air leakage test in accordance with ASTM-E 283. Window units tested by an Independent Laboratory shall be glazed with 1/8" clear annealed glass. Air leakage shall meet the following performance requirements.

Revised 2/2/07

1. Air leakage for fixed panel storm windows shall not exceed 0.15 CFM per square foot of window area at both a positive (infiltration) and negative (exfiltration) static pressure of 1.56 PSF at 25 mph wind. Weep holes shall not be sealed during the air leakage test.
 2. With the storm sash in the closed position, air leakage in removable panel, horizontal and vertical sliding windows shall not exceed 0.50 CFM per lineal foot of sash crack at both positive and negative static pressure 1.56 PSF at 25 mph wind . Weep holes shall not be sealed during the air leakage test.
- C. Uniform Structural Load Test: With storm sash closed position, the window shall be tested in accordance with ASTM E 330. Apply a minimum exterior positive and negative load of:

30.0 PSF at 108 mph wind = Class 20
 37.5 PSF at 121 mph wind = Class 25
 45.0 PSF at 132 mph wind = Class 30
 52.5 PSF at 143 mph wind = Class 35

for fixed panel, removable panel, horizontal and vertical sliding storm windows. Each load shall be maintained for 10 seconds. At the conclusion of the test, there shall be no glass breakage, damage to fasteners, hardware or any other damage causing the storm window to be inoperable.

- D. Water Resistance Test: With storm sash in the closed position, the window shall be subjected to a water resistance test in accordance with ASTM E 331. When a positive static pressure of:

2.0 PSF at 28 mph wind = Class 20
 2.5 PSF at 31 mph wind = Class 25
 3.0 PSF at 34 mph wind = Class 30
 3.5 PSF at 37 mph wind = Class 35

has been stabilized, 5 gallons of water per hour per square foot of window area shall be applied to the exterior face of the window, for a continuous period of 3 minutes. No water shall run over the interior edge of the sloped test buck sill.

- E. Concentrated Load and Glass Adherence Tests: A concentrated load equal to the weight of the sash, but not less than 15 pounds, acting parallel to the plane of the glass in a direction tending to pull the sash rails off the glass and applied alternately for three minutes at the center of all sash rails of the glazed sash shall not cause the sash rails to deflect more than 1/8" each.
- F. Safety Drop Test: When the glazed lower sash of a vertical sliding storm window is allowed to "free fall" the maximum distance provided for by the latch positions, it shall automatically stop every two inches in the next lower latch position.
- G. Glass and Screen Insert Squareness Test: Take a measurement of the distance between diagonally opposite pairs of corners of an insert with a steel rule. The difference between these measurements shall not be more than 1/4".
- H. Acoustical Performance: An acoustical test report shall state that the secondary glazing window to be furnished has been tested by it self in accordance with ASTM E90-90. The STC rating of the storm window shall tested as either "solo", the storm window alone or "tandem", with a prime window and a storm window.

1.04 SUBMITTALS

- A. Shop Drawings: Submit drawings under provisions of Section 01300. Include dimensions, relationships to construction of adjacent work, component anchorage, type of caulking, window locations, installation methods and installation materials. Dimensions of all windows and components will be the responsibility of the successful Bidder.
- B. Samples: Submit appropriate color Samples for Architects review and approval.
- C. Test Reports: Submit Independent Laboratory Test Reports verifying windows meet the specified requirements for sound transmission, air leakage, water resistance, uniform structural load, and deglazing.

- D. Certificates: Furnish an affidavit in triplicate from the Window Manufacturer, certifying that materials used on this Project conform to these Specifications and are identical in all appropriate respects to the storm windows identified in the Independent Laboratory Test Reports.

1.05 QUALITY ASSURANCE

- A. Qualifications: Fabrication shall be by a Window Manufacturer who can furnish evidence to the Owner that it is, and has been for not less than five (5) consecutive years, regularly engaged in the manufacturing of aluminum window units similar in design and performance to those specified for this Project.

B. Pre-award Installation:

1. Provide a complete installation of one (1) window as specified and selected by the Owner. Window mock-up to be completed within seven (7) days of the bid opening date. This window and installation shall be for the review of the product and installation. The Owner at his discretion may have the window tested by an Independent Test laboratory to verify compliance of the product with these Specifications.

The cost for pre-award testing, by the Independent Laboratory shall be paid by Owner. Any deficiencies discovered on the window by the testing and the Bidder at no cost to the Owner will correct deficiencies in any similar models used in the project.

C. Post Installation Field Testing:

1. Window field-testing will be in accordance with AAMA 502-90 using Test Method B. After installation and before final payment, up to two percent (2%), but not less than two (2) window units may be randomly selected by the Owner and subjected to an air leakage and water resistance tests. Air leakage and water resistance test results shall meet the specified requirements per AAMA 502-90. If any randomly tested window fails, the Successful Bidder shall make necessary corrections until satisfactory results are achieved and make corrections to all other window units installed as part of this Project.

All costs associated with the Post Installation Field Testing and required repairs or replacements shall be borne by the Successful Bidder. These tests may be performed by either the Window Manufacturer's technical service personnel using accurately calibrated and approved air leakage testing equipment, or by an approved Independent Test Laboratory. All tests shall be conducted in the presence of the Owner, or the Owner's Representative.

D. Reference List:

1. The Bidder shall furnish with its bid a Reference List from the Window Manufacturer containing not less than ten (10) completed projects with window units of similar to the window units specified for this Project. At least five (5) of the referenced projects shall be at least three (3) years old. As part of the bid evaluation to determine life cycle cost and best value for the Owner, consideration will be given as to age, longevity, performance and extended product life of these installations. The Reference List shall include the name, address and phone number of the project, and the date the project was completed.
2. If an installation sub-contractor is used, the subcontractor must furnish a list of at least five (5) projects similar in scope to this project with the base bid.
3. The Owner or Owners Representative has the right to deem the bidder as "non-responsible" or "non-qualified", based upon inspection of any projects performed by the bidder as a contractor, sub-contractor or manufacturer, if the products or workmanship is determined to be unacceptable by the Owner or Owners Representative.

1.06 WARRANTY

- A. Product Warranty: The successful Bidder shall furnish a positively written, non-prorated and fully transferable warranty from the Window Manufacturer against defects in materials and workmanship of the storm window units, under normal use, for a period of ten (10) years from the date of acceptance of the installed storm window units by the Owner. The warranty shall state that the Window Manufacturer shall provide all materials required to repair or replace defective materials or workmanship. The warranty shall further state that parts used to manufacture the storm window units, or suitable replacements, shall be available throughout the warranty period.
- B. Installation Warranty: The Successful Bidder shall furnish a written warranty against defects in the installation workmanship and materials for a period of three (3) years from the date of acceptance by the Owner. Installation warranty work will be performed at no cost to the Owner.

PART 2 PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Mon-Ray, Inc. (Manufacturer of Mon-Ray 500 or 600 Series Acoustical Storm Windows)
801 Boone Ave. No
Minneapolis, MN 55427-4432
Phone: (800) 544-3646 Fax: (763)-546-8977 Website: www.monray.com
- B. Alternates: Under provisions of Section 01030.

2.02 MATERIALS

- A. Aluminum: All frame, sash and screen members shall be accurately extruded aluminum prime alloy 6063-T6. The minimum nominal wall thickness of all frame, sash, expanders and panning members shall not be less than 0.050".
- B. Glazing: Standard glazing for fixed panel, removable panel, horizontal and vertical sliding storm windows shall be 1/8" clear annealed float glass. The area per lite of glass shall not exceed 20 Square feet for 1/8" glass. Safety glazing shall be used as required by code and correctly labeled on glass. The glass shall be glazed into the sash with a one-piece wrap-around, flexible vinyl glazing channel. All corners shall be secured and neatly tucked. All glass shall be factory washed.
- C. Weather-Strip: All weather-strip shall be silicone treated, UV stabilized polypropylene pile with an integral polypropylene fin running through the center. Weather-stripping shall be bonded to a non-shrinking backing, which shall slide into extruded ports in the aluminum storm frame.
- D. Vinyl Track: All operating windows shall incorporate a vinyl track to eliminate metal to metal contact and reduce operating force. All horizontal sliding sashes shall operate smoothly in a weather tight vinyl track. All vertical sliding sashes shall operate in a vinyl track with predetermined processed ventilating positions. The vinyl tracks will be secured into the storm frame through the use of extruded ports.
- E. Screens: All horizontal and vertical sliding storm window shall have a half screen mounted in the sash track of the storm frame. The screen shall be pre-bowed, extruded 6063-T6 tubular aluminum with a nominal wall thickness of 0.055". Mitered corners shall be joined neatly by means of solid T6 tempered aluminum corner gussets, securely peened within the screen frame extrusion. The screen cloth shall be fiberglass 18 x 14 mesh in a charcoal color and secured into screen frame with a vinyl spline. The screen inserts if removed will not affect the operation, efficiency or performance requirements of the storm window. NOTE: Fiberglass 18 x 16 mesh shall not be acceptable.

2.03 WINDOW TYPE AND OPERATION

- A. Type: All windows shall be fixed panel, removable panel, horizontal sliding or vertical sliding aluminum acoustical storm windows with a frame depth of 7/8" for standard Mon-Ray products.
 - 1. The 500 Series window shall have an frame expander design and mount cleanly into the existing storm window pocket against the blind stop or on the interior of the prime sash using a F channel frame expander.
 - 2. The 600 Series window shall have a blind stop frame design to mount on the blind stop or casing.

All glass sash and screen inserts shall be easily removable to the interior for cleaning. The entire storm window shall be designed and constructed in a manner that allows for easy replacement of all parts, hardware and weather-stripping.

- B. Non-operating Sash: All removable panels shall be held in place by an extruded aluminum turn button. Non-operating sash of horizontal and vertical sliding storm windows shall slide into an extruded weather-stripped sash pocket. Vertical non-operating sash shall be securely supported by two high impact nylon support blocks anchored into the storm window frame by non-magnetic stainless steel screws.
- C. Operation: Operating sash and frame shall have a two-track, self storing sash and screen design. Operating surfaces to be completely separated from metal-to-metal contact. All horizontal sliding sash shall operate smoothly in a weather tight vinyl track. All vertical sliding sash shall operate in a vinyl track with predetermined processed ventilating positions. The vinyl tracks will be secured into the storm frame through the use of extruded ports. The vinyl track and spring loaded pin-locks shall provide a "ratchet action" design with automatic ventilation settings every two (2) inches. In the closed and fully open positions the operating sash shall lock in non-ratcheted, secure holes. The pin-locks shall engage automatically into predetermined ventilating positions processed into each of the side storm frames.

2.04 HARDWARE

- A. All assembly and installation fasteners and screws incorporated in the storm window units and exterior panning shall be non-magnetic, stainless steel. All hardware parts shall be of aluminum, stainless steel, nylon, or other non-corrosive materials compatible with aluminum. NOTE: Wrought metal or plastic parts will not be acceptable.
- B. All removable panel storm sash shall incorporate an extruded aluminum turn button installed with non magnetic stainless steel screws.
- C. All horizontal sliding windows shall slide in extruded vinyl tracks, which shall be set in extruded ports in the master frame.
- D. All vertical sliding sashes shall be equipped with two spring loaded stainless steel pin-lock assemblies. The pin-lock assemblies shall be located at the lower corners of the operating sash and automatically engage at each ventilation setting. Each pin-lock assembly shall consist of: One stainless steel plunger with a diameter of 3/16". One stainless steel knurl knob threaded into the plunger and extending 1/2" to the interior of the sash rail to allow for a firm and easy finger grip. One stainless steel compression spring. The spring and the plunger shall be concealed in an extruded channel within the sash rails to prevent moisture, dirt and debris from affecting the operation of the pin-lock assembly.

2.05 FABRICATION

- A. Frame and Sash Construction:
 - 1. Frame: All aluminum head, jamb and sill members for the master frame and all frame expanders shall have a minimum wall thickness of 0.050 ". All members to be extruded 6063-T6 aluminum assembled in a secure and workman like manner to assure lasting weather resistant construction. Frame joints shall be butt-type, neatly joined and secured by means of non-magnetic stainless steel screws anchored into integral screw ports. Vinyl weather-stripping and tracks shall be shaded from direct sunlight by the frame and sash members. The storm window shall be mounted by using four adjustable expanders, which securely slide over the master frame. All installation holes shall be pre-drilled the manufacturer.

2. Sash: All sash members shall be extruded 6063-T6 aluminum with a minimum wall thickness of 0.055 “. Mitered corners shall be joined by non-magnetic stainless steel corner keys, securely peened on the inside of the sash insert. All sharp corners of the sash shall be deburred and smoothed. Sash meeting rails shall interlock in the closed position. All removable panels and operating sash shall have a full-length extruded lift handle as part of the sash rail. The lift handle shall project 7/16” to the interior to allow adequate area to maintain a sure finger grip. Note: Weather-stripping applied to or installed on the operating sash will not be permitted.

- B. Weep System: The sill expander shall have a minimum of two weep holes, uniformly positioned to allow for water to weep to the exterior of the storm window unit.

2.06 FINISHES

A. Organic (Painted Finish)

1. Finish all exposed areas of aluminum storm windows and components with a factory applied spray coating in accordance with Aluminum Association Designation:

<u>*Description</u>	<u>AA Designation</u>	<u>AAMA Guide Specification</u>
Siliconized polyester baked enamel	AA-M12-C41-RX1	AAMA 2603

2. Standard colors shall be one of the manufacturer’s three standard Poly-Cron III painted finished: White, Bronze or Tan. The head of all assembly and installation screws shall be painted the same color as the master frame of the storm window.
3. Optional colors: Available in polyester enamel or Kynar paints to conform to AAMA 2603 or 2605. Computer matching capability. Color samples available upon request.

B. Anodic (Anodized Finish)

1. Finish all areas of aluminum storm windows and components with electrologically deposited color in accordance with the following Aluminum Association Designation:

<u>*AA Designations</u>	<u>Architectural Class</u>	<u>Description</u>	<u>AAMA Guide Specification</u>
AA-M10-C22-A31/41	II/I	Clear Anodized	AAMA 607.1-77

2. Standard anodized color is 202 R1. Optional anodized finishes conform to AAMA 608.1, in the following colors: Clear 204 R1 and 215 R1, Champagne, Gold, Light Bronze, Medium Bronze, Dark Bronze, Deep Bronze and Black. Other custom anodized colors available upon request at an additional charge.

2.07 ACCESSORIES

- A. Exterior panning: (Optional) - 500 Series Only All existing exterior wood brick-molding around the window openings as shown in the Project drawings shall be covered with 6063-T6 extruded panning. Head and jamb panning shall interlock into the storm window frame and be pre-assembled by the manufacturer. A sill expander panning shall be provided to accommodate sill variations. The panning corners shall be butt-joined, secured with stainless steel alignment clips and be back-sealed by the window manufacturer.
- B. F-channel Expanders: (Optional) - 500 Series Only - Where project conditions warrant or thermal separation is desired, an F-channel expander is available. This expander installs on the same fashion as the U-channel expander, but has a 1/2” leg for anchorage.
- C. H-mulls: (Optional) - 500 Series Only - This accessory allows two or more storm windows or panels to be installed either horizontally or vertically in a single opening.
- D. Mullions and Transoms: (Optional) - 500 Series Only - Where two or more storm window frames adjoin each other horizontally or vertically, mullion or transom panning covers shall be used. Mull and transom covers shall incorporate a port for weather-sealing at the exterior.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Bidders are expected to visit the job-site and make a complete survey of the Project prior to bid. All storm window openings will be measured by the Bidder for proper sizing of the new storm windows. Failure to do so will not relieve the Successful Bidder from the need to furnish any and all materials, which may be required, in accordance with the Specifications, without any additional cost to the Owner.
- B. Inspect openings before installation to assure surfaces are clean and dry. Verify that Storm opening and masonry openings are correct and the sill is level.

3.02 PREPARATION

- A. Remove new storm window units from crating and packaging material. Verify that all parts and accessories are included. All storm window units and accessories shall be securely stored, upright and protected from the weather.
- B. Remove old storm windows and accessories from the window opening. Scrape and remove existing sealant from the opening, which will interfere with the installation of new storm windows.
- C. Install only aluminum tubing or preservative treated lumber, as required, for all blocking. All blocking shall be the full length of the head, jambs and sill.

3.03 INSTALLATION

- A. Storm windows shall be installed in strict accordance with the Manufacturer's instructions and Shop Drawings.
- B. Plumb and align storm window faces in a single plane with the existing window. Erect storm windows and accessories square and true, using blocking and anchors to maintain a permanent position.
- C. Anchors should be not less than #8 non-magnetic, stainless steel screws. The length of the installation screws shall allow a minimum of one half (1/2) inch to penetrate into the window frame or blocking. Anchors must be adequate to handle thermal and building movement, and specified uniform load requirements.
- D. Provide single-component or multi-component, low-modulus, non-sag sealant; comply with ASTM C920, Type S or M, Grade NS, Class 25

3.04 ADJUST AND CLEAN

- A. Operate installed storm windows to assure a proper installation has occurred. Make any appropriate adjustments.
- B. Remove excess sealant, dirt, window labels and wipe dust off frame and glass.



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High Performance Environmental Storm Windows

- Conserves Energy
- Abates Outside Noise
- Reduces Maintenance
- Adds Lasting Value

The Lowest Life-Cycle Cost Storm Window Available providing Year-Round Comfort and Security.



Rated #1

Independent study by leading university rated Mon-Ray Environmental Storm Windows number one in overall performance, workmanship, materials and warranty coverage.

Attractive Appearance

Unlike other combination storm windows, Mon-Ray Environmental Storm Windows are designed with clean, simple lines to maximize the glass viewing area and blend well with any style of architecture.

Improves Quality of Indoor Environment

Effectively reduces outside air, water and noise from penetrating through the existing window openings. Mon-Ray Environmental Storm Windows improve the quality, comfort and security of the indoor living area.

Unique Features and Superior Performance Standards not Found in other Storm Windows.



- Constructed of superior materials to meet high performance air, water, structural and acoustical standards.
- Available in four standard colors: white, bronze or tan Poly-Cron III paint and 204R1 clear anodized. (custom paint and anodized colors are optional).
- Double strength 1/8" glass standard with 3/16" and 1/4" glass optional for maximum acoustical performance.
- Stainless steel, spring loaded pin-locks and full length extruded lift rail provide sure grip and handling.
- Weather-tight, ratchet action jamb liners with automatic ventilation settings every two inches.
- Sash balance system* for large double hung units.
- Covered by ten (10) year, non-prorated and fully transferable product warranty.

* Patent Pending



Since first introduced in 1947, Mon-Ray Environmental Storm Windows have been a leader in setting high performance storm windows standards. They are ideal for both residential and commercial buildings.

- Variety of exterior or interior applications.
- Sizing up to 1/32" of an inch for a custom and precise fit.
- Able to duplicate special designs and shapes to preserve historical appearance.



Mon-Ray Environmental Storm Windows and doors have been specified on sound insulation programs around airports throughout the United States.



#400 Series



#500 Series



#600 Series

Three Attractive Frame Designs to Choose from ...

#400 Series—frame overlaps and mounts to face of exterior brickmolding, covering and protecting wood trim from elements.

#500 Series—our most popular and versatile design. Adjustable frame expanders are perfect solution for "out of square" window openings. Optional snap-on panning trims are available to cover and protect old exterior wood trim.

#600 Series—frame has recessed, profiled appearance and mounts on exterior blindstop. Side frames are tubular extrusions for additional strength.

Standard Mon-Ray Storm Window Styles



Fixed Panels



Removable Panels



Double Hungs



Gliders

Examples of Custom Designs



Octagons and Special Mitres



Circles and Ovals



Round-Tops



Arch-Tops

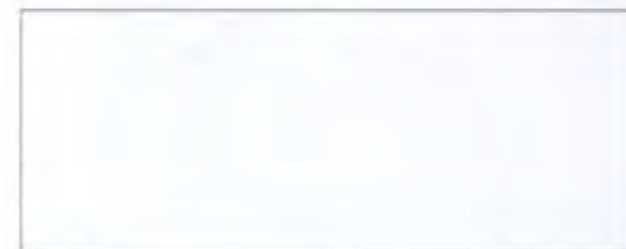


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500 Series Features and Benefits

Product Features	Benefits
<i>Over 70 years of experience</i>	Industry leader in storm window manufacturing, design and technology.
<i>Ability to size to 1/16 of an inch</i>	Custom made to fit the opening. Built to project specifications and design.
<i>6063-T6 tempered aluminum</i>	Handles greater wind loads, over 45% more tensile strength than T-5 and superior uniformity of finish. Will not break, crack or warp like vinyl extrusions.
<i>Standard and custom paint colors</i>	Covers aluminum with a clean, protective finish. Will not oxidize, pit, corrode or rust.
<i>Standard and custom anodized finish colors</i>	Penetrates into aluminum for a lasting finish. Will not oxidize, pit, corrode or rust. Does not discolor or darken like ordinary mill finish. Smoother surface for less friction, easier operation.
<i>Self-storing</i>	Eliminates seasonal changing of storms and screens. Provides ventilation when desired. Sash easily removable to the inside for cleaning.
<i>Coped and butt frame corners</i>	Tighter, stronger joints than mitered joints. Tubular frame sections for additional strength. Allows narrower sight lines for a better view.
<i>Non-magnetic, stainless steel assembly and installation screws</i>	No cathodic reaction between aluminum and other construction materials. Screws will not discolor.
<i>Extruded upper sash pocket</i>	Holds upper sash firmly in place. Reduces potential air leakage around sash.
<i>Fin seal weather-stripping in extruded frame port</i>	Offers long life and tighter fit. Provides a positive seal to help reduce air leakage. Will not wear like weather-stripping attached to operating sash as found in most storm units.
<i>Molded nylon support blocks</i>	Safely and securely supports upper sash. Much stronger than vinyl.
<i>Virgin vinyl, ratchet action jamb liner with ventilation settings every two (2) inches</i>	Acts as gasket separating metal-to-metal contact. Automatic ventilation positions at every two inches. Fixed locking when in closed position for security.

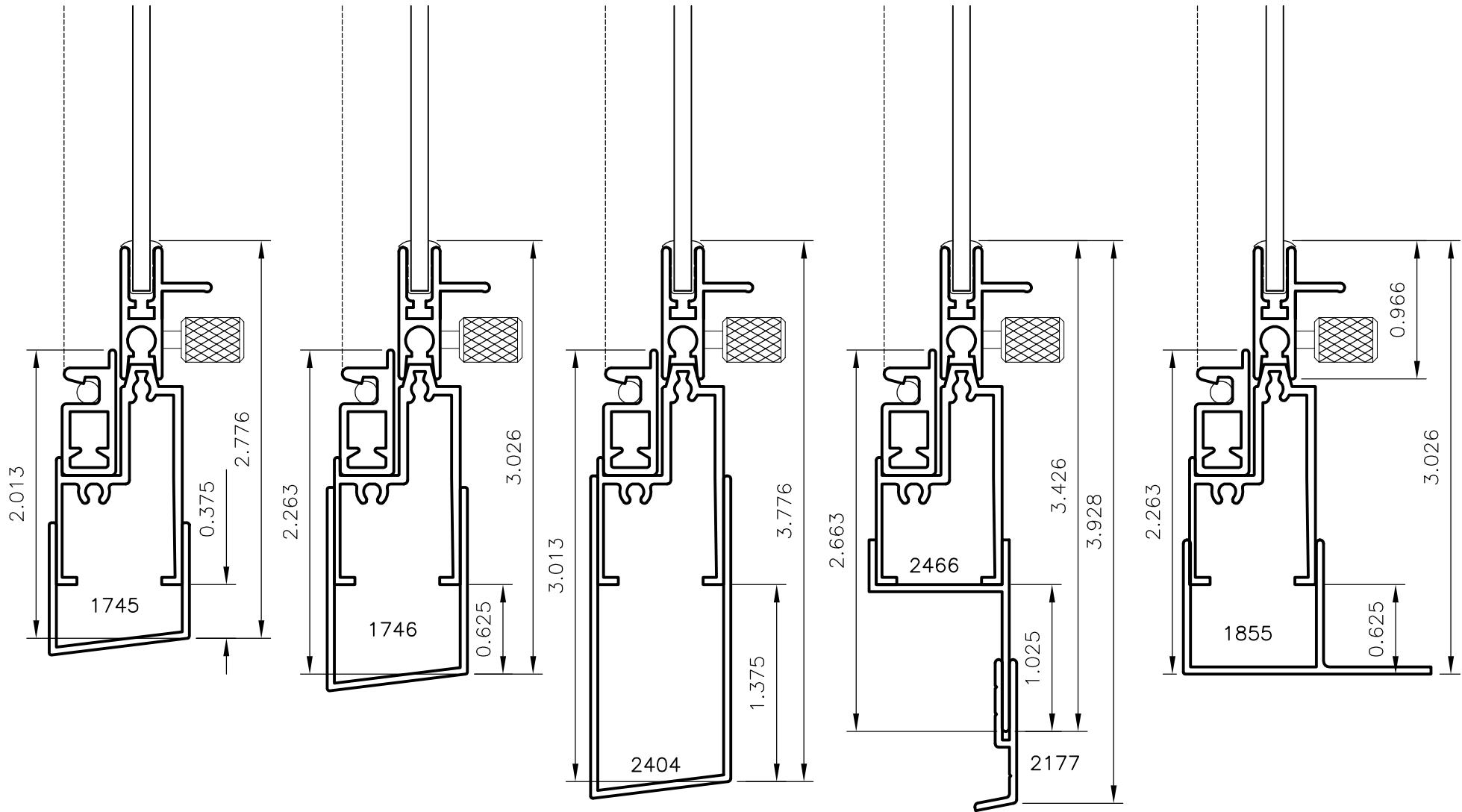
500 Series Features and Benefits

Product Features	Benefits
<i>Positive interlock at sill</i>	Lower sash remains snug under high wind pressure. Greater strength to reduce air and water leakage.
<i>Effective weep hole system</i>	Allows water to drain to outside. Helps protect wood sill from rotting.
<i>Clear 1/8" double strength (DSB) glass</i>	Stronger than single strength as used in most storms. Reduces risk of accidental breakage.
<i>Optional 3/16" and 1/4" glazing thickness</i>	Glass available includes Low E, tinted, tempered safety glass and laminated glass.
<i>Wrap-around glazing</i>	Provides continuous cushion to help protect glass. Spline will not shrink at corners like "set-in" glazing. Eliminates pressure cracks in corners.
<i>Reinforced, stainless steel corner keys</i>	Prevents insert corners from separating. Allows deglazing to replace broken glass.
<i>Nylon glide buttons</i>	Locks upper corners of lower sash to mainframe. Less friction and more strength than metal glides.
<i>Extruded T-6 interlocking meeting rail</i>	Positive interlock reduces air leakage between sashes. Extruded permanent design for lasting strength.
<i>Stainless steel, spring loaded pin-locks</i>	Safety and securely holds sash for ventilation. Will not break like plastic or weaker metal devices. Surer grip and full-length lift bar for easy handling.
<i>Extruded T-6 screen frame with durable 18 x 14 fiberglass mesh screen cloth</i>	Will not easily bend or twist like rolled aluminum. Holds screen spline tight to prevent sagging. Keeps out insects. Will not bend or crease like metal screen.
<i>Pre-drilled installation holes</i>	Factory drilled for more uniform appearance. Correctly positioned to provide proper strength.
<i>Air leakage less than 0.5 CFM High sound abatement ratings</i>	Saves energy and money by reducing annoying draft. Provides effective dead air space in cavity. Tighter design acts as a barrier to outside noise. Meets new state and federal standards.
<i>Mon-Ray Ten (10) Year Limited Product Warranty</i>	Ten (10) year warranty in writing. Non-prorated - for full ten year period. Warranty automatically transfers to the new owner.
<i>Local authorized dealers</i>	Factory trained, knowledgeable and full service.



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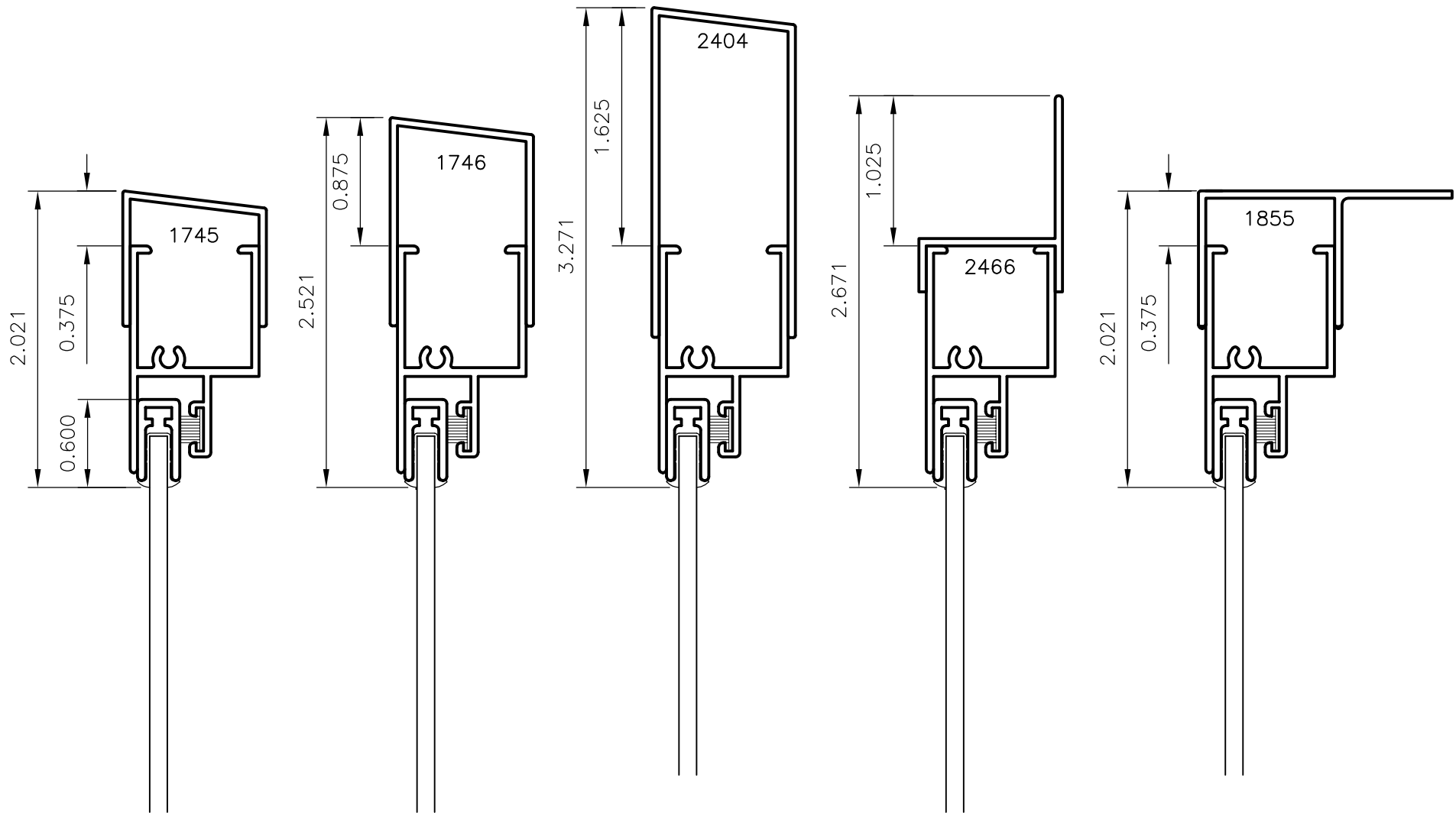
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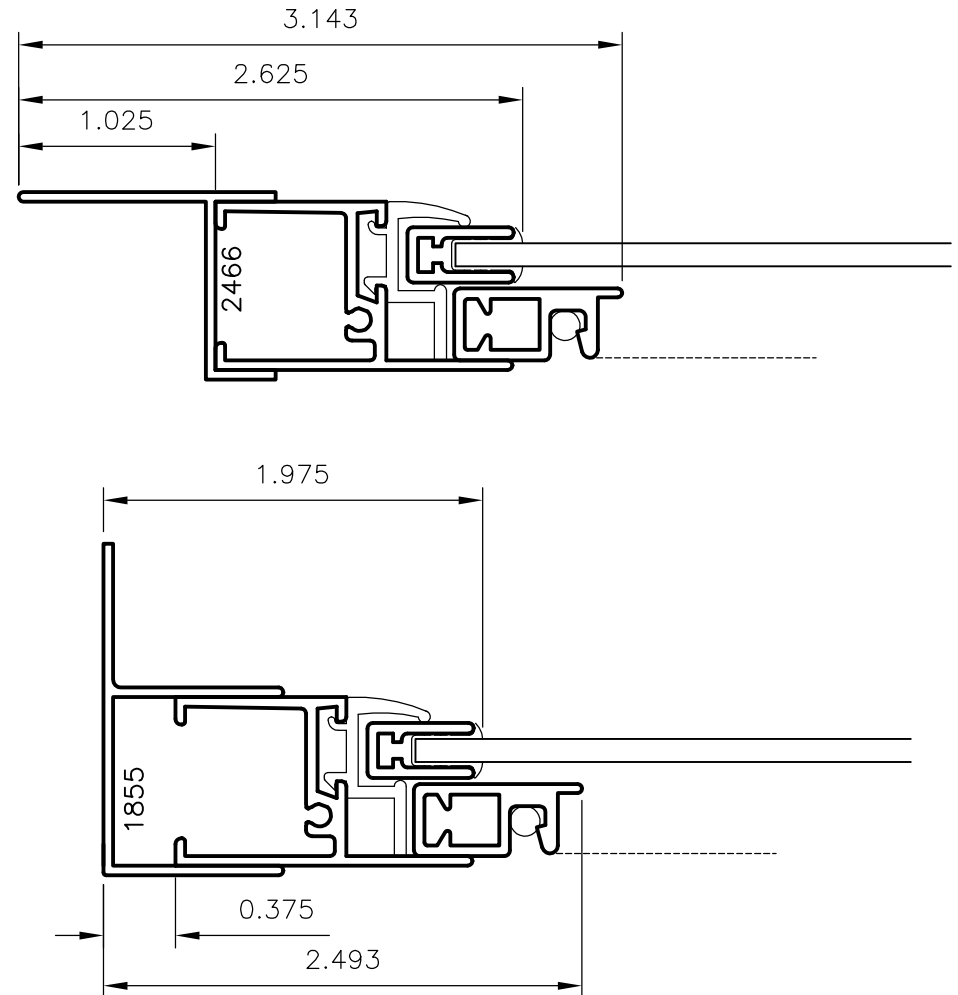
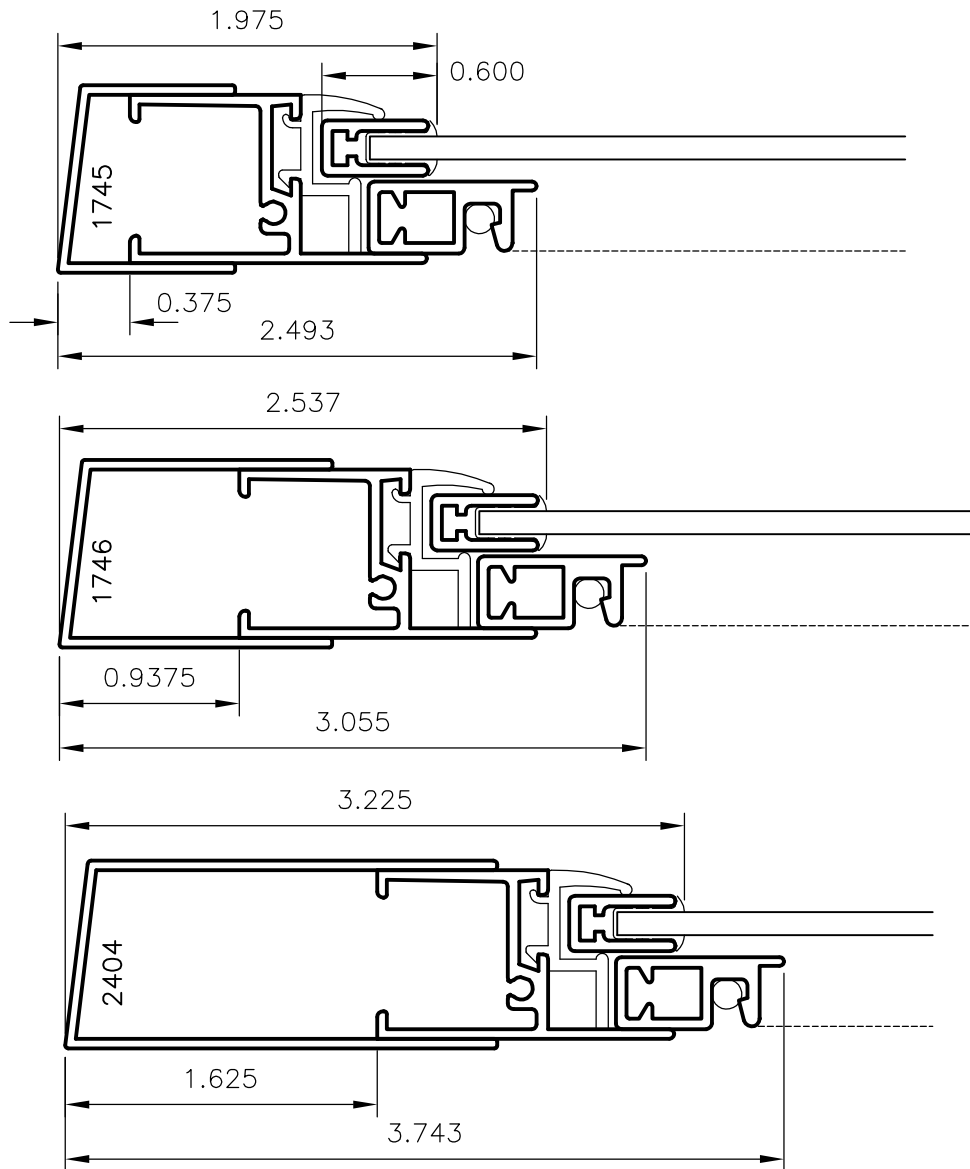
MON-RAY MODEL 504 - DOUBLE HUNG

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Specifying High-Performance Storm Windows

Modern performance standards have taken much of the guesswork out of purchasing and installing high-quality storm windows.

by Frank Hetman, Jr., Mon-Ray, Inc.

Properly designed and installed high-performance storm windows and interior secondary glazing windows work in tandem with existing prime windows to lower energy costs, reduce maintenance expense, and decrease sound transmission. The design and performance standards for storm windows have improved greatly over the past 50 years. To receive the best long-term value, specifiers on residential and commercial properties should make sure the storm windows they select have been made to meet the high performance standards of today — not yesterday.

In this article, we'll review the improvements that have been made in performance standards over the years and provide some checkpoints that specifiers can use for well-informed purchases and installation.

Up in the Fall, Down in the Spring . . .

Early storm windows were made with wooden frames and clear glass. They would be attached on the exterior of the prime window during the colder months. During the warmer months they would be taken down, stored, and replaced with a screen unit. If properly maintained and painted, these early storm windows had a warm and appealing appearance. More important, they were quite effective in blocking air leaks and protecting the prime window. Unfortunately, it was a hassle to take them down in the spring, store them in the garage, install screen units for the summer, and start the cycle all over again in the fall.

In the 1940s, "self-storing" storm windows, designed for convenience, were introduced. They had glass and screen inserts that operated inside their frame, eliminating the need for seasonal changing. The concept proved immensely popular, and over the next 30 years, most property owners opted for these self-storing triple-track storm windows. Unfortunately, most were disappointed with the results.

Most of these "self-storing" storm windows were poorly constructed out

of cheap materials. The frames were usually made of weak, recycled aluminum, and the hardware broke easily and was hard to replace. The units were also difficult to operate and remove for cleaning. Worse yet, their triple-track design was inefficient at stopping air and water leakage. Many property owners were forced to repair or replace weathered prime windows because of the poor job their self-storing triple-track storm windows did in keeping out inclement weather.

Enter: Performance Standards

The 1970s energy crisis propelled the development of high-performance storm-window standards for such factors as air leakage, water penetration, and structural load. Typical high-performance specs soon called for storm windows to have an air-leakage rating of no more than 0.5 CFM per lineal sash crack when tested at both a positive and negative pressure of 1.56 PSF (25 mph. wind load). High-performance standards for minimum water penetration and maximum structural-load performance require storm windows to meet at least a Class 20 of the ANSI/AAMA American National Standard.

More recently, acoustical standards have been added to help define what constitutes a high-performance storm window. For example, storm windows glazed with 1/8-in.-thick glass should have a Sound Transmission Class (STC) of at least 28, and an STC of 30 when glazed with 3/16-in. glass.

Aesthetic & Functional Factors

In addition to high-performance standards, storm windows should also meet high standards for appearance and function. The installation of storm windows should not significantly change the original design characteristics of the window openings or the architectural appearance of the building. For example, if



Technician monitors equipment for a field test of a newly installed storm window to make sure it meets the requirements of air leakage no greater than 0.5 CFM per lineal foot of sash crack.

a window has a special radius head (round top, arch top, etc.) the storm window should have a matching design. The color of the storm window should closely match the color of existing sash and adjacent wood trim. The sash of exterior-mounted storm windows should operate in a manner similar to the interior prime window, and remove easily to the interior for cleaning.

Interior Secondary Glazing

For historic-preservation projects, a storm window installed to the interior of the prime window (sometimes called "interior secondary glazing") offers the advantage of preserving the exterior appearance of existing window openings. While they may assist in reducing air leakage, interior secondary glazing units do not

QUALITY CHECKLIST FOR HIGH-PERFORMANCE STORM WINDOWS

Design/Appearance

- Storm windows should be made to match the size, shape and design of existing windows.
- Operating sash slide should be "friction-free" in track, without metal-to-metal contact.
- Operating units should be a 2-track design, not 3-track, to minimize air leakage.
- All sash and screen should remove easily through the interior window for cleaning.

Installation/Warranty/Performance

- Product materials and workmanship should be covered by a non-prorated, fully transferable warranty for a period of at least ten (10) years.
- Installer should be trained by manufacturer, and follow manufacturer's recommended installation procedures.
- Installation labor and materials should be covered by a non-prorated, fully transferable warranty for a period of at least three (3) years from date of completion.
- Upon completion of the installation, the storm windows may be randomly field-tested to verify the air leakage is less than 0.5 CFM per lineal foot of sash crack at 1.56 PSF.

provide the prime window with any protection from weather conditions. Furthermore, consideration must be given to how water will drain to the outside if it collects between the prime window and the interior secondary glazing. ■

Frank Hetman, Jr., is the President and CEO of Mon-Ray, Inc., a manufacturer of high-performance window and door products. He is the son of Frank Hetman, Sr., who is known for his innovative ideas, numerous patents in window design, and significant contributions to improving window standards for the past 50 years.

GUIDE SPECIFICATION FOR HIGH-PERFORMANCE STORM WINDOWS

Scope: This specification establishes general quality and performance requirements for exterior-mounted, high-performance storm windows.

Qualification: Fabrication shall be by a manufacturer who has regularly engaged in the manufacturing of storm-window units of the type and quality specified for a period of at least three (3) consecutive years.

Reference Standards: *American Society for Testing Materials:* ASTM: E283-91 (Air Leakage Test); ASTM: E331-90 (Water Resistance); ASTM: E330-93 (Uniform Load Test); ASTM: E90-90 (Sound Transmission).

Test Reports: The Bidder shall furnish with its bid test reports from an independent laboratory that the storm window it is bidding has been tested in accordance with the specified methods and procedures.

Product Warranty: The Bidder shall furnish with its bid a written, non-prorated and fully transferable warranty from the storm-window manufacturer against defects in materials and workmanship, under normal use, for a period of ten (10) years from the date of satisfactory completion of the installed units.

Installation Warranty: The Bidder shall furnish with its bid a written, non-prorated and fully transferable warranty against defects and materials related to installation of the storm windows for a period of three (3) years from the date of satisfactory completion of the installed units.

Materials

Aluminum: All frame, sash, and screen members shall be accurately extruded aluminum prime alloy #6063 with T6 hardness tempering, and having a minimum wall thickness of .050 inches.

Fasteners: All fasteners incorporated in the product shall be non-magnetic stainless steel.

Hardware: All hardware shall be of aluminum, stainless steel, or nylon. Wrought-metal alloy or plastics will not be acceptable.

Weather-stripping: All weather-stripping shall be of material compatible with aluminum and resistant to weathering. Flexible, compression, or rigid vinyl weather-strip, where used, shall be of high-impact virgin polyvinyl chloride.

Glass: Glass shall be 1/8-in. clear, annealed glass. Safety glass shall be used as required and clearly labeled.

Screen: Screen cloth shall be charcoal fiberglass with 18 x 14 mesh.

Construction

Frame: All master frame corners shall be butt-joint assembly. Mitered frame corners shall not be permitted. All installation holes shall be pre-drilled by manufacturer and be correctly positioned in frame or frame expanders to provide uniform appearance and required support.

Sash: All sash corners shall be neatly mitered-cut and joined securely by means of stainless-steel corner keys securely peened inside the aluminum sash extrusions.

Glazing: Glass shall be neatly and securely glazed into aluminum extruded sash rails with continuous wrap-around vinyl glazing channel. Set-in glazing shall not be acceptable.

Finish: Standard finish shall be either 202RI clear anodized or painted finish that complies with AAMA Specification 603 performance requirements. Standard paint colors shall be white, bronze, or tan.

Operation

Design: Operating storm-window units shall have a two-track, self-storing glass and screen design. Three-track shall not be acceptable.

Operating Sash: All operating sash shall slide easily in weather tight, extruded vinyl track channel without metal-to-metal contact. Each vinyl track in vertical operating units shall have a ratchet-action design with an automatic ventilation setting every two (2) inches. When closed, the operating sash shall be securely locked to prevent opening from outside.

Lift-Handle Rail: All operating sash shall have a full-length extruded lift handle as part of the sash rail. The lift-handle rail shall project a minimum of 5/16 in. to the interior to allow for a sure finger grip when lifting or sliding the operating sash rails.

Removability: All sash and screen inserts shall remove easily to the interior through the clear opening of the interior prime window sash opening.

Performance Requirements

Air Leakage Test: With weep holes open, air leakage shall be no more than 0.50 CFM per lineal foot of net sash crack at a test pressure of 1.56 PSF (25 MPH wind) for both positive and negative pressure when tested in accordance with ASTM #E283-91.

Water Drainage Test: No water shall run over interior sill of test buck when subjected to water drainage test in accordance with ASTM E331-90 with a pressure of 2.5 PSF.

Uniform Load Test: There shall be no evidence of permanent deformation or breakage, and the storm window shall operate freely, after being subjected to a positive and negative uniform load of 30.0 PSF for ten seconds each.

Safety Drop Test: The operating sash of vertical sliding storm windows shall automatically stop every two inches when allowed to "free fall" from any ventilation position.

Acoustical Performance: The storm window shall have an STC rating of no less than 28 when tested by itself with 1/8-in. -thick glass in accordance with ASTM: E90-90 Laboratory Measurement of Airborne Sound Transmission.

Installation

Qualifications: Installation shall be by a qualified installer who has been trained according to the storm-window manufacturer's recommended installation procedures.

Preparation: Each window opening shall be properly prepared and cleaned before installation of new storm windows.

Caulking: All exterior joints shall be sealed with Class-A-type caulking that meets Federal Specification TT-S-00230. Color of caulking shall match color of frame of new storm window.

Installation: The entire perimeter of the new storm windows shall be back-sealed with approved caulking, and installed plumb and square onto stops to assure proper operation and an attractive appearance. All installation holes shall be pre-drilled by manufacturer to assure uniform spacing and safety. Weep holes shall be left open.

Field Testing

Post-Installation Testing: Upon completion of the installation, the owner may randomly select up to two percent of the total number of storm windows installed and have them field-tested for compliance with the Air Leakage Performance Requirements of 0.5 CFM per lineal foot of net sash crack. Weep holes may not be sealed during this test. The test area shall be the storm-window frame and the exterior mounting surface. The Contractor at no expense to the Owner shall correct any storm window not meeting the minimum air-leakage requirement. For each unit that fails, the owner may select two additional units to be tested.

For more specific information on ASTM Test Standards contact: American Society for Testing and Materials, 100 Barr Harbor Drive, Conshohocken, PA 19428; Phone (610) 832-9500







