

INTRODUCTION

The Value of Milgard Aluminum

The Value of Milgard Aluminum

Milgard Windows is a full-line manufacturer of windows and doors offering Vinyl, Aluminum, and Fiberglass products that are made to order every time. We can create just about any shape or style you can imagine within our wide range of operating styles.

IT TAKES AN OPEN MIND.

— Our engineering teams design our Aluminum windows and patio doors individually with performance, appearance and energy conservation in mind.

— At Milgard, we'll continue to innovate and adapt to everchanging architectural styles and construction practices to provide you with the most advanced Aluminum windows and doors on the market.

DESIGN UNLIMITED.

— Mix and match Milgard Aluminum windows and patio doors from a wide array of shapes and sizes. Select matching window grids conveniently located between the panes of glass. Corrosion resistant hardware is available for those areas where corrosion is a problem.

A QUALITY COMMITMENT.

— It all starts with Milgard's Full Lifetime Warranty. Our promise that we will repair or replace any Milgard product defective in materials or workmanship for as long as your customer owns and resides in their single family home. For commercial projects, Milgard offers a Full ten year Warranty. Our Aluminum windows and patio doors are designed to remain durable and operate smoothly for a lifetime. Our Quality Teams precision-build each window, one at a time, by hand. Just like we've built our windows for over 45 years. For complete warranty details visit milgard.com.

ALUMINUM Guide Spec:

Standard Aluminum Windows & Doors

3 Part Specification Standard Aluminum Windows

STANDARD
SERIES
ALUMINUM

ALUMINUM WINDOWS - 08 51 13

With the thin lines that Migard's Aluminum Windows provide, they are ideal for both new construction as well as replacement. This series of products provide an economical solution while providing architectural style.

ALUMINUM WINDOWS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Solid and tubular aluminum extruded windows of the following type(s):

Picture Window	Series 710, 710S, 910C, 910S, 911C, 1185H, 1285H
Casement	Series 910C, 910S, 911C
Awning	Series 910C, 910S, 911C
Horizontal Slider	Series 1110H, 1110SH, 1180H, 1280H
Vertical Slider	Series 1510, 1510S, 1580, 1680
Bay Window	Series 1550
Bow Window	Series 1560
Radius	Series R15, R15S

B. Related Sections:

INSERT APPROPRIATE SECTION NUMBERS AND TITLES BELOW FOR WINDOW FLASHING AND INSTALLATION SEALANTS.

1. ___ - _____.
2. ___ - _____.
3. 08 32 13 – TIE Aluminum Sliding Doors.

INCLUDE APPROPRIATE LANGUAGE BELOW IF PRODUCTS SPECIFIED IN THIS SECTION ARE TO BE BID AS ALTERNATES.
OTHERWISE DELETE FOLLOWING PARAGRAPH.

C. Alternates:

1. Reference Section 01 23 00 – Alternates.

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1.02 SUBMITTALS

- A. Reference Section 01 33 00 – Submittal Procedures; submit following items:
1. Product Data.
 2. Shop Drawings: Include window schedule, window elevations, sections and details, and multiple window assembly details.
 3. Samples:
 - a. Color samples: Minimum 1x4 inch (25x100 mm) samples of Aluminum with painted or anodized color.
 - b. **Glass, showing specified tint color.**
 4. Quality Assurance/Control Submittals:
 - a. Qualifications: Proof of manufacturer's qualifications.
 - b. **U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.**
 - c. Installation Instructions – AAMA 2400 ("Mounting Flange Installation") or AAMA 2410 ("Flush Fin Installation").
- B. Closeout Submittals: Reference Section 01 78 00 – Closeout Submittals; submit following items:
1. Temporary window labels marked to identify windows that labels were applied to.
 2. Maintenance instructions.
 3. Special Warranties.

1.03 QUALITY ASSURANCE

- A. Overall Standards: Comply with ANSI/AAMA 101.I.S.2, except as otherwise noted herein.
- B. Qualifications:
1. Manufacturer Qualifications:
 - a. Minimum five years experience in producing aluminum windows of the type(s) specified.
 - b. Member AAMA, NFRC.

INSERT LOCAL REGULATORY REQUIREMENTS BELOW.

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- C. Regulatory Requirements:
- D. Certifications for insulated glass windows:
 - 1. AAMA: Windows shall be Gold Label certified with label attached to frame per AAMA requirements.
 - 2. NFRC: Windows shall be NFRC certified with temporary U-factor label applied to glass and an NFRC tab added to permanent AAMA frame label.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Reference section 01 66 00 - Product Storage and Handling Requirements.
- B. Follow manufacturer's instructions on label applied to windows.

1.05 WARRANTY

SELECT "RESIDENTIAL" WARRANTY BELOW FOR OWNER OCCUPIED SINGLE FAMILY RESIDENTIAL AND OWNER OCCUPIED CONDOMINIUM PROJECTS. SELECT "COMMERCIAL WARRANTY FOR NON-OWNER OCCUPIED CONDOMINIUMS, COMMERCIAL, AND MULTI-FAMILY PROJECTS.

- A. Residential Special Warranty:
 - 1. Full Lifetime Warranty to original owner.
 - 2. Transferability:
 - a. Permit unlimited transfer of ownership in first ten years.
 - b. Upon first transfer of ownership, warranty period shall become ten years from date of original purchase.
 - c. For complete warranty details visit milgard.com.
 - 3. Guarantees windows against defects in materials and workmanship including costs for parts and labor.

OR

- B. Commercial Special Warranty:
 - 1. 10-year Commercial Warranty.
 - 2. Guarantees windows against defects in manufacturing and workmanship including costs for parts and labor.
 - 3. For complete warranty details visit milgard.com.

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PART 2 – PRODUCTS

2.01 MANUFACTURER

- | | | | |
|----|--|------|--|
| A. | Milgard Manufacturing, Inc.
1010 54th Avenue East
Tacoma, WA 98424 | Tel: | 1.800.MILGARD (645-4273)
(253) 922-2030 |
| | | Fax: | (253) 926-0848 |
| | | Web: | milgard.com |

INSERT NAME, ADDRESS AND PHONE NUMBERS OF MANUFACTURER'S REPRESENTATIVE BELOW

- | | | | |
|----|--------------------------------|--------|-------|
| 1. | Manufacturer's Representative: | Tel: | _____ |
| | _____ | Fax: | _____ |
| | _____ | Email: | _____ |

- B. Window Series: Milgard Aluminum Windows
- C. Substitutions: Reference Section 01 25 13 – Product Substitutions Procedures.

2.02 MATERIALS

- A. Aluminum: Comply with requirements of AAMA/WDMA/CSA 101/I.S.2/A440-05, 6063-T5 temper for strength, corrosion resistance and application of required finish.
- B. Extruded frame members are to be .060" in thickness for structural walls.

VERIFY THAT DOOR FLASHING MATERIAL AND INSTALLATION SEALANT IS SPECIFIED IN APPROPRIATE SECTIONS.

2.03 GENERAL PERFORMANCE REQUIREMENTS:

- A. Thermal Performance: Comply with NFRC 100.
- B. Air Leakage, Water Resistance, Structural Test: Comply with ANSI/AAMA 101/I.S.2.
- C. Forced-Entry Resistance: Comply with ASTM E 588.

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2.04 WINDOW TYPES:

SELECT FOLLOWING WINDOW TYPES AND RELATED NAIL FIN/MOUNTING STYLE BASED ON PROJECT REQUIREMENTS. DELETE WINDOW TYPES NOT USED.

- A. Picture Window and Radius – [710 Series, 1 inch (25mm) nail fin setback] [710S Series, 1 3/8 inch (35mm) nail fin setback with stucco key] [910C Series, 1 inch (25mm) nail fin setback] [910S Series, 1 3/8" (35mm) nail fin setback with stucco key] [911C Series, block frame (no nail fin)] [R-15 Series, 1 inch (25mm) nail fin setback] [R-15S Series, 1 3/8" (35mm) nail fin setback with stucco key] [1185H Series, block frame (no nail fin)] [1285H Series, Z-bar flush fin]:
1. Frame:
 - a. 710 & 710S Series, 2 1/16" (52mm) & 2 3/8" (60mm)
 - b. 910C Series, 2 1/16" (52mm)
 - c. 910S Series, 2 7/16" (62mm)
 - d. 911C Series, 1 1/4" (32mm)
 - e. R15 & R15S Series, 2 1/16" (52mm) & 2 3/8" (60mm)
 - f. 1185H & 1285H Series, 2 1/16" (52mm)
 2. Sightlines:
 - a. 1185H & 1285H Series, equal to the horizontal slider and single hung
 3. Performance Class:
 - a. 710 & 710S Series, 95 1/2" x 71 1/2" and smaller: FW-HC40
 - b. 910C, 910S & 911C Series, 95 1/2" x 71 1/2" and smaller: FW-HC45
 - c. R-15 & R-15S Series, 71 1/2" x 71 1/2" and smaller: FW-HC40
 - d. 1185H Series, 71 1/2" x 71 1/2" and smaller: FW-HC45
 - e. 1285H Series, 71 1/2" x 71 1/2" and smaller: FW-HC40
- B. Horizontal Slider – [1110H Series, 1 inch (25mm) nail fin setback] [1110SH Series, 1 3/8 inch (35mm) nail fin setback with stucco key] [1180H Series, block frame (no nail fin)] [1280H Series, Z-bar flush fin]:
1. Frame:
 - a. 1110H & 1110SH Series, 2 1/16" (52mm) & 2 3/8" (60mm)
 - b. 1180H & 1280H Series, 2 1/16" (52mm)
 2. Sash: Depth of 1 1/8" (29 mm), hollow aluminum extrusion.

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3. Sightlines: Non-equal sightlines between sash and fixed glass.
 4. Performance Class:
 - a. 119 ½" x 71 ½" Double Vent, 36" vent set: HS-LC25.
 5. Hardware:
 - a. Nylon rollers with stainless steel axles, aluminum integral monorail track.
 - b. Single pull rail on meeting rail sash.
 - c. Automatic, spring loaded, height adjustable positive lock.
 6. Weatherstripping: Fin seal polypropylene pile.
- C. Single Hung – [1510 Series, 1 inch (25mm) nail fin setback] [1510S Series, 1 3/8 inch (35mm) nail fin setback with stucco key] [1580H Series, block frame (no nail fin)] [1680H Series, Z-bar flush fin]:
1. Frame:
 - a. 1510 & 1510S Series, 2 1/16" (52mm) & 2 3/8" (60mm)
 - b. 1580H & 1680H Series, 2 1/16" (52mm)
 2. Sash: Depth of 1 1/8" (29 mm), hollow aluminum profile.
 3. Sightlines: Non-equal sightlines between sash and fixed glass.
 4. Performance Class:
 - a. 47 ½" x 83 ½" and smaller: H-LC25.
 5. Hardware:
 - a. Concealed block and tackle balancer.
 - b. Single pull rail (sash lifts) on meeting rail sash.
 - c. Automatic, spring loaded, height adjustable positive lock.
 6. Weatherstripping: Fin seal polypropylene pile.
- D. Casement – [910C Series, 1 inch (25mm) nail fin setback] [910S Series, 1 3/8 inch (35mm) nail fin setback with stucco key] [911C Series, block frame (no nail fin)]:
1. Frame:
 - a. 910C Series, 2 1/16" (52mm)
 - b. 910S Series, 2 7/16" (62mm)
 - c. 911C Series, 1 ¼" (32mm)
 2. Sash: Depth of 1 5/16" (33mm), solid aluminum extrusion.

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3. Performance Class:
 - a. 95 ½" x 59 ½" Double Casement with center picture window, 32 vent set: C-C30.
 4. Hardware:
 - a. Operators will be of single push arm design driven by a hand crank. Constructed of hardened steel worm and gearing and high-pressure zinc alloy die castings with high-strength plastic trim cover.
 - b. Cam style locking mechanism with latch on jamb.
 - c. Tension adjustable hinge.
 5. Weatherstripping: Dual durometer vinyl bulb seal.
- E. Awning – [910C Series, 1 inch (25mm) nail fin setback] [910S Series, 1 3/8 inch (35mm) nail fin setback with stucco key] [911C Series, block frame (no nail fin)]:
1. Frame:
 - a. 910C Series, 2 1/16" (52mm)
 - b. 910S Series, 2 7/16" (62mm)
 - c. 911C Series, 1 ¼" (32mm)
 2. Sash: Depth of 1 5/16" (33mm), solid aluminum extrusion.
 3. Performance Class:
 - a. 47 ½" x 83 ½" Bottom Awning, 36" barset: AP-C30.
 4. Hardware:
 - a. Operators will be of combined push arm and drag arm/link design driven by a hand crank. Constructed of hardened steel worm and gearing and high-pressure zinc alloy die castings with high-strength plastic trim cover.
 - b. Cam style locking mechanism with latch on jamb.
 - c. Tension adjustable hinge.
 5. Weatherstripping: Dual durometer vinyl bulb seal.
- F. Bay Windows – [1550 Series, 1 inch (25 mm) nail fin setback]:
1. Frame: Depth of frame is 2 1/16" (52mm)
 2. Unit configuration and window types as shown on drawings; mulled together to form single window unit.
 3. Assembly posts at 45 degrees.
- G. Bow Windows – [1560 Series, 1 inch (25 mm) nail fin setback]:

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1. Frame: Depth of frame is 2 1/16" (52mm)
2. Unit configuration and window types as shown on drawings; mulled together to form single window unit.
3. Assembly posts at 13 degrees.

2.05 GLAZING

- A. Insulated Glass Units: ASTM E 774, Class A, 3/4 inch (19mm) thick overall except 710 and 710S which are 1 inch (25mm) thick.
1. Glazing Type: [Clear/Clear] [Clear/SunCoat® Low-E] [Clear/SunCoat® Low-E, argon gas filled] [Clear/SunCoatMAX™ Low-E] [Clear/SunCoatMAX™ Low-E, argon gas filled] [Clear/Hardcoat Low-E] [Clear/Hardcoat Low-E, argon gas filled].

WARM EDGE SPACERS ARE NOT AVAILABLE ON SOME UNITS
INCLUDING CERTAIN OVERSIZE UNITS, RADIUS AND GABLED UNITS.

2. Spacer Bar: [Warm edge steel spacer] [Aluminum box spacer] [Warm edge foam spacer].

MOST COMMON TYPES OF INSULATED UNITS ARE INCLUDED ABOVE, BUT SEVERAL OTHER TYPES INCLUDING TINTED, REFLECTIVE, HEAT STRENGTHENED, TEMPERED, OBSCURE, WIRE, AND LAMINATED ARE AVAILABLE FOR SPECIAL APPLICATIONS. SELECT DESIRED TYPES FROM MILGARD WEBSITE milgard.com/architects AND SPECIFY IN LIEU OF, OR IN ADDITION, TO THE ABOVE WITH ALL NECESSARY CRITERIA SUCH AS OBSCURE PATTERNS. IF MORE THAN ONE TYPE OF GLAZING IS REQUIRED FOR THE PROJECT, BE CERTAIN THAT TYPE FOR EACH WINDOW IS CLEARLY NOTED ON DRAWINGS OR IN WINDOW SCHEDULE.

OR

- B. Single Pane Glass:
1. Glazing Type: [Clear] [Solar Bronze] [Solar Gray] [Hardcoat Low-E] [Solar Cool Bronze] [Solar Cool Gray].

MOST COMMON TYPES OF SINGLE PANE GLASS ARE INCLUDED ABOVE, BUT SEVERAL OTHER TYPES INCLUDING REFLECTIVE, HEAT STRENGTHENED, TEMPERED, OBSCURE, WIRE, AND LAMINATED ARE AVAILABLE FOR SPECIAL APPLICATIONS. SELECT DESIRED TYPES FROM MILGARD WEBSITE milgard.com/architects AND SPECIFY IN LIEU OF, OR IN ADDITION, TO THE ABOVE WITH ALL NECESSARY CRITERIA SUCH AS OBSCURE PATTERNS. IF MORE THAN ONE TYPE OF GLAZING IS REQUIRED FOR THE PROJECT, BE CERTAIN THAT TYPE FOR EACH WINDOW IS CLEARLY NOTED ON DRAWINGS OR IN WINDOW SCHEDULE.

2.06 DIVIDED LITE GRIDS

VERIFY THAT DESIRED GRID PATTERNS, IF ANY, ARE SHOWN ON THE DRAWING. CERTAIN GRID PATTERNS MAY NOT BE AVAILABLE WITH ONE OR THE OTHER BAR TYPES IN THE FOLLOWING PARAGRAPH - CONSULT MILGARD FOR UNUSUAL DESIGN APPLICATIONS. GRIDS ARE NOT AVAILABLE FOR SINGLE PANE GLASS WINDOWS.

- A. [5/8 inch (16 mm) wide flat, grids between the glass that are color matched to frame and sash] [1-1/16 inch (27 mm) wide sculptured, grids between the glass that are color matched to frame and sash]

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2.07 INSECT SCREENS

- A. Provide tight-fitting screen for operating sash with hardware to allow easy removal.
 - 1. Screen Cloth: Charcoal colored fiberglass mesh.
 - 2. Frame:
 - a. Cambered formed aluminum with rigid plastic corner keys.
 - b. Pull tabs for removal.

2.08 FABRICATION

- A. Fabricate frames and sash with mechanically joined corners. Corners are fastened with corrosion resistant screws and sealed with an acrylic sealant.
- C. All fixed glass is exterior glazed and all sashes are marine glazed with flexible PVC glazing. The fixed glazing shall be removed without disassembly of a sash. The vents will need to be disassembled to replace the glazing.

2.09 FINISHES

- A. Frame and Sash Color: [White] [Tan] Painted Exterior Finish: Equaling 0.3 mils dry film thickness to AAMA 603.8-92.
- B. Frame and Sash Color: [Bronze] [Clear] Anodized Exterior Finish: Provide AA-C22-A32 Class II Bronze or AA-C22-A31 Class II Clear finish, minimum 0.4 mils thick, electrolytically deposited color anodized finish.
- C. Color match screen frame to window frame and sash color.

2.10 SOURCE QUALITY CONTROL

- A. Windows inspected in accordance with manufacturer's Quality Control Program as required by AAMA Gold Label certification.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings in which windows will be installed.
 - 1. Verify that framing complies with AAMA 2400 ("Mounting Flange Installation") or AAMA 2410 ("Flush Fin Installation").
 - 2. Verify that fasteners in framed walls are fully driven and will not interfere with window installation.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.

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C. Commencement of work by installer is acceptance of substrate conditions.

3.02 INSTALLATION

INSTALLATION INSTRUCTIONS (AAMA 2400) ARE ADEQUATE FOR NORMAL INSTALLATION CONDITIONS IN FRAMED CONSTRUCTION. MASONRY WALLS AND UNUSUAL CONDITIONS MAY REQUIRE ADDITIONAL INFORMATION IN THIS ARTICLE.

- A. Install windows in framed walls in accordance with AAMA 2400 ("Mounting Flange Installation") or AAMA 2410 ("Flush Fin Installation").
- B. Do not remove temporary labels.
- C. Install insect screens on operable sash.

3.03 CLEANING

- A. Reference Section 01 74 00 – Cleaning and Waste Management.
- B. Remove temporary labels and retain for Closeout Submittals.
- C. Clean soiled surfaces and glass using a mild detergent and warm water solution with soft, clean cloths.

END OF SECTION

This specification was prepared by Milgard Manufacturing, Inc. Comments or suggestions for improvement should be addressed to Milgard at the address in Article 2.01 A.

Issue Date: March 10, 2009

3 Part Specification

Standard Aluminum Doors

STANDARD

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GENERAL NOTES TO SPECIFIER:

THIS SPECIFICATION SYSTEM HAS BEEN PREPARED TO ASSIST DESIGN PROFESSIONALS IN THE PREPARATION OF PROJECT OR OFFICE MASTER SPECIFICATIONS. IT FOLLOWS GUIDELINES ESTABLISHED BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE, AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

EDIT CAREFULLY TO SUIT PROJECT REQUIREMENTS. MODIFY AS NECESSARY AND DELETE ITEMS THAT ARE NOT APPLICABLE. VERIFY THAT REFERENCED SECTION NUMBERS AND TITLES ARE CORRECT (NUMBERS AND TITLES REFERENCED ARE BASED ON MASTERFORMAT, 2004 EDITION.)

THIS SECTION ASSUMES THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 1 DOCUMENTS INCLUDING 01 25 13 – PRODUCT SUBSTITUTION PROCEDURES, SECTIONS 01 33 00 – SUBMITTAL PROCEDURES, 01 62 00 – PRODUCT OPTIONS, 01 66 00 – PRODUCT STORAGE AND HANDLING REQUIREMENTS, 01 74 00 – CLEANING AND WASTE MANAGEMENT, 01 77 00 – CLOSEOUT PROCEDURES, AND 01 78 00 – CLOSEOUT SUBMITTALS. CLOSE COORDINATION WITH DIVISION 1 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION SHOULD BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

THIS IS AN OPEN PROPRIETARY SPECIFICATION ALLOWING USERS THE OPTION OF APPROVING OTHER MANUFACTURERS THAT COMPLY WITH THE CRITERIA SPECIFIED HEREIN.

NOTES TO THE SPECIFIER ARE CONTAINED IN BOXES AND SHOULD BE DELETED FROM FINAL COPY.

OPTIONAL ITEMS REQUIRING SELECTION BY THE SPECIFIER ARE ENCLOSED WITHIN BRACKETS, E.G. [35] [40] [45]. MAKE APPROPRIATE SELECTIONS AND DELETE OTHERS.

ITEMS REQUIRING ADDITIONAL INFORMATION ARE UNDERLINED BLANK SPACES, E.G. _____.

OPTIONAL PARAGRAPHS REQUIRING SELECTION OF ONE OF THE OPTIONS ARE SEPARATED BY “OR” WITHIN A BOX. E.G.

OR

BOLD FACE TYPE IDENTIFIES OPTIONAL PARAGRAPHS AND FEATURES THAT MAY BE INCLUDED OR DELETED DEPENDING UPON PROJECT REQUIREMENTS. CONVERT THE BOLD FACE TYPE TO REGULAR TYPE WHEN INCLUDING THESE PARAGRAPHS OR FEATURES.

REVISE FOOTER TO SUIT PROJECT/OFFICE REQUIREMENTS.

ELECTRONIC VERSIONS OF THIS SPECIFICATION UTILIZE AUTOMATIC PARAGRAPH NUMBERING.

WHEN EDITING IS COMPLETE, DELETE ALL TEXT ON THIS PAGE, THEN REMOVE THE SECTION BREAK AT THE TOP OF THE NEXT PAGE TO REMOVE THIS PAGE FROM THE DOCUMENT.

SPECIFICATION BEGINS ON THE FOLLOWING PAGE.

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ALUMINUM DOORS – 08 32 13

With the thin lines that Migard's Aluminum Doors provide, they are ideal for both new construction as well as replacement. This series of products provide an economical solution while providing architectural style.

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Solid and tubular aluminum extruded doors of the following type(s):

Sliding Patio Door

Series 450S, 450 & 1600

B. Related Sections:

INSERT APPROPRIATE SECTION NUMBERS AND TITLES BELOW FOR WINDOW FLASHING AND INSTALLATION SEALANTS.

1. — — — - _____.
2. — — — - _____.
3. 08 51 13 – **Aluminum Windows.**

INCLUDE APPROPRIATE LANGUAGE BELOW IF PRODUCTS SPECIFIED IN THIS SECTION ARE TO BE BID AS ALTERNATES.
OTHERWISE DELETE FOLLOWING PARAGRAPH.

C. Alternates:

1. Reference Section 01 23 00 – Alternates.

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1.02 SUBMITTALS

- A. Reference Section 01 33 00 – Submittal Procedures; submit following items:
 - 1. Product Data.
 - 2. Shop Drawings: Include window schedule, door elevations, sections and details, and multiple door assembly details.
 - 3. Samples:
 - a. Color samples: Minimum 1x4 inch (25x100 mm) samples of Aluminum with painted or anodized color.
 - b. **Glass, showing specified tint color.**
 - 4. Quality Assurance/Control Submittals:
 - a. Qualifications: Proof of manufacturer's qualifications.
 - b. **U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.**
 - c. Installation Instructions – AAMA 2400 ("Mounting Flange Installation").
- B. Closeout Submittals: Reference Section 01 78 00 – Closeout Submittals; submit following items:
 - 1. Temporary door labels marked to identify doors that labels were applied to.
 - 2. Maintenance instructions.
 - 3. Special Warranties.

1.03 QUALITY ASSURANCE

- A. Overall Standards: Comply with ANSI/AAMA 101.I.S.2, except as otherwise noted herein.
- B. Qualifications:
 - 1. Manufacturer Qualifications:
 - a. Minimum five years experience in producing aluminum doors of the type(s) specified.
 - b. Member AAMA, NFRC.

INSERT LOCAL REGULATORY REQUIREMENTS BELOW.

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- C. Regulatory Requirements:
- D. Certifications for insulated glass doors:
 - 1. AAMA: Doors shall be Gold Label certified with label attached to frame per AAMA requirements.
 - 2. NFRC: Doors shall be NFRC certified with temporary U-factor label applied to glass and an NFRC tab added to permanent AAMA frame label.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Reference section 01 66 00 - Product Storage and Handling Requirements.
- B. Follow manufacturer's instructions on label applied to doors.

1.05 WARRANTY

SELECT "RESIDENTIAL" WARRANTY BELOW FOR OWNER OCCUPIED SINGLE FAMILY RESIDENTIAL AND OWNER OCCUPIED CONDOMINIUM PROJECTS. SELECT "COMMERCIAL WARRANTY FOR NON-OWNER OCCUPIED CONDOMINIUMS, COMMERCIAL, AND MULTI-FAMILY PROJECTS.

- A. Residential Special Warranty:
 - 1. Full Lifetime Warranty to original owner.
 - 2. Transferability:
 - a. Permit unlimited transfer of ownership in first ten years.
 - b. Upon first transfer of ownership, warranty period shall become ten years from date of original purchase.
 - c. For complete warranty details visit milgard.com.
 - 3. Guarantees against defects in materials and workmanship including costs for parts and labor.

OR

- B. Commercial Special Warranty:
 - 1. 10-year Commercial Warranty.
 - 2. Guarantees against defects in manufacturing and workmanship including costs for parts and labor.
 - 3. For complete warranty details visit milgard.com.

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PART 2 – PRODUCTS

2.01 MANUFACTURER

- | | | | |
|----|--|------|--|
| A. | Milgard Manufacturing, Inc.
1010 54th Avenue East
Tacoma, WA 98424 | Tel: | 1.800.MILGARD (645-4273)
(253) 922-2030 |
| | | Fax: | (253) 926-0848 |
| | | Web: | milgard.com |

INSERT NAME, ADDRESS AND PHONE NUMBERS OF MANUFACTURER'S REPRESENTATIVE BELOW

- | | | | |
|----|--------------------------------|--------|-------|
| 1. | Manufacturer's Representative: | Tel: | _____ |
| | _____ | Fax: | _____ |
| | _____ | Email: | _____ |

- B. Door Series: Milgard Aluminum Doors
- C. Substitutions: Reference Section 01 25 13 – Product Substitutions Procedures.

2.02 MATERIALS

- A. Aluminum: Comply with requirements of AAMA/WDMA/CSA 101/I.S.2/A440-05, 6063-T5 temper for strength, corrosion resistance and application of required finish.
- B. Extruded frame members are to be .060" in thickness for structural walls.

VERIFY THAT DOOR FLASHING MATERIAL AND INSTALLATION SEALANT IS SPECIFIED IN APPROPRIATE SECTIONS.

2.03 GENERAL PERFORMANCE REQUIREMENTS:

- A. Thermal Performance: Comply with NFRC 100.
- B. Air Leakage, Water Resistance, Structural Test: Comply with ANSI/AAMA 101/I.S.2.
- C. Forced-Entry Resistance: Comply with CAWM 300-96.

DOOR TYPES:

SELECT FOLLOWING DOOR TYPES AND RELATED NAIL FIN/MOUNTING STYLE BASED ON PROJECT REQUIREMENTS. DELETE DOOR TYPES NOT USED.

- A. Sliding Patio Door – [450 Series, 1 inch (25 mm) nail fin setback with stucco key] [450S Series, 1 7/16 inch (37 mm) nail fin setback with stucco key]:
1. Frame:
- a. 450 Series frame depth is 4 ½" (114 mm)
- b. 450S Series frame depth is 4 9/16" (116 mm)

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2. Sash: Depth of 1 5/16" (33 mm), hollow aluminum extrusion.
 3. Sightlines: Equal sightlines between sash and fixed glass.
 4. Performance Class:
 - a. 71 1/2" x 103 1/2" Two Panel: SD-R20.
 - b. 191 1/2" x 95 1/2" Four Panel: SD-R20.
 5. Hardware:
 - a. Stainless steel adjustable tandem rollers, aluminum integral monorail track.
 - b. Interior and exterior pull handle colored to match, single point lock with key option.
 6. Weatherstripping: Fin seal polypropylene pile.
- B. Sliding Patio Door – [1600 Series, 1 1/4 inch (32 mm) nail fin setback with stucco key]:
1. Frame: Depth of frame is 4 3/4" (121 mm).
 2. Sash: Depth of 1 9/16" (40 mm), hollow aluminum profile.
 3. Sightlines: Equal sightlines between sash and fixed glass.
 4. Performance Class:
 - a. 191 1/2" x 119 1/2" Four Panel with 2 ft transom: SD-LC25.
 - b. 191 1/2" x 95 1/2" Four Panel: SD-HC40.
 - c. 191 1/2" x 119 1/2" Four Panel: SD-C30.
 - d. 119 1/2" x 119 1/2" Two Panel: SD-HC40 (with rebar) & SD-C30 (w/out rebar).
 5. Hardware:
 - a. Adjustable heavy duty stainless steel tandem rollers.
 - b. Single point lock with key standard with anti-slam strike.
 - c. Interior and exterior pull handles painted to match the door.
 6. Weatherstripping: Fin seal polypropylene pile.

3 Part Specification

Standard Aluminum Doors

STANDARD**SERIES
ALUMINUM**

2.05 GLAZING

- A. Insulated Glass Units: ASTM E 774, Class A, 1 inch (25mm) thick overall.
 - 1. Tempered Glazing Type: [Clear/Clear] [Clear/SunCoat® Low-E] [Clear/SunCoat® Low-E, argon gas filled] [Clear/SunCoatMAX™ Low-E] [Clear/SunCoatMAX™ Low-E, argon gas filled] [Clear/Hardcoat Low-E] [Clear/Hardcoat Low-E, argon gas filled].

WARM EDGE SPACERS ARE NOT AVAILABLE ON SOME UNITS
INCLUDING CERTAIN OVERSIZE UNITS.

- 2. Spacer Bar: [Warm edge steel spacer] [Aluminum box spacer].

MOST COMMON TYPES OF INSULATED UNITS ARE INCLUDED ABOVE, BUT SEVERAL OTHER TYPES INCLUDING TINTED, REFLECTIVE, OBSCURE, AND LAMINATED ARE AVAILABLE FOR SPECIAL APPLICATIONS. SELECT DESIRED TYPES FROM MILGARD WEBSITE milgard.com/architects AND SPECIFY IN LIEU OF, OR IN ADDITION, TO THE ABOVE WITH ALL NECESSARY CRITERIA SUCH AS OBSCURE PATTERNS. IF MORE THAN ONE TYPE OF GLAZING IS REQUIRED FOR THE PROJECT, BE CERTAIN THAT TYPE FOR EACH DOOR IS CLEARLY NOTED ON DRAWINGS OR IN WINDOW SCHEDULE.

2.06 DIVIDED LITE GRIDS

VERIFY THAT DESIRED GRID PATTERNS, IF ANY, ARE SHOWN ON THE DRAWING. CERTAIN GRID PATTERNS MAY NOT BE AVAILABLE WITH ONE OR THE OTHER BAR TYPES IN THE FOLLOWING PARAGRAPH - CONSULT MILGARD FOR UNUSUAL DESIGN APPLICATIONS. GRIDS ARE NOT AVAILABLE FOR SINGLE PANE GLASS DOORS.

- A. [5/8 inch (16 mm) wide flat, grids between the glass that are color matched to frame and sash] [1-1/16 inch (27 mm) wide sculptured, grids between the glass that are color matched to frame and sash]

2.07 INSECT SCREENS

- A. Provide sliding screen.
 - 1. Screen Cloth: Charcoal colored fiberglass mesh.
 - 2. Frame:
 - a. Extruded aluminum frame with adjustable rollers.
 - b. Locking handle standard.

2.08 FABRICATION

- A. Fabricate frames and sash with mechanically joined corners. Corners are fastened with corrosion resistant screws and sealed with an acrylic sealant.
- B. All sashes are marine glazed with flexible PVC glazing. The sashes will need to be disassembled to replace the glazing.

3 Part Specification

Standard Aluminum Doors

STANDARD

**SERIES
ALUMINUM**

2.09 FINISHES

- A. Frame and Sash Color: [White] [Tan] Painted Exterior Finish: Equaling 0.3 mils dry film thickness to AAMA 603.8-92.
- B. Frame and Sash Color: [Bronze] [Clear] Anodized Exterior Finish: Provide AA-C22-A32 Class II Bronze or AA-C22-A31 Class II Clear finish, minimum 0.4 mils thick, electrolytically deposited color anodized finish.
- C. Color match screen frame to door frame and sash color.

2.10 SOURCE QUALITY CONTROL

- A. Doors inspected in accordance with manufacturer's Quality Control Program as required by AAMA Gold Label certification.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings in which windows will be installed.
 - 1. Verify that framing complies with AAMA 2400 ("Mounting Flange Installation").
 - 2. Verify that fasteners in framed walls are fully driven and will not interfere with door installation.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of substrate conditions.

3.02 INSTALLATION

INSTALLATION INSTRUCTIONS (AAMA 2400) ARE ADEQUATE FOR NORMAL INSTALLATION CONDITIONS IN FRAMED CONSTRUCTION. MASONRY WALLS AND UNUSUAL CONDITIONS MAY REQUIRE ADDITIONAL INFORMATION IN THIS ARTICLE.

- A. Install doors in framed walls in accordance with AAMA 2400 ("Mounting Flange Installation").
- B. Do not remove temporary labels.
- C. **Install insect screens on operable sash.**

3 Part Specification Standard Aluminum Doors

STANDARD

**SERIES
ALUMINUM**

3.03 CLEANING

- A. Reference Section 01 74 00 – Cleaning and Waste Management.
- B. Remove temporary labels and retain for Closeout Submittals.
- C. Clean soiled surfaces and glass using a mild detergent and warm water solution with soft, clean cloths.

END OF SECTION

This specification was prepared by Milgard Manufacturing, Inc. Comments or suggestions for improvement should be addressed to Milgard at the address in Article 2.01 A.

Issue Date: March 10, 2009

450

Sliding Door

Sliding Patio Doors Milgard Aluminum Doors

450
SERIES
ALUMINUM



The 450 Series Sliding Door has been specially designed to meet the building practices and climatic conditions in your market. The door features 7/8" insulating glass options for energy efficiency and frame and grid color alternatives for virtually any architectural design. The 450 Series has been specifically designed to accommodate the added thickness and extra weight of 1" insulating glass units. The door is built for durability, easy maintenance and long term weather tight performance.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Sliding Patio Doors Milgard Aluminum Doors

450
SERIES
ALUMINUM

CONFIGURATIONS

The 450 Series is designed as an inside slider (the sliding panel or "vent" slides inside the stationary panel). For the vent to open completely, there must be at least an equal size adjacent stationary panel. The track system provides for one panel in a two-panel or three-panel door to move, and two panels in a four-panel door to move.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .062", and non-structural wall thickness of .050". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish.

The sliding glass door is constructed from fixed and moving panels mounted in a perimeter frame specifically engineered for insulating glass. Both panels are removable for repair and can be reversed in the field.

A butt-jointed corner is used on the perimeter frame and panel members. Wide screw spacing on the mechanically joined corners ensures a rigid connection with a consistent dimension. With the insertion of the non-moving panel into the perimeter frame, the door squares itself to ensure a rigid connection with an even sight line. It is still necessary to square the frame for installation. The glass in the fixed and sliding panel is equally exposed.

The jamb, sill and all corners are caulked with exterior grade sealant before the fixed panel is installed to maximize weather tight integrity. Standard frame widths is 4 1/2" which will allow for adaptation to most wall conditions.

NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter head and jambs to attach door in opening. The fin is setback 1" from the exterior edge of the frame.

SLIDING PATIO DOOR WEEP SYSTEM

The rectangular weep holes on the interior of the sill section are offset approximately 6" from the holes on the frame exterior to provide a baffling system minimizing "blow back". A hinged weep door to the exterior reduces air infiltration and provides an attractive, uncluttered sill appearance.

GLAZING MATERIAL

Sliding and fixed panels employ a wraparound "U-shaped" vinyl channel designed to effectively seal 1" overall insulating glass units and cushion the glass from the surrounding frame.

GLASS

Glass options are available in 7/8" overall insulating units, clear, tinted, reflective, obscure and low-emissivity glass. Special safety glass options are available upon request. (See Glass Section for types and description).

SLIDING PANEL

Designed specifically for insulating glass the sliding panel is engineered with the glass unit's weight centered over the roller assembly, which rides on a raised monorail track. This track helps keep the sliding operation free from interference by foreign particles that may collect in the sill. An "L-shaped" lip fully interlocks with the fixed panel, adding security and preventing weather penetration. The panel can be easily removed in the open position by lifting up and pulling the bottom inward. Nylon compression strip is used to ensure an even, weather tight seal. A rubberized stop is attached to the perimeter jamb to cushion the panel in a fully open position.

FIXED PANEL

The fixed panel is fastened to the perimeter frame and tightly sealed for maximum performance. The fixed panel has an "L-shaped" lip, that fully interlocks with the sliding panel for added security and a weather tight seal.

WEATHERSTRIPPING

Silicone treated, water repellent polypropylene fin seal weatherstripping provides a durable, weather tight seal. This weatherstripping is installed in an integral, continuous keyway around the exterior edge of the closing stile and on the interlock.

ROLLER ASSEMBLY

A cadmium-coated steel roller assembly with sealed ball bearings rides on a raised monorail track and can be easily adjusted. Two tandem rollers are used on each panel.

LOCKING ASSEMBLY

The primary locking assembly is a component of the handle set. The door may be locked or unlocked easily from the inside by the flip-latch mechanism. An antilift device is installed in the handle to prevent sliding panel removal when the door is closed.

SCREEN

Screen frames are engineered for rigid strength, finished with three coats of color matched baked polyester for long term durability. Four nylon rollers contained in fully adjustable plated steel housings ride on a raised monorail track for easy operation.

OPTIONS

KEY LOCK

A cylinder lock for keyed exterior is available.

Sliding Patio Doors

Milgard Aluminum Doors

450
SERIES
ALUMINUM

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

GLASS

Refer to Glass Section

STUCCO FIN

1 3/8" fin setback. Check with local branch for availability.

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

See Test Data Section

INSTALLATION

All 450 Series Doors are factory sized to fit into a framed opening, whether new or created by removing an existing door. Doors will be 1/2" smaller than the framed (rough) opening to allow 1/2" clearance on header and 1/4" clearance on jambs. Built to rough opening size with 1/2" deductions automatically made, no complex calculations are required for ordering. Opening panels must be closed and locked during installation. Doors must be installed level, plumb and square with 1/4" clearance on the sides with weep holes at the bottom.

HEADERS MUST NOT BE NAILED

Nail through fin into framing along sides. At the head, casing nails may be placed 1/2" above fin and bent down over fin, to allow for header deflection. Wood Sill: Caulk entire sill length before setting door.

CONCRETE/MORTAR

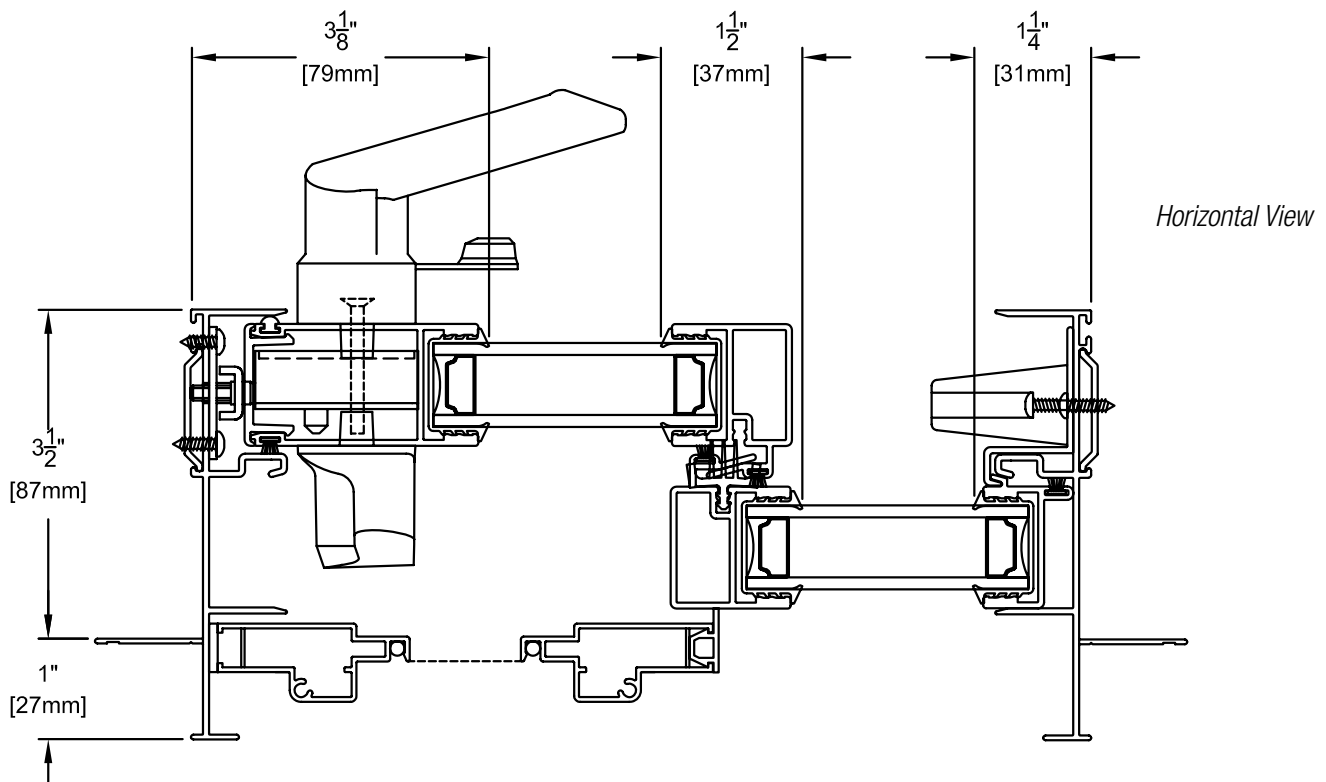
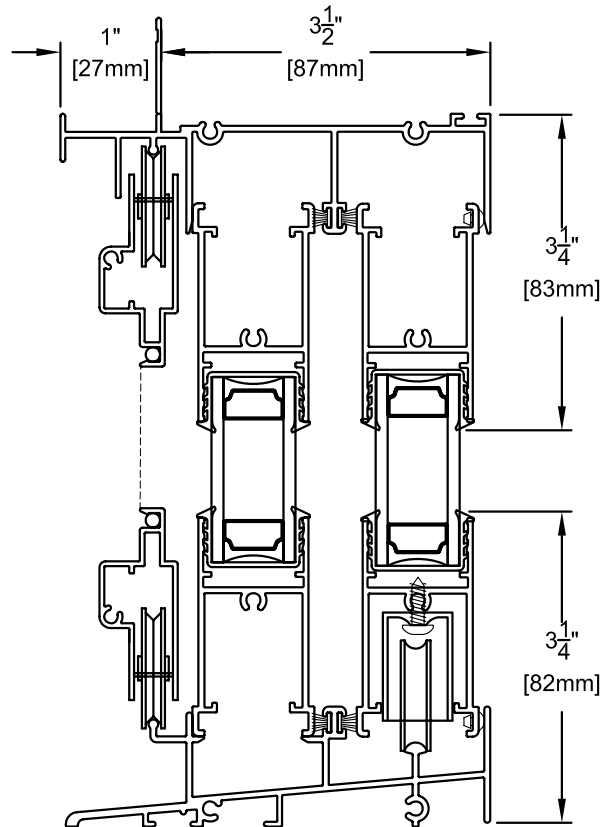
Install as with wood sill, except use heavy building paper or redwood barrier between door frame and concrete to prevent corrosion. Caulk both sides of barrier for weather tight performance.

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

450 Aluminum Assembly Drawing

450
SERIES
ALUMINUM



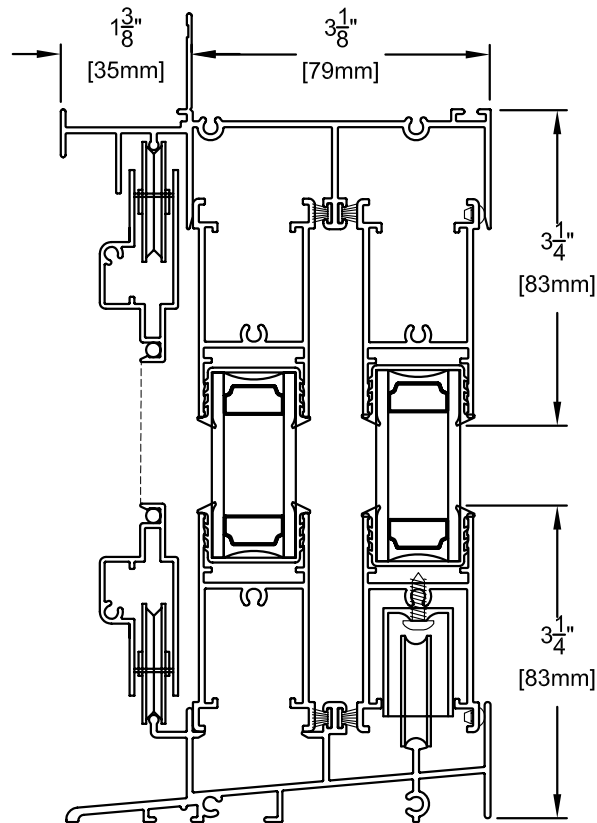
450-5
APRIL 2009

Scale: 6" = 1' (1/2 scale)

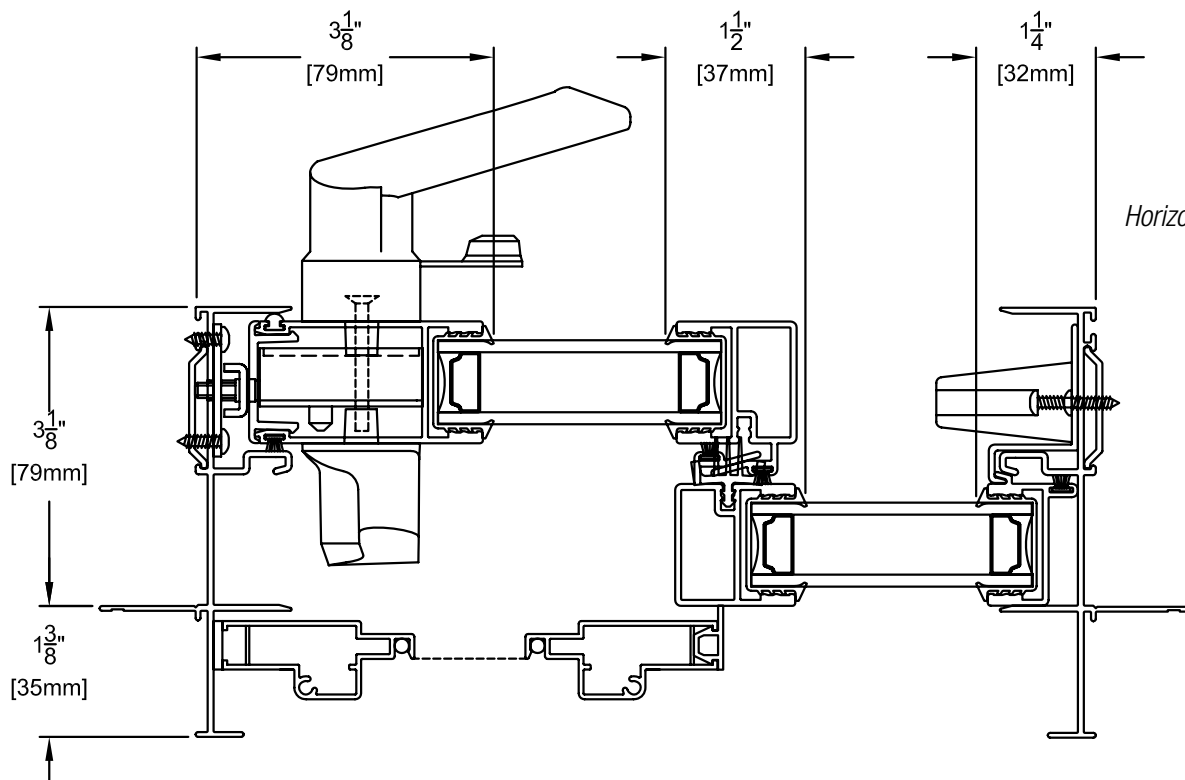
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450S Aluminum Assembly Drawing

450
SERIES
ALUMINUM



Vertical View



Horizontal View

Scale: 6" = 1' (1/2 scale)

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450-6
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710/910/911

Picture/Casement/Awning Windows

Picture/Casement/Awning Windows Milgard Aluminum Window

710/910/911

SERIES
ALUMINUM



Milgard's 710/910/911 Series is designed for high performance and maximum strength for architectural applications throughout the West. Ideal for virtually any architectural style of home, the 710/910/911 Series offers clean sight lines, maximum glazing area, and requires virtually no maintenance. Its precisely mitered corners provide strength and a detailed appearance with equal margins on all sides.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Picture/Casement/Awning Windows Milgard Aluminum Window

710/910/911**SERIES
ALUMINUM**

CONFIGURATIONS

All 710/910/911 Series Casement, Awning, and Picture windows are available in both standard and custom sizes to match virtually any design, either new or retrofit.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .125", and non-structural wall thickness of .062". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. Corners are sealed for added protection from the weather.

The 710/910/911 Series is available with either a standard frame with nail-on fin, or with Milgard's specially designed H-Bar™ frame for wood stop or retrofit application. The standard frame is 2 1/4" in width and the H-Bar is 1-1/4" wide with 5/8" legs that provide a surface area for wood stop installation. Both types utilize 3/4" overall glazing for either fixed or vented sections.

NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter of the standard frame and is used to attach the window into the rough opening. The fin is scored for complete removal for retrofit/wood stop installations. The fin is set back 1" from the exterior edge of the frame. The optional H-Bar frame has no nailing fin and must be stopped in the opening.

WEEP SYSTEM

The rectangular weep holes are located in the frame sill for effective drainage and moisture control.

GLAZING MATERIAL

AAMA approved glazing tape adheres glass to the fixed and vent frame and seals and cushions the glass. Rigid vinyl setting blocks are used to support the glass-unit, preventing glass slip-page and glass-to-metal contact. Extruded vinyl glazing (snapin) bead is applied around the exterior edge. Metal bead is available at some locations.

GLASS

Glass options are available in 3/4" or 1" overall insulating units in clear, tinted, reflective, obscure, Low-E, and safety glass. Other specialty glass is available upon request. (See Glass Section for types and description.)

VENT PANEL

The vent features a clean appearance and rigid construction with mitered and mechanically joined corners. Due to weight limitations of the hinging system, the vent is restricted to a maximum size of 12 square feet for awnings and 15 square feet for casements.

HINGES

Two types of hinges are available with the 710/910/911 Series, one standard and one for egress application. The stainless steel egress hinge allows a full 90 degree rotation opening. The standard hinge is zinc-plated steel with a sliding brass shoe, which is tension adjustable and is completely concealed when the window is in a closed position. Each vent uses two hinges.

WEATHERSTRIPPING

For Casements and Awnings, a dual durometer vinyl bulb seal surrounds the entire perimeter of the vent frame, creating a positive, weather tight seal.

LOCKING ASSEMBLY

Friction Hardware

– Hand-operated push out latch located on the vent which secures against a polyester strike plate and provides a positive lock and tight seal.

Note: Casements over 36" in height two handles are utilized to ensure a tight seal.

SCREEN

Screen frames are aluminum, finished with three coats of color matched baked polyester for long-term durability. The screen material is an attractive, low maintenance gray fiberglass mesh. Screens are installed on the inside of Casement and Awning windows using four screw-mounted vinyl L-clips that secure through pre-drilled holes in the window frame. A wicket may be inset into the screen, giving access to the lock for vent operation.

OPTIONS

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

WARM EDGE SPACER

Spacer available in a standard clear finish or optional bronze or champagne finish in the airspace of the insulating glass units. PGG Intercept™ warm-edge steel spacer available in certain regions (standard in some areas.) Contact your Milgard manufacturing representative for spacers used in your area.

Picture/Casement/Awning Windows Milgard Aluminum Window

710/910/911

SERIES
ALUMINUM

EGRESS HINGES

Available upon request.

TRUE DIVIDED LITE

True divided lite configurations are available, subject to production approval.

GLASS

Refer to Glass Section

STUCCO FIN

1 3/8" fin setback. Check with local branch for availability.

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

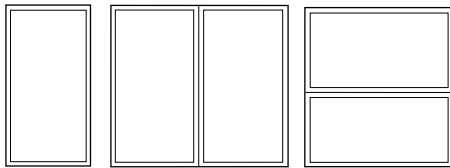
See Test Data Section

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

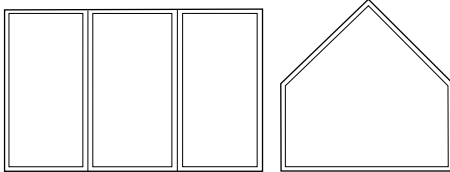
Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

Picture Windows

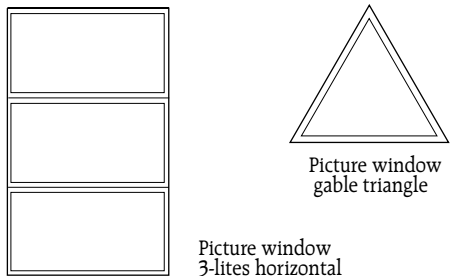
Milgard Aluminum Window



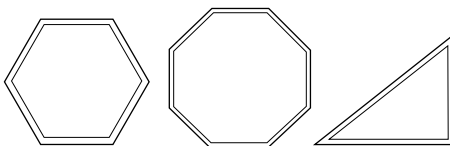
Picture window Picture window 2-lites vertical Picture window 2-lites horizontal



Picture window 3-lites vertical Picture window gable



Picture window 3-lites horizontal



Picture window hexagon Picture window octagon Picture window gable 3-sided

*Windows viewed from exterior

— PICTURE WINDOW 2-LITES VERTICAL

- Min 2'1" Max 8'6" / 10'4"

— PICTURE WINDOW 2-LITES HORIZONTAL

- Min 1'2" Max 6'8"

— PICTURE WINDOW 3-LITES VERTICAL

- Min 3'1" Max 10'4"

— PICTURE WINDOW GABLE

- Min 2'2" Max 8'5" / 10'4"

— PICTURE WINDOW 3-LITES HORIZONTAL

- Min 1'3" Max 6'8"

— PICTURE WINDOW GABLE TRIANGLE

- Min 2'2" Max 8'5" / 10'4"

— PICTURE WINDOW HEXAGON/OCTAGON

- Min 2'2" Max 6'6"

— PICTURE WINDOW GABLE 3 SIDED

- Min 1'0" Max 8'6"

- Windows over 40 square feet or mulled units over 72 square feet shipped open for field glazing.

- Max single lite is 40 square feet

- Divided lite configurations are available.

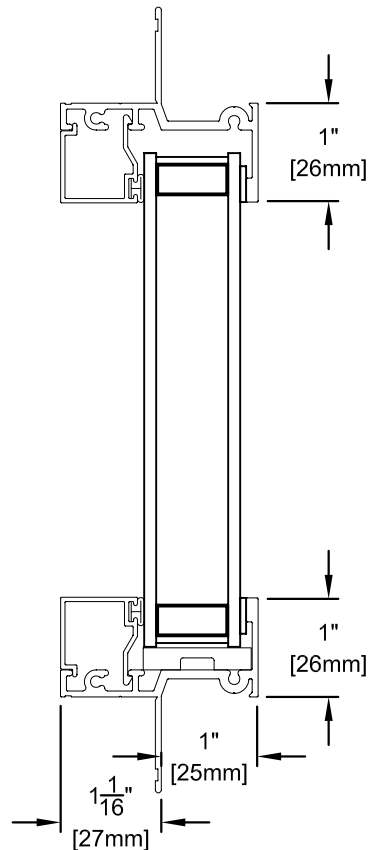
NOTE: For engineering approval contact your Milgard representative for any configuration over 40 square feet. Each Milgard Manufacturing plant reserves the right to alter or change sizes and configurations according to location capabilities. Ask your Milgard rep about specialty applications and size limits for other configurations.

Windows over 40 square feet shipped open for field glazing.

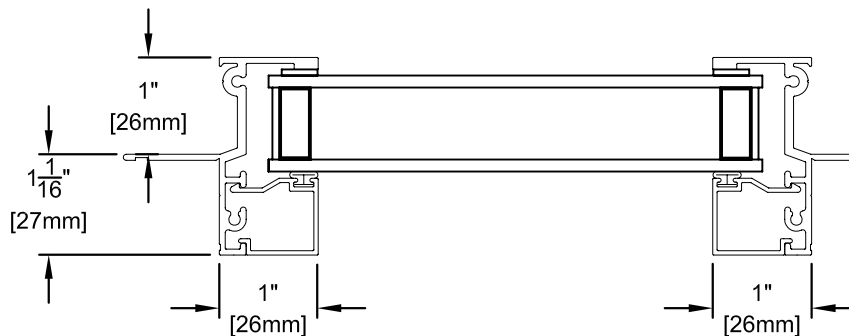
710 Aluminum Assembly Drawing

710/910/911

**SERIES
ALUMINUM**



Vertical View



Horizontal View

Scale: 6" = 1' (1/2 scale)

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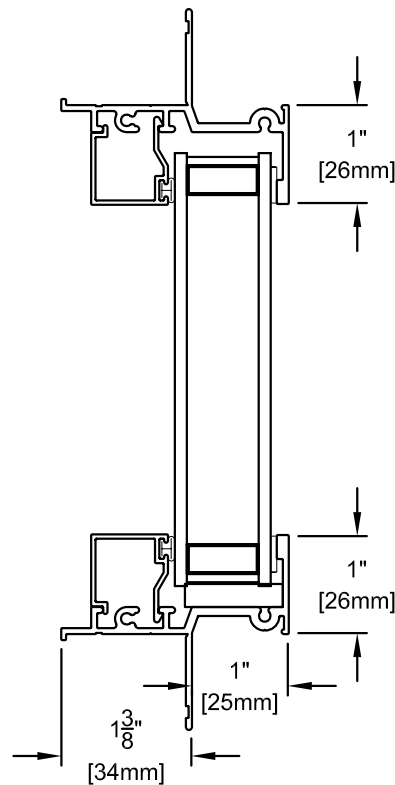
**710/910/911-6
APRIL 2009**

710S Aluminum Assembly Drawing

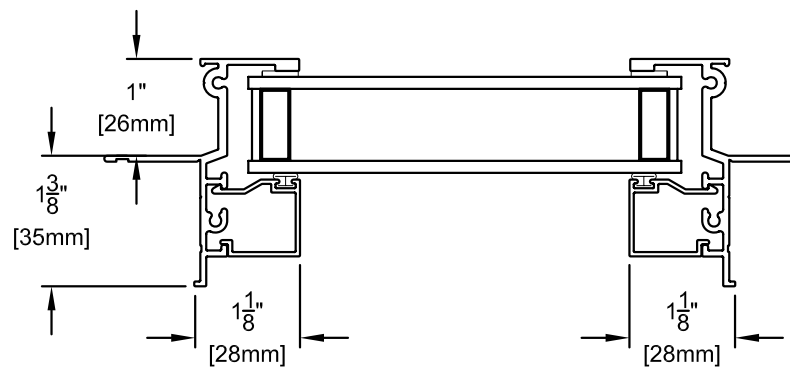
710/910/911

**SERIES
ALUMINUM**

Vertical View



Horizontal View

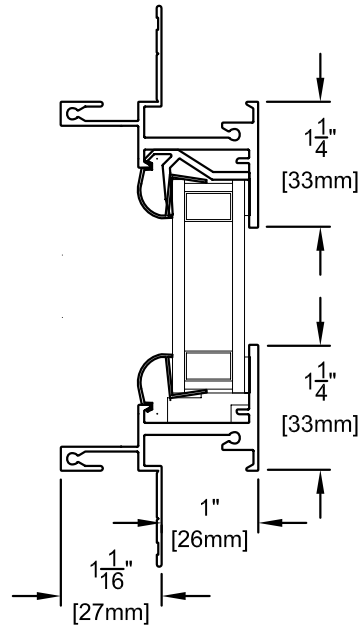


910C Aluminum Assembly Drawing

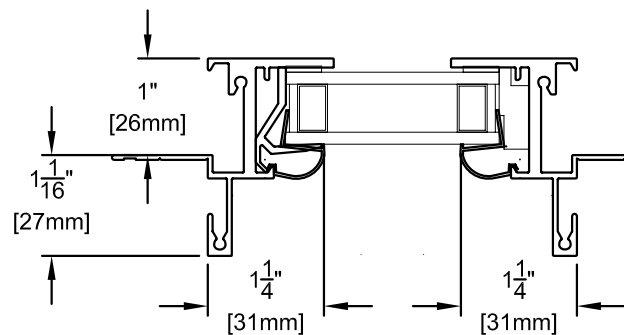
710/910/911

**SERIES
ALUMINUM**

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

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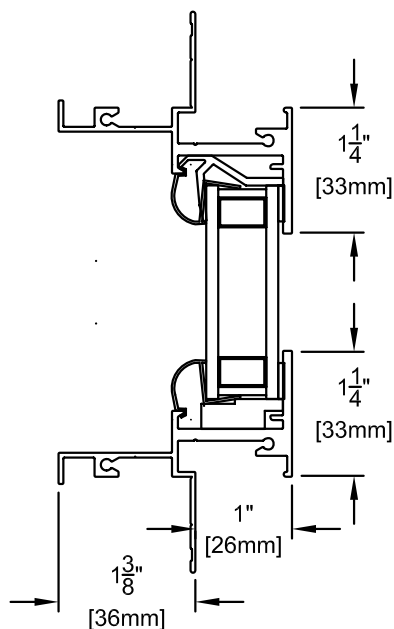
**710/910/911-8
APRIL 2009**

910S Aluminum Assembly Drawing

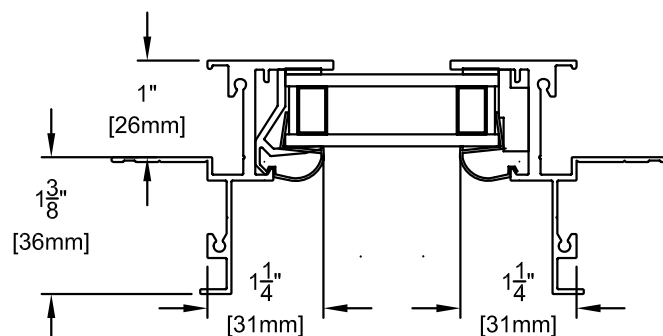
710/910/911

**SERIES
ALUMINUM**

Vertical View



Horizontal View

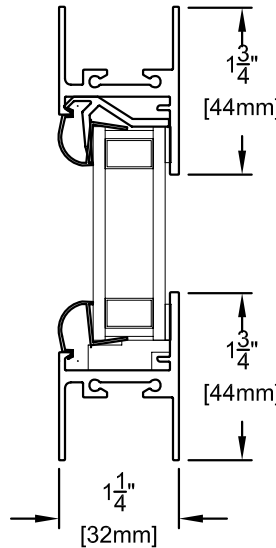


911C Aluminum Assembly Drawing

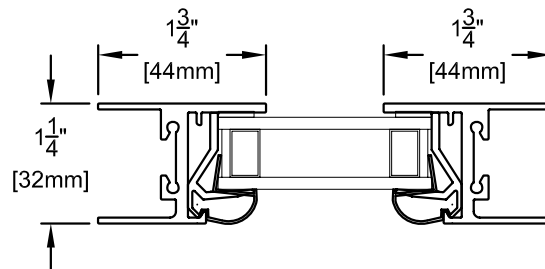
710/910/911

**SERIES
ALUMINUM**

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

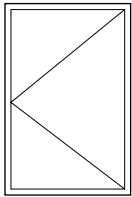
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**710/910/911-10
APRIL 2009**

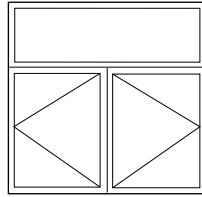
Casement Windows

Milgard Aluminum Window

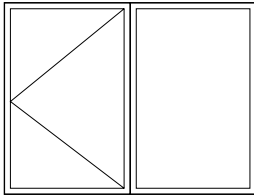
910
SERIES
ALUMINUM



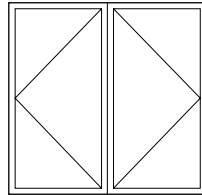
Full casement



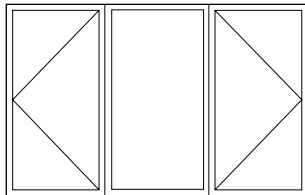
Double-bottom
casement



Single casement



Double casement



Double casement/picture

— FULL CASEMENT

- 12 square feet maximum vent size
- Min width 1'6" Max width 2'
- Min height 1'6" Max height 5'

— DOUBLE CASEMENT

- 15 square feet maximum vent size
- Min width 4'0" Max width 5'
- Min height 1'6" Max height 5'

— DOUBLE CASEMENT W/PICTURE

- 15 square feet maximum vent size
- Min width 3'0" Max width 12'
- Min height 1'0" Max height 5'

- Equal leg frame available

- Egress hinges available - minimum egress 2'3" and 2'4".

- Divided lite configurations are available

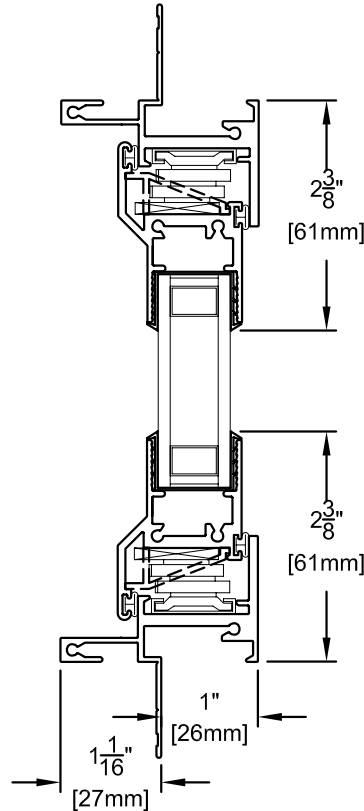
- Hinge left or right.

NOTE: For engineering approval contact your Milgard representative for any configuration over 40 square feet. Each Milgard Manufacturing plant reserves the right to alter or change sizes and configurations according to location capabilities. Ask your Milgard rep about specialty applications and size limits for other configurations.

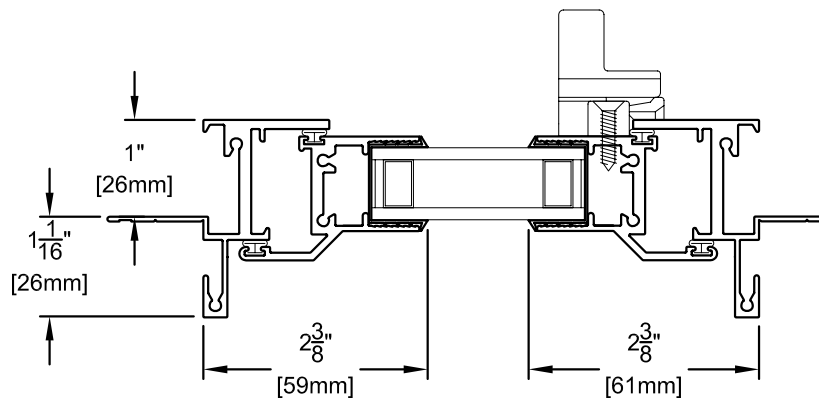
Windows over 40 square feet shipped open for field glazing.

910C Push out Aluminum Assembly Drawing

910
SERIES
ALUMINUM



Vertical View



Horizontal View

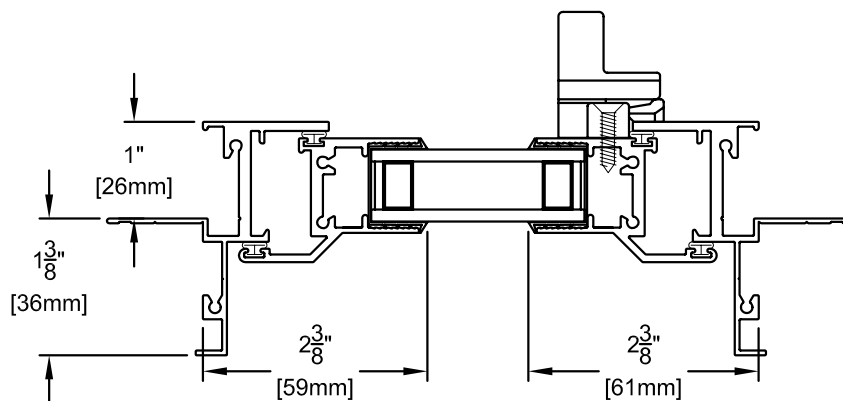
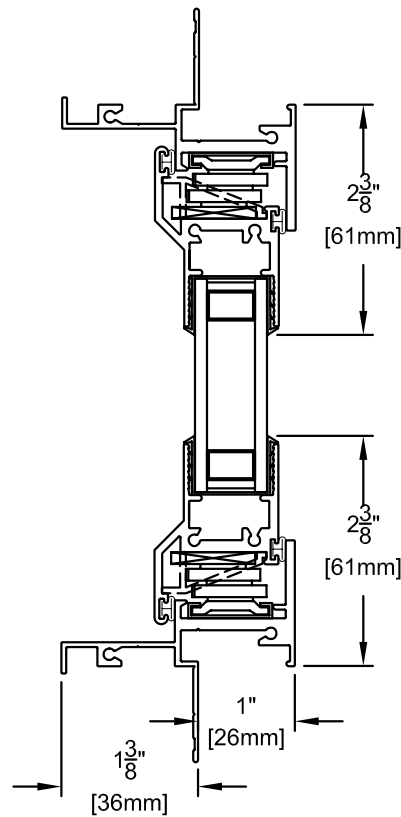
Scale: 6" = 1' (1/2 scale)

Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

910-2
APRIL 2009

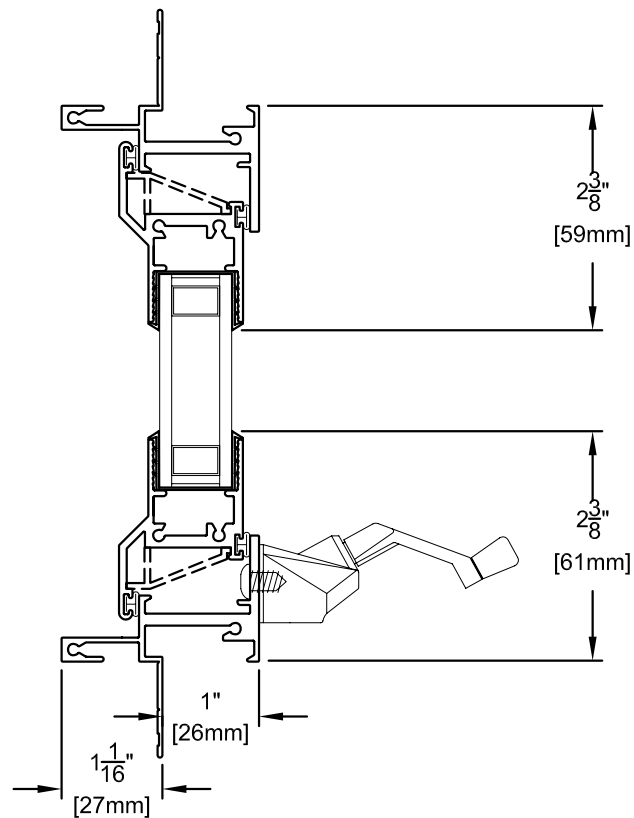
910S Push out Aluminum Assembly Drawing

910
SERIES
ALUMINUM

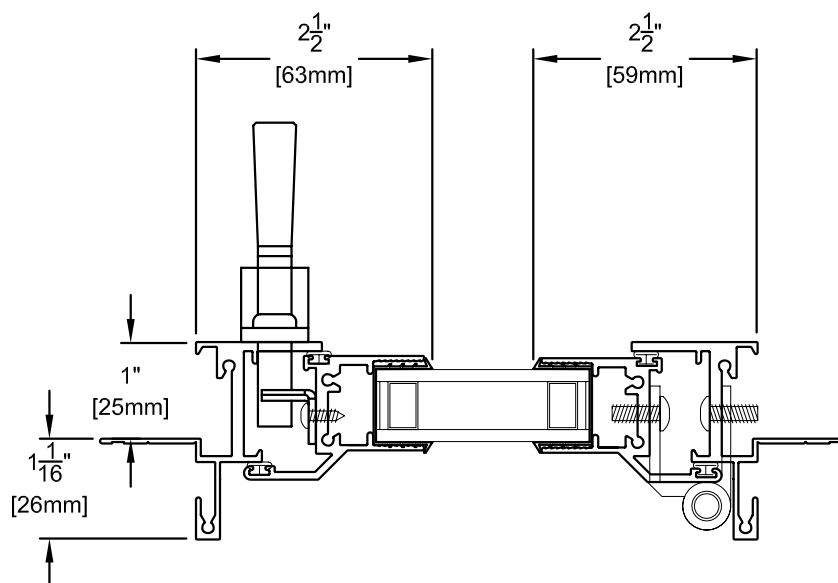


910C Roto Aluminum Assembly Drawing

910
SERIES
ALUMINUM



Vertical View



Horizontal View

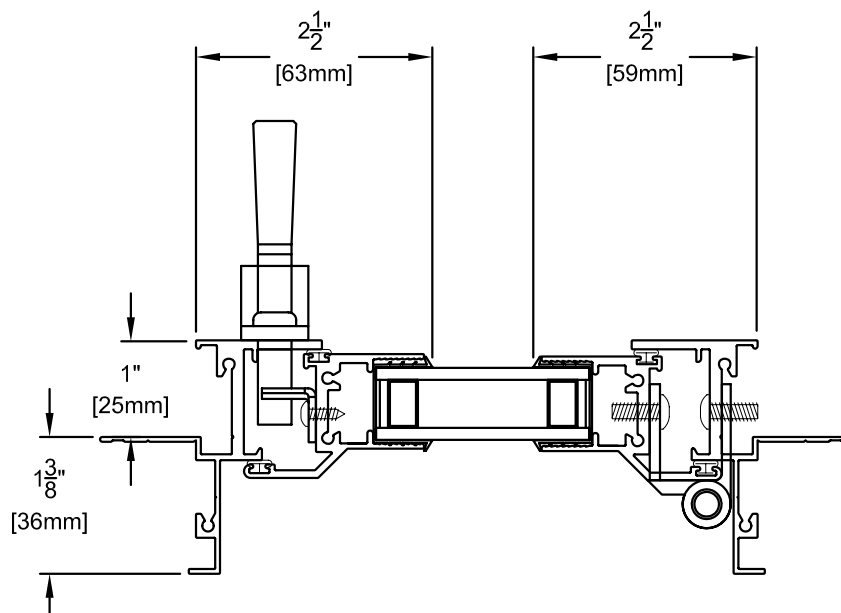
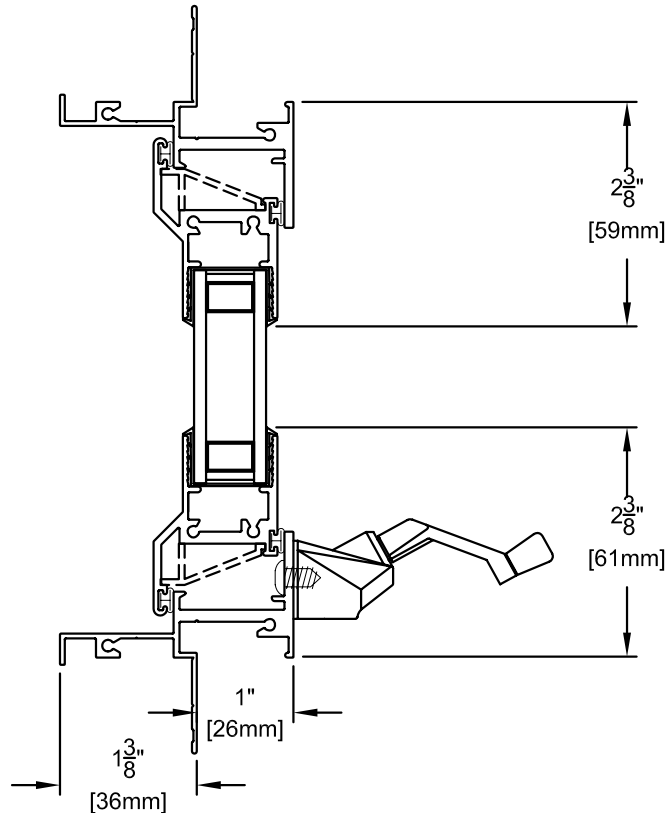
Scale: 6" = 1' (1/2 scale)

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910-4
APRIL 2009

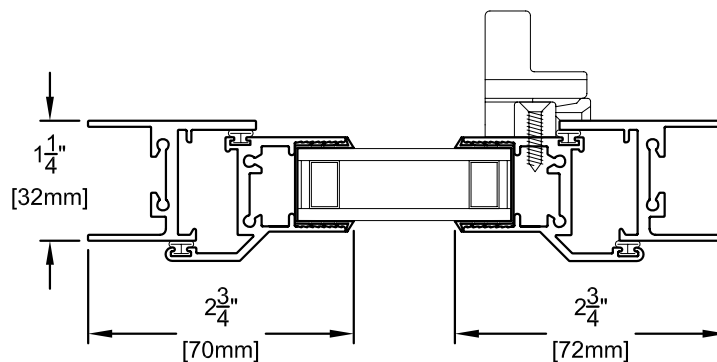
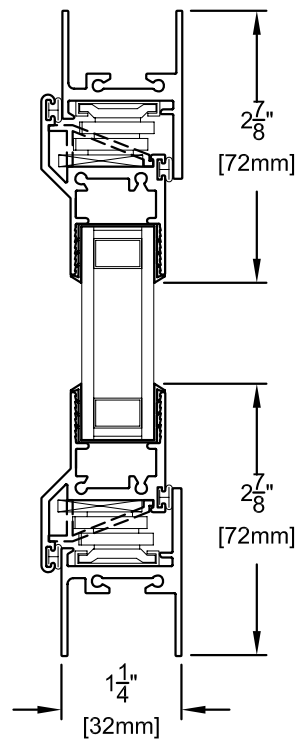
910S Roto Aluminum Assembly Drawing

910
SERIES
ALUMINUM



911C Casement Aluminum Assembly Drawing

910
SERIES
ALUMINUM



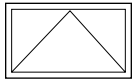
Scale: 6" = 1' (1/2 scale)

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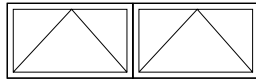
910-6
APRIL 2009

Picture/Casement/Awning Windows Milgard Aluminum Window

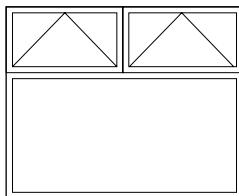
910
SERIES
ALUMINUM



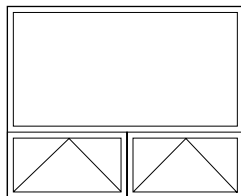
Full awning



Double awning



Double-top awning



Double-bottom awning

FULL AWNING

- 12 square feet maximum vent size
- Min vent width 1' Max vent width 4'
- Min vent height 1' Max vent height 3'

DOUBLE AWNING

- 12 square feet maximum vent size
- Min vent width 3' Max vent width 8'
- Min vent height 1' Max vent height 3'

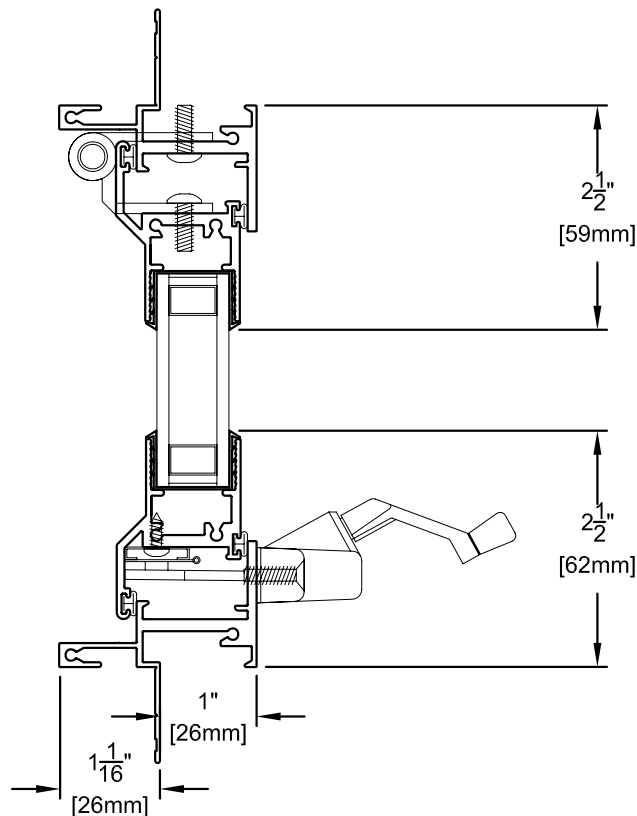
NOTE: For engineering approval contact your Milgard representative for any configuration over 40 square feet. Each Milgard Manufacturing plant reserves the right to alter or change sizes and configurations according to location capabilities. Ask your Milgard rep about specialty applications and size limits for other configurations.

Windows over 40 square feet shipped open for field glazing.

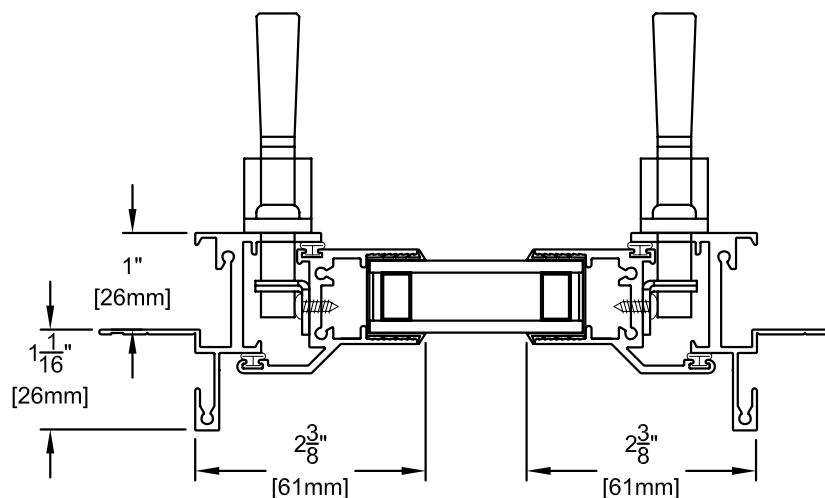
910C Roto Awning Aluminum Assembly Drawing

910
SERIES
ALUMINUM

Vertical View



Horizontal View



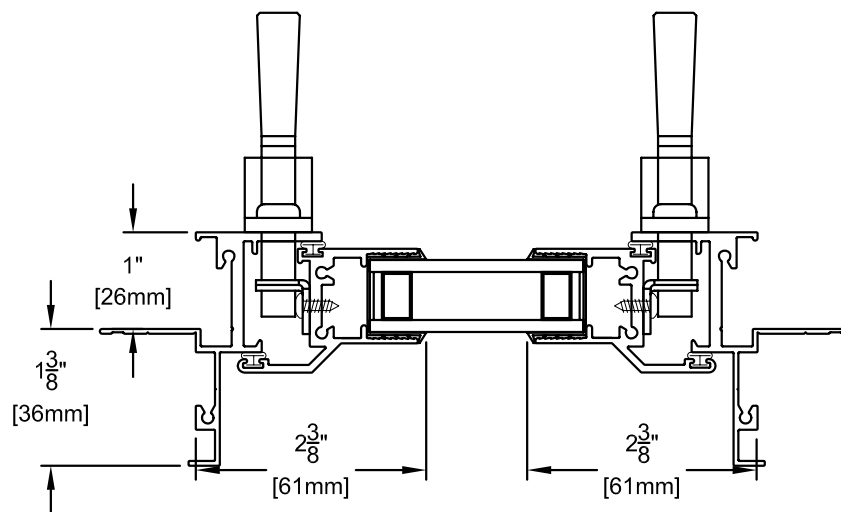
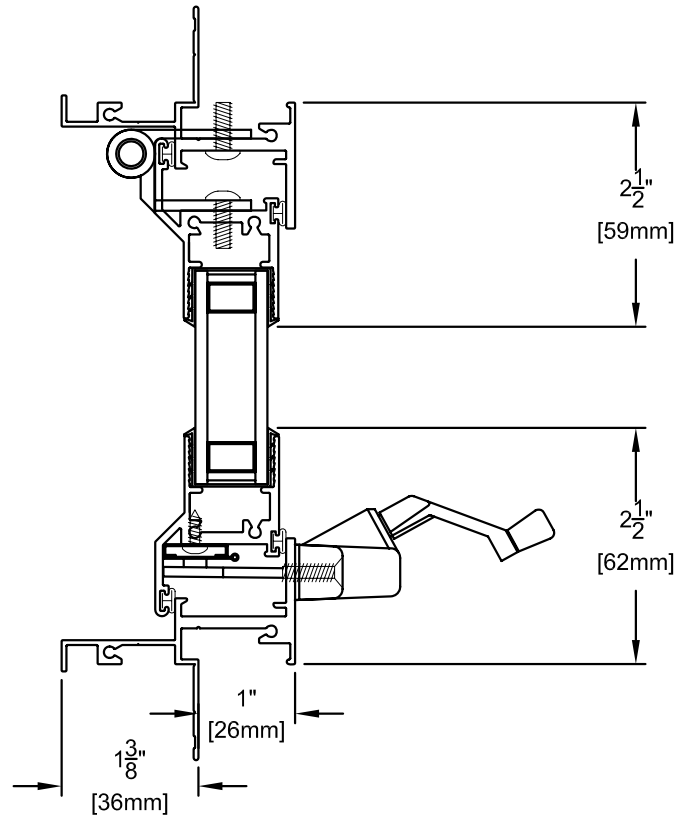
Scale: $6" = 1'$ (1/2 scale)

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910-8
APRIL 2009

910S Roto Awning Aluminum Assembly Drawing

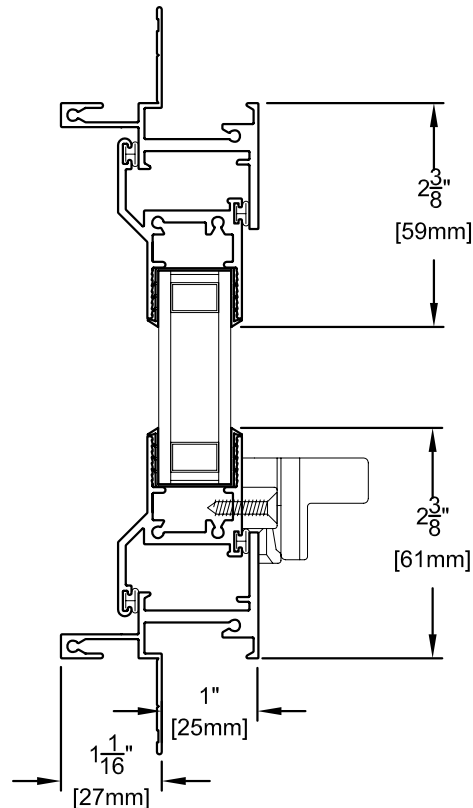
910
SERIES
ALUMINUM



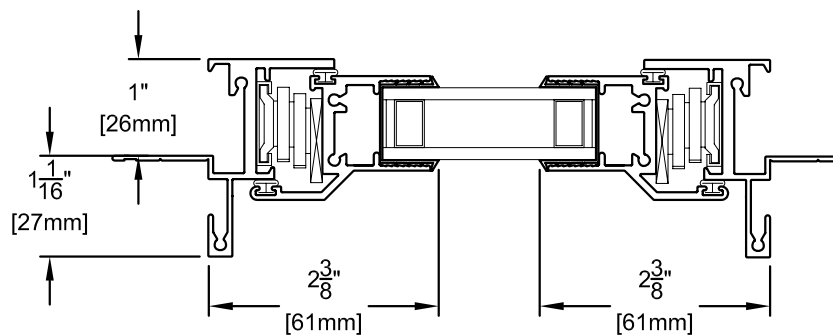
910C Push Out Awning Aluminum Assembly Drawing

910
SERIES
ALUMINUM

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

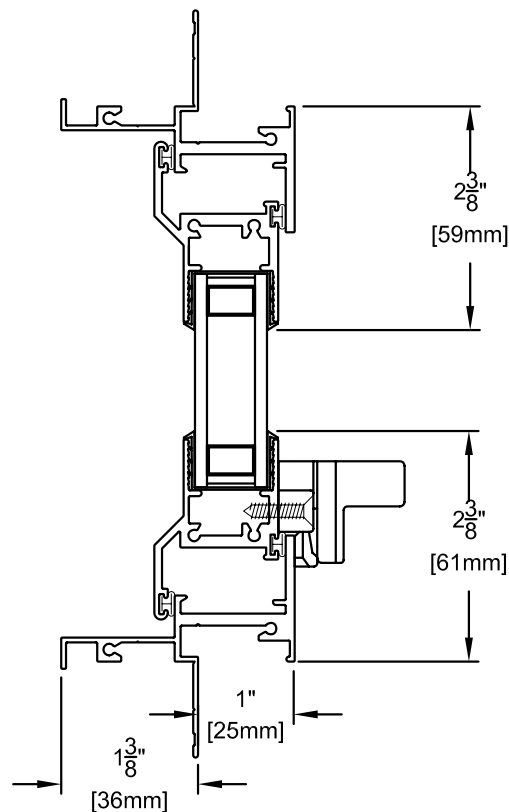
Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

910-10
APRIL 2009

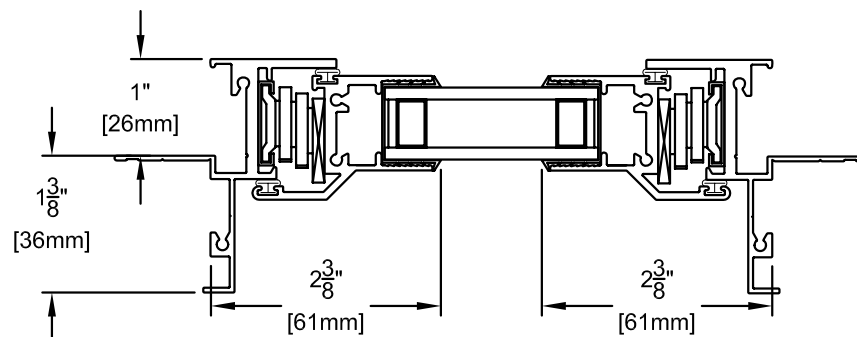
910S Push Out Awning Aluminum Assembly Drawing

910
SERIES
ALUMINUM

Vertical View

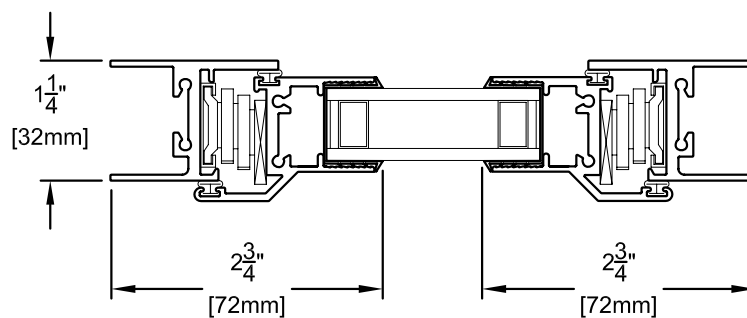
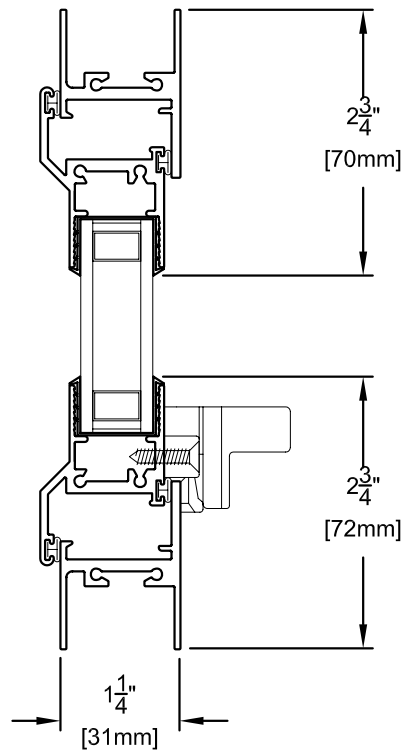


Horizontal View



911C Awning Aluminum Assembly Drawing

910
SERIES
ALUMINUM



Scale: 6" = 1' (1/2 scale)

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910-12
APRIL 2009

750 Skylight

Fixed Skylight / Fixed Multiple Skylight Milgard Aluminum Window

750
SERIES
ALUMINUM



The 750 Series Skylight has been specifically designed to provide maximum thermal efficiency by incorporating a special polyurethane barrier between the inside and outside frame components. This thermal break combined with insulating glass options and weather tight seals make the 750 Series a high performance skylight for use in both single and multi-lite configurations.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Fixed Skylight / Fixed Multiple Skylight Milgard Aluminum Window

750
SERIES
ALUMINUM

CONFIGURATIONS

Standard 750 Skylights are available in single or multi-lite options in 2', 3', 4' widths and in even feet up to 8' in length (maximum 16 Sq. Ft. per lite.)

In addition to standard sizes, special sizes using combinations of segments, can be constructed up to 10 feet long. Consult the nearest Milgard location for special shapes and sizes over 30 square feet, and for information on ridge or gable applications.

The 750 Series may be pre-glazed up to 25 square feet, but must be field set if larger, due to weight considerations.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .109". The 750 Series utilizes a thermal break for added insulation value. The poured-in polyurethane insulator is approximately 1/4" wide at the most narrow point and is used in all frame members. The frame is available in bronze anodized finishes with a standard .4 mil coating thickness.

The 750 Series is designed for clean lines and high visual appeal with maximum glass exposure. Its' precisely mitered corners provide strength and a detailed appearance with equal margins on all sides. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. All corners are caulked with butyl sealant for added protection from the weather.

Multi-lite installations will utilize a support tube or "rafter" for support. Depending on the size and configuration, a standard 1 1/4", 3" or 5" deep mullion will be used. (Ridge and gable skylights are custom fabricated and are welded together at the peak and on common frame members.)

INSTALLATION-FIN

The frame measures 5" in height, of which 3" sit above the curb mount. The bottom 2" serve as a flashing leg and installation fin.

WEEP SYSTEM

A baffle leg extends around the perimeter of the frame, protecting the hidden circular weep holes, which run from the condensation drip leg through to the exterior. The weep is located in the base (low end) of the skylight. 2'x 4' standard skylights are double weeped for 4'x 2' applications.

CONDENSATION TRAP

A 1 1/4" leg extends around the edge of the interior frame to serve as a condensation trap where moisture can collect and

evaporate. This interior condensation trap is weeped to the outside for complete drainage.

GLAZING MATERIAL

AAMA approved glazing tape adheres the bottom lite of the 1" overall unit to the frame. The top lite is sealed against the frame with a compressed, vinyl bulb seal for weather tight performance. Rigid vinyl setting blocks are used to support the unit above the base of the frame, preventing glass slippage and glass-to-metal contact.

OPTIONS

GLASS

Refer to Glass Section

TEST STANDARDS

See Test Data Section

INSTALLATION

The 750 Series Skylight fits over a raised curb in the roof rather than inside a rough opening like most windows. This curb should rise a minimum of 4" from roofing material and be constructed so its outside dimensions are 1 1/2" wider in total than the nominal size of the Skylight when nominal 2X curb material is used. The curb top must be angled to provide a minimum 2 1/2" (12 degree) pitch for adequate drainage.

The Skylight must be oriented with weep holes on the lowest side. Wood shims should be used at each installation hole to square the Skylight and provide "backing" for secure screw attachment. Skylight must be caulked at curb to eliminate water and air leaks.

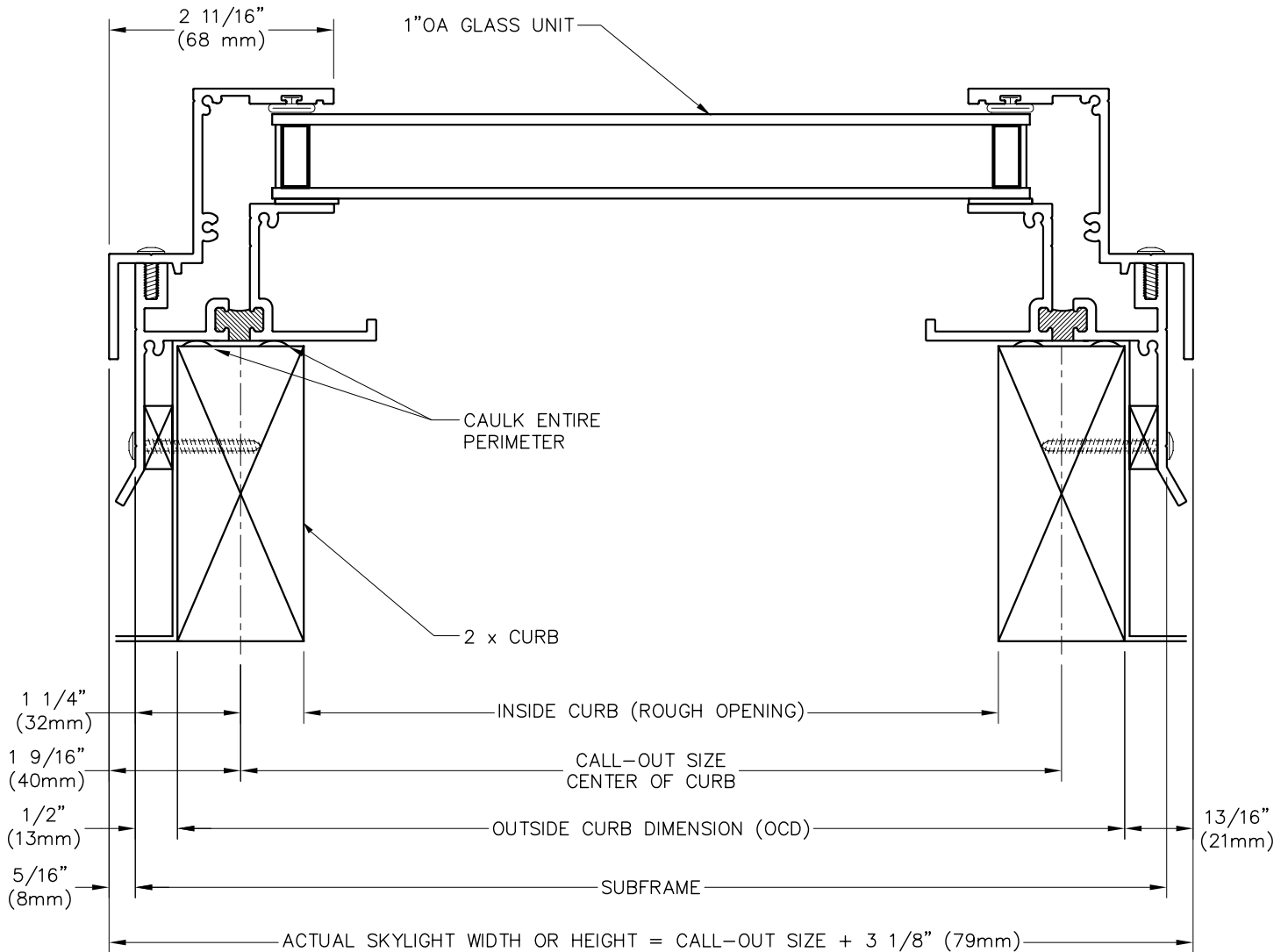
NOTE: Roof flashing, shims and sealant for the curb are provided by the installer.

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

750 Aluminum Assembly Drawing

750
SERIES
ALUMINUM



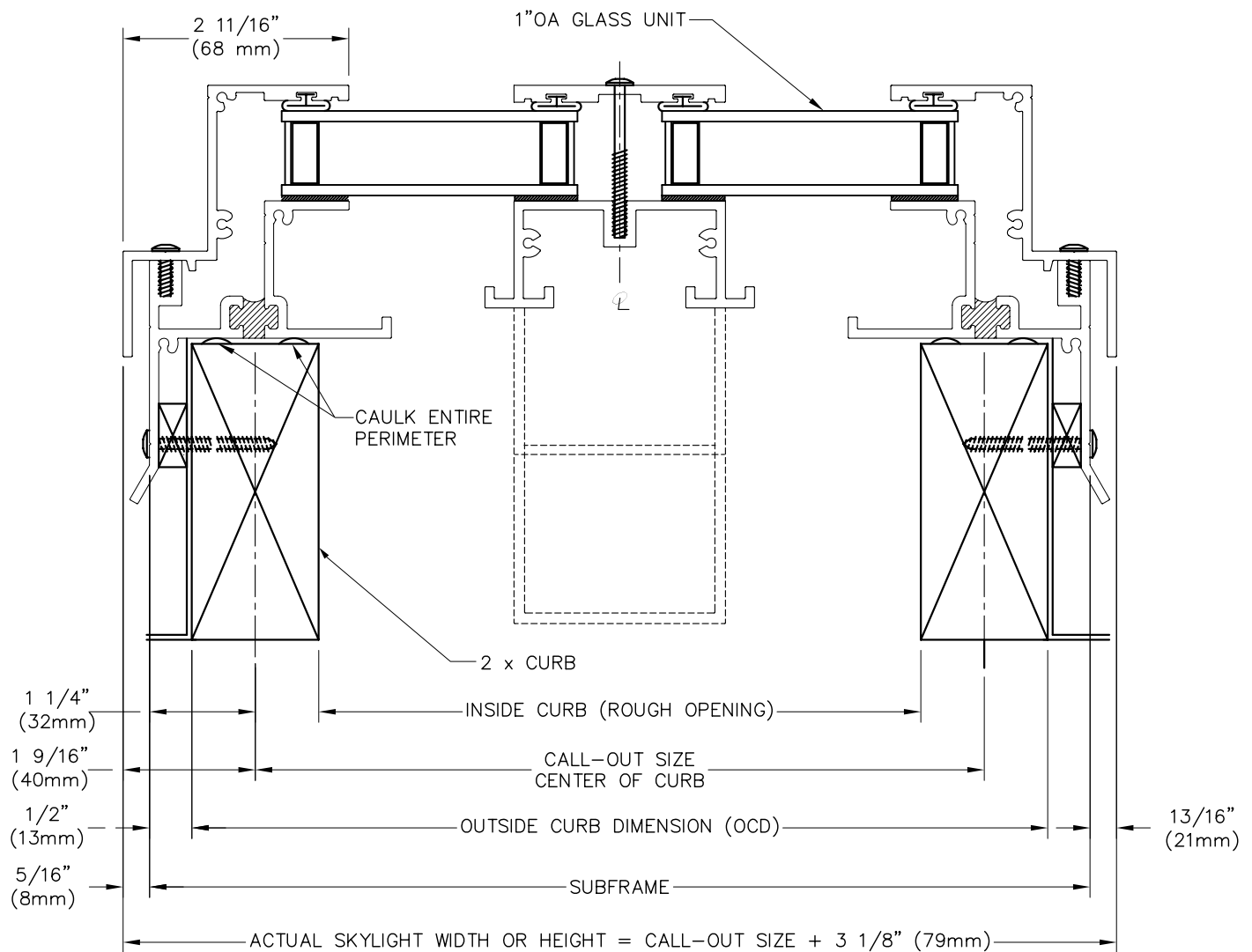
Scale: 6" = 1' (1/2 scale)

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Products shown are not available at all locations – confirm availability with your local Milgard representative.

750-4
APRIL 2009

750 Aluminum Assembly Drawing

750
SERIES
ALUMINUM



780

Skylight

Operable / Fixed Skylight Milgard Aluminum Window

780
SERIES
ALUMINUM



The 780 Series Skylight has been specifically designed to provide maximum thermal efficiency by incorporating a special polyurethane barrier between the inside and outside frame components. This thermal break combined with an inner-frame of extruded PVC plus insulating glass options and weather tight seals make the 780 Series a high performance skylight for use in any climate condition.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Operable / Fixed Skylight Milgard Aluminum Window

780
SERIES
ALUMINUM

CONFIGURATIONS

Standard 780 Skylights are available in 2', 3' and 4' widths and in even feet up to 6' in length (maximum 16 Sq. Ft.). Operable versions are hinged on the top side. Maximum height on operable is 4'.

COMPONENTS

FRAME

Aluminum exterior frame components are made from 6063-T5 alloy with a structural wall thickness of .062". The 780 Series utilizes a thermal break for added insulation value. The poured-in polyurethane insulator is approximately 1/4" wide at the most narrow point and is used in all frame members. The exterior frame has a bronze anodized finishes with a standard .4" mil coating thickness.

The 780 Series is designed for clean lines and high visual appeal with maximum glass exposure. Its' precisely mitered corners provide strength and a detailed appearance with equal margins on all sides. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. All exterior corners are caulked with butyl-sealant for added protection from the weather.

The inner-frame is constructed of exterior grade, extruded white PVC which adds significantly to the insulation value to reduce energy consumption and condensation. This inner-frame is mitered and welded for an attractive interior appearance and added structural strength.

INSTALLATION/COVER FIN

The exterior frame measures 4 5/32" in height, of which 2 5/16" sit above the curb mount. The bottom 1 13/16" serve as a flashing leg. The flashing leg becomes the installation fin in fixed Skylight versions.

NOTE: Roof curb flashing is provided by installer.

WEEP SYSTEM

A flashing leg extends around the perimeter of the frame, protecting the hidden weep holes, which run from the condensation drip leg through to the exterior. The weep is located in the base (low end) of the skylight.

CONDENSATION TRAP

A leg extends around the edge of the interior frame to serve as a condensation trap where moisture can collect and evaporate. This interior condensation trap is weeped to the outside for complete drainage.

GLAZING MATERIAL

An extruded vinyl glazing boot surrounds all edges of the 1" overall insulating glass units, which is then compressed into a close tolerance hollow in the exterior aluminum frame. The vinyl boot cushions the glass and provides a weather tight seal.

GLASS

Glass options utilize 1/8" tempered glass for the top lite, and 7/32" laminated safety glass in the bottom panel in 1" overall glazing. Skylights are available in clear, tinted, reflective, obscure, low-emissivity, and polished wire glass. (See Glass Section for types and description.)

OPERABLE CONFIGURATION

The 780 Series is designed to allow the exterior frame containing the glazing to hinge, creating an opening Skylight. Stainless steel hinges and a waterproof, flexible operator arm provide maximum durability. Operable versions come standard with an interior wood liner (1" x 4") and an integral insect screen.

OPERATOR

Both the manual and motor driven operators utilize a high-gear reduction, high-output torque drive, that generates a maximum sash liftweight of 80 pounds (maximum vent size: 16 square feet). The operator arm is a hardened steel chain designed for minimum deflection. The operator may be detached at the vent for outside access.

ELECTRIC:

Available with either a hand-held remote control or mounted switch to activate a 24 volt electric motor, which operates through a transformer on a standard 110V circuit. Both models are standard with a rain sensor, which automatically closes the Skylight with moisture contact.

NOTE: Rain sensor external plate must be cleaned annually to assure reliable operation. Electric models must be installed by a qualified electrician.

MANUAL

Standard configurations are supplied with a hexball or hook & loop drive system and a telescoping operator pole 6' - 10' in length.

SCREEN (OPENING VERSIONS ONLY)

Screen frames are aluminum, finished with three coats of color matched baked polyester for long term durability. Tension springs are integrated in the screen frame for a secure fit and easy installation from inside. The screen material is an attractive, low maintenance gray fiberglass mesh.

Operable / Fixed Skylight Milgard Aluminum Window

780
SERIES
ALUMINUM

OPTIONS

MANUAL/OPERABLE

Operable using remote wall mounted control

GLASS

Refer to Glass Section

TEST STANDARDS

See Test Data Section

INSTALLATION

The 780 Series Skylight fits over a raised curb in the roof rather than inside a rough opening like most windows. This curb should rise a minimum of 4" from roofing material and be constructed so its outside dimensions are 1 1/2" wider in total than the nominal size of the Skylight. The curb top must be angled to provide a minimum 2/12" (5 degree) pitch for adequate drainage. Roof/curb flashing must be used; supplied by others. Skylight must be caulked at curb to eliminate air leaks.

FIXED

The Skylight must be oriented with weep holes on the lowest side. Screws are furnished for attachment to the curb through pre-punched installation holes. Wood shims should be used at each installation hole to square the Skylight and provide "backing" for secure screw attachment. High quality exterior sealant must be used around the entire perimeter of the curbed top at the time of installation.

OPERABLE

Install Skylights so weep holes are located on the lowest side. High quality exterior sealant must be used around the entire perimeter of the curb top at the time of installation. Attach Skylight from the interior, using screws or nails through the integral wood liner into the curb. Wood shims, supplied by the installer, should be used at fastener locations and placed between the wood skylight liner and the inside of the curb.

NOTE: Roof flashing, shims and sealant for the curb are provided by the installer.

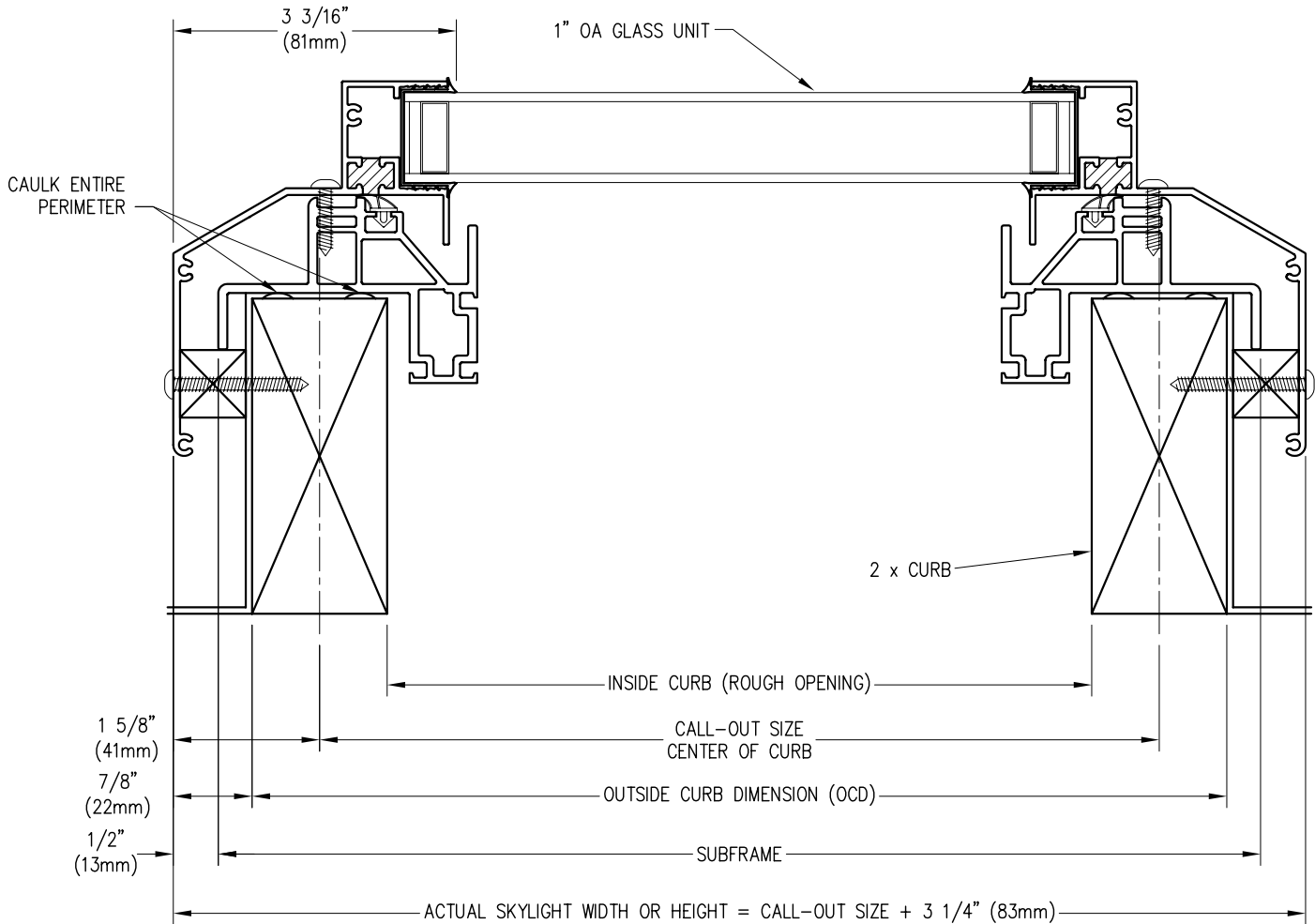
CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

Milgard's Full Lifetime Warranty does not extend to the 780 Operable Skylight's electric motor or the basic drive unit. These parts are separately covered by a warranty from the manufacturer of these sub components. Full details are provided with each Skylight and are available from Milgard upon request.

780 Aluminum Assembly Drawing

780
SERIES
ALUMINUM



1110

Horizontal Slider

Horizontal Sliding Windows Milgard Aluminum Window

1110

SERIES
ALUMINUM



The 1110 Series Sliding Window is designed and engineered to combine a streamlined appearance with long term durability. The 3/4" overall glazing provides insulating value. Specially designed roller and security features assure trouble free operation and easy to use, positive locking. The window offers alternatives in glass for energy efficiency plus frame and grid color options for virtually any architectural need, including residential, light commercial and retrofit.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Horizontal Sliding Windows

Milgard Aluminum Window

1110
SERIES
ALUMINUM

CONFIGURATIONS

The 1110 Series is designed as an inside slider (the sliding panel or "vent" slides inside the stationary panel). For the vent to open completely, there must be at least an equal size adjacent stationary panel. Horizontal Sliders can be used alone or combined with picture, gable or radius windows for vent below and vent above options.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .060", and non-structural wall thickness of .050". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish.

The 1110 Series is designed for clean lines and high visual appeal with maximum glass exposure. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. Corners are sealed for added protection from the weather. The standard frame is 2 1/16" in width.

NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter of the standard frame and is used to attach the window into the rough opening. The fin is scored for complete removal for retrofit/wood stop installations. The fin is setback 1 from the exterior edge of the frame.

WEEP SYSTEM

Split sill construction and baffled, hidden weep holes drain water from the track. The unique sill design greatly reduces the occurrence of "blow back", or water seeping to the inside caused by a combination of wind and rain.

GLAZING MATERIAL

AAMA approved glazing tape adheres glass to the fixed and vent frame and seals and cushions the glass. Rigid vinyl setting blocks are used to support the unit above the sill, preventing glass slippage and glass-to-metal contact. Extruded vinyl glazing (snap-in) bead is applied around the exterior edge. The vent panel utilizes a "Ushaped" vinyl channel designed to seal the unit and cushion the glass from the frame.

GLASS

Glass options are available in 3/4" overall insulating units in clear, tinted, reflective, obscure, Low-E, and safety glass. Other specialty glass is available upon request. (See Glass Section for types and description.)

VENT PANEL

The vent is engineered for the thickness and weight of insulating glass. It's roller assembly rides on a monorail track for easy operation and durability. This raised track in the frame sill helps keep the vent operation free from interference by foreign particles that may collect in the sill.

WEATHERSTRIPPING

Silicone treated, water repellent polypropylene fin seal weatherstripping provides a durable, weather tight seal. This weatherstripping is installed in an integral, continuous keyway around the entire perimeter of the vent panel.

ROLLER ASSEMBLY

Self-lubricating, wear resistant, dual nylon rollers provide flexible, freewheeling, smooth and silent operation. Rollers are engineered for reduction of friction and elimination of torque on the vent frame. Prevention of metal-to-metal contact eliminates unsightly wear marks on the monorail track. Roller housings without rollers are installed in the vent top to serve as guides.

LOCKING ASSEMBLY

An automatic, spring-loaded, positive lock is located on the vent lock stile and secures to the vertical meeting rail. The aluminum handle is adjustable to any desired height. When the window is fully closed it will lock automatically.

SCREEN

Screen frames are aluminum, finished with three coats of color matched baked polyester for long term durability. Tension springs are integrated in the screen frame for a secure fit and easy installation from inside or outside. The screen material is an attractive, low maintenance gray fiberglass mesh.

OPTIONS

Available options include:

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

SPACER

Spacer available in a standard clear finish or optional bronze or champagne finish in the airspace of the insulating glass units. PGG Intercept™ warm-edge steel spacer available in certain regions. Contact your Milgard representative for spacers used in your area.

GLASS

Refer to Glass Section

STUCCO FIN

1 3/8" fin setback. Check with local branch for availability.



Horizontal Sliding Windows Milgard Aluminum Window

1110
SERIES
ALUMINUM

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

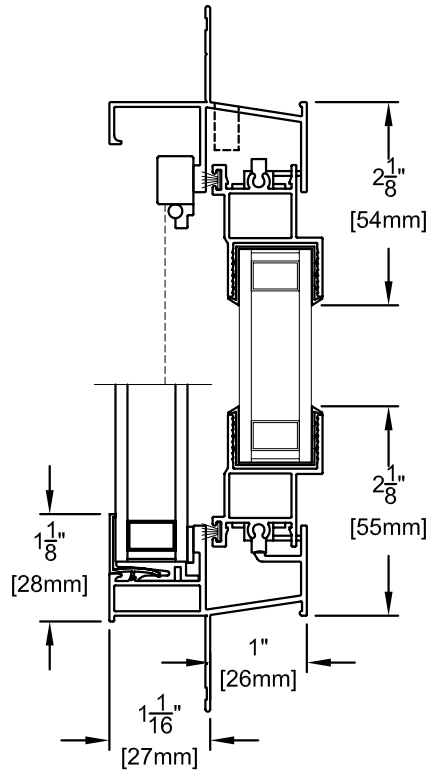
See Test Data Section

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

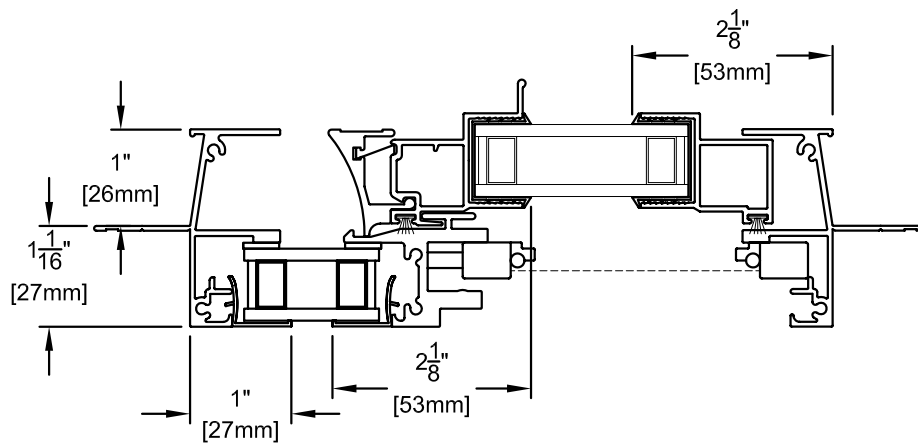
Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

1110H Aluminum Assembly Drawing

1110
SERIES
ALUMINUM



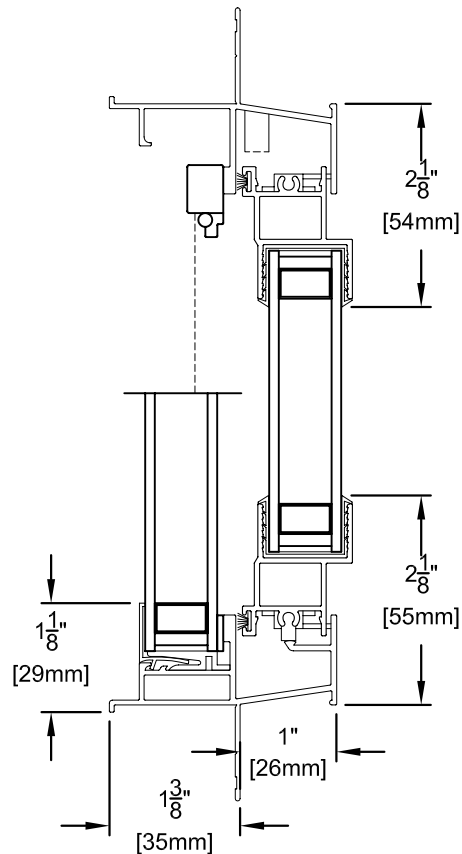
Vertical View



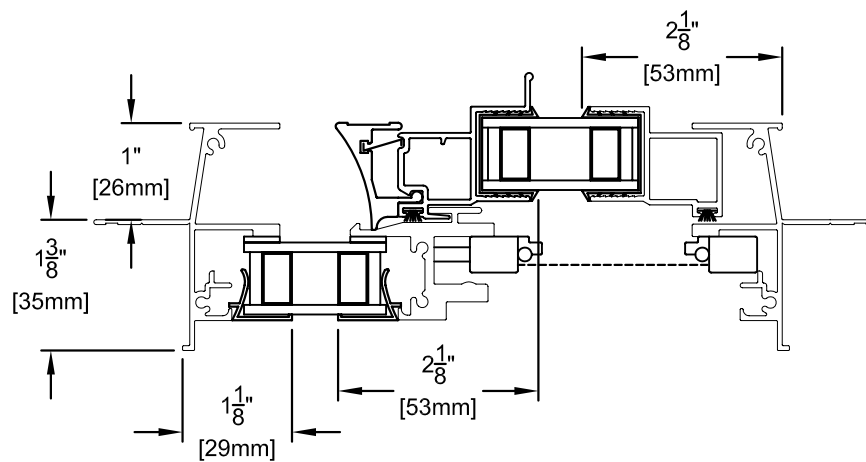
Horizontal View

1110SH Aluminum Assembly Drawing

1110
SERIES
ALUMINUM



Vertical View



Horizontal View

Scale: 6" = 1' (1/2 scale)

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1110-6
APRIL 2009

1510

Single Hung

Single Hung Windows Milgard Aluminum Window

1510
SERIES
ALUMINUM



The 1510 Series Single Hung Window is designed and engineered to combine a streamlined appearance with long term durability. The 3/4" overall glazing provides insulating value while specially designed balancer and security features assure trouble free operation and easy to use, positive locking. The window offers alternatives in glass for energy efficiency plus frame and grid color options for virtually any architectural design, including residential, light commercial and retrofit.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Single Hung Windows Milgard Aluminum Window

1510
SERIES
ALUMINUM

CONFIGURATIONS

The 1510 Series is designed as an insideslider (the bottom panel or "vent" slides inside the stationary panel). For the vent to open completely, there must be at least an equal size adjacent stationary panel. Single Hung Windows can be used alone or combined with picture, gable or radius windows or in tandem for multiple window installations.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .060". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish.

The 1510 Series is designed for clean lines and high visual appeal with maximum glass exposure. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. Corners are sealed for added protection from the weather. The standard frame is 2 1/16" in width.

NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter of the standard frame and is used to attach the window into the rough opening. The fin is scored for complete removal for retrofit/wood stop installations. The fin is setback 1" from the exterior edge of the frame.

WEEP SYSTEM

Hollow sill construction and offset weep holes drain water from the track and greatly reduce the occurrence of blow back, or water seeping to the inside caused by a combination of wind and rain.

GLAZING MATERIAL

AAMA approved glazing tape adheres glass to the fixed and vent frame and seals and cushions the glass. Rigid vinyl setting blocks are used to support the glass unit, preventing glass slip-page and glass-to-metal contact. Extruded vinyl glazing (snapin) bead is applied around the exterior edge. The vent panel utilizes a "U-shaped" vinyl channel designed to seal the unit and cushion the glass from the frame.

GLASS

Glass options are available in 3/4" overall insulating units in clear, tinted, reflective, obscure, Low-E, and safety glass. Other specialty glass is available upon request. (See Glass Section for types and description.)

VENT PANEL

The vent has an "L" shaped lip that fully interlocks with the horizontal meeting rail, adding security and preventing weather penetration. Both the lift rail and the lock rail have legs that project inward 7/16" for ease in operating the vent from the interior. The vent panel may be removed for ease of cleaning and maintenance.

WEATHERSTRIPPING

Silicone treated, water repellent polypropylene fin seal weatherstripping provides a durable, weather tight seal. This weatherstripping is installed in an integral, continuous keyway around the entire perimeter of the vent panel.

BALANCER SYSTEM

The vent operates on concealed block and tackle balancers, allowing the vent to remain open in any position. The balancer system is installed in the jamb on each side of the window.

LOCKING ASSEMBLY

An automatic, spring-loaded, positive lock is located on the vent lock rail and secures to the horizontal meeting rail. The aluminum handle is adjustable and will lock automatically when the window is fully closed.

SCREEN

Screen frames are aluminum, finished with three coats of color matched baked polyester for long term durability. Tension springs are integrated in the screen frame for a secure fit and easy installation from inside or outside. The screen material is an attractive, low maintenance gray fiberglass mesh.

OPTIONS

Available options include:

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

SPACER

Spacer available in a standard clear finish or optional bronze or champagne finish in the airspace of the insulating glass units. PGG Intercept™ warm-edge steel spacer available in certain regions. Contact your Milgard representative for spacers used in your area.

GLASS

Refer to Glass Section

STUCCO FIN

1 3/8" fin setback. Check with local branch for availability.



Single Hung Windows Milgard Aluminum Window

1510
SERIES
ALUMINUM

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

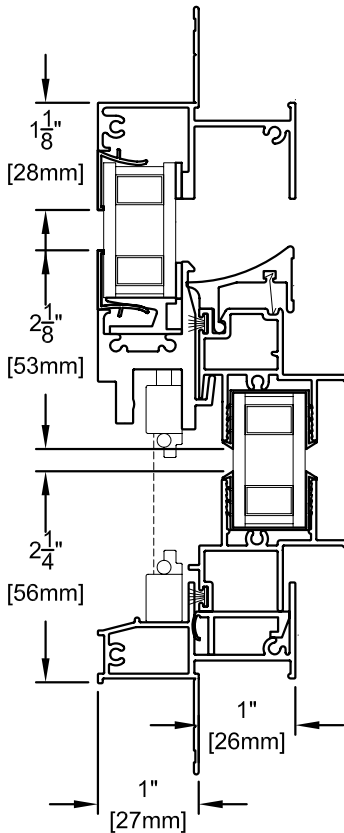
See Test Data Section

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

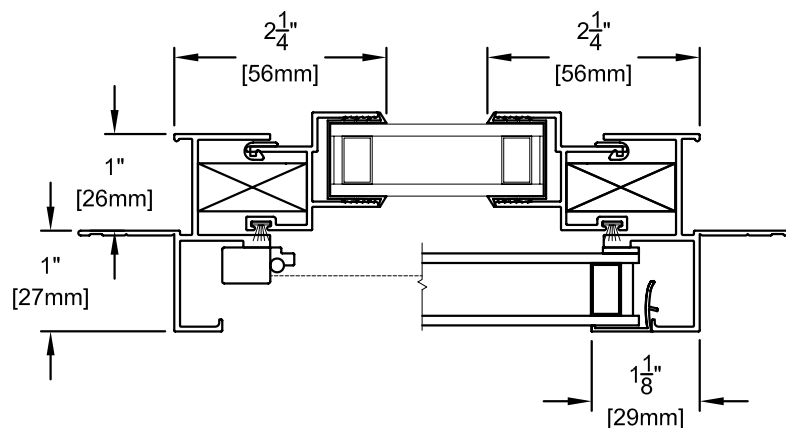
Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

1510 Aluminum Assembly Drawing

1510
SERIES
ALUMINUM

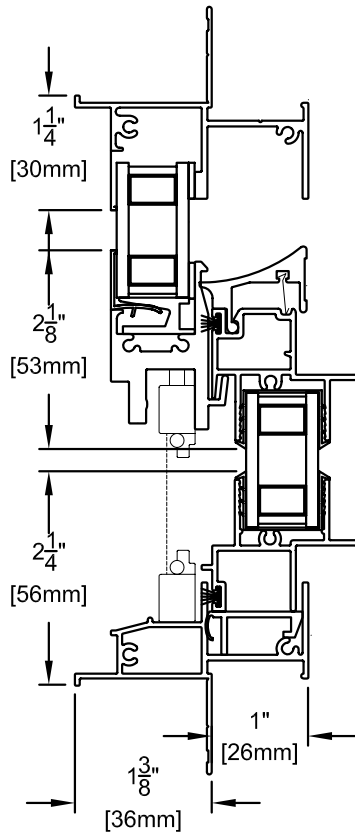


Horizontal View

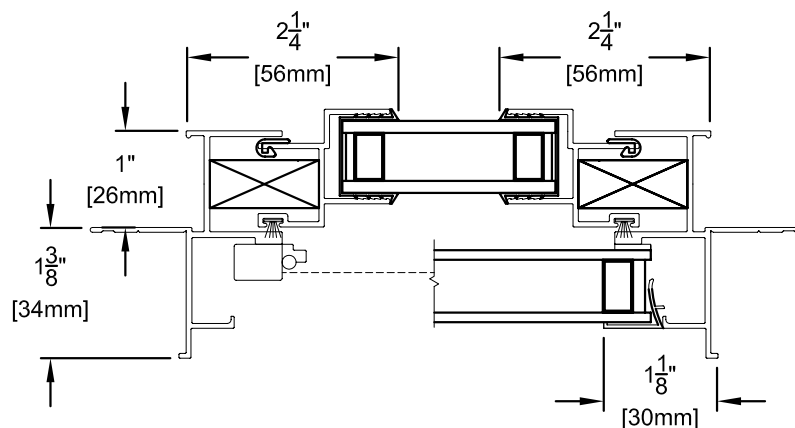


1510S Aluminum Assembly Drawing

1510
SERIES
ALUMINUM



Horizontal View



Scale: 6" = 1' (1/2 scale)

Due to continual product research and development, details may be changed at any time. ©2009
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1510-6
APRIL 2009

1550/1560

Bay & Bow Windows

Bay and Bow Windows Milgard Aluminum Window

1550/1560

SERIES
ALUMINUM



The 1500 Series of Bay and Bow windows are engineered to provide unique architectural design and insulating options, which are compatible with other Milgard window and door products. Bay windows utilize a center section with an attached panel on each side, fixed at a 45 degree angle. The Bow window incorporates three or more panels which join at a 13 degree angle for a gently bowed out appearance. Both types accept 3/4" overall glazing plus a wide selection of glass alternatives for improved energy efficiency. Frame and grid color options allow the 1500 Series to be used in

virtually any architectural design.

Milgard's Aluminum windows, doors, and skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Bay and Bow Windows Milgard Aluminum Window

1550/1560

SERIES
ALUMINUM

CONFIGURATIONS

The 1550 Series Bay window standard configuration includes 18" or 24" "flankers" or side windows with a picture window in the center in overall widths from 4' to 8' in 3', 4' and 5' heights. The flankers are vented using single hung (vertical opening) windows.

1560 Bow windows are standard in 3', 4' and 5' heights with either 18" or 24" wide panels in overall widths from 4'4" to 9'5". Consult the nearest Milgard location for special sizes and venting options.

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .060" and a non-structural wall thickness of .050". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish. Frame material used in the 1550 Series, with the exception of the mullions, or panel joining members is 1110 or 1510. The Bay mullion creates a 45 degree angle between the centerlite and flanker while the Bow mullion joins sections at a 13 degree angle. The mullions are a tube design for added strength.

The 1500 Series is designed for clean lines and high visual appeal with maximum glass exposure. Its' precisely mitered corners provide strength and a detailed appearance with equal margins on all sides. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. Corners are sealed for added protection from the weather. The standard frame is 2 1/16" in width.

BAY AND BOW WINDOWS NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter of the standard frame and is used to attach the window into the rough opening. The fin is scored for complete removal for retrofit/ wood stop installations. The fin is setback 1" from the exterior edge of the frame.

GLAZING MATERIAL

AAMA approved glazing tape adheres the glass to the frame members glazing leg. The bedding seals and cushions the glass. Rigid vinyl setting blocks are used to support the glass unit, preventing glass slippage and glass-to-metal contact. Vent panels utilize a "U-shaped" vinyl channel designed to seal the unit and cushion the glass from the frame.

GLASS

Glass options are available in 3/4" overall insulating units in clear, tinted, reflective, obscure, Low-E, and safety glass. Other specialty glass is available upon request. (See Glass Section for types and description.)

WEEP SYSTEM, VENT, LOCKING

ASSEMBLY, SCREEN

Refer to the appropriate product description section (i.e. 1510 Single Hung, 1110 Horizontal Slider) for details of operable components of 1550 configurations.

OPTIONS

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

SPACER

Spacer available in a standard clear finish or optional bronze or champagne finish in the airspace of the insulating glass units. PGG Intercept™ warm-edge steel spacer available in certain regions. Contact your Milgard representative for spacers used in your area.

GLASS

Refer to Glass Section

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

See Test Data Section

BAY AND BOW WINDOWS INSTALLATION

All 1500 Series windows are factory sized to fit in a framed opening, whether new or created by removing an existing window. This allows nailing fins to overlap opening for secure fastening. Opening panels must be closed and locked during installation. Windows must be installed level, plumb and square with 1/4" clearance on the sides and weep holes at the bottom.

ALL 1500 SERIES WINDOWS MUST HAVE SUBSTANTIAL SUPPORT FROM BELOW. FULL WALL FRAMING OR 45 DEGREE ANGLE BRACING IS RECOMMENDED.

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

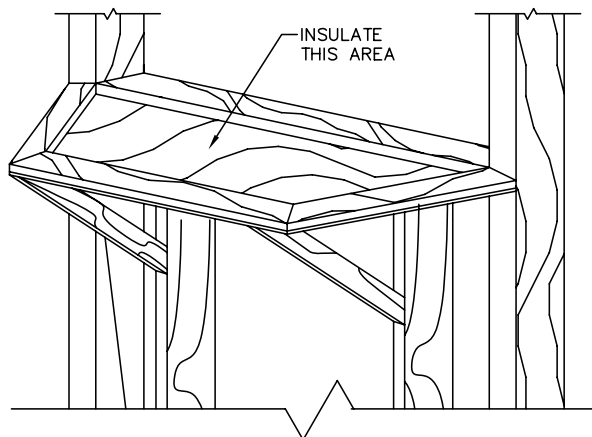
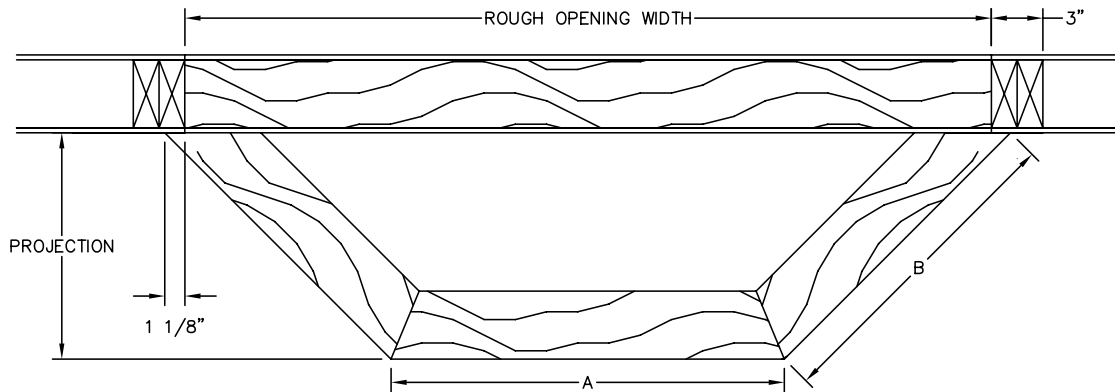
Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

Bay Windows Milgard Aluminum Window

1550/1560

**SERIES
ALUMINUM**

BAY FRAMING DETAIL



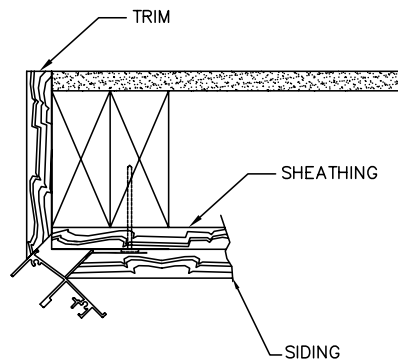
SILL DETAIL PROJECTION

18" FLANKERS – $13 \frac{1}{2}"$ PROJECTION
R.O. HEIGHTS ARE 36", 48", AND 60"

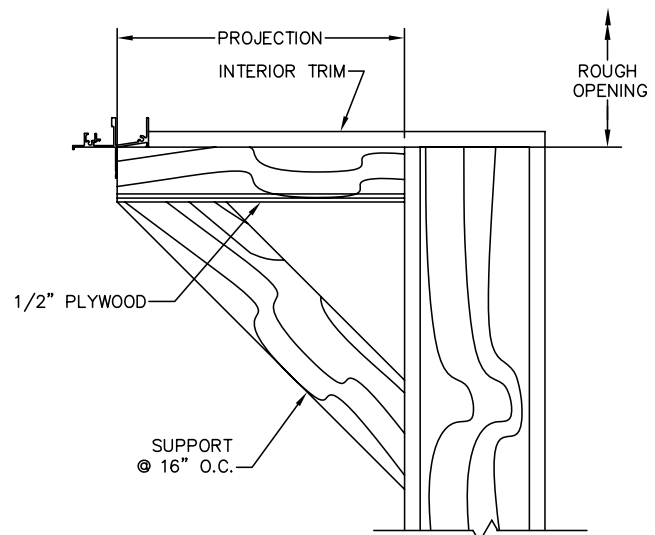
R.O. WIDTH	A	B
48"	$23 \frac{1}{4}"$	$19 \frac{1}{8}"$
60"	$35 \frac{1}{4}"$	$19 \frac{1}{8}"$
72"	$47 \frac{1}{4}"$	$19 \frac{1}{8}"$

24" FLANKERS – $17 \frac{3}{4}"$ PROJECTION
R.O. HEIGHTS ARE 36", 48", AND 60"

R.O. WIDTH	A	B
72"	$38 \frac{3}{4}"$	$25 \frac{1}{8}"$
84"	$50 \frac{3}{4}"$	$25 \frac{1}{8}"$
96"	$62 \frac{3}{4}"$	$25 \frac{1}{8}"$



JAMB FIN DETAIL

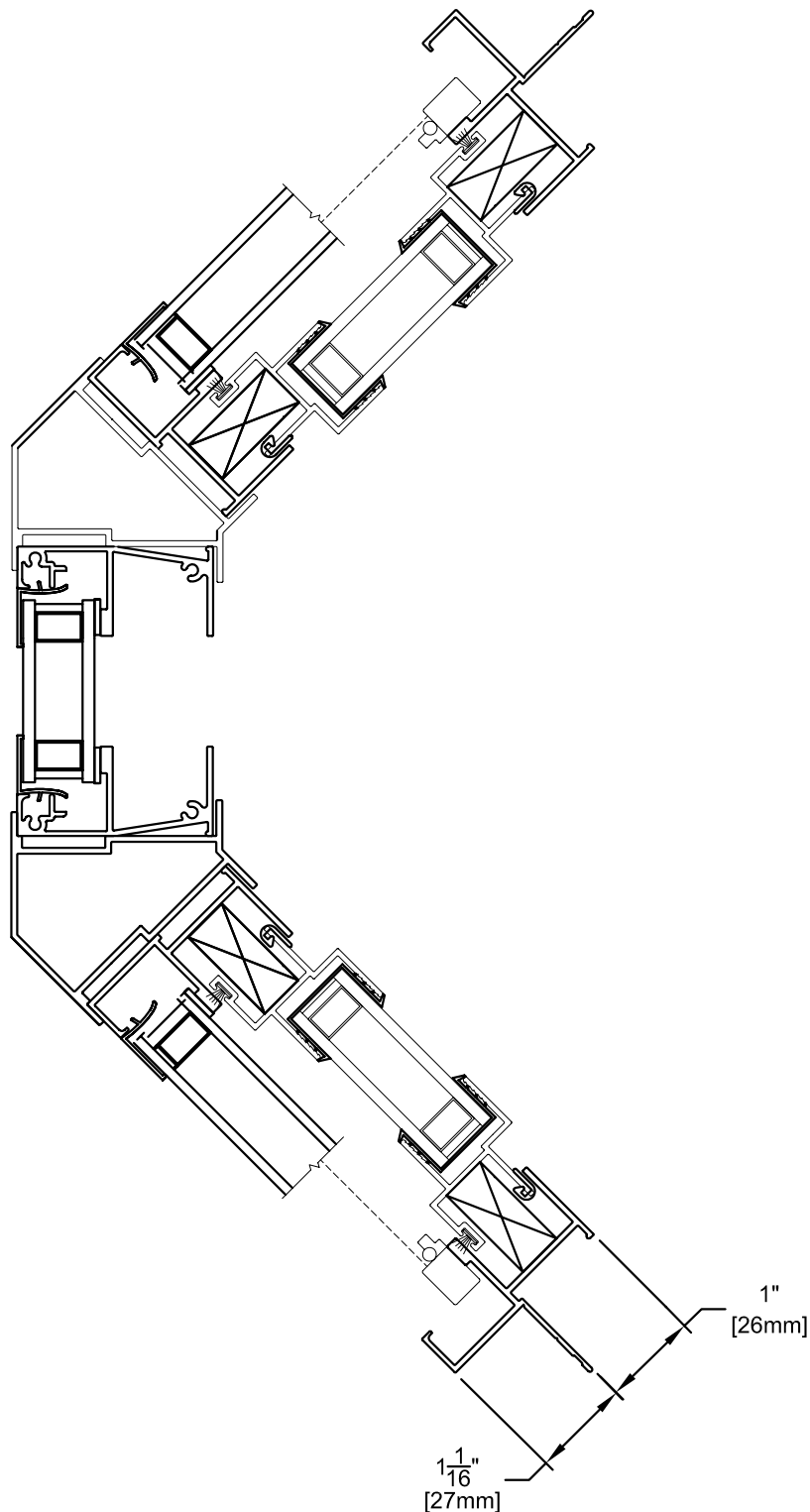


SILL DETAIL (HEAD IS SIMILAR)

Bay Window with Single Hung Flankers

1550/1560

**SERIES
ALUMINUM**



**1550/1560-5
APRIL 2009**

Scale: 6" = 1' (1/2 scale)

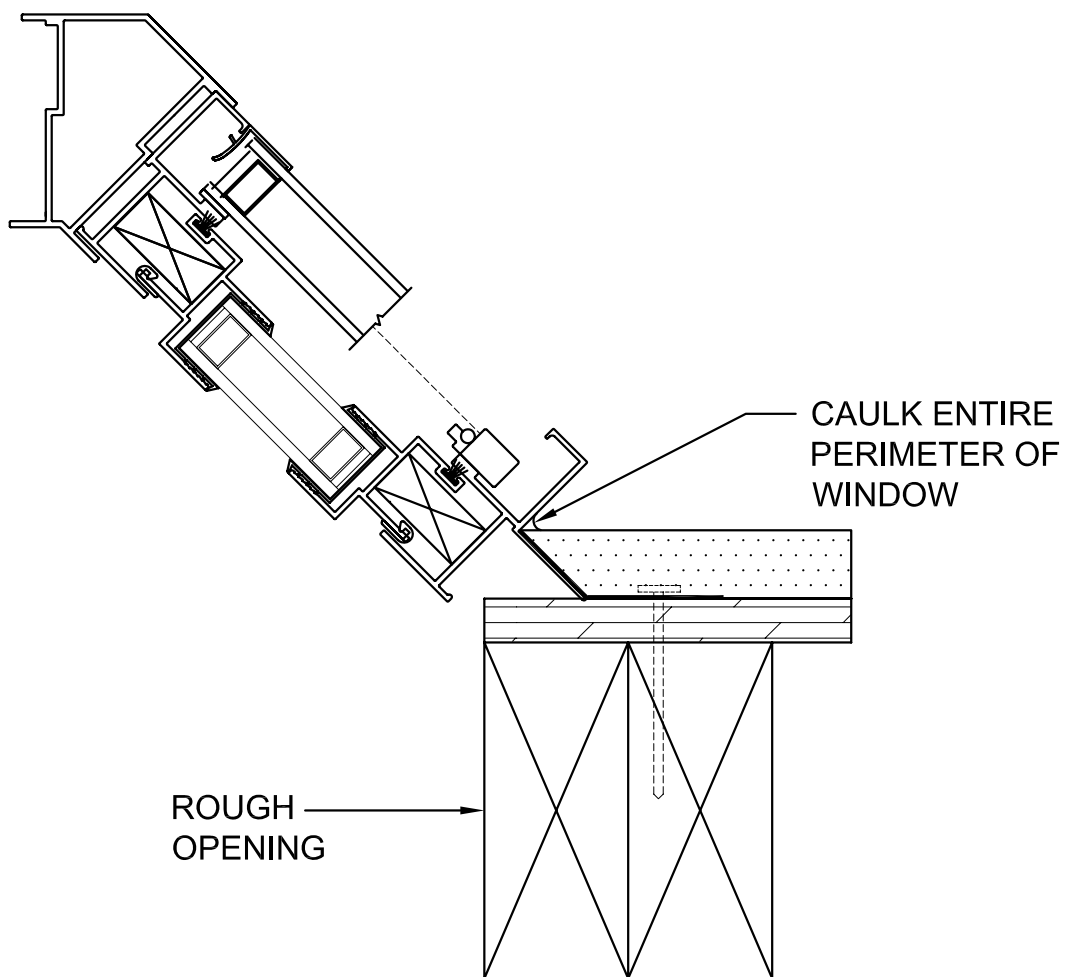
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Products shown are not available at all locations – confirm availability with your local Milgard representative.

Bay Window with Single Hung Flankers

1550/1560

**SERIES
ALUMINUM**

Jamb Detail - Stucco Installation



Scale: 6" = 1' (1/2 scale)

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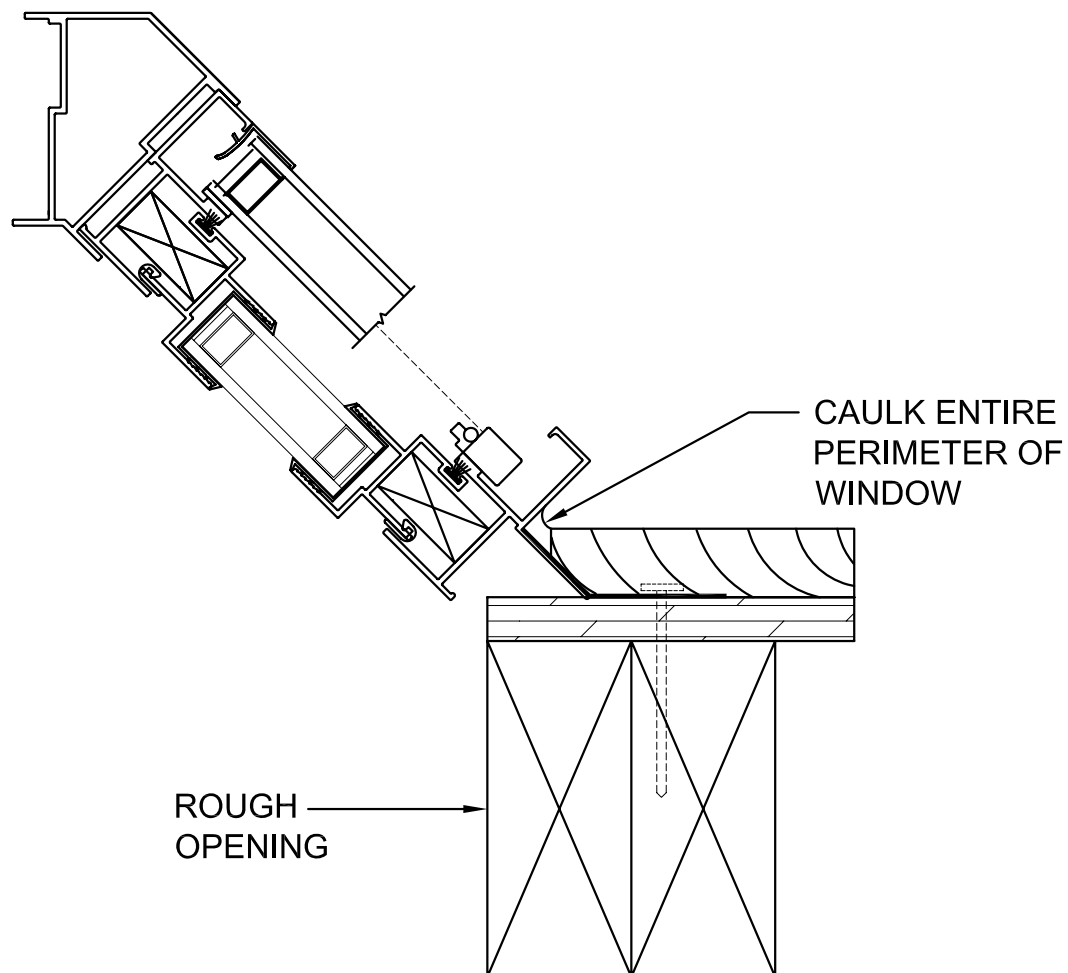
**1550/1560-6
APRIL 2009**

Bay Window with Single Hung Flankers

1550/1560

**SERIES
ALUMINUM**

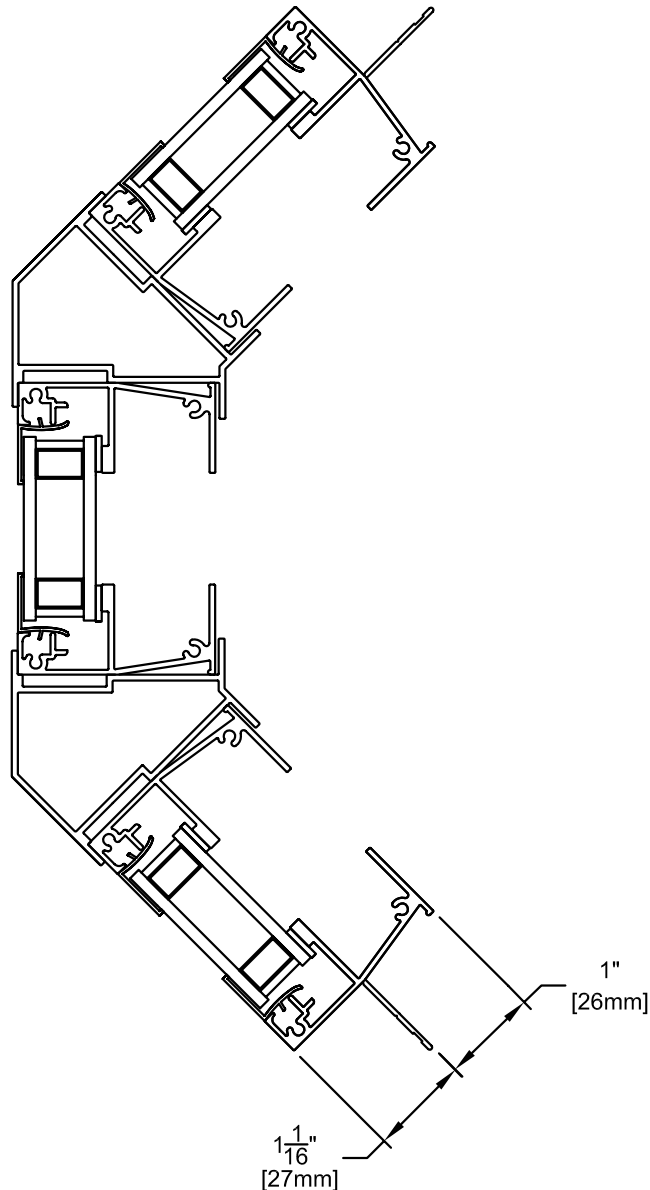
Jamb Detail - Siding Installation



Bay Window with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**



Scale: 6" = 1' (1/2 scale)

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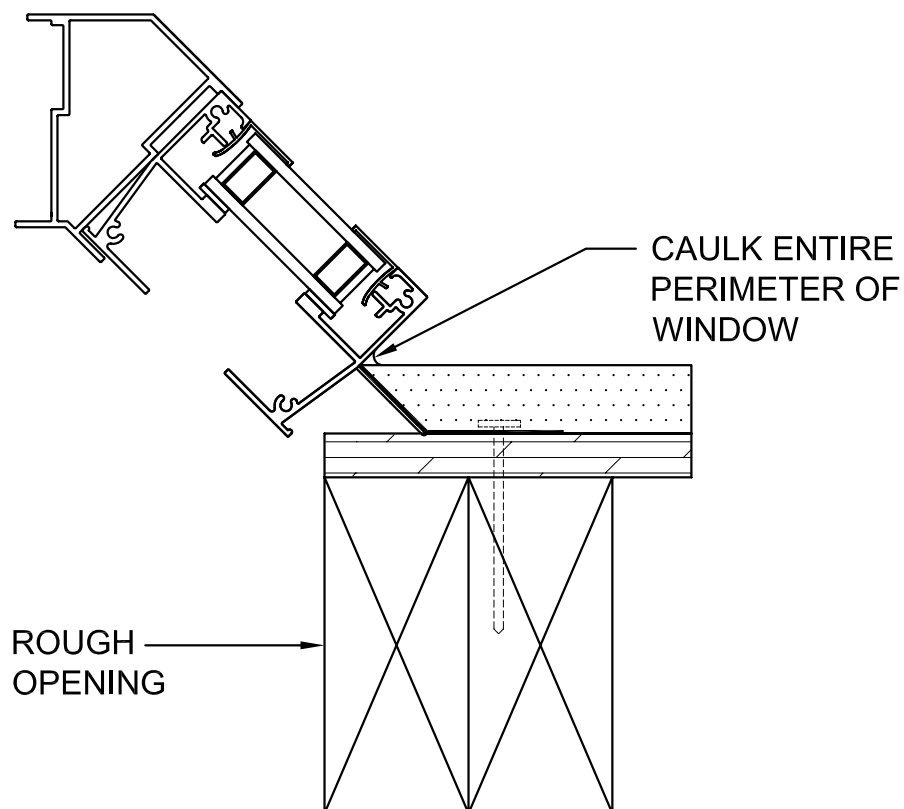
**1550/1560-8
APRIL 2009**

Bay Window with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**

Jamb Detail - Stucco Installation

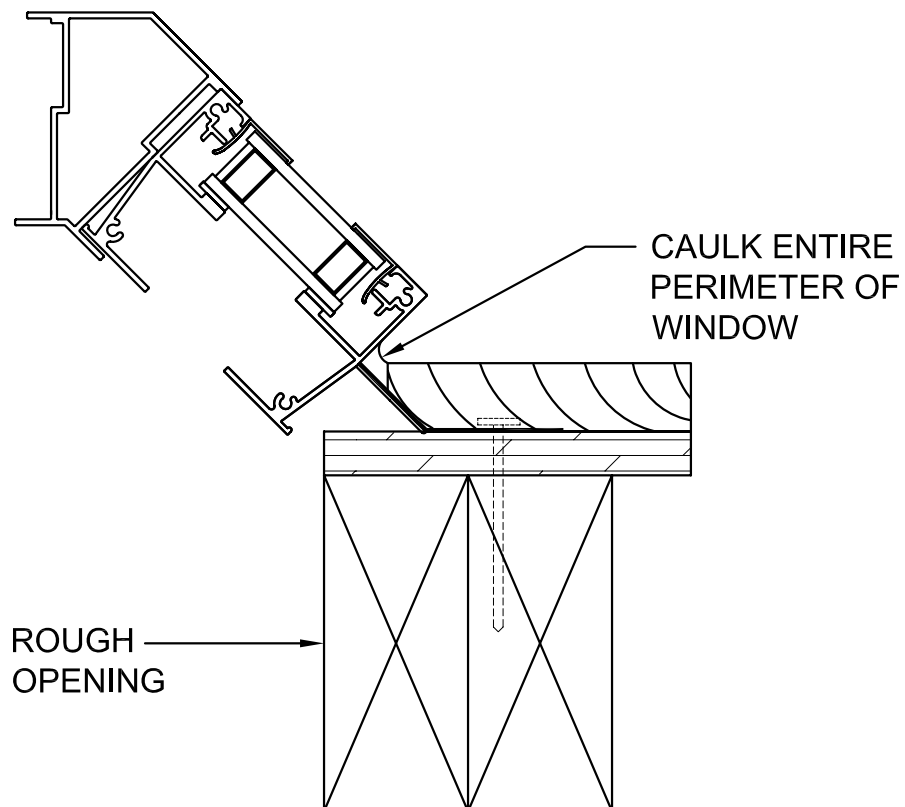


Bay Window with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**

Jamb Detail - Siding Installation



Scale: 6" = 1' (1/2 scale)

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**1550/1560-10
APRIL 2009**

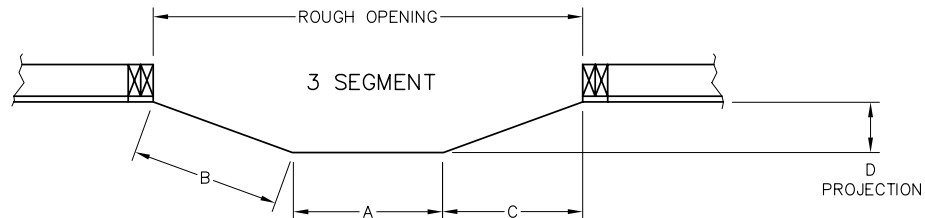
Bow Windows

Milgard Aluminum Window

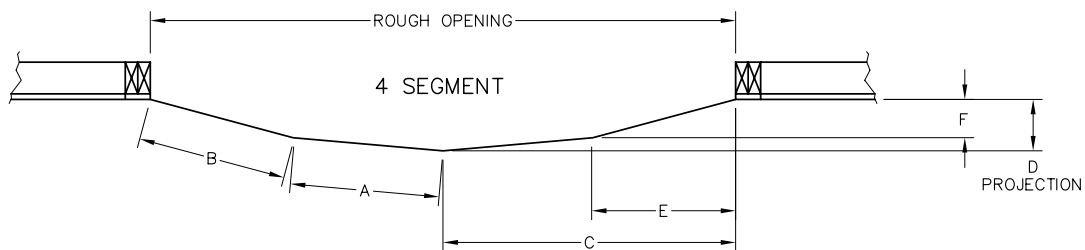
1550/1560

SERIES
ALUMINUM

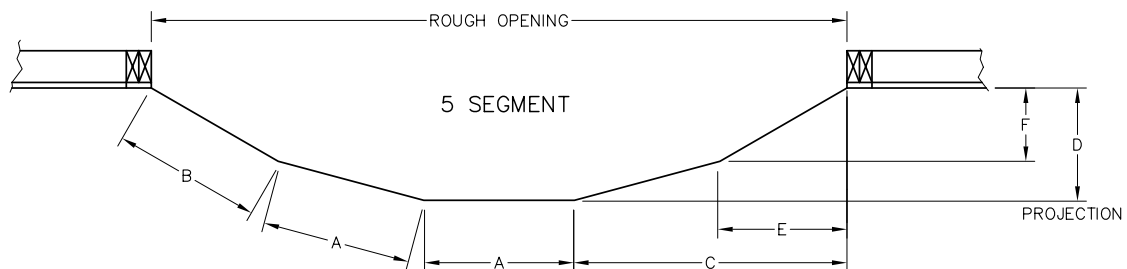
BOW FRAMING DETAIL
ROUGH OPENING HEIGHTS ARE 36", 48", AND 60"



RO WIDTH	A	B	C	D	Window width
52 3/4"	18 1/8"	17 3/4"	17 5/16"	4 1/4"	17 1/2"
70 1/2"	24 1/8"	23 3/16"	23 3/16"	5 5/8"	23 1/2"



RO WIDTH	A	B	C	D	E	F	Window width
69 1/2"	18 1/8"	17 3/4"	34 3/4"	8 3/8"	16 3/4"	6 5/16"	17 1/2"
92 3/4"	24 1/8"	22 3/4"	46 3/8"	11"	22 3/8"	8 5/16"	23 1/2"



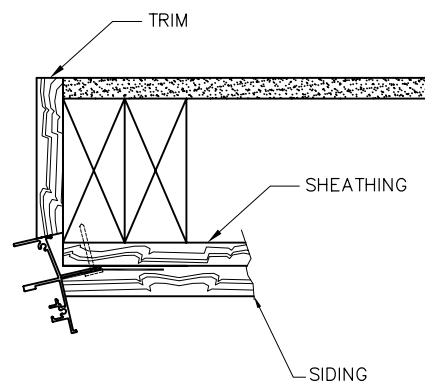
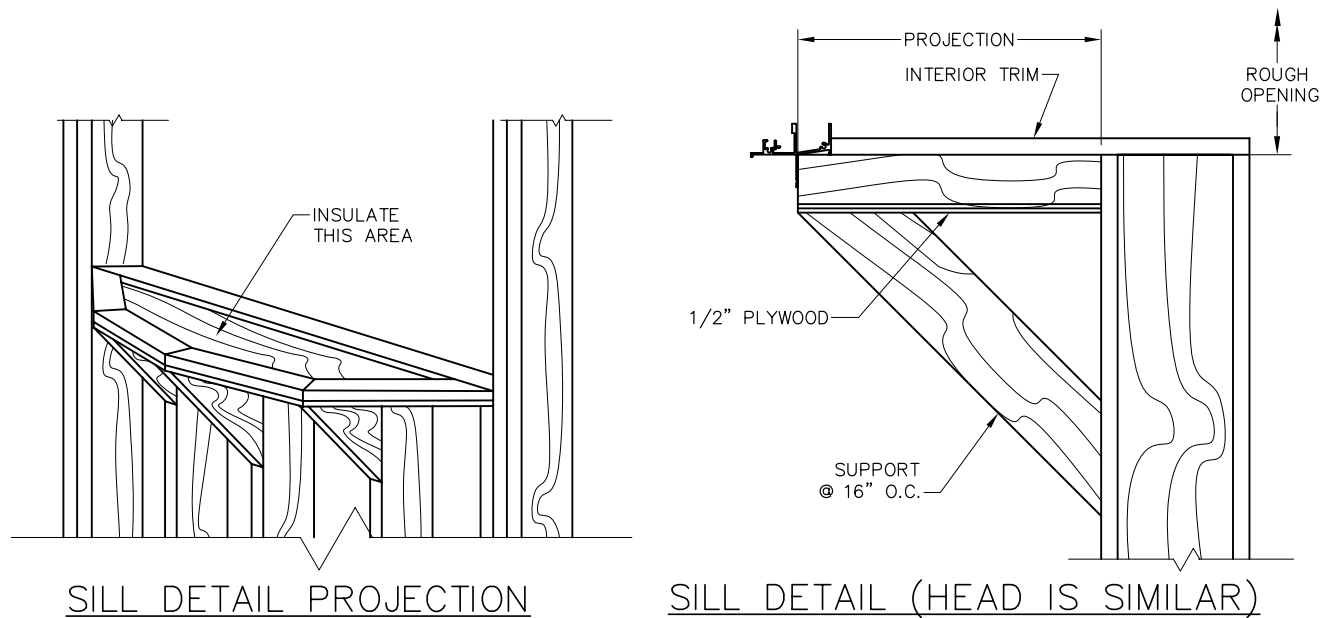
RO WIDTH	A	B	C	D	E	F	Window width
85 1/4"	18 1/8"	17 3/4"	33 9/16"	12 5/16"	15 15/16"	8 1/4"	17 1/2"
113 3/4"	24 1/8"	23 11/16"	44 13/16"	16 5/16"	21 5/16"	10 7/8"	23 1/2"

Bow Windows Milgard Aluminum Window

1550/1560

**SERIES
ALUMINUM**

BOW FRAMING DETAIL

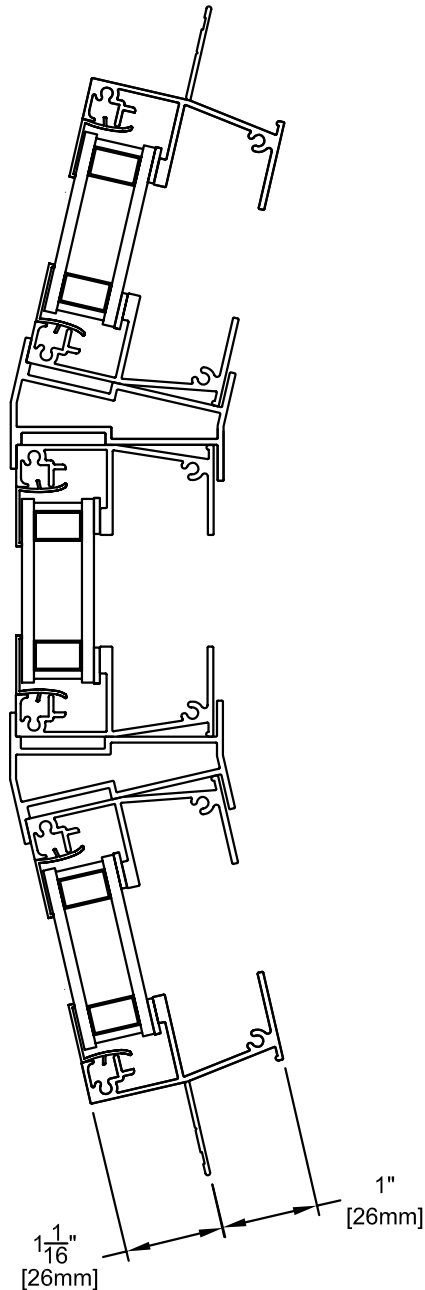


JAMB FIN DETAIL

Bow Windows with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**

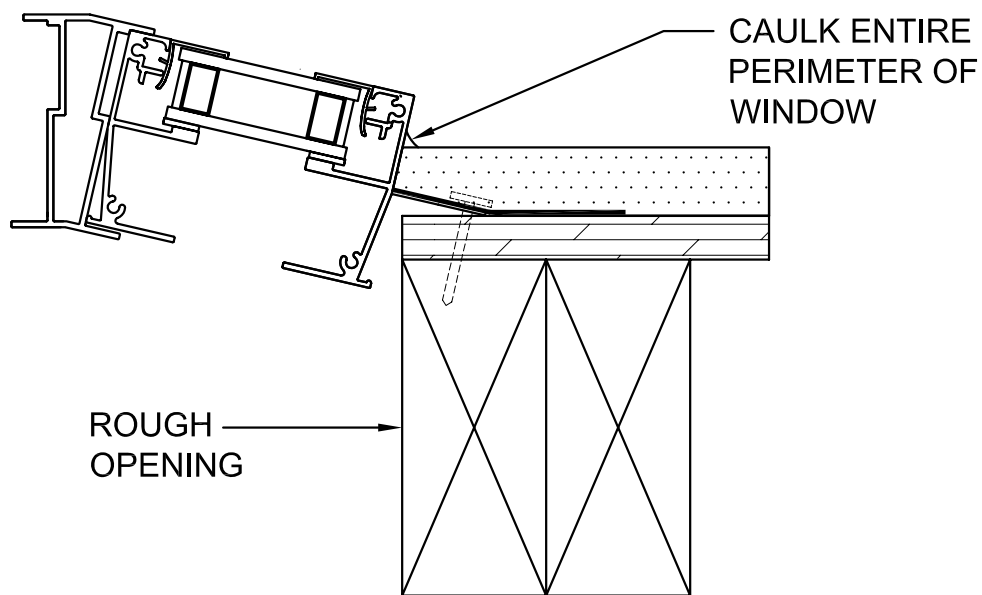


Bow Windows with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**

Jamb Detail - Stucco Installation



Scale: 6" = 1' (1/2 scale)

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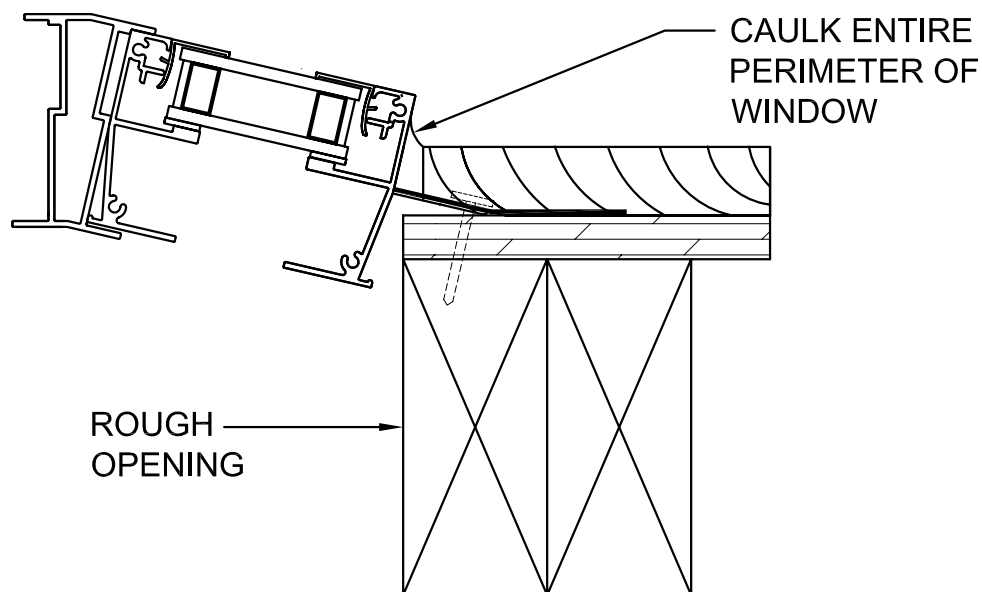
**1550/1560-14
APRIL 2009**

Bow Windows with Picture Window Flankers

1550/1560

**SERIES
ALUMINUM**

Jamb Detail - Siding Installation



R-15

Radius Windows

Radius Windows Milgard Aluminum Window

R-15
SERIES
ALUMINUM



The R-15 Series of Radius Windows are designed and engineered to provide a dramatic complement to architectural design either alone or combined with sliding, casement, or single hung windows. The window offers alternatives in glass for energy efficiency in 3/4" overall insulating units, plus frame and grid color options for virtually any architectural design.

Milgard's Aluminum windows, doors, and

skylights carry a Full Lifetime Warranty to the original single family homeowner covering both materials and labor. The Milgard Full Lifetime Warranty is fully transferrable up to 10 years. For complete warranty details visit milgard.com

Commercial, apartment, multi-family, and co-housing projects are covered by a 10-year warranty from date of manufacture, covering materials and labor, including the glazing unit.

Radius Windows

Milgard Aluminum Window

R-15
SERIES
ALUMINUM

CONFIGURATIONS

The R-15 Series features a frame designed to blend well architecturally with other Milgard windows. One extrusion is used for all radius and round windows. Attaching bars are used to join the radius tops with other variations. Please refer to the appropriate product description for examples of vents, weeping system, and other detailed information. The R-15 is attached to the 910, 1110, and 1510 with a stacking bar by mechanical joining. The minimum diameter for the R-15 Series is 2'6".

COMPONENTS

FRAME

Frame components are made from 6063-T5 aluminum alloy with a structural wall thickness of .060" and a non-structural wall thickness of .050". The frame is available in clear and bronze anodized finishes with a standard .4" mil coating thickness, and white baked enamel finish. The R-15 Series is designed for clean lines and high visual appeal with maximum glass exposure. Wide screw spacing on the mechanically joined corners ensure a rigid connection with a consistent dimension. Corners are sealed for added protection from the weather. The standard frame is 2 1/16" in width.

NAIL-ON FIN

An integral nailing fin extends 1" around the perimeter of the standard frame and is used to attach the window into the rough opening. The fin is scored for complete removal for retrofit/wood stop installations. The fin is setback 1" from the exterior edge of the frame.

GLAZING MATERIAL

AAMA approved glazing tape adheres the glass to the frame members glazing leg. The bedding seals and cushions the glass. Rigid vinyl setting blocks are used to support the unit above the frame sill, preventing glass slippage and glass-to-metal contact. Anodized or painted extruded aluminum bead 3/4" x 3/4", with a wall thickness of .050" is fastened down into the perimeter frame member on all radius sections.

GLASS

Glass options are available in 3/4" overall insulating units in clear, tinted, reflective, obscure, Low-E, and safety glass. Other specialty glass is available upon request. (See Glass Section for types and description.)

TOLERANCE

Due to unique material properties and manufacturing processes, tolerances on R-15 windows are +/- 1/4" on full round windows; partial rounds may vary +/- 1/8" in width and +/- 1/4" in height.

OPTIONS

GRIDS

Available in 5/8" standard or 1-1/16" sculptured aluminum profiles sealed between panes.

SPACER

Spacer available in a standard clear finish or optional bronze or champagne finish in the airspace of the insulating glass units. PGG Intercept™ warm-edge steel spacer available in certain regions. Contact your Milgard representative for spacers used in your area.

GLASS

Refer to Glass Section

STUCCO FIN

1 3/8" fin setback. Check with local branch for availability.

COLORS

Check with local branch for color options and availability.

TEST STANDARDS

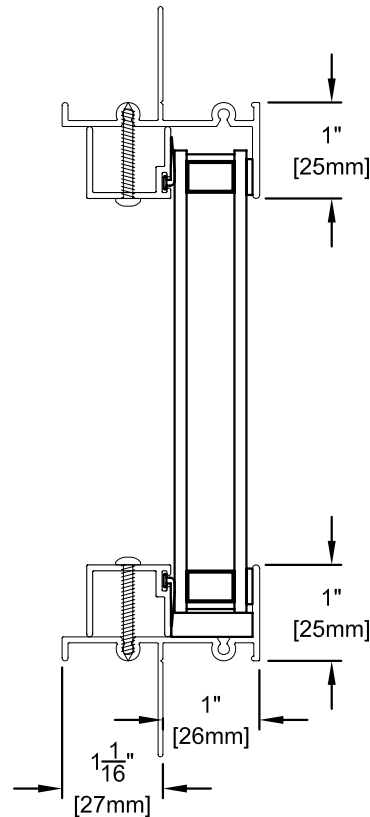
See Test Data Section

CAUTION: The use of petroleum based fuels or solvents as release agents in stucco wall installations or glass cleaning will chemically attack materials used in seals and other components, and voids the Milgard Full Lifetime Warranty. The use of wax based release agents is recommended.

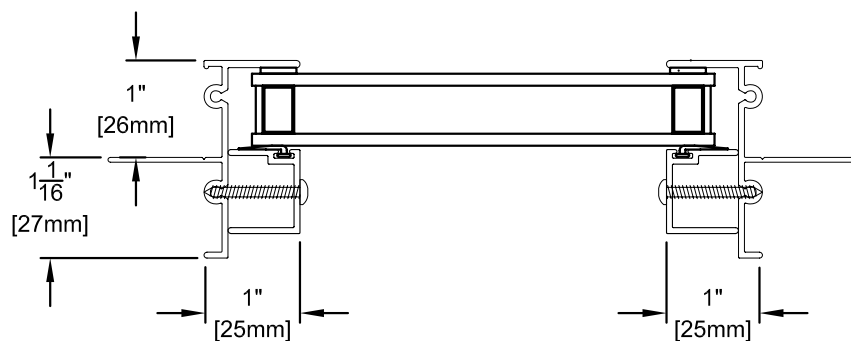
Expanding foam for insulation purposes should not be used. Non-expanding foam or loose packed batt insulation is recommended.

R-15 Aluminum Assembly Drawing

R-15
SERIES
ALUMINUM



Vertical View



Horizontal View

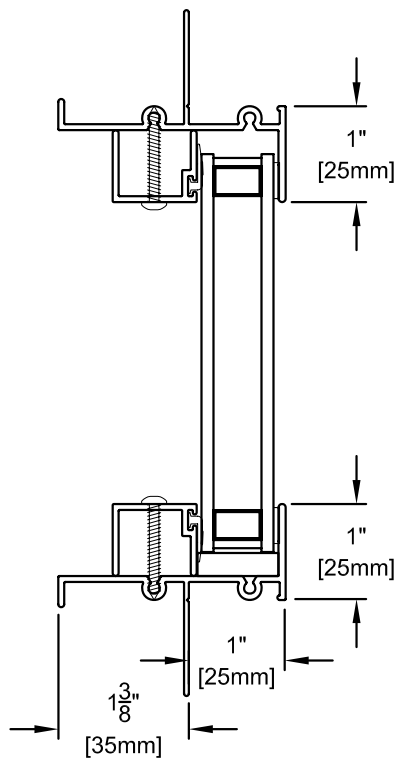
Scale: 6" = 1' (1/2 scale)

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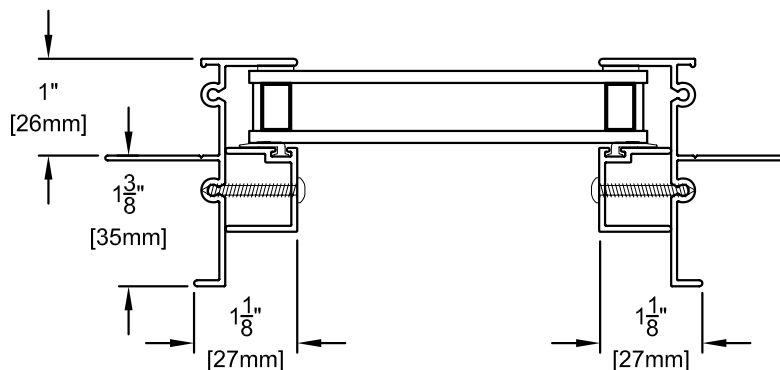
R-15-4
APRIL 2009

910C Roto Aluminum Assembly Drawing

R-15
SERIES
ALUMINUM



Vertical View



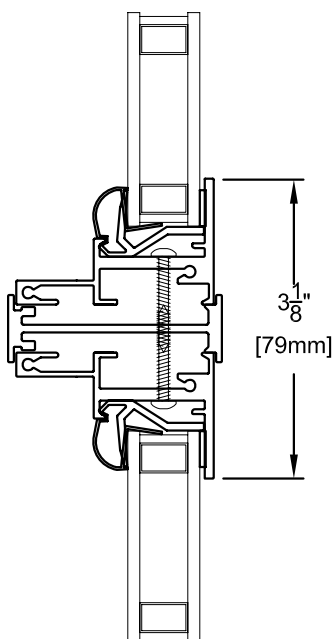
Horizontal View

Combinations & Mulls

910C Picture Window Mull

COMBO

**SERIES
ALUMINUM**



Scale: 6" = 1' (1/2 scale)

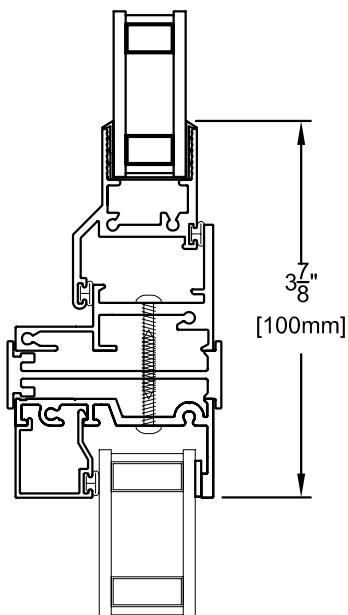
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**COMBO-2
APRIL 2009**

910C Casement / 710 Picture Window Mull

COMBO

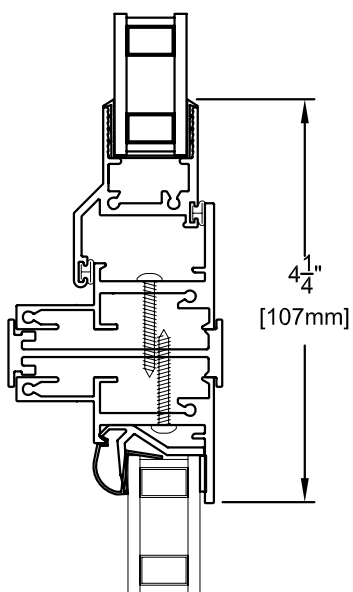
**SERIES
ALUMINUM**



910C Awning / 910C Picture Window Mull

COMBO

**SERIES
ALUMINUM**



Scale: 6" = 1' (1/2 scale)

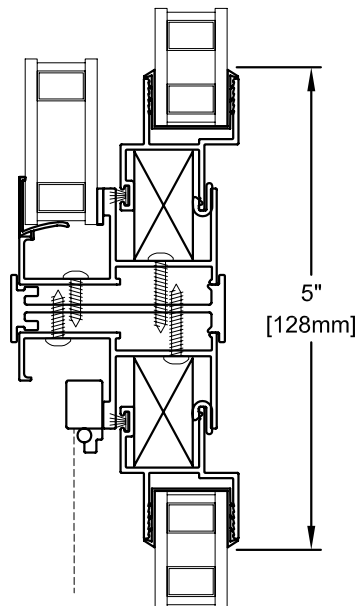
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Products shown are not available at all locations – confirm availability with your local Milgard representative.

**COMBO-4
APRIL 2009**

1510 Vertical Sliding Window Mull

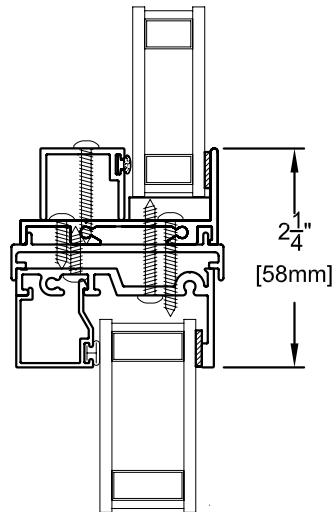
COMBO

**SERIES
ALUMINUM**



R-15 Radius / 710 Picture Window Mull

COMBO
SERIES
ALUMINUM



Scale: 6" = 1' (1/2 scale)

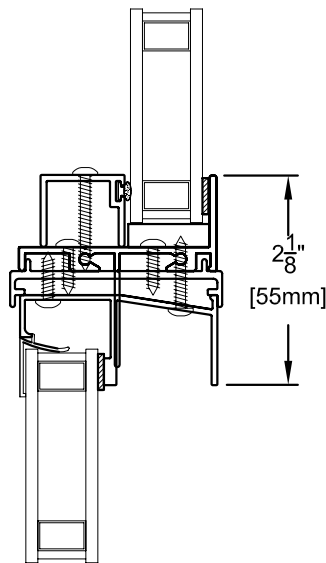
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Products shown are not available at all locations – confirm availability with your local Milgard representative.

COMBO-6
APRIL 2009

R-15 Radius / 1110H Horizontal Slider Mull

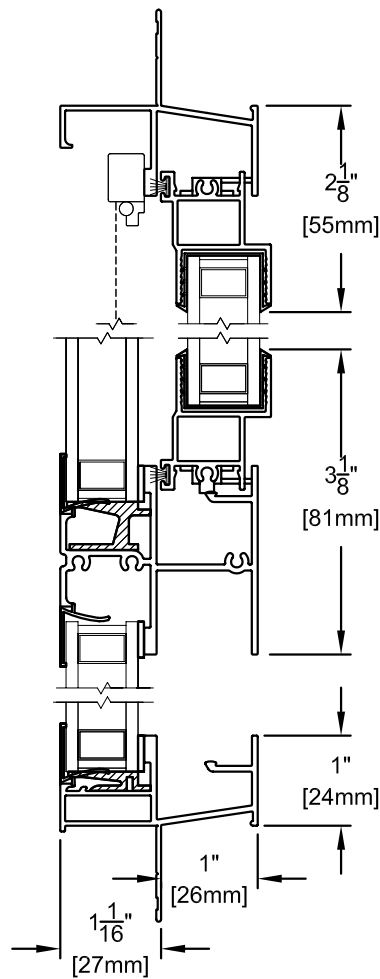
COMBO

**SERIES
ALUMINUM**



1110H Half Vent Above

COMBO
SERIES
ALUMINUM



Scale: 6" = 1' (1/2 scale)

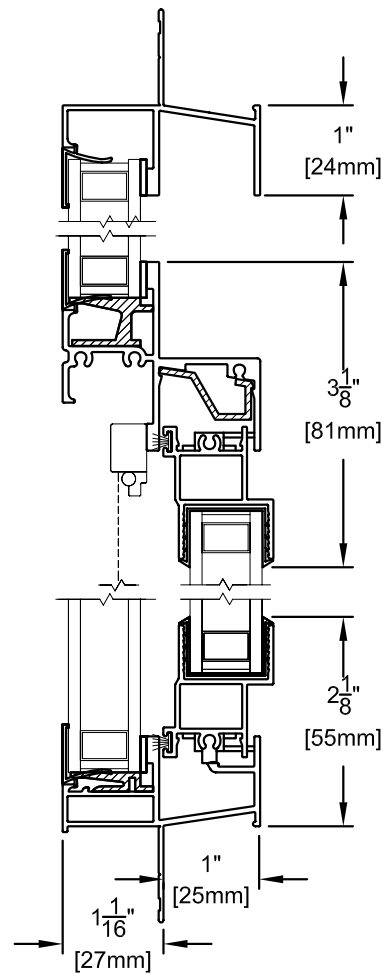
Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

COMBO-8
APRIL 2009

1110H Half Vent Below

COMBO

**SERIES
ALUMINUM**



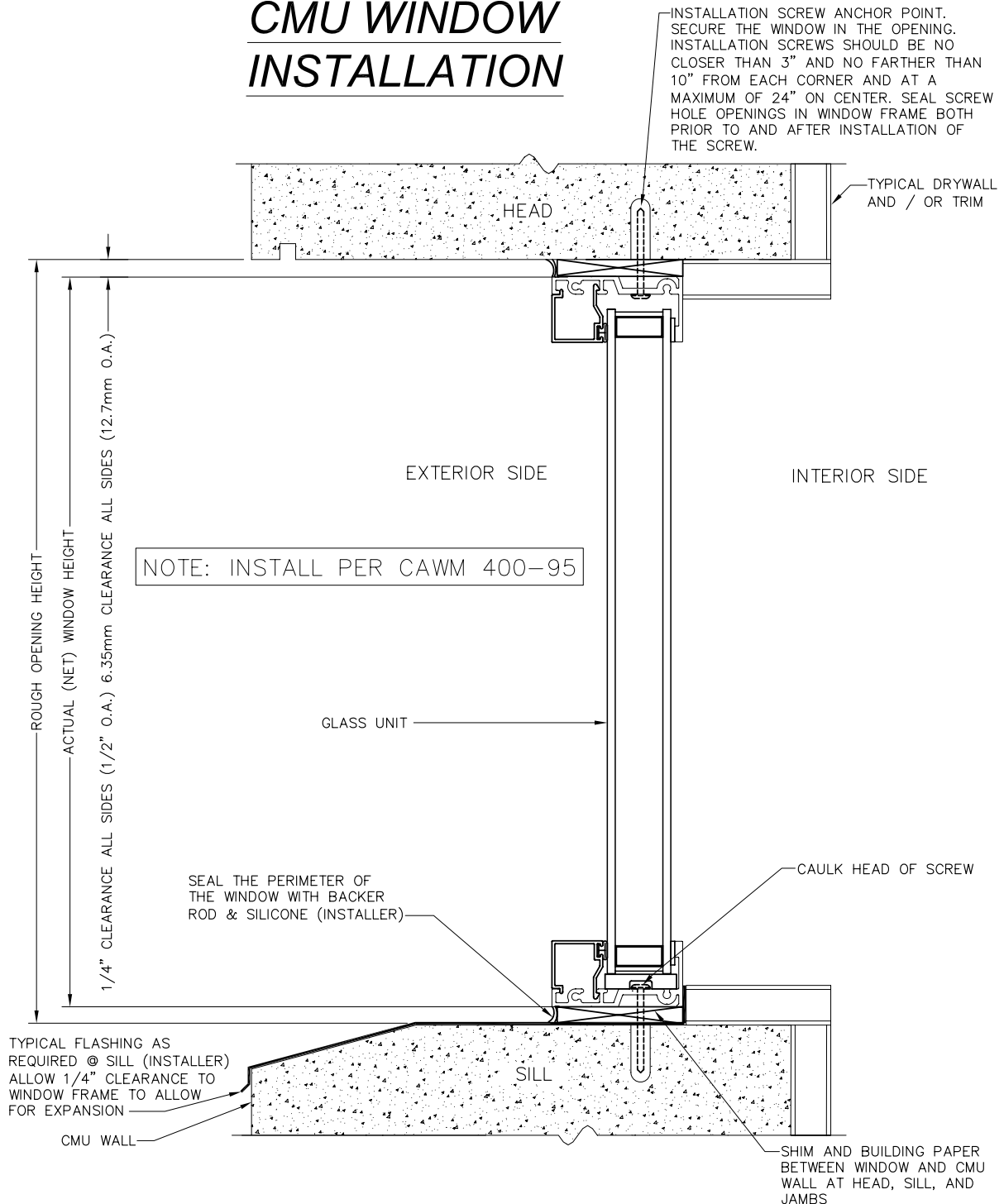
INSTALLATION

Installation – 710 CMU

INSTALLATION

**SERIES
ALUMINUM**

CMU WINDOW INSTALLATION

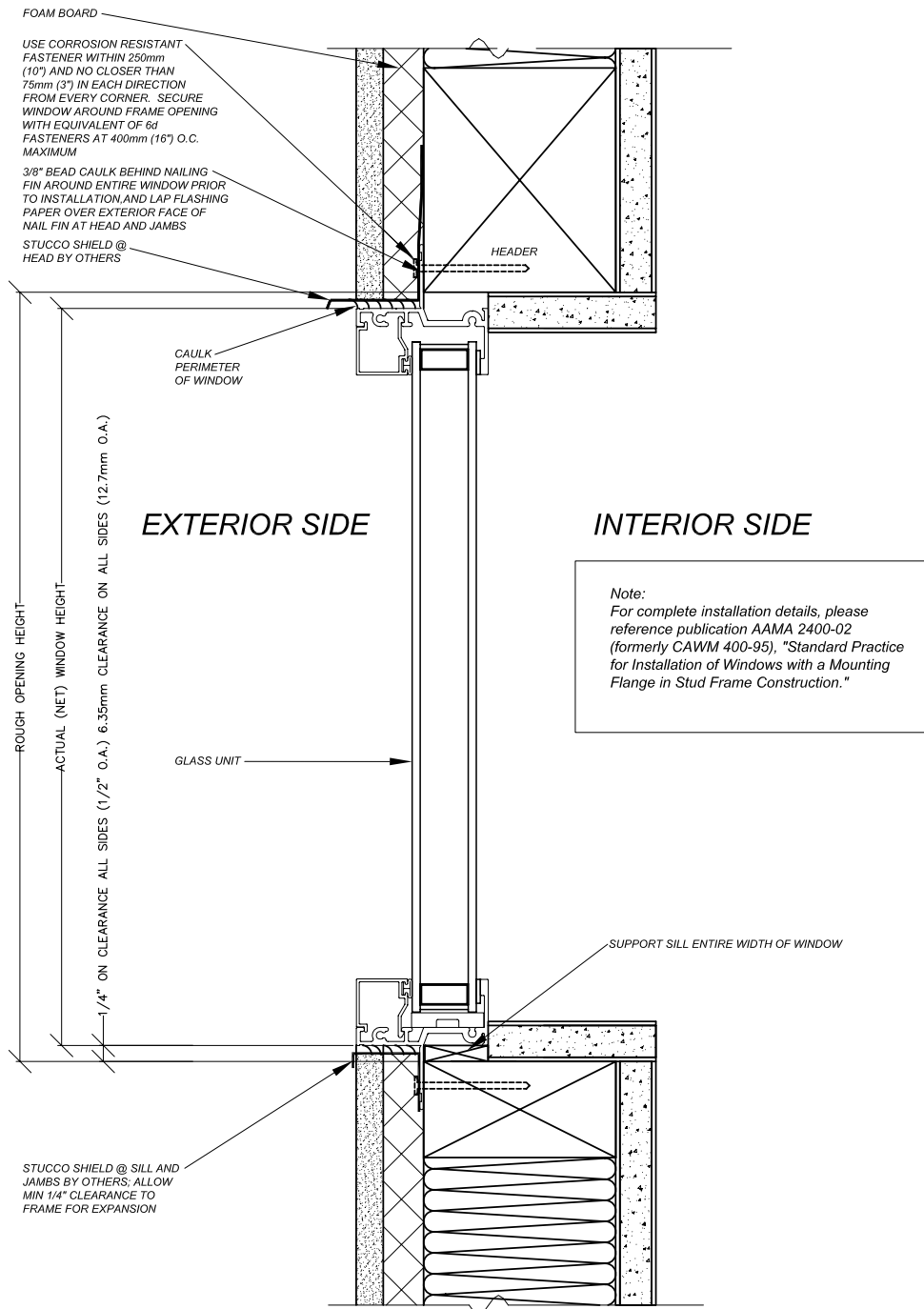


Installation – 710 Power Wall

INSTALLATION

**SERIES
ALUMINUM**

ONE COAT STUCCO WINDOW INSTALLATION

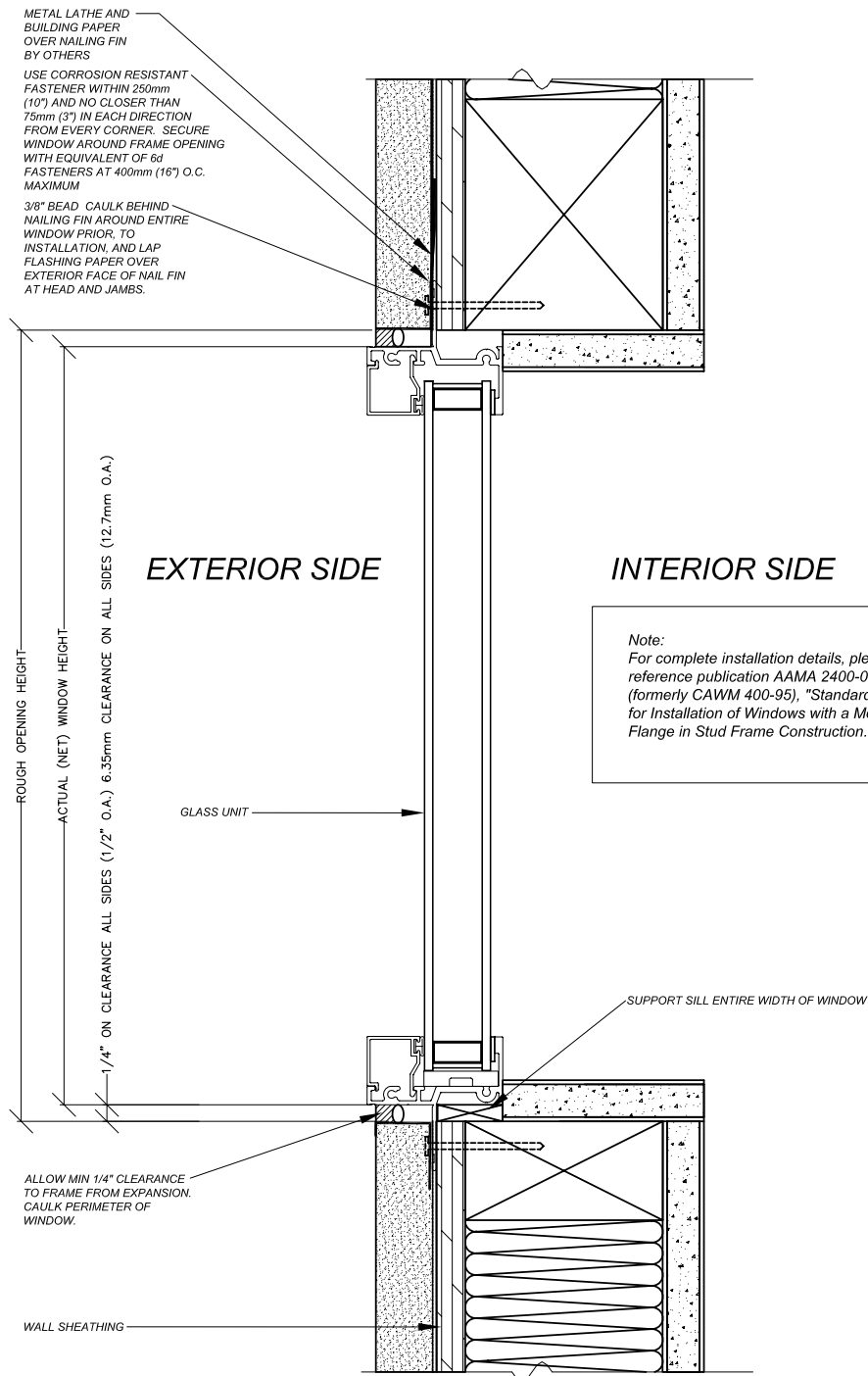


Installation – 710 Stucco

INSTALLATION

**SERIES
ALUMINUM**

THREE COAT STUCCO WINDOW INSTALLATION

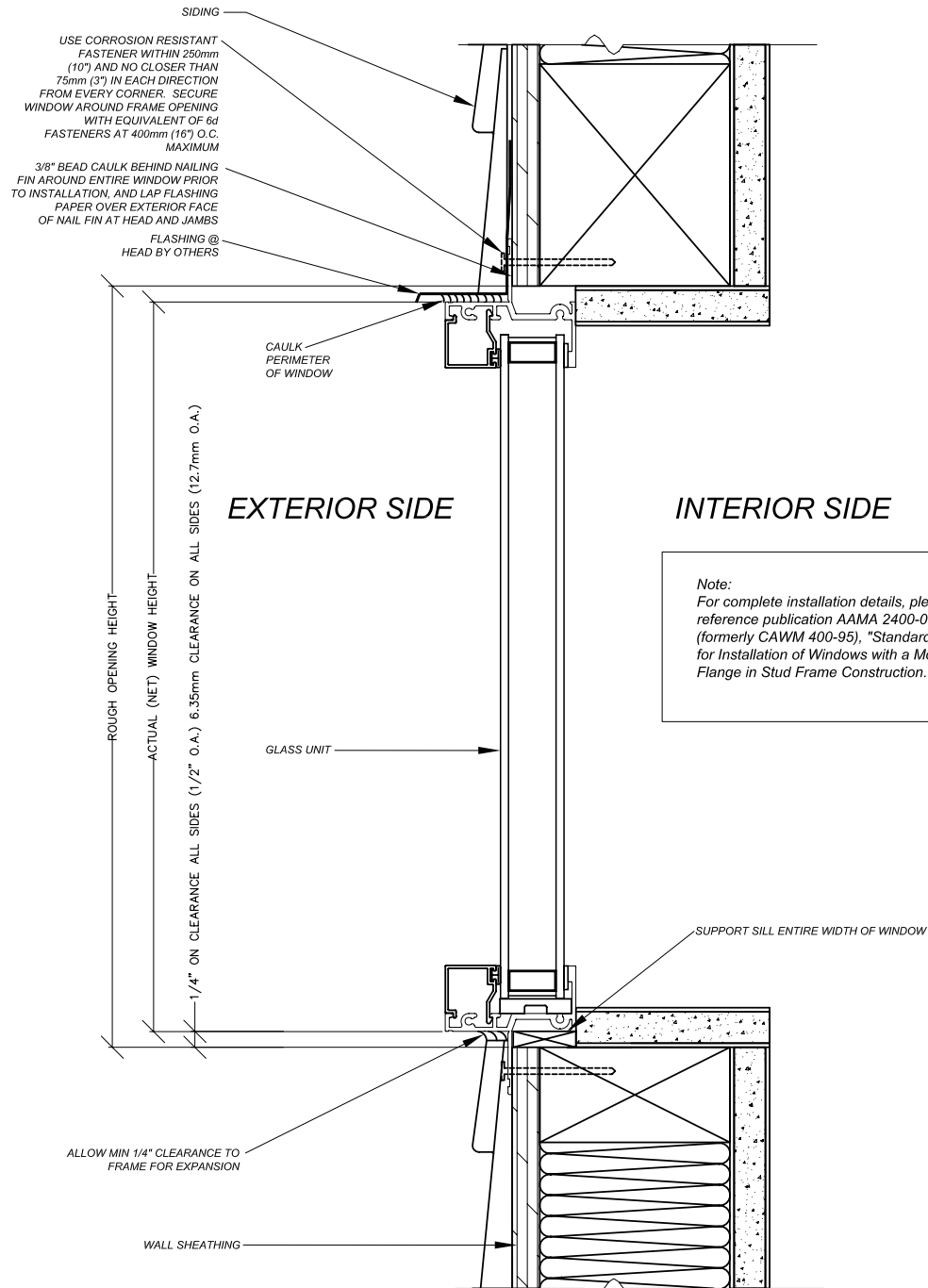


Installation – 710 Wood Siding

INSTALLATION

**SERIES
ALUMINUM**

SIDING WINDOW INSTALLATION



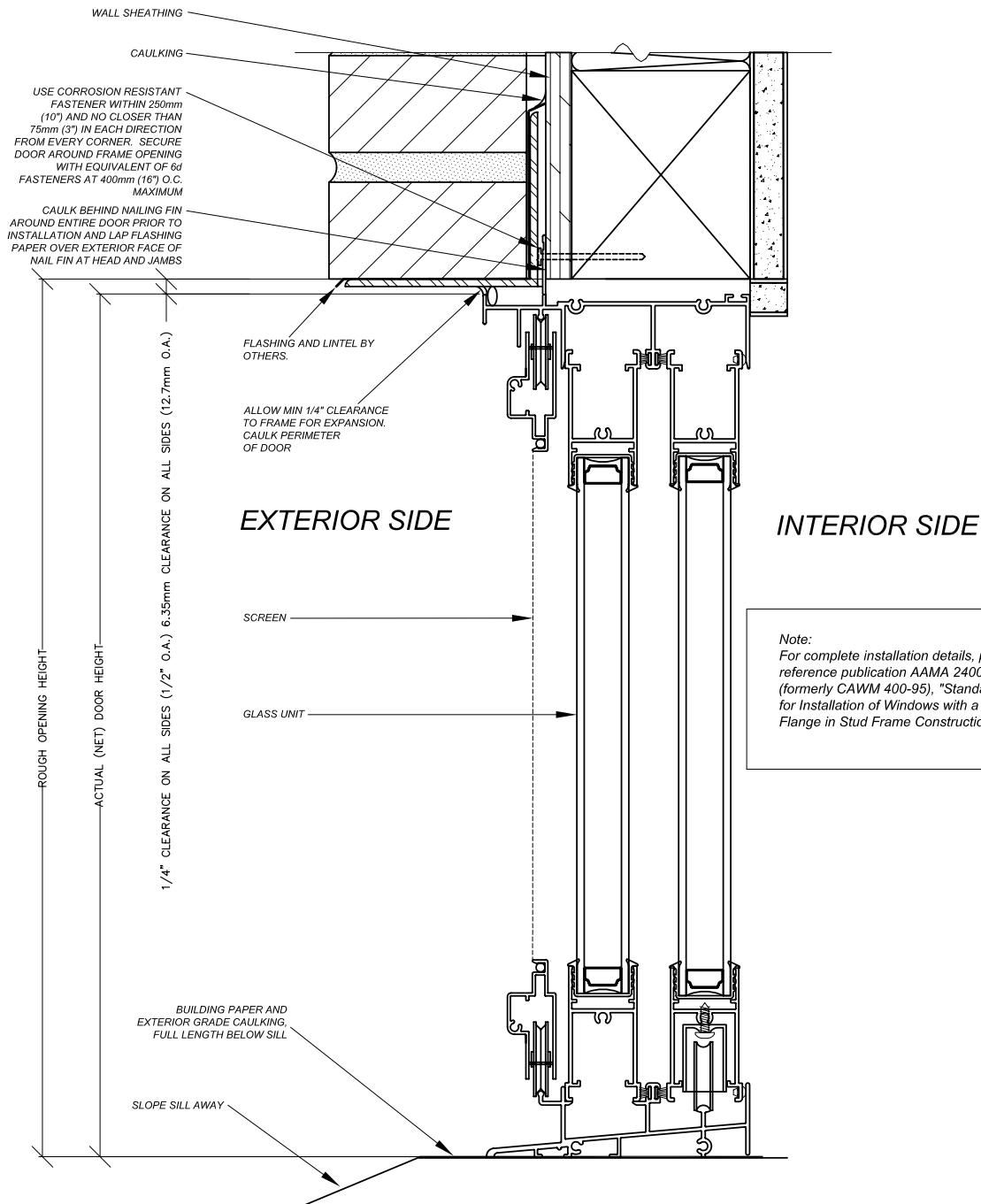
Note:
For complete installation details, please reference publication AAMA 2400-02 (formerly CAWM 400-95), "Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction."

Installation – 450 Brick

INSTALLATION

**SERIES
ALUMINUM**

BRICK WALL DOOR INSTALLATION

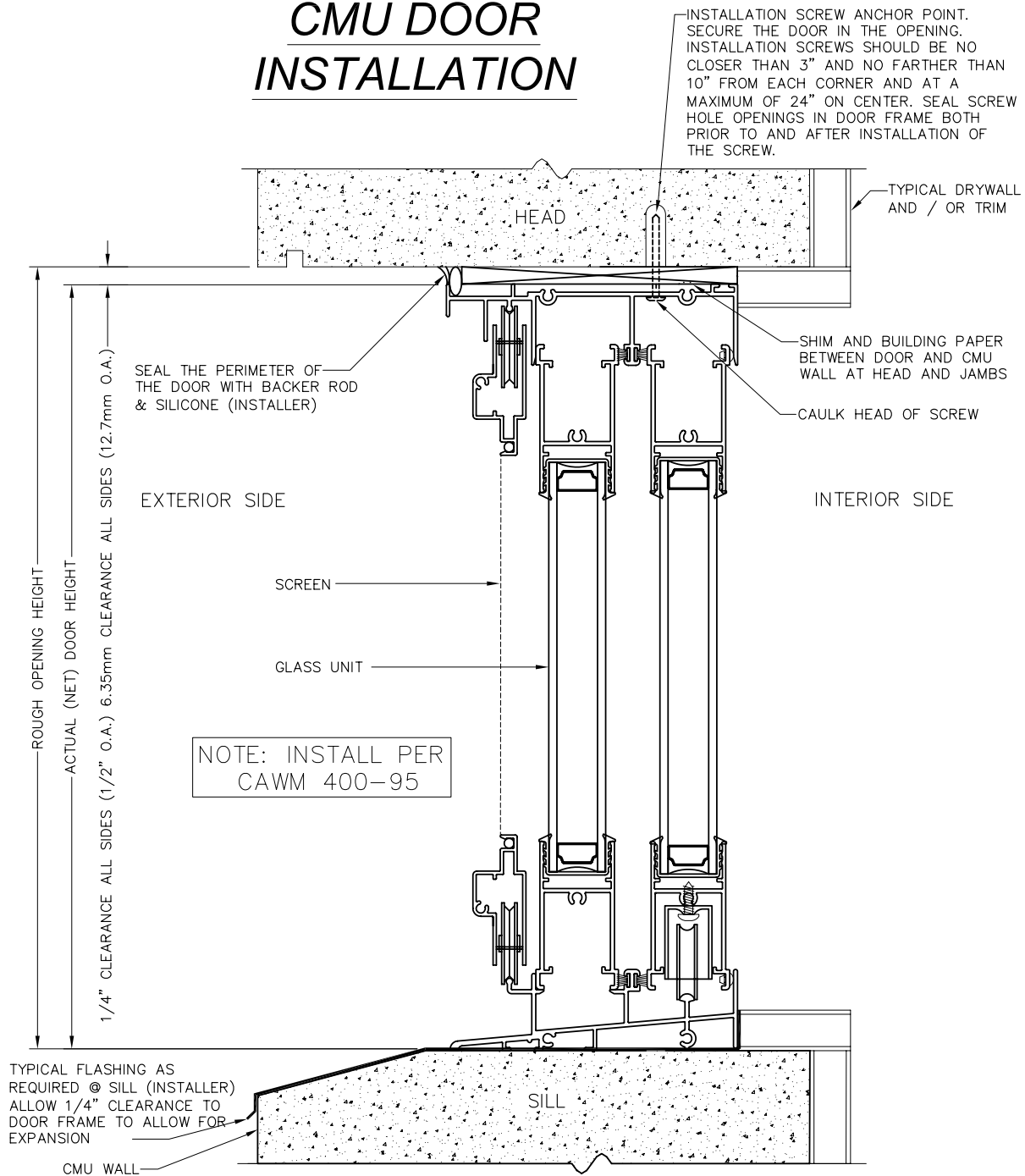


Installation – 450 CMU

INSTALLATION

**SERIES
ALUMINUM**

CMU DOOR INSTALLATION

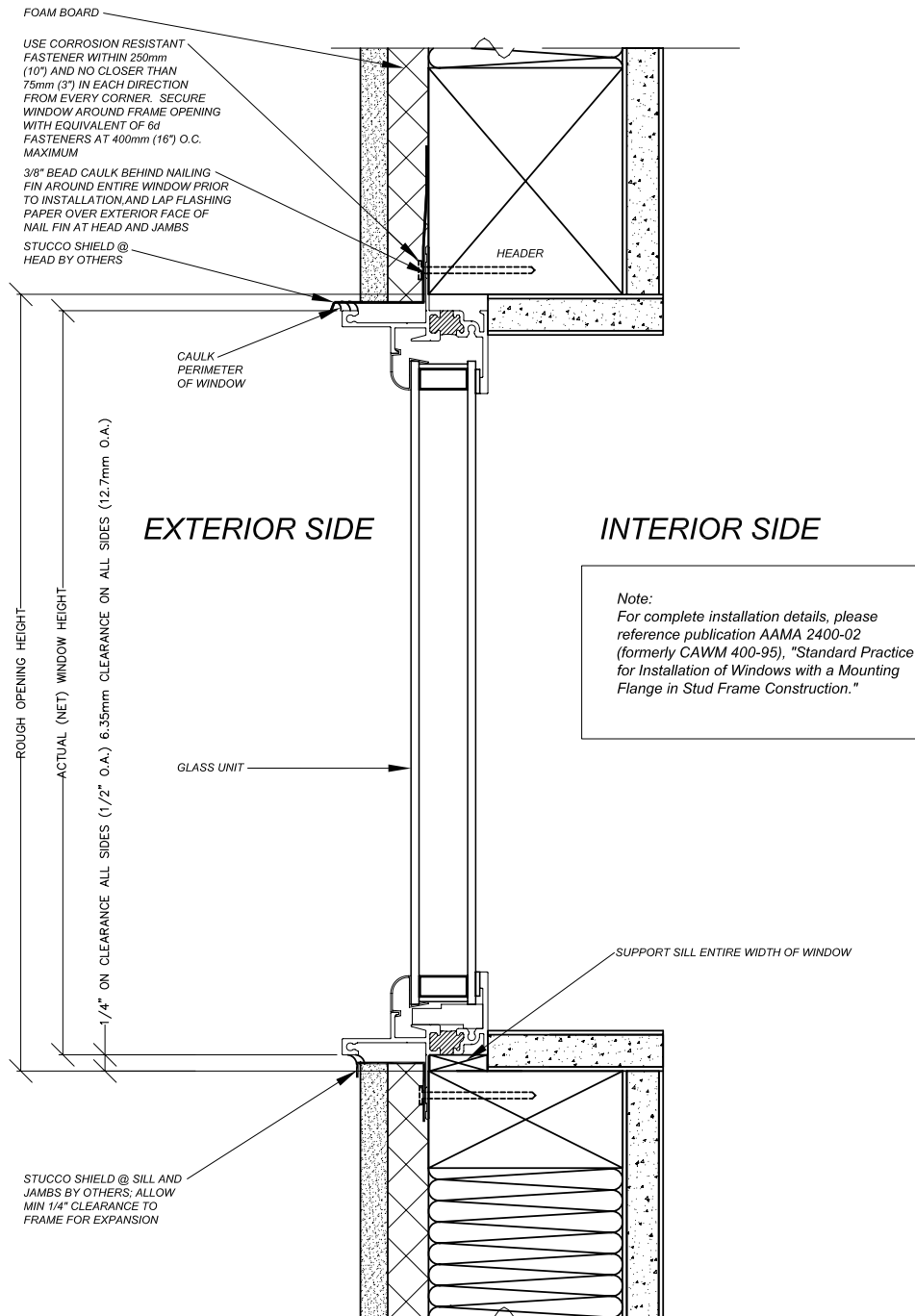


Installation – 450 Power Wall

INSTALLATION

**SERIES
ALUMINUM**

ONE COAT STUCCO WINDOW INSTALLATION

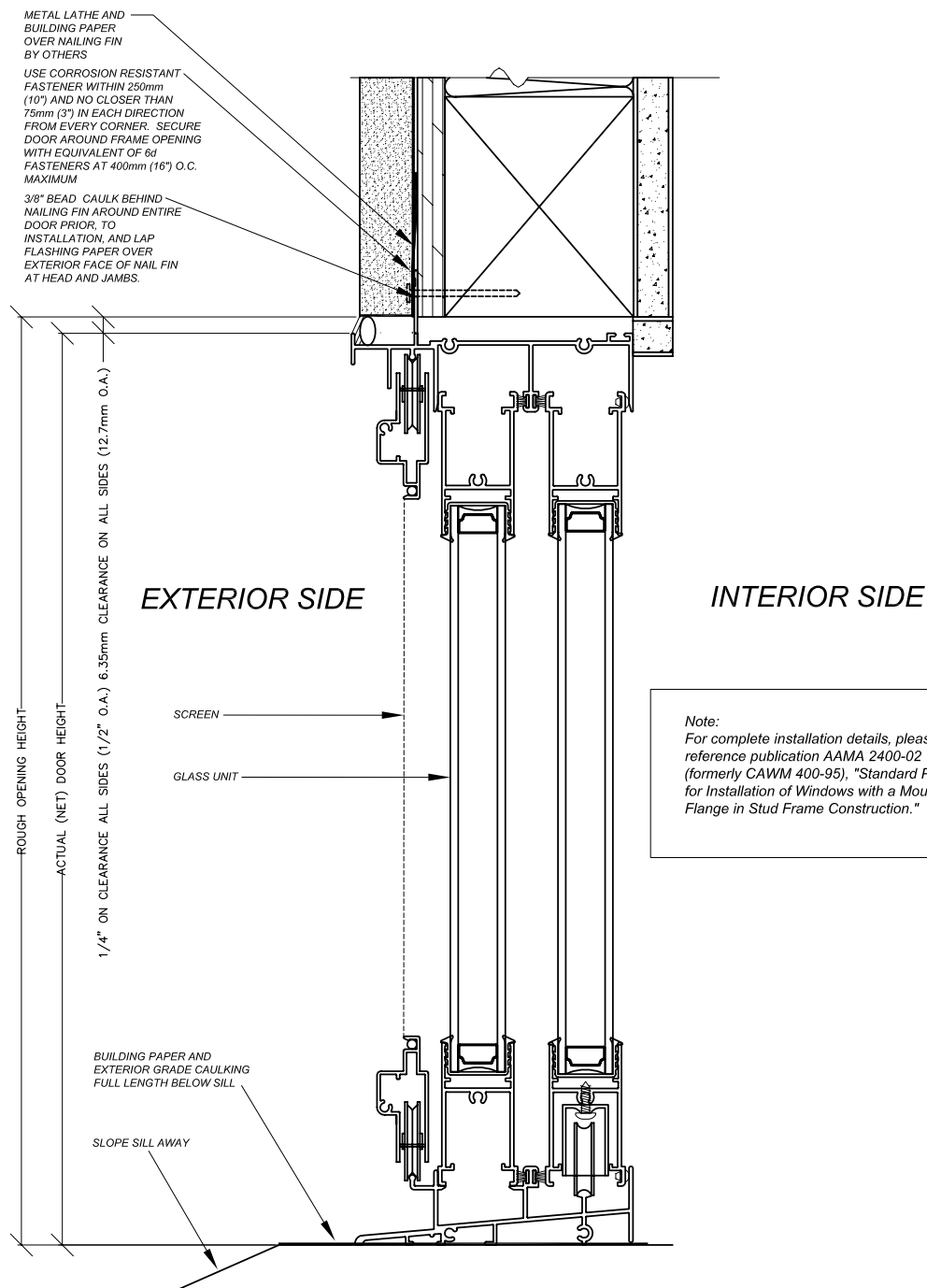


Installation - 450 Stucco

INSTALLATION

**SERIES
ALUMINUM**

THREE COAT STUCCO DOOR INSTALLATION

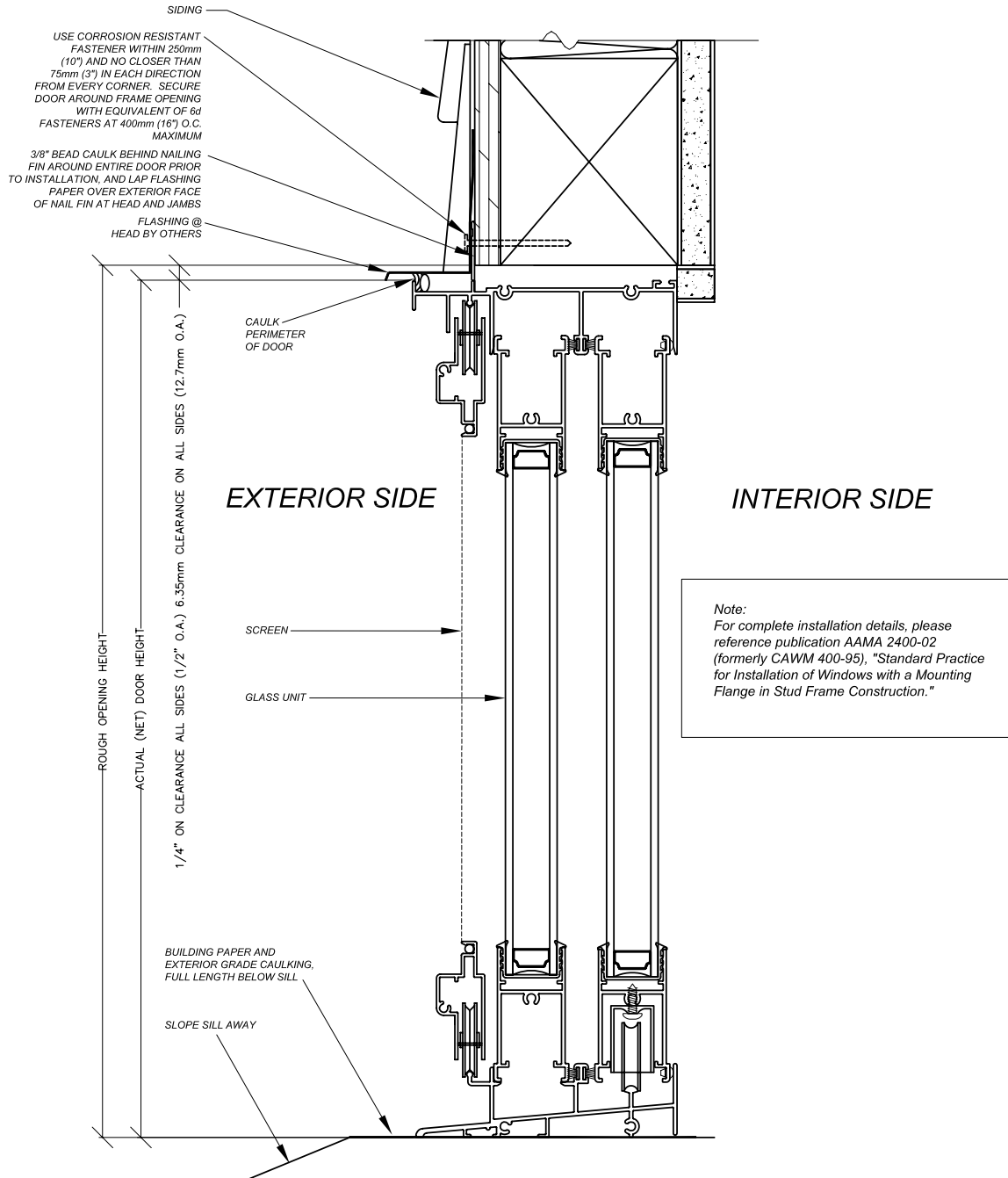


Installation – 450 Wood Siding

INSTALLATION

**SERIES
ALUMINUM**

SIDING DOOR INSTALLATION

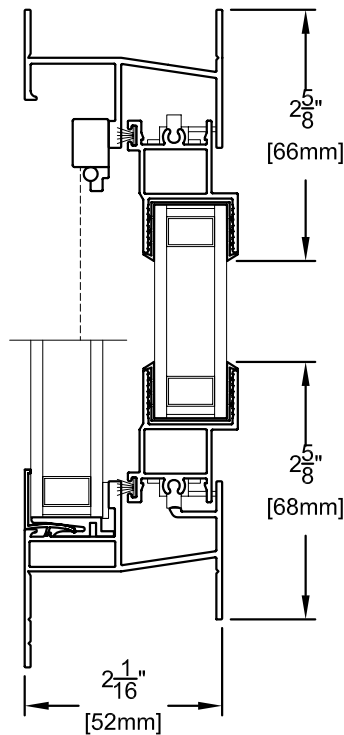


Replacement Windows

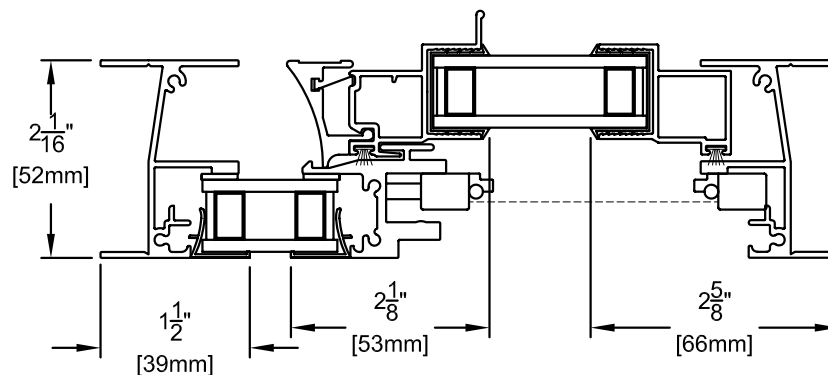
1180H Block Frame Sloped Sill Horizontal Sliding Window

RETROFIT
SERIES
ALUMINUM

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

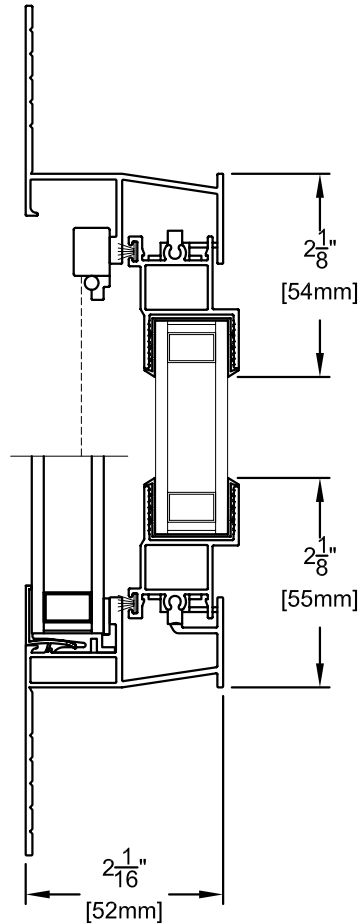
RETROFIT-2
APRIL 2009

1280H Z-Bar Horizontal Sliding Window

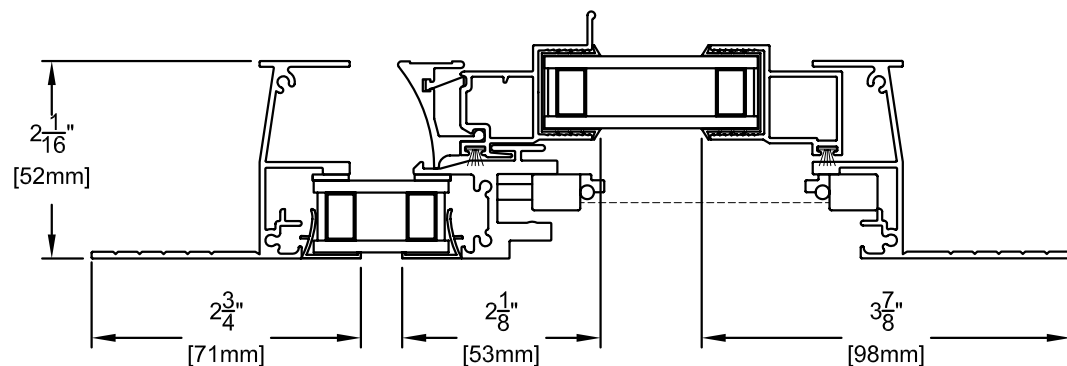
RETROFIT

**SERIES
ALUMINUM**

Vertical View

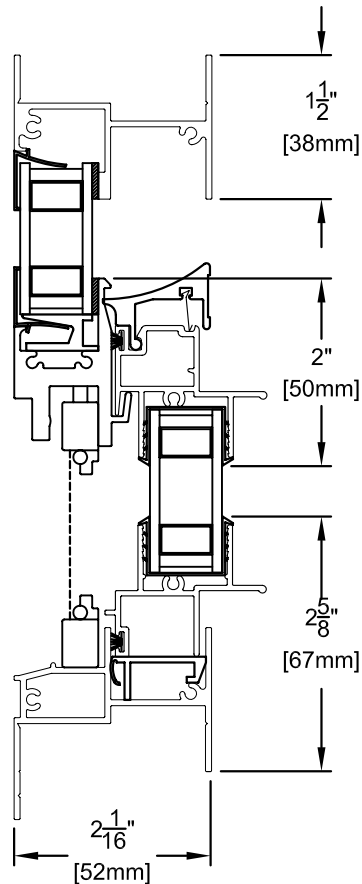


Horizontal View

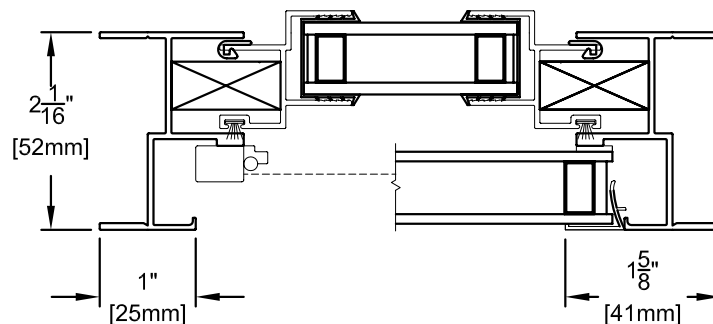


1580H Blocked Frame Sloped Sill Vertical Sliding Window

RETROFIT
SERIES
ALUMINUM



Vertical View



Horizontal View

Scale: 6" = 1' (1/2 scale)

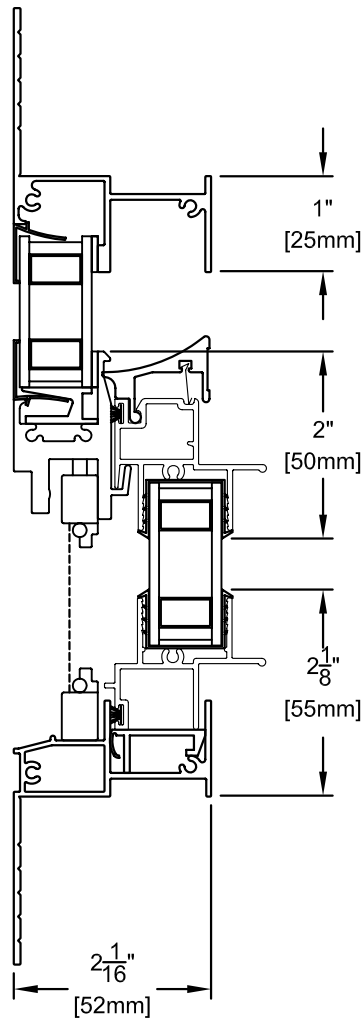
Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

RETROFIT-4
APRIL 2009

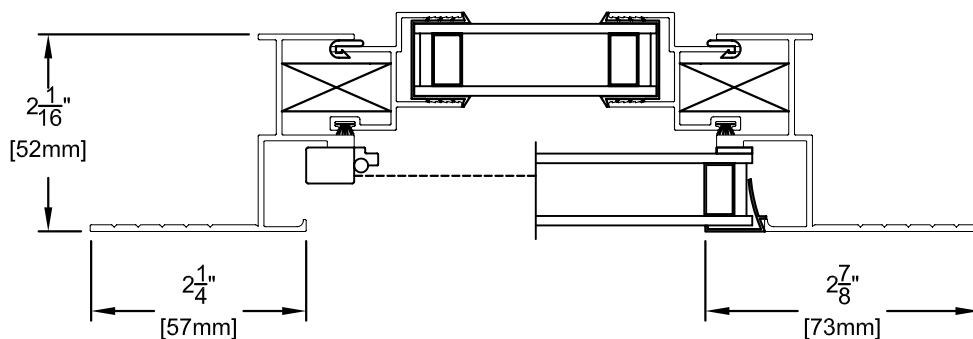
1680 Z-Bar Vertical Sliding Window

RETROFIT

**SERIES
ALUMINUM**



Vertical View

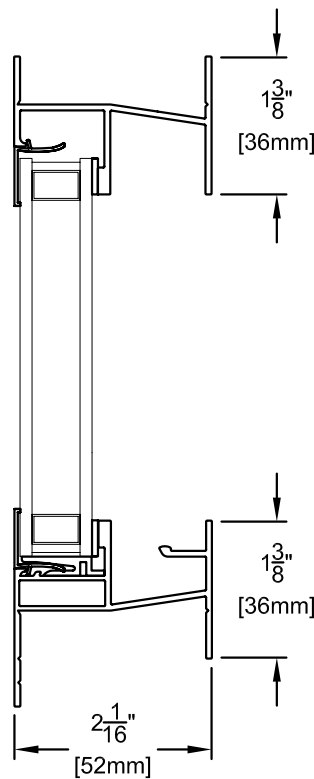


Horizontal View

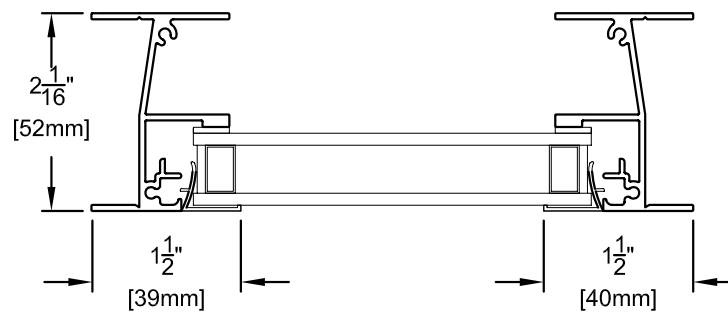
1185H Block Frame Sloped Sill Picture Window

RETROFIT
SERIES
ALUMINUM

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

Due to continual product research and development, details may be changed at any time. ©2009
Products shown are not available at all locations – confirm availability with your local Milgard representative.

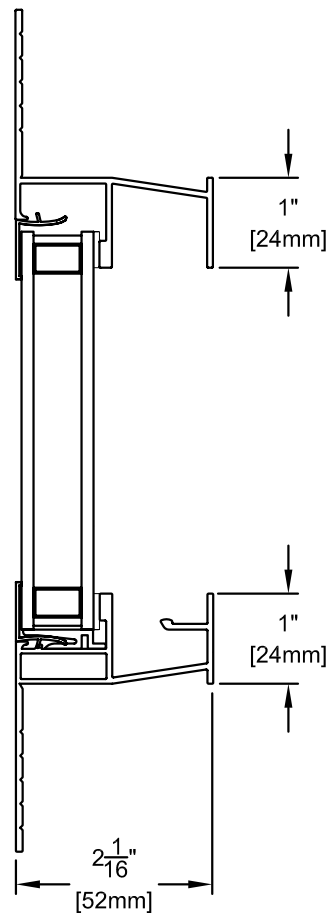
RETROFIT-6
APRIL 2009

1285H Z-Bar Picture Window

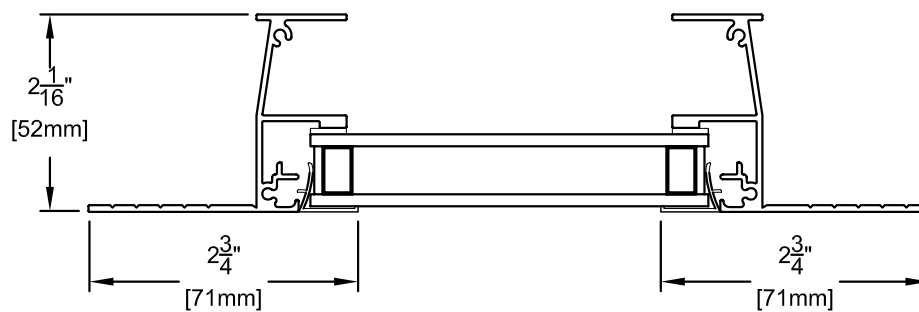
RETROFIT

**SERIES
ALUMINUM**

Vertical View



Horizontal View



Scale: 6" = 1' (1/2 scale)

GLASS

Milgard Architectural Manual

Glazing Section

NOTE: The addition of after-market applied tints or films to Milgard windows and patio doors may cause seal failure or glass breakage, and will void Milgard's Full Lifetime Warranty. For complete warranty details, visit milgard.com

There are various tints available through Milgard to achieve the energy performance or architectural style that is desired. These tints include Solar Bronze, Solar Gray, Graylite, Solex, Evergreen and Azurlite. Please check with your Milgard Representative on availability of these and other tinted products.

REFLECTIVE GLASS

The reflective coating is applied just like Low-E. It is either sprayed through (pyrolytic process) or applied using the vacuum deposition sputtering process, depending on suppliers.

Benefits of Reflective Glass:

- Reflects light and heat with a metal oxide coating giving a mirror effect.
- Minimizes solar heat gain and ultraviolet light damage to interior furnishings.
- Adds daytime privacy.
- Can be tempered.

There are various reflective glass types available through Milgard to achieve the energy performance or architectural style that is desired. These include Solar Cool Bronze and Solar Cool Gray. Please check with your Milgard Representative on availability of these and other reflective products.

NOTE: Heat absorbing and heat reflective glass can only be used on the exterior lite of a glazing unit, to avoid a build-up of heat inside the airspace, which will cause thermal stress cracks or seal failure.

NOTE: Reflective-type glass works with the play of light. Example: During daylight hours you can't see inside a building with reflective glass, you only can see your reflection. At night, the opposite effect occurs. You can see in, but the people inside cannot see out. If you specify this type of glazing in a residential application, suggest that a spotlight be placed outside of the window. It will give the same effect as daylight.

LAMINATED GLASS

Laminated glass is produced by permanently bonding two pieces of glass together with a tough plastic interlayer (polyvinyl butyral) under heat and pressure. Once bonded together, the lite behaves as a single piece. The interlayer is invisible when viewed through the glass; thus, the finished lite is indistinguishable from plain glass.

Most often, laminated glass is produced from annealed glass, but tempered glass can be used when special performance needs are present. The benefit of laminated glass – if it is broken, glass fragments adhere to the plastic interlayer rather than falling free and potentially causing injury. Laminated annealed glass can be cut or drilled.

Laminated glass is required in sloped glazing applications (such as skylights), that exceed any of the following conditions:

- The area of each pane (single glass) or unit (insulating glass) exceeds 16 square feet.
- The highest point of the glass is greater than 12 feet above any walking surface or other accessible area.
- The nominal thickness of each pane exceeds 3/16".

Milgard Architectural Manual

Glazing Section

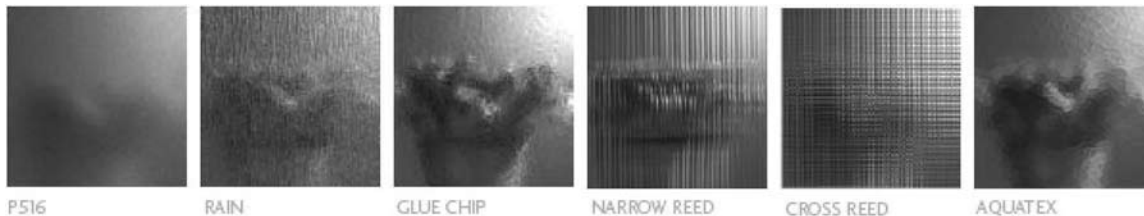
GLASS
SERIES
ALUMINUM

Noise Reduction Benefits:

- Laminated glass is highly effective in reducing noise, thus reducing Sound Transmission Ratings. The damping characteristics of the plastic interlayer combines with the attenuating characteristics of the air space of the insulated glass (IG) unit to maximize sound reduction.
- Example: Two lites of 1/4" laminated glass in an IG unit with a 1/2" air space provides an STC rating of 42. This compares with two pieces of plain 1/4" glass in an IG unit with a 1/2" air space, where the STC rating would be 35.
- Laminated glass eliminates 99.9% of ultraviolet rays, making it highly effective in protecting furnishings, displays, merchandise, etc.
- Standard laminated glass is 7/32" with a .030 (approx. 1/32") polyvinyl butyral interlayer.

OBSCURE GLASS

To add privacy where window coverings are impractical or undesirable, we recommend obscure glass. Our obscure glass can be tempered for safety and is available in numerous styles, some of which are shown below.



Benefits of Obscure Glass:

- Adds privacy where window coverings are impractical or undesirable (bathrooms, door sidelites).
- Various colors and texture patterns provide a translucent, semi-opaque effect for unique visual design applications.
- Can be tempered.

Please check with your Milgard Representative on availability of these and other obscure glass products.

GRIDS (DIVIDERS, GBG, MUTTIONS, ETC.)

With the right choices in grids, you can really make your windows and doors stand out. Grids are available with all of our window and door product lines. Milgard's Aluminum and Thermally Improved Aluminum (TIE) product lines offer a choice of either flat or sculptured grids.

Grids Between the Glass:



5/8" Flat grid



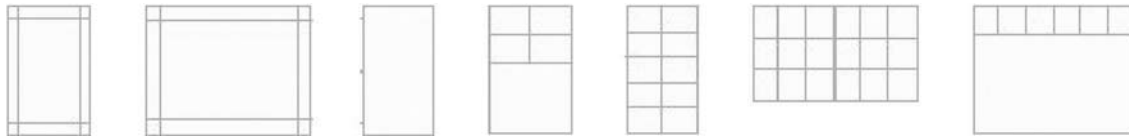
1 1/16" Sculptured grid

Milgard Architectural Manual

Glazing Section

Multiple grid configurations allow nearly endless options to customize your home design. By simply altering the grid design, you can dramatically impact the home's curb appeal. Below are just a few of the many possible grid configurations.

Please check with your Milgard Representative on availability of these and other grid patterns.



INERT GAS

Optional Argon gas, inserted between the panes of glass, is also available to improve thermal performance. Argon gas is heavier than air and is a good thermal insulator because it reduces the amount of heat that can pass through the glazing of a window.

INSULATED GLASS SPACER

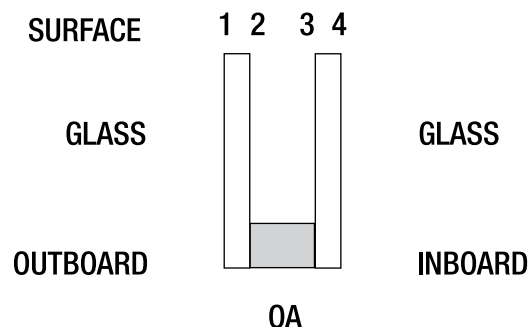
The standard insulated glass spacer used in the Aluminum and Thermally Improved Aluminum window series is the EdgeGard™ warm edge spacer system. As an option, Milgard also offers the EdgeGardMAX™ warm edge spacer system. Milgard's EdgeGardMAX spacer is a state of the art and utilizes an all-foam design. Because of the all-foam design, the energy performance of the windows and doors increases substantially allowing these products to meet ENERGY STAR® requirements in some zones.

BASIC GLASS DEFINITIONS

Lite:	Single piece of glass
SS:	Single strength glass, 3/32" thickness
DS:	Double strength glass, 1/8" thickness
IG Unit:	Two or more pieces of glass separated by a hermetically (air-tight) sealed airspace, forming a construction that reduces heat transfer for improved thermal performance.
O.A.:	The thickness, overall, of an insulated unit of glass, including both pieces of glass and the spacer bar.

GLASS LIMITATIONS

Up to 12 sq ft:	SS glass (3/32" thick)
From 12 to 25 sq ft:	DS glass (1/8" thick)
From 25 to 40 sq ft:	3/16" glass
Over 40 sq ft:	1/4" glass



R-VALUE VS. U-FACTOR:

R-value: Measures the insulation effectiveness of a window – its resistance to heat gain or loss. The higher the r-value, the better the insulation against heat and cold.

U-factor: Measures the heat gain or loss caused by differences in indoor and outdoor temperatures. The lower the u-factor, the slower the rate of heat flow, thus the better the insulating performance.

TEST DATA

Test Data

NFRC Certified U-Factors for Standard Aluminum - SW Edgegard™ (Intercept Spacer)

Window	Window	CLR / CLR		SUNCOAT & 140 / CLR		SUNCOAT MAX / CLR	
Series	Type	AIR	ARGON	AIR	ARGON	AIR	ARGON
1110H, 1180H, 1280H	Slider	0.65	0.51	0.50	0.50	0.50	0.49
1185, 1285	Picture Window (Slider Frame)	0.63	0.61	0.47	0.42	0.47	0.42
1510, 1580, 1680	Single Hung	0.73	0.71	0.58	0.55	0.58	0.55
910-C Picture	Picture Window	0.56	0.54	0.40	0.36	0.40	0.36
910-C Awning	Awning	0.69	0.67	0.56	0.53	0.56	0.53
910-C Casement	Casement	0.68	0.67	0.56	0.53	0.56	0.52
911-C Picture	H-Bar Picture Window	0.56	0.54	0.41	0.37	0.41	0.37
911-C Awning	H-Bar Awning	0.70	0.68	0.58	0.55	0.57	0.54
911-C Casement	H-Bar Casement	0.69	0.67	0.57	0.55	0.57	0.54
710	Picture Window	0.56	0.54	0.41	0.37	0.40	0.36
450	Sliding Door	0.65	0.63	0.52	0.48	0.52	0.48
R-15*	Radius Window	0.55	0.53	0.39	0.35	0.39	0.34
1600	Sliding Door (Heavy)	0.56	0.53	0.57	0.53	0.56	0.53

California Default U-Factor	
Clear	Low-E
0.82	0.77
0.67	0.62
0.82	0.77
0.67	0.62
0.82	0.77
0.82	0.77
0.67	0.62
0.82	0.77
0.82	0.77
0.67	0.62
0.80	0.75
0.67	0.62
0.80	0.75

“S” Series

Window	Window	CLR / CLR		SUNCOAT & 140 / CLR		SUNCOAT MAX / CLR	
Series	Type	AIR	ARGON	AIR	ARGON	AIR	ARGON
1110SH	Slider Hollow Sill Stucco	0.66	0.65	0.52	0.48	0.52	0.47
1510S	Single Hung Stucco	0.76	0.74	0.61	0.57	0.61	0.57
910S Casement	Casement Stucco	0.69	0.67	0.57	0.54	0.56	0.53
910S Awning	Awning Stucco	0.69	0.68	0.57	0.54	0.56	0.53
910S Picture	Picture Window Stucco	0.56	0.54	0.41	0.37	0.40	0.36
710S Picture	Picture Window stucco	0.56	0.54	0.41	0.37	0.40	0.36
450S	Sliding Door stucco	0.65	0.63	0.52	0.48	0.52	0.48
R-15S*	Radius Window Stucco	0.55	0.53	0.39	0.35	0.39	0.35

California Default U-Factor	
Clear	Low-E
0.82	0.77
0.82	0.77
0.82	0.77
0.82	0.77
0.67	0.62
0.67	0.62
0.80	0.75
0.67	0.62

Values are based on SS/SS & DS/DS glass.

Grids can affect U-factor when OA is less than 1". Please refer to entered quote / order for accurate values when using grids.

*Box spacer

Test data as of July 21, 2008. All data is subject to change without prior notification.
For the most up to date testing information, contact your Milgard sales representative.

Test Data

Solar Heat Gain Coefficients & Visible Light Transmittance: Standard Aluminum

Type	SHGC				VT		
	Glazing	No Grids	Flat Grids	Sculptured Grids	No Grids	Flat Grids	Sculptured Grids
Slider	Clr / Clr	0.65	0.59	0.52	0.69	0.62	0.55
1110H / 1180H / 1280H	Loe272 / Clr	0.36	0.32	0.29	0.62	0.55	0.49
ALCS / ALRH / ALRZ	Loe270 / Clr	0.32	0.29	0.26	0.60	0.54	0.48
ALSS	Loe240 / Clr	0.22	0.20	0.18	0.34	0.30	0.27
	Loe366 / Clr	0.25	0.22	0.20	0.55	0.49	0.44
	Loe70 / Clr	0.24	0.22	0.20	0.55	0.49	0.44
Single Hung	Clr / Clr	0.65	0.58	0.52	0.69	0.62	0.55
1510 / 1580 / 1680	Loe272 / Clr	0.36	0.32	0.29	0.61	0.55	0.49
ALRH / ALRZ	Loe270 / Clr	0.32	0.29	0.26	0.60	0.54	0.48
ALCS / ALSS	Loe240 / Clr	0.22	0.20	0.18	0.34	0.30	0.27
	Loe366 / Clr	0.25	0.22	0.20	0.55	0.49	0.44
	Loe70 / Clr	0.24	0.22	0.20	0.55	0.49	0.44
Fixed	Clr / Clr	0.70	0.63	0.57	0.75	0.67	0.60
710	Loe272 / Clr	0.38	0.34	0.31	0.66	0.60	0.54
ALSC	Loe270 / Clr	0.35	0.31	0.28	0.65	0.58	0.52
	Loe240 / Clr	0.23	0.21	0.19	0.37	0.33	0.29
	Loe366 / Clr	0.26	0.24	0.22	0.59	0.53	0.48
	Loe70 / Clr	0.26	0.23	0.21	0.59	0.53	0.48
Fixed	Clr / Clr	0.70	0.63	0.57	0.75	0.67	0.60
710 S	Loe272 / Clr	0.38	0.34	0.31	0.66	0.60	0.54
ALSC	Loe270 / Clr	0.34	0.31	0.28	0.65	0.58	0.52
	Loe240 / Clr	0.23	0.21	0.19	0.37	0.33	0.29
	Loe366 / Clr	0.26	0.24	0.21	0.59	0.53	0.48
	Loe70 / Clr	0.26	0.23	0.21	0.59	0.53	0.48
Fixed	Clr / Clr	0.69	0.62	0.55	0.73	0.66	0.59
910C	Loe272 / Clr	0.37	0.34	0.30	0.65	0.58	0.52
ALCS	Loe270 / Clr	0.34	0.31	0.28	0.63	0.57	0.51
	Loe240 / Clr	0.23	0.21	0.19	0.36	0.32	0.29
	Loe366 / Clr	0.26	0.23	0.21	0.58	0.52	0.46
	Loe70 / Clr	0.25	0.23	0.21	0.58	0.52	0.46
Awning	Clr / Clr	0.56	0.51	0.46	0.59	0.54	0.49
910C	Loe272 / Clr	0.31	0.28	0.26	0.53	0.48	0.43
ALCS	Loe270 / Clr	0.28	0.26	0.24	0.51	0.47	0.42
	Loe240 / Clr	0.20	0.18	0.17	0.29	0.26	0.24
	Loe366 / Clr	0.22	0.20	0.18	0.47	0.43	0.38
	Loe70 / Clr	0.21	0.20	0.18	0.47	0.43	0.38
Casement	Clr / Clr	0.56	0.51	0.46	0.59	0.54	0.49
910C	Loe272 / Clr	0.31	0.28	0.26	0.53	0.48	0.43
ALCS	Loe270 / Clr	0.28	0.26	0.24	0.51	0.47	0.42
	Loe240 / Clr	0.20	0.18	0.17	0.29	0.26	0.24
	Loe366 / Clr	0.22	0.20	0.18	0.47	0.42	0.38
	Loe70 / Clr	0.21	0.20	0.18	0.47	0.43	0.38
Fixed	Clr / Clr	0.69	0.62	0.55	0.73	0.66	0.59
910S	Loe272 / Clr	0.37	0.34	0.30	0.65	0.58	0.52
ALCS	Loe270 / Clr	0.34	0.31	0.28	0.63	0.57	0.51
	Loe240 / Clr	0.23	0.21	0.19	0.36	0.32	0.29
	Loe366 / Clr	0.26	0.23	0.21	0.58	0.52	0.46
	Loe70 / Clr	0.25	0.23	0.21	0.58	0.52	0.46

Test Data

Solar Heat Gain Coefficients & Visible Light Transmittance: Standard Aluminum

Type	SHGC				VT		
	Glazing	No Grids	Flat Grids	Sculptured Grids	No Grids	Flat Grids	Sculptured Grids
Awning / Casement	Clr / Clr	0.56	0.51	0.46	0.59	0.54	0.49
910S	Loe272 / Clr	0.31	0.28	0.26	0.53	0.48	0.43
ALCS	Loe270 / Clr	0.28	0.26	0.23	0.51	0.47	0.42
	Loe240 / Clr	0.19	0.18	0.16	0.29	0.26	0.24
	Loe366 / Clr	0.22	0.20	0.18	0.47	0.42	0.38
	Loe70 / Clr	0.21	0.19	0.18	0.47	0.43	0.38
Fixed	Clr / Clr	0.66	0.60	0.53	0.71	0.63	0.56
911C	Loe272 / Clr	0.36	0.33	0.29	0.63	0.56	0.50
ALCS	Loe270 / Clr	0.33	0.30	0.27	0.61	0.55	0.49
	Loe240 / Clr	0.23	0.20	0.19	0.34	0.31	0.28
	Loe366 / Clr	0.25	0.23	0.21	0.56	0.50	0.45
	Loe70 / Clr	0.25	0.22	0.20	0.56	0.50	0.45
Awning / Casement	Clr / Clr	0.53	0.48	0.43	0.56	0.50	0.45
911C	Loe272 / Clr	0.30	0.27	0.25	0.49	0.45	0.40
ALCS	Loe270 / Clr	0.27	0.25	0.22	0.48	0.44	0.39
	Loe240 / Clr	0.19	0.17	0.16	0.27	0.25	0.22
	Loe366 / Clr	0.21	0.17	0.18	0.44	0.40	0.36
	Loe70 / Clr	0.21	0.19	0.17	0.44	0.40	0.36
Door	Clr / Clr	0.65	0.57	0.50	0.69	0.60	0.53
450	Loe272 / Clr	0.35	0.31	0.28	0.61	0.54	0.47
A45S / A451	Loe270 / Clr	0.32	0.28	0.25	0.60	0.52	0.46
	Loe240 / Clr	0.22	0.20	0.17	0.34	0.30	0.26
	Loe366 / Clr	0.24	0.22	0.19	0.54	0.48	0.42
	Loe70 / Clr	0.24	0.21	0.19	0.54	0.48	0.42
Heavy Door	Clr / Clr	0.62	0.54	0.47	0.65	0.57	0.50
1600	Loe272 / Clr	0.34	0.30	0.27	0.58	0.51	0.44
ALHS	Loe270 / Clr	0.31	0.28	0.24	0.57	0.50	0.43
	Loe240 / Clr	0.22	0.19	0.17	0.32	0.28	0.24
	Loe366 / Clr	0.24	0.21	0.19	0.52	0.45	0.39
	Loe70 / Clr	0.23	0.21	0.19	0.52	0.45	0.39
Fixed	Clr / Clr	0.70	0.63	0.57	0.75	0.67	0.60
R15	Loe272 / Clr	0.38	0.35	0.31	0.67	0.60	0.54
ALCS	Loe270 / Clr	0.35	0.31	0.28	0.65	0.58	0.52
	Loe240 / Clr	0.23	0.21	0.19	0.37	0.33	0.30
	Loe366 / Clr	0.26	0.24	0.22	0.59	0.53	0.48
	Loe70 / Clr	0.26	0.23	0.21	0.59	0.53	0.48
Fixed	Clr / Clr	0.70	0.63	0.57	0.75	0.67	0.60
R15 S	Loe272 / Clr	0.38	0.34	0.31	0.67	0.60	0.54
ALSS	Loe270 / Clr	0.35	0.31	0.28	0.65	0.58	0.52
	Loe240 / Clr	0.23	0.21	0.19	0.37	0.33	0.30
	Loe366 / Clr	0.26	0.24	0.22	0.59	0.53	0.48
	Loe70 / Clr	0.26	0.23	0.21	0.59	0.53	0.48

Test data as of July 21, 2008. All data is subject to change without prior notification.

For the most up to date testing information, contact your Milgard sales representative.

Test Data

Standard Aluminum Sound Transmission Class

Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
1110	HV	71.75 x 47.75	4/21/1999	99-156	1/8	1/8	-	29	30	25
1110	HV	71.75 x 47.75	4/21/1999	99-158	1/8	1/4	-	30	32	27
1110	HV	71.75 x 47.75	4/21/1999	99-157	3/16	1/8	-	31	32	27
1110	HV	71.5 x 47.5	11/12/1998	98-411	7/32 LAM	3/16	-	31	33	28
1110	HV	71.5 x 47.5	11/12/1998	98-409	7/32 LAM	1/8	-	32	32	28
1110	HV	71.5 x 47.5	11/12/1998	98-412	7/32 LAM	7/32 LAM	-	32	34	29
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
1510	SH	47.5 x 71.5	11/9/1998	98-399	3/32	3/32	-	27	28	23
1510	SH	47.5 x 71.5	5/18/1999	99-200	1/8	1/8	-	27	28	24
1510	SH	47.5 x 71.5	5/18/1999	99-201	1/4	1/8	-	30	31	27
1510	SH	47.5 x 71.5	5/18/1999	99-202	3/16	1/8	-	31	31	26
1510	SH	47.5 x 71.5	11/9/1998	98-398	7/32 LAM	1/8	-	32	33	28
1510	SH	47.5 x 71.5	11/10/1998	98-404	7/32 LAM	3/16	-	32	33	28
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
1600	SD	71.5 x 79.5	1/25/2001	01-117	1/8	1/8	-	31	31	24
1600	SD	71.5 x 79.5	1/25/2001	01-116	3/16	3/16	-	33	35	28
1600	SD	71.5 x 79.5	1/25/2001	01-118	1/8	3/16	-	34	34	27
1600	SD	71.5 x 79.5	1/24/2001	01-113	1/8	7/32 LAM	-	35	35	28
1600	SD	71.5 x 79.5	1/25/2001	01-114	3/16	7/32 LAM	-	36	35	28
1600	SD	71.5 x 79.5	1/25/2001	01-115	7/32 LAM	7/32 LAM	-	36	36	29
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
450	SD	71.5 X 79.5	11/11/1998	98-406	1/8	1/8	-	27	28	22
450	SD	71.5 X 79.5	11/11/1998	98-407	7/32 LAM	7/32 LAM	-	29	30	26
450	SD	71.5 X 79.5	6/14/2001	01-375	3/16	3/16	-	30	31	26
450	SD	71.5 X 79.5	11/11/1998	98-405	1/8	1/4	-	30	31	26
450	SD	71.5 X 79.5	6/14/2001	01-374	3/16	1/8	-	31	31	25
450	SD	71.5 X 79.5	11/11/1998	98-408	7/32 LAM	1/8	-	31	32	26
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
710	PW	47.75 x 71.75	4/20/1999	99-149	1/8	1/8	-	30	30	24
710	PW	47.75 x 71.75	4/20/1999	99-152	3/16	1/8	-	32	32	26
710	PW	47.75 x 71.75	4/20/1999	99-153	1/4	1/8	-	33	33	27
710	PW	47.75 x 71.75	4/20/1999	99-154	7/32 LAM	1/8	-	34	33	27
710	PW	47.75 x 71.75	4/20/1999	99-151	7/32 LAM	3/16	-	35	35	29
710	PW	47.75 x 71.75	4/20/1999	99-150	7/32 LAM	7/32 LAM	-	37	36	29
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
910	PW	71.5 x 47.5	11/10/1998	98-401	1/8	1/8	-	29	30	24
910	PW	71.5 x 47.5	11/10/1998	98-400	1/8	7/32 LAM	-	33	33	28
910	PW	71.5 x 47.5	11/10/1998	98-403	3/16	7/32 LAM	-	34	36	30
910	PW	71.5 x 47.5	11/10/1998	98-402	7/32 LAM	7/32 LAM	-	35	35	30
Series	Model	Test Size	Test Date	Test #	Glass 1	Glass 2	Glass 3	STC	EWR	OITC
910C	FC	35.5 x 59.5	11/9/1998	98-395	1/8	1/8	-	30	31	26
910C	FC	35.5 x 59.5	11/9/1998	98-397	1/4	1/8	-	35	35	30
910C	FC	35.5 x 59.5	11/9/1998	98-396	7/32 LAM	1/8	-	36	36	30
910C	FC	35.5 x 59.5	11/9/1998	98-394	7/32 LAM	1/4	-	36	36	30

Test data as of April 1, 2009. All data is subject to change without prior notification.

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