

BLAST MITIGATION

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Blast Resistant Single Hung, Fixed, and Sliding Windows

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SECTION F4

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Due to the diversity in state/provincial, local, and federal laws and codes that govern the design and application of architectural products, it is the responsibility of the individual architect, owner, and installer to ensure that products selected for use on projects comply with all applicable building codes and laws. U.S. Aluminum exercises no control over the use or application of its products, glazing materials, and operating hardware, and assumes no responsibility thereof.

The rapidly changing technology within the architectural aluminum products industry demands that U.S. Aluminum reserve the right to revise, discontinue or change any product line, specification or electronic media without prior written notice.

NOTE: Dimensions in parentheses () are millimeters unless otherwise noted.

- Other metric units shown in this publication are:
- m - meter
 - Pa - pascal
 - MPa - megapascal
 - Kg - kilogram
 - KPa - kilopascal

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BLAST MITIGATION

Specifications

SECTION 08 51 13 ALUMINUM WINDOWS

QUALITY ASSURANCE

Drawings and specifications are based on Series BW8000 Single Hung, BW8100 Fixed, or BW8200 Horizontal Sliding (*Specify*) CW60 Blast Resistant Thermal Windows as manufactured by U.S. Aluminum. Whenever substitute products are to be considered, supporting technical literature, samples, drawings, and performance data must be submitted 10 days prior to bid in order to make a valid comparison of the products involved. Test reports certified by an AAMA independent test laboratory must be made available upon request.

PART 1 GENERAL

1.01 Work Included

A. Furnish and install aluminum architectural windows complete with hardware and related components as shown on drawings and specified in this section.

Specify glass and glazing in this section if window assemblies are to be glazed by the window manufacturer. If glazing is to be done by a different contractor, glass and glazing should be specified in Section 08 80 00.

B. 1-1/32" (26) Thick Glass and Glazing

1. All units shall be factory glazed.
OR
1. Reference Section 08 80 00 for Glass and Glazing.

List work and materials related to this section but specified in other sections.

1.02 Related Work

Section 08 40 00 - Entrances and Storefronts
Section 08 44 00 - Glazed Curtain Walls
Section 08 50 00 - Windows

1.03 Testing and Performance Requirements

A. Test Units

1. Air, water, and structural test unit shall conform to requirements set forth in ANSI/AAMA/NWDA 101 I.S. 2-97 and AAMA 910-93 or CSA A440.
2. Thermal test unit sizes shall be 47-1/4" x 59" (1200 x 1500) for Series BW8000 and BW8100, 59" x 47-1/4" (1500 x 1200) for Series BW8200. Unit shall consist of a single hung, fixed or horizontal sliding window.

B. Test Procedures and Performances

1. Windows shall conform to all AAMA/ANSI/NWDA-101 I.S. 2-97 and AAMA 910-93 or CSA A440 requirements for the window type referenced in 1.01.B. In addition, the following specific performance requirements shall be met.
2. **Air Infiltration Test:**
With ventilators closed and locked, test unit in accordance with ASTM E 283-91 at a static air pressure difference of 6.24 psf. Air infiltration shall not exceed .30 cfm per foot of crack.
3. **Water Resistance Test:**
With ventilators closed and locked, test unit in accordance with ASTM E 331-96/ASTM E 547 at a static air pressure difference of 12 psf. There shall be no uncontrolled water leakage.
4. **Uniform Load Deflection Test:**
With ventilators closed and locked, test unit in accordance with ASTM E 330-97 at a static air pressure difference of 90 psf positive and negative pressure. No member shall deflect over L/175 of its span.
5. **Condensation Resistance Test (CRF):** With ventilators closed and locked, test unit in accordance with AAMA 1503. Condensation Resistance Factor (CRF) shall not be less than 49 for Series BW8100 and BW8200. Not less than 50 for Series BW8000.

Blast Resistant Single Hung, Fixed, and Sliding Windows

- Defender Series BW8000
- Defender Series BW8100
- Defender Series BW8200

6. Thermal Transmittance Test (Conductive U-Value):

With ventilators closed and locked, test unit in accordance with NFRC 100 and AAMA 1503. Conductive thermal transmittance (U-Value) for Series BW8000 and BW8200 Windows shall have a range between 0.35 to 0.56 BTU/hr/ft²/°F and Series BW8100 Windows shall have a range between 0.33 to 0.56 BTU/hr/ft²/°F.

7. AAMA CW60 Rating Testing Procedures -

- AAMA/WDMA/CSA 101/I.S.2/A440-0.8 - Laboratory Performance Testing.
- AAMA 503-08 - Newly Installed Fenestration Products.
- AAMA 511-08 - Installed Fenestration Products After 6 Months.

8. DoD - UFC 4-010-01 (Jan 07)

- ATFP
- ISC Security Design Criteria for Blast Protection for Windows
- ASTM F 1642
- FAR 52.225-9, 11, and 12 Buy America Act

1.04 Quality Assurance

- A. Provide test reports from AAMA accredited laboratories certifying the performance as specified in 1.05 or 11.15 of CSA A440.
- B. Test reports shall be accompanied by the window manufacturer's letter of certification, stating the tested window meets or exceeds the referenced criteria for the appropriate AAMA/NWDA 101/I.S.2-97 and AAMA 910-93 or CSA A440 window type.

1.05 Submittals

- A. Contractor shall submit shop drawings, finish samples, test reports, and warranties.

BLAST MITIGATION

Specifications

SECTION 08 51 13 ALUMINUM WINDOWS

1.06 Warranties

A. Total Window System

- The responsible contractor shall assume full responsibility and warrant for one year the satisfactory performance of the total window installation which includes that of the windows, hardware, glass (including insulating units), glazing, anchorage and setting system, sealing, flashing, etc., as it relates to air, water, and structural adequacy as called for in the specifications and approved shop drawings.

PART 2 PRODUCTS

2.01 Materials

A. Aluminum

- Extruded aluminum shall be 6063-T5 alloy and tempered.

B. Hardware

- Series BW8000 and BW8200 Windows have spring loaded self-locking latches as supplied by U.S. Aluminum.

C. Weatherstrip

- For Series BW8000 and BW8200 Windows weatherstrip shall be fin seal or equal. For Series BW8100 Windows all weatherstrip shall be E.P.D.M.

D. Thermal Barrier

- Barrier material shall be poured-in-place two part polyurethane. To ensure that composite strength remains unaltered during thermal cycling, a mechanical bond between the aluminum and the thermal filling shall be created by mechanically abrading the extrusion thermal cavity prior to filling with the polyurethane polymer. A non-structural thermal barrier is unacceptable.
- Specified hardware shall not bridge the thermal barrier.

E. Glass

- Insulating glass shall be 1-1/32" (26) as manufactured by () consisting of () exterior, () air spacer, and () interior.

2.02 Fabrication

A. General

- All primary aluminum frame, extrusions or vent extrusions shall have a minimum wall thickness of .062 (1.57)
- Depth of frame 4-1/2" (114.3) for 1-1/32" (26) glazing.

B. Frame - Frame components shall be mechanically fastened.

C. Ventilator (Series BW8000 and BW8200)

- All vent extrusions shall be notched .

D. Screens (Series BW8000 and BW8200)

- Screen frames shall have springs locking the screen in place.
- Screen mesh shall be aluminum or fiberglass. (if applicable)

E. Glazing - All units shall be either shop or field glazed.

F. Finish

All exposed framing surfaces shall be free of scratches and other serious blemishes. Aluminum extrusions shall be given a caustic etch followed by an anodic oxide treatment to obtain... (*Specify one of the following*)

____ #11 Clear anodic coating

____ #22 Dark Bronze anodic coating

____ #33 Black anodic coating

A Fluoropolymer paint coating conforming with the requirements of AAMA 2605. Color shall be (*Specify a U.S. Aluminum standard color*).

Blast Resistant Single Hung, Fixed, and Sliding Windows

- Defender Series BW8000
- Defender Series BW8100
- Defender Series BW8200

PART 3 EXECUTION

3.01 Inspection

A. Job Conditions-

Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface, and are in accordance with approved shop drawings.

3.02 Installation

A. Use only skilled tradesmen with work done in accordance with approved shop drawings and specifications.

B. Adequately anchor to maintain positions permanently when subjected to normal thermal movement, specified building movement, and specified wind loads.

C. Adjust windows for proper operation after installation.

D. Furnish and apply sealants to provide a weather tight installation at all joints and intersections and at opening perimeters.

3.03 Protection and Cleaning

A. After completion of window installation, windows shall be inspected, adjusted, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the general contractor.

BLAST MITIGATION

Special Features

FOR 1-1/32" (26) GLAZING

Blast Resistant Single Hung Window

- Defender Series BW8000

DEFENDER

BLAST MITIGATION PRODUCTS

As part of the 8000 Series of heavy commercial windows, the BW8000 Blast Resistant Single Hung Window offers a DoD 1 psi blast resistance capability to the product line. The 4-1/2" (114) deep frame is designed to match typical building conditions, including our entrances and storefronts. An efficient thermally insulated frame accepts 1-1/32" (26) glazing infills, with extruded pulls at the interlock and bottom rail. The window features a self-locking latch and Class 5 balances for ease of operation. Accessories such as mulling bars, subsills, and head and jamb channels are available.

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Thermally Insulated - NFRC Certified
- 4-1/2" (114) Deep Frame
- Accepts 1-1/32" (26) Laminated Glazing
- Choice of Block or Fin Frame
- AAMA CW60 Rated Window
- Class 5 Balance for Ease of Operation
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.

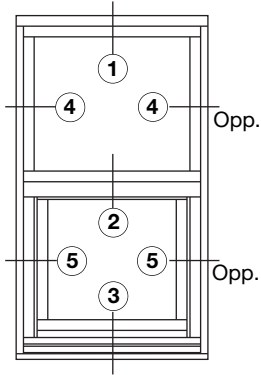


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BLAST MITIGATION

Typical Details

FOR 1-1/32" (26) GLAZING



Meets or Exceeds Specifications:

- DoD - UFC 4-010-01 - (Jan 07)
 - ATFP
 - ISC - Security Design Criteria for Blast Protection for Windows - ASTM F 1642
- AAMA/WDMA/CSA 101/1.S.2/A 440-08
 - ASTM E 283-04
 - ASTM E 330-02
 - ASTM E 331-00
 - AAMA 1503
- NFRC - NFRC 100-2004
 - NFRC 200-2004
 - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12

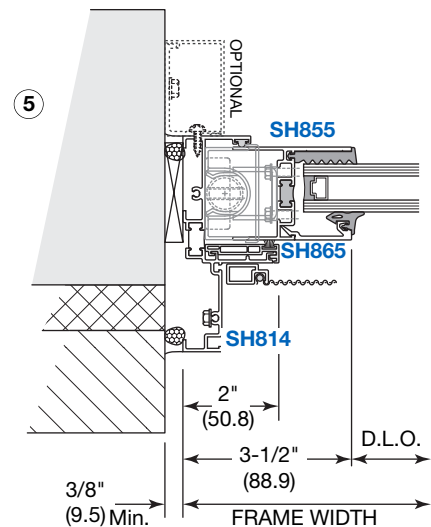
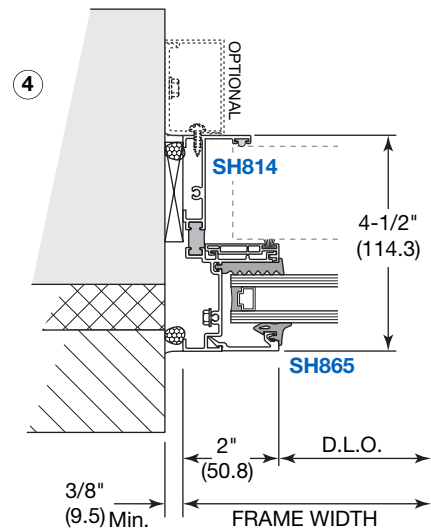
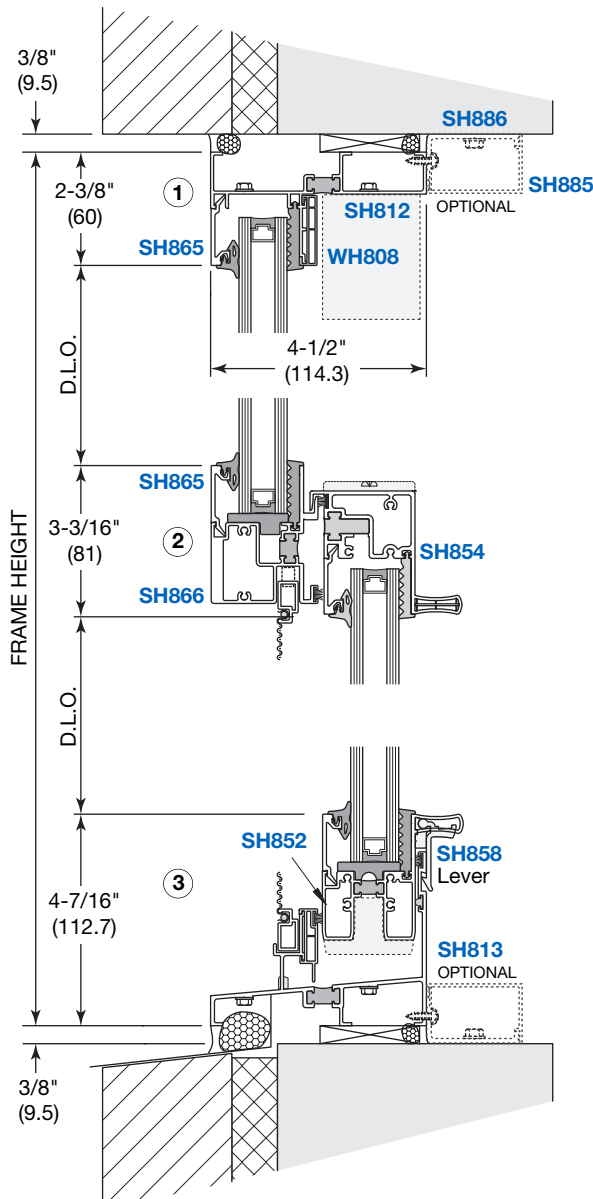
Blast Resistant Single Hung Window

- Defender Series BW8000

Block Frame Installation Method Shown

Maximum Frame Size 65" x 91" (1651 x 2311)

A complete set of details in DWG format is available at usalum.com



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BLAST MITIGATION

Special Features

FOR 1-1/32" (26) GLAZING

Blast Resistant Fixed Window

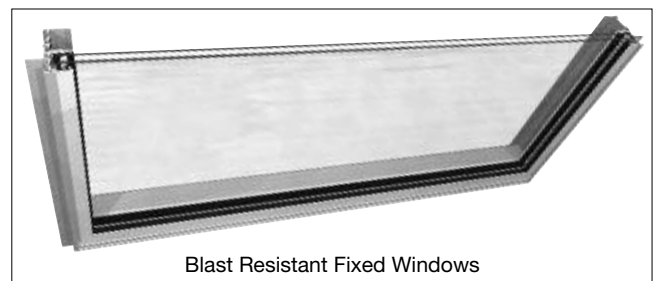
- Defender Series BW8100

DEFENDER

BLAST MITIGATION PRODUCTS

The Series BW8100 Blast Resistant Fixed Window offers that rare combination of durability and toughness to meet blast mitigation requirements. The Defender Series of Blast Mitigation products are designed to provide protection for DoD and private sector facilities. Other Defender Series products include Storefront, Curtain Wall, Projected Windows, Horizontal Sliding, and Single Hung Windows.

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Accepts 1-1/32" (26) Laminated Glazing
- Tested to AAMA CW60
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.33
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Accessories Such as Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Made in the U.S.A.



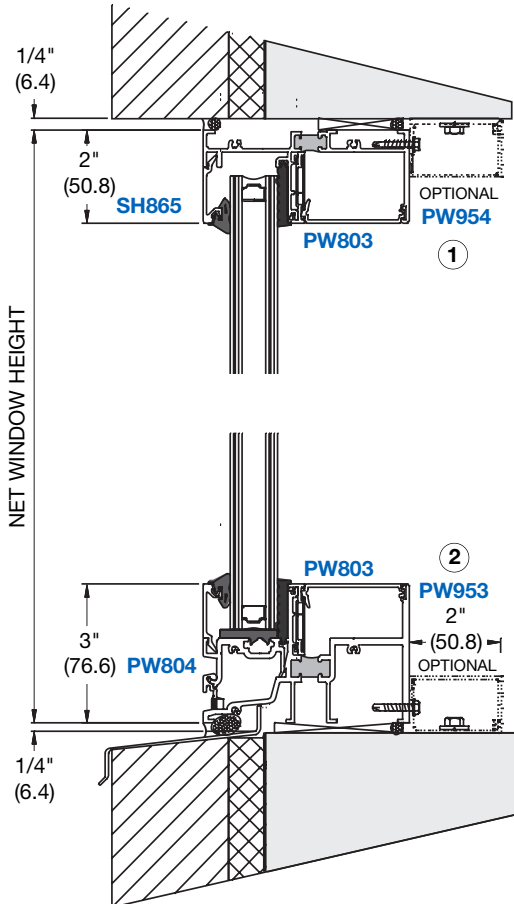
BLAST MITIGATION

Typical Details

FOR 1-1/32" (26) GLAZING

Blast Resistant Fixed Window

• Defender Series BW8100



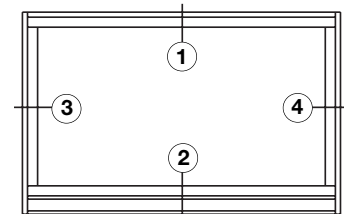
Block Frame
Installation Method Shown

Maximum Frame Size
96" x 60" (2438 x 1524)

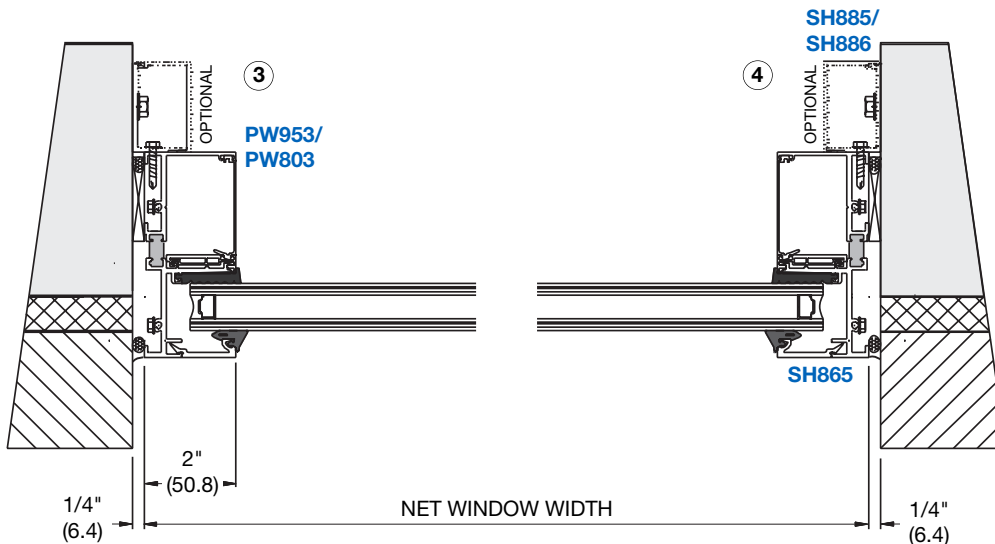
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Meets or Exceeds Specifications:

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 - ASTM E 283-04
 - ASTM E 330-02
 - ASTM E 331-00
 - AAMA 1503
- NFRC - NFRC 100-2004
 - NFRC 200-2004
 - NFRC 500-2004
- Buy America Act - FAR 52.225-9, 11 & 12



TYPICAL ELEVATION



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BLAST MITIGATION

Special Features

FOR 1-1/32" (26) GLAZING

Blast Resistant Horizontal Sliding Window

• Defender Series BW8200



The BW8200 Blast Resistant Horizontal Sliding Window offers that rare combination of smooth operation, durability, and toughness to meet blast mitigation requirements. The Defender Series of Blast Mitigation products are designed to provide protection for DoD and private sector facilities. Other Defender Series products include Storefront, Curtain Wall, Projected, Fixed, and Single Hung Windows

- DoD UFC 4-010-01 (Jan 07), ATPF, ISC Security Design Criteria for Blast Protection for Windows, ASTM F 1642
- Accepts 1-1/32" (26) Laminated Glazing
- Tested to AAMA CW60
- Thermally Insulated-NFRC Certified
- U-Factors as Low as 0.35
- 4-1/2" (114) Deep Frame to Match Typical Building Conditions
- Choice of Block or Fin Frame
- Even Sightlines
- Self Locking Latch and Adjustable Tandem Rollers for Ease of Operation
- Accessories Such as Screens, Mulling Bars, Subsills, Head and Jamb Channels are Available
- Available in an Array of Architectural Coatings and Anodized Finishes
- Complemented by the Series BW8000 Single Hung and Series BW8100 Fixed Windows
- Made in the U.S.A.



Blast Resistant Horizontal Sliding Windows

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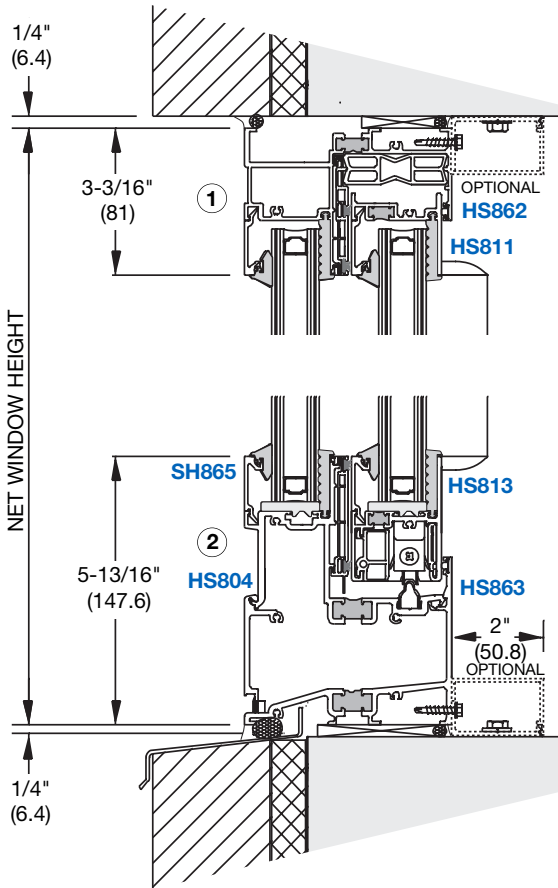
BLAST MITIGATION

Typical Details

FOR 1-1/32" (26) GLAZING

Blast Resistant Horizontal Sliding Window

• Defender Series BW8200



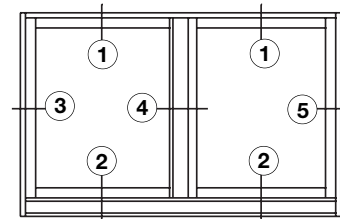
Block Frame
Installation Method Shown

Maximum Frame Size
96" x 60" (2438 x 1524)

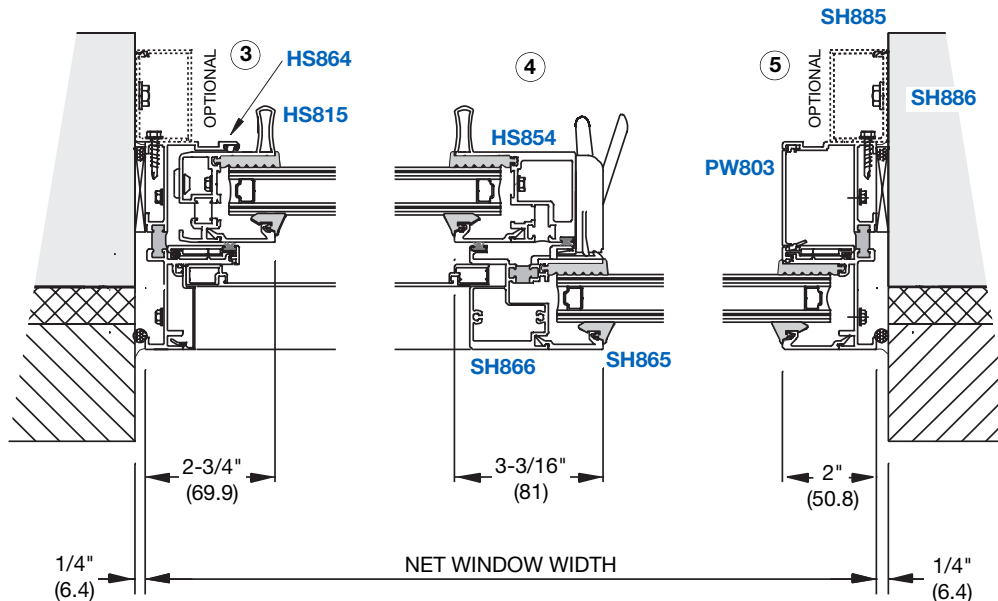
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