

**HISTORIC AND DESIGN REVIEW COMMISSION
COMPLIANCE AND TECHNICAL ADVISORY BOARD**

April 19, 2024

HDRC CASE NO: 2024-118
ADDRESS: 116 W SUMMIT AVE
LEGAL DESCRIPTION: NCB 1767 BLK 1 LOT E 35 FT OF 5 & W 25 FT OF 6
ZONING: R-4, H
CITY COUNCIL DIST.: 1
DISTRICT: Monte Vista Historic District
APPLICANT: Emily Sammons/Pella South Texas
OWNER: KIRBO CHARLES G & REBECCA A
TYPE OF WORK: Window replacement
APPLICATION RECEIVED: March 14, 2024
60-DAY REVIEW: May 13, 2024
CASE MANAGER: Rachel Rettaliata

REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to replace seven (7) existing wood windows with aluminum-clad wood windows.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 2, Exterior Maintenance and Alterations

6. Architectural Features: Doors, Windows, and Screens

A. MAINTENANCE (PRESERVATION)

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

B. ALTERATIONS (REHABILITATION, RESTORATION, AND RECONSTRUCTION)

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

- viii. *Security bars*—Install security bars only on the interior of windows and doors.
- ix. *Screens*—Utilize wood screen window frames matching in profile, size, and design of those historically found when the existing screens are deteriorated beyond repair. Ensure that the tint of replacement screens closely matches the original screens or those used historically.
- x. *Shutters*—Incorporate shutters only where they existed historically and where appropriate to the architectural style of the house. Shutters should match the height and width of the opening and be mounted to be operational or appear to be operational. Do not mount shutters directly onto any historic wall material.

Standard Specifications for Original Wood Window Replacement

- SCOPE OF REPAIR: When individual elements such as sills, muntins, rails, sashes, or glazing has deteriorated, every effort should be made to repair or reconstruct that individual element prior to consideration of wholesale replacement. For instance, applicant should replace individual sashes within the window system in lieu of full replacement with a new window unit.
- MISSING OR PREVIOUSLY-REPLACED WINDOWS: Where original windows are found to be missing or previously-replaced with a nonconforming window product by a previous owner, an alternative material to wood may be considered when the proposed replacement product is more consistent with the Historic Design Guidelines in terms of overall appearance. Such determination shall be made on a case-by-case basis by OHP and/or the HDRC. Whole window systems should match the size of historic windows on property unless otherwise approved.
- MATERIAL: If full window replacement is approved, the new windows must feature primed and painted wood exterior finish. Clad, composition, or non-wood options are not allowed unless explicitly approved by the commission.
- SASH: Meeting rails must be no taller than 1.25". Stiles must be no wider than 2.25". Top and bottom sashes must be equal in size unless otherwise approved.
- DEPTH: There should be a minimum of 2" in depth between the front face of the window trim and the front face of the top window sash. This must be accomplished by recessing the window sufficiently within the opening or with the installation of additional window trim to add thickness.
- TRIM: Original trim details and sills should be retained or repaired in kind. If approved, new window trim must feature traditional dimensions and architecturally appropriate casing and sloped sill detail. Window track components such as jamb liners must be painted to match the window trim or concealed by a wood window screen set within the opening.
- GLAZING: Replacement windows should feature clear glass. Low-e or reflective coatings are not recommended for replacements. The glazing should not feature faux divided lights with an interior grille. If approved to match a historic window configuration, the window should feature real exterior muntins.
- COLOR: Replacement windows should feature a painted finished. If a clad product is approved, white or metallic manufacturer's color is not allowed, and color selection must be presented to staff.
- INSTALLATION: Replacement windows should be supplied in a block frame and exclude nailing fins. Window opening sizes should not be altered to accommodate stock sizes prior to approval.
- FINAL APPROVAL: If the proposed window does not meet the aforementioned stipulations, then the applicant must submit updated window specifications to staff for review, prior to purchase and installation. For more assistance, the applicant may request the window supplier to coordinate with staff directly for verification.

FINDINGS:

- a. The primary structure located at 116 W Summit is a 2-story, single-family home constructed circa 1930 in the Colonial Revival style. The structure features a side gable composition shingle roof, brick cladding, a front gable front porch surround, and eight-over-eight, true divided lite wood windows. The property is contributing to the Monte Vista Historic District.
- b. WINDOW REPLACEMENT: EXISTING CONDITION – The applicant has requested to replace seven (7) existing wood windows with Pella Reserve aluminum-clad wood windows. Staff conducted a site visit on April 9, 2024, and observed the following conditions on the original wood windows: damaged and peeling or chipping paint, one broken cord, water damage, deteriorated wood elements, including exterior muntins, and wood rot or warping at the joints. The windows do not show signs of significant wood rot, wood damage, or severe deterioration, and fewer than 50 percent on the window elements are deteriorated beyond repair. Staff finds that the existing wood windows are in repairable condition.
- c. WINDOW REPLACEMENT: ENERGY EFFICIENCY AND MAINTENANCE – In terms of efficiency, in

most cases, windows only account for a fraction of heat gain/loss in a building. Improving the energy efficiency of historic windows should be considered only after other options have been explored such as improving attic and wall insulation. The original windows feature single-pane glass which is subject to radiant heat transfer. Products are available to reduce heat transfer such as window films, interior storm windows, and thermal shades. The historic house already features an inherent barrier in window screens. Additionally, air infiltration can be mitigated through weatherstripping or readjusting the window assembly within the frame, as assemblies can settle or shift over time. The wood windows were designed specifically for this structure and can accommodate the natural settling and movement of the structure as a whole throughout seasons. Modern replacement products are extremely rigid, often resulting in the creation of gaps, cracks, and major points of air infiltration at the window frames and other areas of the exterior wall plane over time due to material incompatibility when considering the structure as whole integrated system.

- d. WINDOW REPLACEMENT: WASTE AND LIFESPAN – Over 112 million windows end up in landfills each year, and about half are under 20 years old. Historic wood windows were constructed to last 100+ years with old growth wood, which is substantially more durable than modern wood and clad products, and original windows that are restored and maintained over time can last for decades. Replacement window products have a much shorter lifespan, around 10-20 years, and cannot be repaired once they fail. On average, over the lifetime of an original wood window, replacement windows will need to be again replaced at least 4 times. The total lifecycle cost of replacement windows is also much more energy intensive than the restoration of existing windows, including material sourcing and the depletion of natural resources and forests, petroleum-heavy manufacturing methods, transportation, and installation. Finally, window repair and restoration utilizes the local labor and expertise of craftspeople versus off-the-shelf, non-custom composite products. Staff generally encourages the repair and restoration of original windows whenever possible.
- e. WINDOW REPLACEMENT – The applicant has proposed to replace seven (7) existing wood windows with Pella Reserve aluminum-clad wood replacement windows. According to the Historic Design Guidelines, wood windows should be repaired in place and restored whenever possible, unless there is substantial evidence that the windows are deteriorated beyond repair. Guideline 6.B.iv for Exterior Maintenance and Alterations states that new windows should be installed to match the historic or existing windows in terms of size, type, configuration, material, form, appearance, and detail when original windows are deteriorated beyond repair. As noted in finding b, staff finds that the windows are in repairable condition. If the windows were deteriorated beyond repair, replacement windows should be fully wood and conform to the Historic Design Guidelines. Window repair work includes the removal of sashes from frames to make repairs. Elements such as rails and stiles that are rotten or missing may be replaced with new solid wood elements to match the existing (in kind repairs only). Glass should feature a clarity comparable to the existing (tinted glass should not be used).

RECOMMENDATION:

Staff does not recommend approval of window replacement based on findings a through e. Staff finds that the windows are repairable. Any window elements that are deteriorated beyond repair may be replaced with in-kind material, matching in material, dimension, profile, and finish.

If the HDRC is compelled to approve window replacement, staff recommends the following stipulation:

- i. That the applicant installs fully wood windows that meet staff's standard window stipulations and submits updated specifications to staff for review and approval. The windows should feature an inset of two (2) inches within facades and should feature profiles that are found historically within the immediate vicinity. Meeting rails must be no taller than 1.25" and stiles no wider than 2.25". White manufacturer's color is not allowed, and color selection must be presented to staff. There should be a minimum of two inches in depth between the front face of the window trim and the front face of the top window sash. This must be accomplished by recessing the window sufficiently within the opening or with the installation of additional window trim to add thickness. Window trim must feature traditional dimensions and architecturally appropriate sill detail. Window track components must be painted to match the window trim or concealed by a wood window screen set within the opening. Faux divided lites are not permitted.

W Summit Ave.

W Summit Ave.

W Summit Ave.



110

#3 #2 #1
#4 #5 #6 #7



120

108





#1



#1



#2





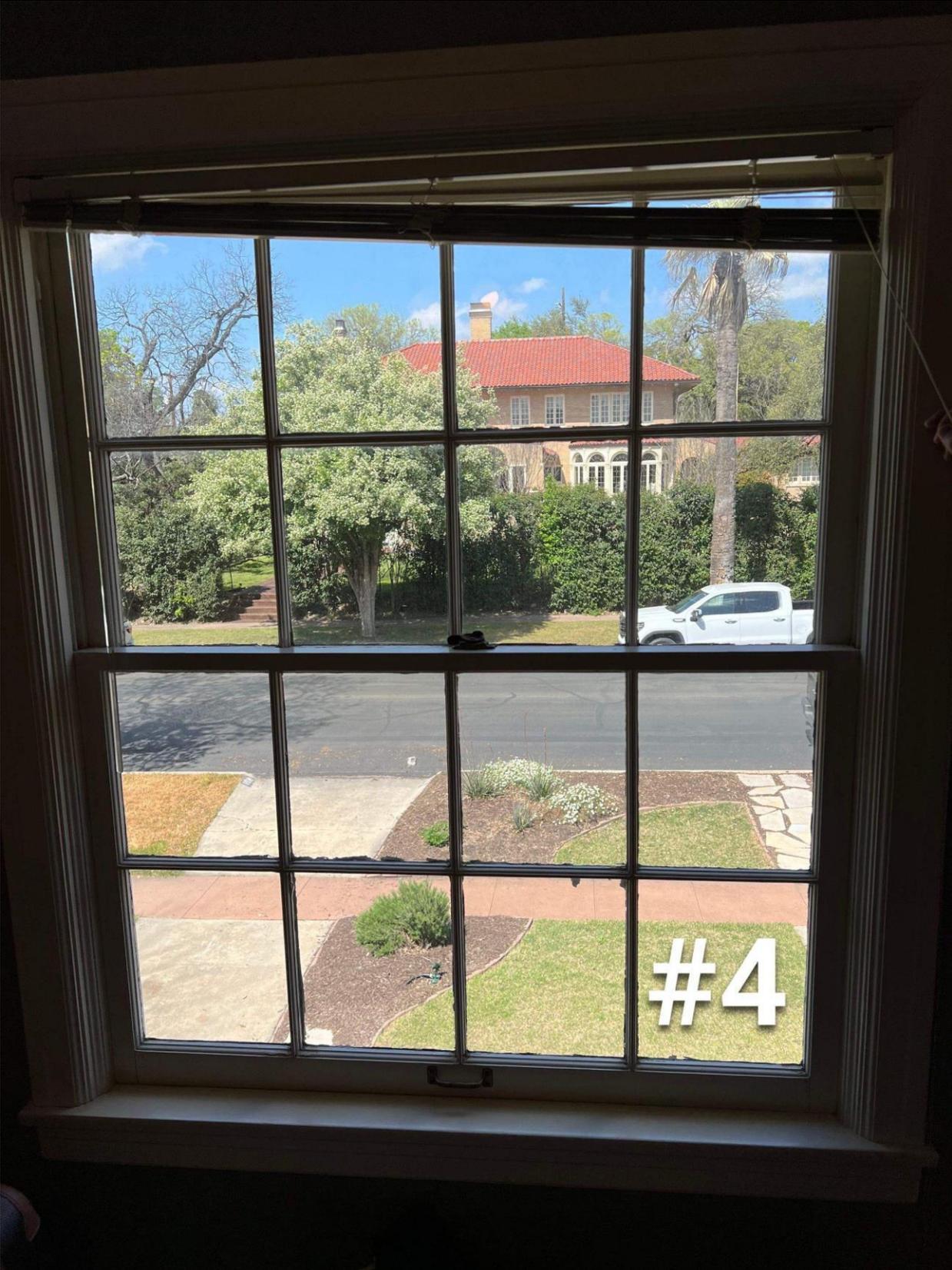
#3



#3



#4





#5



#5

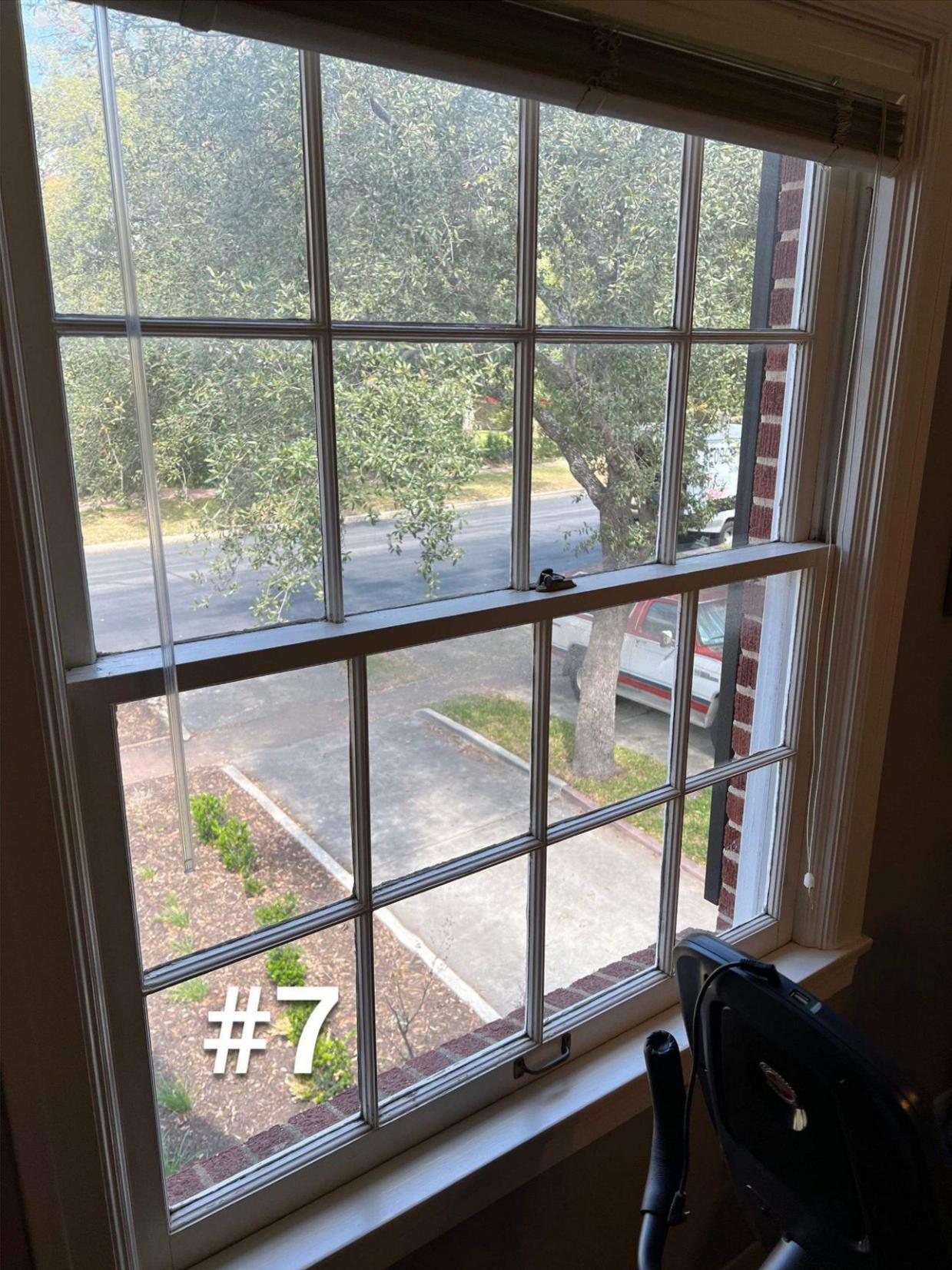


#6





#7





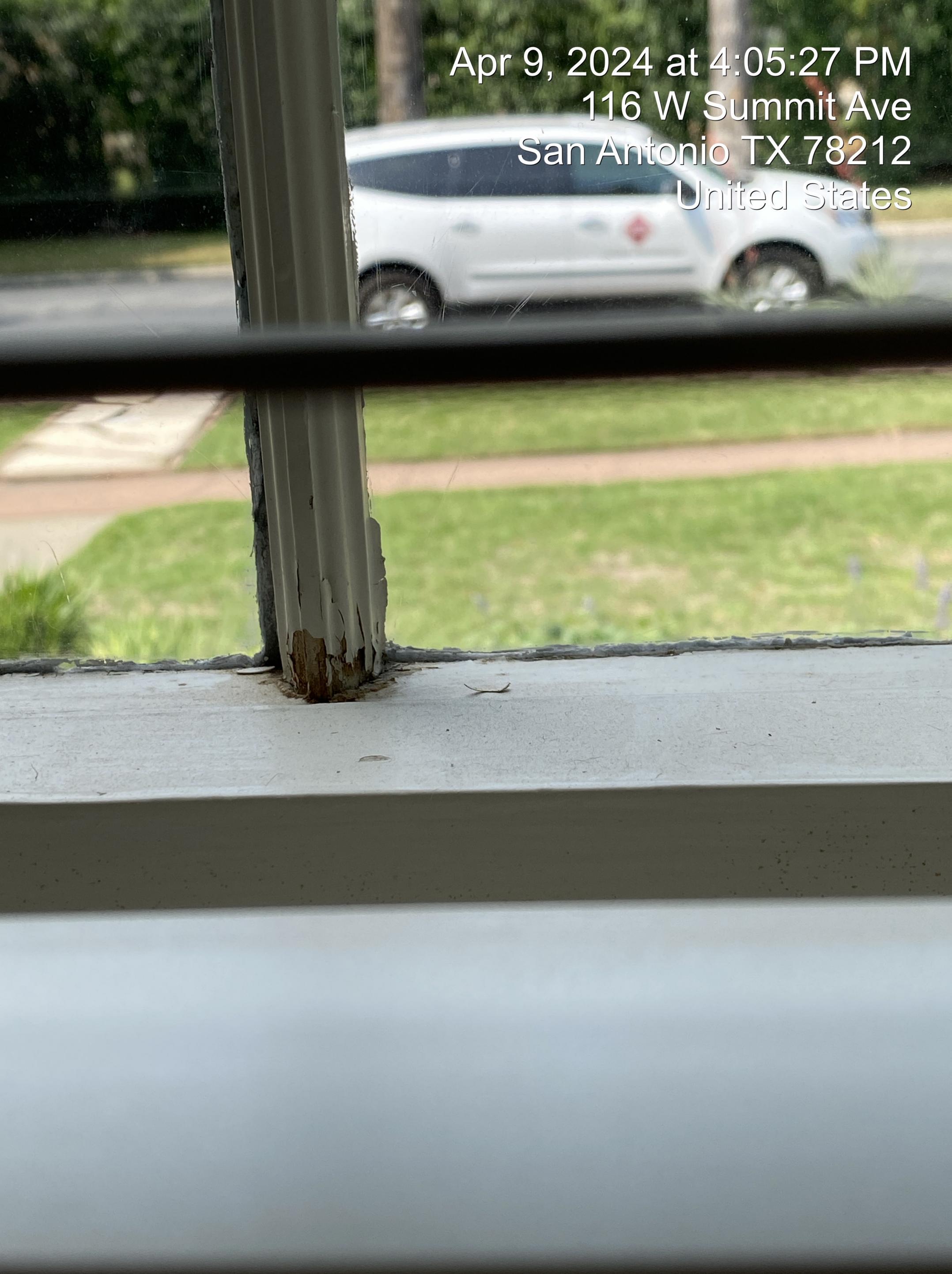
- #7
EVIDENCE OF WOOD ROT
- #6
ONE (1) BROKEN GIRD
- #1
WATER DAMAGE
SIGNS OF WOOD ROT
- #2
EXTERIOR MUNTIN DETERIORATION
- #1
INTERIOR WATER DAMAGE

- #4
WOOD ROT ON EXTERIOR
- #5
WOOD ROT
PAINT CHIPPING
- #3
EXTERIOR MUNTIN DETERIORATION
PAINT CHIPPING
WOOD SPLITTING

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116 W Summit Ave
San Antonio TX 78212
United States



Apr 9, 2024 at 4:05:27 PM
116 W Summit Ave
San Antonio TX 78212
United States



Apr 9, 2024 at 4:07:42 PM
116 W Summit Ave
San Antonio TX 78212
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San Antonio TX 78212
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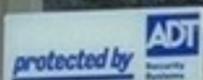
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San Antonio TX 78212
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San Antonio TX 78212
United States



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108 W Summit Ave
San Antonio TX 78212
United States





Contract - Detailed

Pella Window and Door Showroom of San Antonio
 1926 Gulfmart Dr
 San Antonio, TX 78217
Phone: (210) 735-2030 **Fax:** (210) 735-3837

Sales Rep Name: Blok, Derek
Sales Rep Phone: 210-330-8788
Sales Rep Fax:
Sales Rep E-Mail: dblok@pellasouthtexas.com

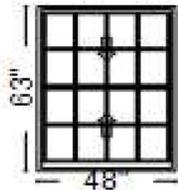
Customer Information	Project/Delivery Address	Order Information
Becky Kirbo 116 W Summit Ave San Antonio, TX 78212-2954 Primary Phone: (210) 7226296 Mobile Phone: Fax Number: E-Mail: beckykirbo@sbcglobal.net Contact Name: Great Plains #: 1007670891 Customer Number: 1011427786 Customer Account: 1007670891	Becky Kirbo - 116 W Summit Ave , Antonio, TX, US 7 116 W Summit Ave Lot # Antonio, TX 78212 County: Owner Name: Owner Phone:	Quote Name: Becky Kirbo - 116 W Summit Ave , Antonio, TX, US 7 Order Number: 775 Quote Number: 17809233 Order Type: Installed Sales Wall Depth: Payment Terms: Tax Code: USETAX Cust Delivery Date: None Quoted Date: 2/9/2024 Contracted Date: Booked Date: Customer PO #:

Line #	Location:	Attributes	Qty
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10 Living

Pella® Reserve, , Traditional Double Hung, 48 X 63

Qty
2



PK #
2156

Viewed From Exterior

1: 4863 Double Hung, Equal
Frame Size: 48 X 63
General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"
Exterior Color / Finish: Primed, Primed Aluminum
Interior Color / Finish: Linen White Paint Interior
Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs
Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor
Screen: No Screen
Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 44.625, Clear Opening Height 27.062, Clear Opening Area 8.386401, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee
Wrapping Information: No Exterior Trim, 4 15/16", 5 1/8", Standard Four Sided Jamb Extension, Factory Applied, Pella Recommended Clearance, Perimeter Length = 222".

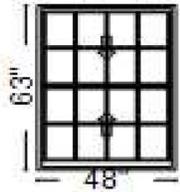
Rough Opening: 48 - 3/4" X 63 - 3/4"

For more information regarding the finishing, maintenance, service and warranty of all Pella® products, visit the Pella® website at www.pella.com

WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1
*MATERIALS001 - Installation Materials - Windows	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
W-INSTALL-OVERSIZE - Oversize/Large Unit	Qty	1

Line #	Location:	Attributes
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15 Dining



PK #
2156

Viewed From Exterior

Pella® Reserve, , Traditional Double Hung, 48 X 63

Qty
1

1: Non-Standard Size Double Hung, Equal

Frame Size: 48 X 63

General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"

Exterior Color / Finish: Primed, Primed Aluminum

Interior Color / Finish: Linen White Paint Interior

Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs

Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude

Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor

Screen: No Screen

Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 44.625, Clear Opening Height 27.062, Clear Opening Area 8.386401, Egress Meets Typical 5.7 sqft (E) (United States Only)

Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee

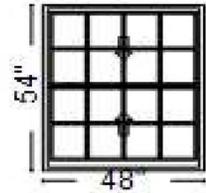
Wrapping Information: No Exterior Trim, 4 15/16", 5 1/8", Standard Four Sided Jamb Extension, Factory Applied, Pella Recommended Clearance, Perimeter Length = 222".

Rough Opening: 48 - 3/4" X 63 - 3/4"

WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1
*MATERIALS001 - Installation Materials - Windows	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
W-INSTALL-OVERSIZE - Oversize/Large Unit	Qty	1

Line #	Location:	Attributes
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20 Up. Guest



PK #
2156

Viewed From Exterior

Pella® Reserve, , Traditional Double Hung, 48 X 54

Qty
1

1: 4854 Double Hung, Equal

Frame Size: 48 X 54

General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"

Exterior Color / Finish: Primed, Primed Aluminum

Interior Color / Finish: Linen White Paint Interior

Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs

Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude

Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor

Screen: No Screen

Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 44.625, Clear Opening Height 22.562, Clear Opening Area 6.99187, Egress Does not meet typical United States egress, but may comply with local code requirements

Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee

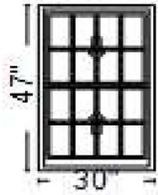
Wrapping Information: No Exterior Trim, 4 15/16", 5 1/8", Standard Four Sided Jamb Extension, Factory Applied, Pella Recommended Clearance, Perimeter Length = 204".

Rough Opening: 48 - 3/4" X 54 - 3/4"

*MATERIALS001 - Installation Materials - Windows	Qty	1
W-INSTALL-OVERSIZE - Oversize/Large Unit	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1
2ndFL-W-INSTALL - 2nd Floor Window Install	Qty	1

Line #	Location:	Attributes
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25 Up. Bath 1



Viewed From Exterior

PK #
2156

Pella® Reserve, , Traditional Double Hung, 30 X 47

Qty
1

1: Non-Standard Size Double Hung, Equal

Frame Size: 30 X 47

General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"

Exterior Color / Finish: Primed, Primed Aluminum

Interior Color / Finish: Linen White Paint Interior

Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs

Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude

Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor

Screen: No Screen

Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 26.625, Clear Opening Height 19.062, Clear Opening Area 3.524484, Egress Does not meet typical United States egress, but may comply with local code requirements

Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee

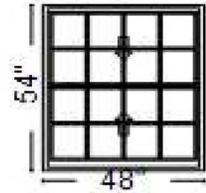
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Rough Opening: 30 - 3/4" X 47 - 3/4"

2ndFL-W-INSTALL - 2nd Floor Window Install	Qty	1
*MATERIALS001 - Installation Materials - Windows	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1

Line #	Location:	Attributes
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30 Up. Bath 3



PK #
2156

Viewed From Exterior

Pella® Reserve, , Traditional Double Hung, 48 X 54

Qty
1

1: 4854 Double Hung, Equal

Frame Size: 48 X 54

General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"

Exterior Color / Finish: Primed, Primed Aluminum

Interior Color / Finish: Linen White Paint Interior

Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs

Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude

Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor

Screen: No Screen

Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 44.625, Clear Opening Height 22.562, Clear Opening Area 6.99187, Egress Does not meet typical United States egress, but may comply with local code requirements

Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee

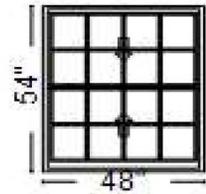
Wrapping Information: No Exterior Trim, 4 15/16", 5 1/8", Standard Four Sided Jamb Extension, Factory Applied, Pella Recommended Clearance, Perimeter Length = 204".

Rough Opening: 48 - 3/4" X 54 - 3/4"

*MATERIALS001 - Installation Materials - Windows	Qty	1
W-INSTALL-OVERSIZE - Oversize/Large Unit	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1
2ndFL-W-INSTALL - 2nd Floor Window Install	Qty	1

Line #	Location:	Attributes
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35 Up. Office



Viewed From Exterior

PK #
2156

Pella® Reserve, , Traditional Double Hung, 48 X 54

Qty
1

1: 4854 Double Hung, Equal

Frame Size: 48 X 54

General Information: Standard, Luxury, Wood, Pine, 4 3/8", 4 3/16"

Exterior Color / Finish: Primed, Primed Aluminum

Interior Color / Finish: Linen White Paint Interior

Sash / Panel: Putty Glaze, Ogee, Standard, No Sash Lugs

Glass: Insulated Dual Low-E SunDefense™ Low-E Insulating Glass Argon Non High Altitude

Hardware Options: Spoon-Style Lock, Champagne, No Window Opening Control Device, No Limited Opening Hardware, Order Sash Lift, No Integrated Sensor

Screen: No Screen

Performance Information: U-Factor 0.28, SHGC 0.19, VLT 0.44, CPD PEL-N-234-01191-00001, Performance Class CW, PG 45, Calculated Positive DP Rating 45, Calculated Negative DP Rating 45, TDI WIN-2038, Year Rated 08|11, Clear Opening Width 44.625, Clear Opening Height 22.562, Clear Opening Area 6.99187, Egress Does not meet typical United States egress, but may comply with local code requirements

Grille: ILT, No Custom Grille, 7/8", Traditional (4W2H / 4W2H), Putty Glaze, Ogee

Wrapping Information: No Exterior Trim, 4 15/16", 5 1/8", Standard Four Sided Jamb Extension, Factory Applied, Pella Recommended Clearance, Perimeter Length = 204".

Rough Opening: 48 - 3/4" X 54 - 3/4"

*MATERIALS001 - Installation Materials - Windows	Qty	1
W-INSTALL-OVERSIZE - Oversize/Large Unit	Qty	1
*MATERIALS003 - Sealant - OSI Quad Max - QTY 1	Qty	3
WDP-W-P-INSTALL - Wood Window Pocket Install (No interior trim)	Qty	1
2ndFL-W-INSTALL - 2nd Floor Window Install	Qty	1

Line #	Location:	Attributes
--------	-----------	------------

40 Stops

MATERIALS003 - Cedar Trim

Qty
4

Line #	Location:	Attributes	Qty
45		HDRC - HDRC-Review	<u>1</u>

Line #	Location:	Attributes	Qty
50		SAPERMIT - City of San Antonio Permit	<u>1</u>

Line #	Location:	Attributes	Qty
55	None Assigned	PROMO-SR - Senior Discount	<u>2</u>

Line #	Location:	Attributes	Qty
60	None Assigned	PROMO-*TS - Time Saver	1

Thank You For Purchasing Pella® Products

PELLA WARRANTY:

Pella products are covered by Pella's limited warranties in effect at the time of sale. All applicable product warranties are incorporated into and become a part of this contract. Please see the warranties for complete details, taking special note of the two important notice sections regarding installation of Pella products and proper management of moisture within the wall system. Neither Pella Corporation nor the Seller will be bound by any other warranty unless specifically set out in this contract. However, Pella Corporation will not be liable for branch warranties which create obligations in addition to or obligations which are inconsistent with Pella written warranties.

Clear opening (egress) information does not take into consideration the addition of a Rolscreen [or any other accessory] to the product. You should consult your local building code to ensure your Pella products meet local egress requirements.

Per the manufacturer's limited warranty, unfinished mahogany exterior windows and doors must be finished upon receipt prior to installing and refinished annually, thereafter. Variations in wood grain, color, texture or natural characteristics are not covered under the limited warranty.

INSYNCTIVE PRODUCTS: In addition, Pella Insynctive Products are covered by the Pella Insynctive Products Software License Agreement and Pella Insynctive Products Privacy Policy in effect at the time of sale, which can be found at [Insynctive.pella.com](https://www.pella.com). By installing or using Your Insynctive Products you are acknowledging the Insynctive Software Agreement and Privacy Policy are part of the terms of sale.

Notice of Collection of Personal Information: We may collect your personal information when you interact with us. Under the California Consumer Privacy Act (CCPA), California residents have specific rights to request this information, request to delete this information, and opt out of the sharing or sale of this information to third parties. To learn more about our collection practices and your rights under the CCPA please visit our link <https://www.pella.com/california-rights-policy/> at [pella.com](https://www.pella.com).

ARBITRATION AND CLASS ACTION WAIVER ("ARBITRATION AGREEMENT")

YOU and Pella and its subsidiaries and the Pella Branded Distributor AGREE TO ARBITRATE DISPUTES ARISING OUT OF OR RELATING TO YOUR PELLA PRODUCTS (INCLUDES PELLA GOODS AND PELLA SERVICES) AND WAIVE THE RIGHT TO HAVE A COURT OR JURY DECIDE DISPUTES. YOU WAIVE ALL RIGHTS TO PROCEED AS A MEMBER OR REPRESENTATIVE OF A CLASS ACTION, INCLUDING CLASS ARBITRATION, REGARDING DISPUTES ARISING OUT OF OR RELATING TO YOUR PELLA PRODUCTS. You may opt out of this Arbitration Agreement by providing notice to Pella no later than ninety (90) calendar days from the date You purchased or otherwise took ownership of Your Pella Goods. To opt out, You must send notice by e-mail to pellawebsupport@pella.com , with the subject line: "Arbitration Opt Out" or by calling (877) 473-5527. Opting out of the Arbitration Agreement will not affect the coverage provided by any applicable limited warranty pertaining to Your Pella Products. For complete information, including the full terms and conditions of this Arbitration Agreement, which are incorporated herein by reference, please visit www.pella.com/arbitration or e-mail to pellawebsupport@pella.com, with the subject line: "Arbitration Details" or call (877) 473-5527. D'ARBITRAGE ET RENONCIATION AU RECOURS COLLECTIF ("convention d'arbitrage") EN FRANÇAIS SEE PELLA.COM/ARBITRATION. DE ARBITRAJE Y RENUNCIA COLECTIVA ("acuerdo de arbitraje") EN ESPAÑOL VER PELLA.COM/ARBITRATION.

Seller shall not be held liable for failure or delay in the performance of its obligations under this Agreement, if such performance is hindered or delayed by the occurrence of an act or event beyond the Seller's reasonable control (force majeure event), including but not limited to earthquakes, unusually severe weather and other Acts of God, fire, strikes and labor unrest, epidemics, riots, war, civil unrest, and government interventions. Seller shall give timely notice of a force majeure event and take such reasonable action to mitigate the impacts of such an event.

Product Performance Information:

U-Factor, Solar Heat Gain Coefficient (SHGC), and Visible Light Transmittance (VLT) are certified by the National Fenestration Rating Council (NFRC).

For more information regarding the finishing, maintenance, service and warranty of all Pella® products, visit the Pella® website at www.pella.com

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any products and does not warrant the suitability of any product for any specific use.

Design Pressure (DP), Performance Class, and Performance Grade (PG) are certified by a third party organization, in many cases the Window and Door Manufacturers Association (WDMA). The certification requires the performance of at least one product of the product line to be tested in accordance with the applicable performance standards and verified by an independent party. The certification indicates that the product(s) of the product line passed the applicable tests. The certification does not apply to mulled and/or product combinations unless noted. Actual product results will vary and change over the products life.

For more performance information along with information on Florida Product Approval System (FPAS) Number and Texas Dept. of Insurance (TDI) number go to www.pella.com/performance.

Including during the construction period, casement windows should never be left open and unlocked for prolong periods or during high wind conditions to avoid sash detachment/damage.

Actual sizes tested for documented STC and OITC ratings may vary from the ASTM E 1425 sizes to better represent Pella product offering.

STC and OITC ratings shown may be conservatively based on products tested with thinner panes of glass.

STC and OITC ratings may be from test results from an equivalent product.

Terms & Conditions

All Orders

This quote is valid for 30 days and subject to repricing after that.

I am aware that the products sold by Pella South Texas are made to order and my order is made specifically for my home / project, including aesthetics and sizing. I understand that there will be no changes allowed on this order after products are ordered, and orders cannot be cancelled or returned. I have reviewed each line on the contract with the sales representative and clearly understand the hinging, venting, count of openings, grilles, sizing, and color are correct, with all products being viewed from the exterior.

To activate order, please sign and return this copy. All orders are subject to acceptance by Pella South Texas.

Pella South Texas makes no guarantees as to lead times and is not responsible for any delays, including those from manufacturers. Any lead time or delivery date discussions during the sales process are estimates based on the best information available at the time and should only be used as such. No discounts will be given for delays, including manufacturing.

Installed Orders (New Full Units)

For replacement projects, Pella South Texas makes no guarantees that existing window and door treatments and accessories (such as blinds, shutters, shades, storm doors, storm windows, etc.) will fit with your new Pella windows and doors.

For replacement projects, Pella South Texas makes no guarantees that existing interior (e.g. drywall, paint, wallpaper, etc.) or exterior materials (e.g. siding, stucco, EIFS, brick, etc.) will be undamaged during the installation process. While great care will be taken with our customers' homes, there are times where existing materials will not allow a window or door to be removed and reinstalled without additional work being required by the homeowner subsequent to installation.

Payment Terms:

Unless financing through Pella South Texas offered financing programs, payment of 50% is required prior to ordering any products (unless payment terms have been previously given)

The balance is due upon substantial completion. Substantial completion on each item is achieved when that line item has been installed and is operational. Partial invoices may occur. Items such as missing or broken parts and service adjustments are covered by warranty and do not affect the status of your project from being substantially complete.

Partial installations will be due for that part of the project upon substantial completion of that partial install.

The final payment must be Paid in Full on the last day of Substantial Completion. In the event that any part of your order was ordered incorrectly, has damage, or is incomplete, you may temporarily withhold the following from your final payment:

For items not able to be installed or needing a full unit reorder, the price due for that item, including installation cost, will not be due.

For items substantially complete but needing parts under warranty, you may withhold:

\$700 for damaged or broken sash/glass

\$300 for missing or damaged screen, hardware or similar product

Full payment is expected at the time missing or damaged units are installed or replaced.

Late payments beyond the Payment Terms defined above will be charged 1.5% of the outstanding balance per month. If Pella South Texas is required to employ an attorney to collect the amounts owed to it by Customer, Pella South Texas will be entitled to collect all attorney's fees, costs, and expenses it incurs.

Non-Installed Orders (New Full Units)

Pella South Texas makes no guarantees that existing window and door treatments and accessories (such as blinds, shutters, shades, storm doors, storm windows, etc.) will fit with your new Pella windows and doors.

Remaining account balance must be Paid in Full at delivery, unless credit terms have been extended by Pella South Texas.

Purchaser agrees to take receipt of all materials within 30 days of either original requested need by date or actual date of the entire order's arrival at Pella South Texas' warehouse, whichever is later. After 30 days, the remaining account balance is Due in Full. After 90 days, storage fees of 1.5% of the contracted price will be assessed per month. All storage fees are required to be Paid in Full prior to product delivery. Screens and hardware are exceptions and may be stored up to 24 months without penalty. If screens and hardware are not requested within 24 months after final product delivery, they are subject to disposal and would need to be repurchased and reordered when needed.

Call a minimum of five days in advance to schedule delivery. Customer is expected to supply help to unload unless a 2-man delivery is on the contract.

Any product damage must be reported to Pella South Texas within 48 hours of product receipt.

Late payments beyond the Payment Terms defined above will be charged 1.5% of the outstanding balance per month. If Pella South Texas is required to employ an attorney to collect the amounts owed to it by Customer, Pella South Texas will be entitled to collect all attorney's fees, costs, and expenses it incurs.

Service Orders

All non-warranty Service quotes must be paid for in full, including tax, prior to ordering. Service parts may not be returned or refunded.

Customer Name (Please print)

Pella Sales Rep Name (Please print)

Customer Signature

Pella Sales Rep Signature

Date

Date

Credit Card Approval Signature

Order Totals	
Taxable Subtotal	\$21,231.03
Sales Tax @ 0%	\$0.00
Non-taxable Subtotal	\$4,662.00
Total	\$25,893.03
Deposit Received	
Amount Due	\$25,893.03



Product Selection Guide

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Cottage Sash Units..... W-HG-14

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Replacement Units..... W-HG-25

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Document Navigation Tips:

Items listed in the table of contents above are active links that will take you to the corresponding page. The Pella logo on each page is a link back to this table of contents. Bookmarks are also included in this PDF document and are available as an additional navigation option.

Supporting documents for this product:

Test Reports:

https://media.pella.com/professional/adm/CertificationReports/Test_Reports_AS-Clad.pdf

CSI Specs

(readable using Microsoft Word or other text editing application):

https://media.pella.com/professional/adm/Wood-CSI_Specs/08552-R.rtf

AIA Masterspec

(readable using Microsoft Word or other text editing application):

https://media.pella.com/professional/adm/Wood-CSI_Specs/Masterspec/085200_fl.doc

Detailed Product Description

(readable using Microsoft Word or other text editing application):

Clad: <https://media.pella.com/professional/adm/Clad-Wood/PR-DoubleHung-C.rtf>

Wood: <https://media.pella.com/professional/adm/Clad-Wood/PR-DoubleHung-W.rtf>

Size Tables

(requires appropriate CAD software to read and use):

https://media.pella.com/professional/adm/Clad-Wood/ASCDHEV_D.dwg

CAD cross sections

(requires appropriate CAD software to read and use):

Clad: https://media.pella.com/professional/adm/Clad-Wood/ASRM5DH3_D.dwg

Wood: <https://media.pella.com/professional/adm/Clad-Wood/ASWM4DHRPT3b.dwg>

3D & BIM

(requires appropriate software to read and use):

https://media.pella.com/professional/adm/RevitFiles/PR-Revit/Window-Double_Hung-Pella-Reserve-Traditional.zip

Sketchup

(requires appropriate software to read and use):

https://media.pella.com/professional/adm/Clad-Wood/PellaSKP_PellaReserve_Traditional_Double-Hung.zip

Combination Recommendations:

https://media.pella.com/professional/adm/Clad-Wood/D_Combinations.pdf

Installation Details:

https://media.pella.com/professional/adm/Clad-Wood/F_InstallationDetails.pdf

Impact-Resistant Double-Hung, Complete Product Information:

https://media.pella.com/professional/adm/Clad-Wood/Pella-ImpactResistant_DoubleHung.pdf

Bay/Bow Details:

https://media.pella.com/professional/adm/Clad-Wood/Pella-Wood_BayBowWindows.pdf

The information published in this document is believed to be accurate at the time of publication. However, because we are constantly working to improve our products, specifications are subject to change without notice. Consult your local Pella representative for up-to-date product information.

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Pella® Reserve™ Traditional Hung Window

Size and Performance Data

Air/Water/Structural Performance ₁	
Meets or Exceeds AAMA/WDMA Ratings	H-CW30 - CW50 Hallmark Certified
Air Infiltration (cfm/ft ² of frame @ 1.57 psf wind pressure) ₂	0.11
Water Resistance	4.6 – 7.5 psf
Design Pressure	30 – 50 psf
Other Performance Criteria	
Forced Entry Resistance Level (Minimum Security Grade) ₃	10
Operating Force (lb) Initiate Motion / Maintain Motion (of Hallmark tested size and glazing) ₄	40/45

Sound Transmission Class / Outdoor-Indoor Transmission Class

Product	Frame Size Tested ₅	Glazing System				STC Rating	OITC Rating
		Overall Glazing Thickness	Exterior Glass Thickness	Interior Glass Thickness	Third Pane Thickness		
Clad Double-Hung Window	WITHOUT GRILLES						
	45" x 65"	11/16"	2.5mm	2.5mm	—	28	24
	45" x 65"	11/16"	5mm	3mm	—	31	27
Wood Double-Hung Window	WITHOUT GRILLES						
	45" x 65"	11/16"	2.5mm	2.5mm	—	26	22
	45" x 65"	11/16"	3mm	3mm	—	29	24

(—) = Not Available

(1) Maximum performance for single unit when glazed with the appropriate glass thickness. See Design Data pages in this section for specific product performance class and grade values.

(2) Published performance data for air infiltration is determined by testing a minimum of four (4) products of NFRC model size. Testing is conducted in accordance with ASTM E283. Air infiltration ratings for products will differ by size. The performance data does not apply to combination assemblies unless noted. Actual product performance may vary for a number of reasons including installation and product care.

(3) The higher the level, the greater the product's ability to resist forced entry.

(4) Glazing configurations may result in higher operational forces

(5) ASTM E 1425 defines standard sizes for acoustical testing. Ratings achieved at that size are representative of all sizes of the same configuration.



Pella® Reserve™ Traditional Hung Window

Features and Options

Standard	Options / Upgrades
Glazing	
Glazing Type	
Dual-Pane Insulating Glass	—
Insulated Glass Options/Low-E Types	
Advanced Low-E	SunDefense™ Low-E
	SunDefense+ Low-E
	AdvancedComfort Low-E
	NaturalSun Low-E
	NaturalSun+ Low-E
	Clear (no Low-E coating)
Additional Glass Options	
Annealed Glass	Tempered Glass
	Obscure Glass ₁
	Low-E Tinted Glass (Bronze, Gray and Green)
	Non-Impact Laminated Dual-Pane Insulating Glass
Gas Fill/High Altitude	
Argon	High altitude
Exterior	
Exterior Sash Profile	
Ogee	Putty Glaze
Exterior Finish	
EnduraClad® aluminum-clad exterior	EnduraClad Plus protective finish, Factory Primed Pine wood exterior, Unfinished Mahogany wood exterior
Cladding Colors	
Standard colors ₁	Feature Colors, Custom Colors ₁
Interior	
Unfinished wood	Factory primed
	Factory prefinished paint ₁
	Factory prefinished stain ₁
Wood Types	
Pine	Mahogany, Douglas Fir
Hardware	
Hardware Types	
Sash lifts, Cam-action lock	Simulated lock
	Air conditioner lock
	Historical spoon-style lock (surface mounted)
Hardware Finishes	
Champagne, White, Brown or Matte Black	Satin Brass, Satin Nickel, Oil-Rubbed Bronze, Distressed Bronze, Distressed Nickel ₄
Tilt-Wash Cleaning	
Tilt to interior on both sashes	—
Grilles	
Integral Light Technology® Grilles	
—	Traditional, Prairie, Top Row, Cross, New England, Victorian, Diamond, Custom
Grilles-Between-the-Glass	
—	Traditional, Prairie, Top Row ₁ , Cross, Custom-Equally Divided
Screens	
—	Integrated Rolscreen® - retractable screen, InView™ screens, in standard roll-form or premium extruded aluminum frame

(—) = Not Available

(1) Contact your local Pella sales representative for current designs and color options.

(2) Only available for Pella Reserve products with triple glazing. Not available with high altitude glazing.

(3) Available with Low-E argon-insulated glass only.

(4) Antique Brass, Distressed Nickel, Distressed Bronze finishes available for Historical spoon-style lock only.

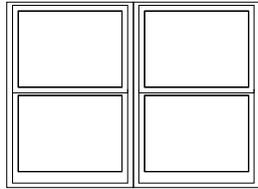


Combination Assemblies - Rectangular Units

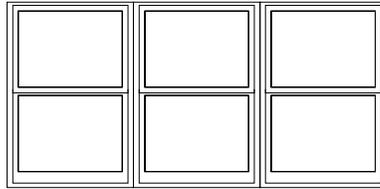
Combinations are a great way to create visual interest in any project. A combination is an assembly formed by two or more separate windows or doors whose frames are mullioned together by a combination or reinforcing mullion.

Pella window combinations are available in an endless variety of arrangements. Below are some examples of factory-assembled combinations. See the Combinations Recommendations document for typical mullions, requirements and limitations.

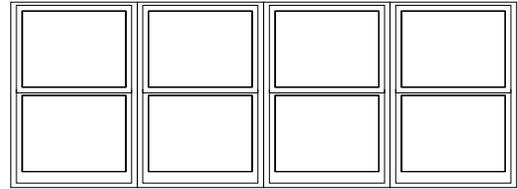
Contact your local Pella sales representative for more information.



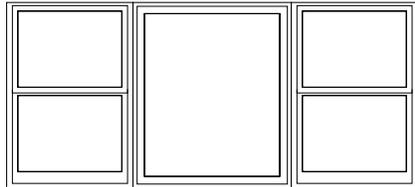
Two-Wide



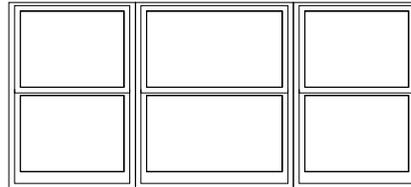
Three-Wide Equal



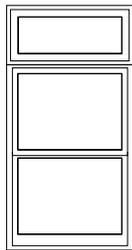
Four-Wide Equal



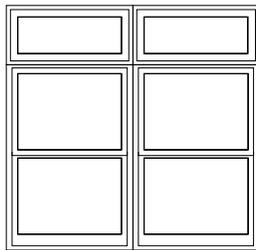
Center Fixed with Flankers



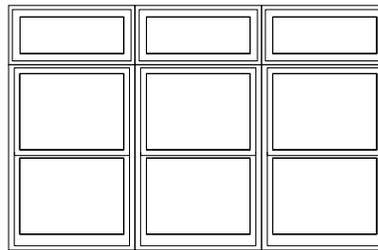
Three-Wide Unequal



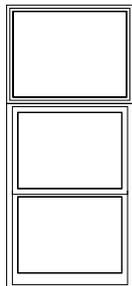
Transom over Single



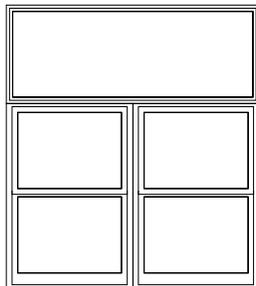
Two-Wide Transoms over Two-Wide



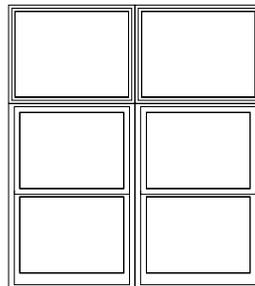
Three-Wide Transoms over Three-Wide



Clad Frame over Single



Single Clad Frame over Two-Wide



Two Wide Clad Frame over Two-Wide

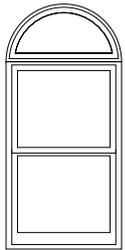


Combination Assemblies - Arch Top Units

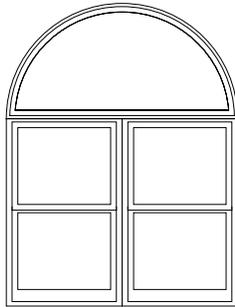
Combinations are a great way to create visual interest in any project. A combination is an assembly formed by two or more separate windows or doors whose frames are mullioned together by a combination or reinforcing mullion.

Pella window combinations are available in an endless variety of arrangements, below are some examples. See the Combinations Recommendations document for typical mullions, requirements and limitations.

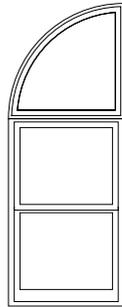
Contact your local Pella sales representative for more information.



Half Circle over Single



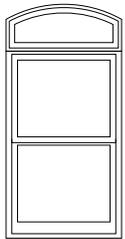
Half Circle over Two-Wide



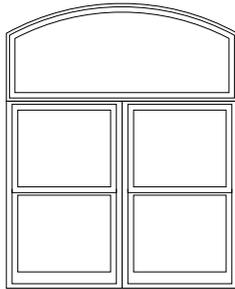
Left Quarter Circle over Single



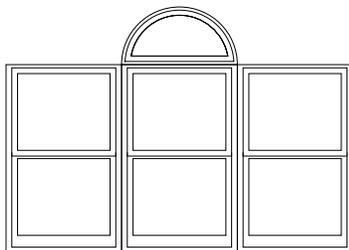
Right Quarter Circle over Single



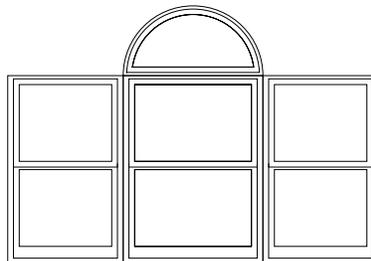
Arch Head over Single



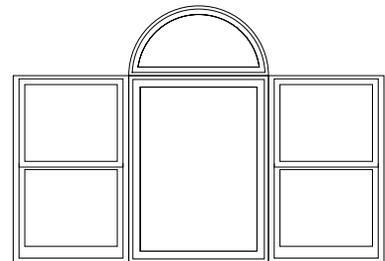
Arch Head over Two-Wide



Half Circle centered on Three-Wide Equal



Half Circle over Three-Wide Unequal



Half Circle over Center Fixed with Flankers



Pella® Reserve™ Traditional Hung Window

Glazing Performance - Total Unit

Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown								
			Ext.	Int.		U-Factor	SHGC	VLT	CR	U. S.				Canada ²				
										Zone				ER	Zone			
Vent Dual-Pane Glazing - Aluminum-Clad Exterior										N	NC	SC	S					
11/16"	Clear IG	PEL-N-232-01105-00001	2.5	2.5	air	0.46	0.60	0.62	44									
	with grilles-between-the-glass	PEL-N-232-01106-00001				0.46	0.53	0.55	44									
	with integral grilles	PEL-N-232-01107-00001				0.46	0.53	0.55	44									
11/16"	Clear IG	PEL-N-232-01109-00001	3	3	air	0.46	0.58	0.61	44									
	with grilles-between-the-glass	PEL-N-232-01110-00001				0.46	0.52	0.55	44									
	with integral grilles	PEL-N-232-01111-00001				0.46	0.52	0.55	44									
11/16"	Advanced Low-E IG	PEL-N-232-01141-00001	2.5	2.5	argon	0.29	0.28	0.53	60									
	with grilles-between-the-glass	PEL-N-232-01142-00001				0.29	0.25	0.47	60									
	with integral grilles	PEL-N-232-01143-00001				0.29	0.25	0.47	60									
11/16"	Advanced Low-E IG	PEL-N-232-01145-00001	3	3	argon	0.29	0.28	0.52	59									
	with grilles-between-the-glass	PEL-N-232-01146-00001				0.29	0.25	0.46	59									
	with integral grilles	PEL-N-232-01147-00001				0.29	0.25	0.46	59									
11/16"	SunDefense™ Low-E IG	PEL-N-232-01189-00001	2.5	2.5	argon	0.28	0.21	0.49	60			SC	S					
	with grilles-between-the-glass	PEL-N-232-01190-00001				0.28	0.19	0.43	60			SC	S					
	with integral grilles	PEL-N-232-01191-00001				0.29	0.19	0.43	60				S					
11/16"	SunDefense™ Low-E IG	PEL-N-232-01193-00001	3	3	argon	0.28	0.21	0.48	59			SC	S					
	with grilles-between-the-glass	PEL-N-232-01194-00001				0.28	0.19	0.43	59			SC	S					
	with integral grilles	PEL-N-232-01195-00001				0.29	0.19	0.43	59				S					
11/16"	SunDefense+ Low-E IG	PEL-N-232-01813-00001	2.5	2.5	argon	0.25	0.20	0.48	49		NC	SC	S					
	with grilles-between-the-glass	PEL-N-232-01814-00001				0.25	0.18	0.42	49		NC	SC	S					
	with integral grilles	PEL-N-232-01815-00001				0.25	0.18	0.42	49		NC	SC	S					
11/16"	SunDefense+ Low-E IG	PEL-N-232-01821-00001	3	3	argon	0.25	0.20	0.47	48		NC	SC	S					
	with grilles-between-the-glass	PEL-N-232-01822-00001				0.25	0.18	0.42	48		NC	SC	S					
	with integral grilles	PEL-N-232-01823-00001				0.26	0.18	0.42	48			SC	S					
11/16"	AdvancedComfort Low-E IG	PEL-N-232-01165-00001	2.5	2.5	argon	0.25	0.28	0.52	48		NC							
	with grilles-between-the-glass	PEL-N-232-01166-00001				0.25	0.25	0.46	48		NC							
	with integral grilles	PEL-N-232-01167-00001				0.26	0.25	0.46	48									
11/16"	AdvancedComfort Low-E IG	PEL-N-232-01169-00001	3	3	argon	0.25	0.27	0.51	47		NC							
	with grilles-between-the-glass	PEL-N-232-01170-00001				0.25	0.25	0.45	47		NC							
	with integral grilles	PEL-N-232-01171-00001				0.26	0.25	0.45	47									
11/16"	NaturalSun Low-E IG	PEL-N-232-01117-00001	2.5	2.5	argon	0.30	0.52	0.60	59									
	with grilles-between-the-glass	PEL-N-232-01118-00001				0.30	0.47	0.53	59									
	with integral grilles	PEL-N-232-01119-00001				0.30	0.47	0.53	59									
11/16"	NaturalSun Low-E IG	PEL-N-232-01121-00001	3	3	argon	0.30	0.52	0.59	58									
	with grilles-between-the-glass	PEL-N-232-01122-00001				0.30	0.46	0.53	58									
	with integral grilles	PEL-N-232-01123-00001				0.30	0.46	0.53	58									
11/16"	NaturalSun+ Low-E IG	PEL-N-232-01781-00001	2.5	2.5	argon	0.26	0.48	0.58	47	N						35	CA	
	with grilles-between-the-glass	PEL-N-232-01782-00001				0.26	0.43	0.52	47	N								
	with integral grilles	PEL-N-232-01783-00001				0.27	0.43	0.52	47									
11/16"	NaturalSun+ Low-E IG	PEL-N-232-01789-00001	3	3	argon	0.26	0.47	0.58	46	N						34	CA	
	with grilles-between-the-glass	PEL-N-232-01790-00001				0.26	0.42	0.51	46	N								
	with integral grilles	PEL-N-232-01791-00001				0.26	0.42	0.51	46	N								

R-Value = 1/U-Factor
 SHGC = Solar Heat Gain Coefficient
 VLT % = Visible Light Transmission
 CR = Condensation Resistance
 ER = Canadian Energy Rating

(1) Glazing performance values are calculated for Pine using NFRC 100, NFRC 200 and NFRC 500. Thermal performance of other wood species may vary. ENERGY STAR® values are updated to 2023 (Version 7) criteria.

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Glazing Performance - Total Unit

Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown						
			Ext.	Int.		U-Factor	SHGC	VLT	CR	U. S.				Canada ²		
										Zone				ER	Zone	
Tinted Glazing										N	NC	SC	S	CA		
11/16"	Bronze Advanced Low-E IG	PEL-N-232-01225-00002	5	3	argon	0.29	0.25	0.34	58							
	with grilles-between-the-glass	PEL-N-232-01226-00002				0.31	0.23	0.30	58				S			
	with integral grilles	PEL-N-232-01227-00002				0.30	0.23	0.30	58				S			
11/16"	Gray Advanced Low-E IG	PEL-N-232-01225-00003	5	3	argon	0.29	0.23	0.29	58				S			
	with grilles-between-the-glass	PEL-N-232-01226-00003				0.31	0.21	0.26	58				S			
	with integral grilles	PEL-N-232-01227-00003				0.30	0.21	0.26	58				S			
11/16"	Green Advanced Low-E IG	PEL-N-232-01225-00004	5	3	argon	0.29	0.28	0.46	58							
	with grilles-between-the-glass	PEL-N-232-01226-00004				0.31	0.25	0.41	58							
	with integral grilles	PEL-N-232-01227-00004				0.30	0.25	0.41	58							
Vent Dual-Pane High Altitude Glazing - Aluminum-Clad Exterior																
11/16"	Advanced Low-E IG	PEL-N-232-01153-00001	2.5	2.5	air	0.32	0.28	0.53	56							
	with grilles-between-the-glass	PEL-N-232-01154-00001				0.32	0.25	0.47	56							
	with integral grilles	PEL-N-232-01155-00001				0.33	0.25	0.47	56							
11/16"	Advanced Low-E IG	PEL-N-232-01157-00001	3	3	air	0.32	0.28	0.52	55							
	with grilles-between-the-glass	PEL-N-232-01158-00001				0.32	0.25	0.46	55							
	with integral grilles	PEL-N-232-01159-00001				0.33	0.25	0.46	55							
11/16"	SunDefense™ Low-E IG	PEL-N-232-01201-00001	2.5	2.5	air	0.32	0.21	0.49	56				S			
	with grilles-between-the-glass	PEL-N-232-01202-00001				0.32	0.19	0.43	56				S			
	with integral grilles	PEL-N-232-01203-00001				0.33	0.19	0.43	56				S			
11/16"	SunDefense™ Low-E IG	PEL-N-232-01205-00001	3	3	air	0.32	0.21	0.48	55				S			
	with grilles-between-the-glass	PEL-N-232-01206-00001				0.32	0.19	0.43	55				S			
	with integral grilles	PEL-N-232-01207-00001				0.33	0.19	0.43	55							
11/16"	SunDefense+ Low-E IG	PEL-N-232-01809-00001	2.5	2.5	air	0.27	0.21	0.48	44			SC	S			
	with grilles-between-the-glass	PEL-N-232-01810-00001				0.27	0.19	0.42	44			SC	S			
	with integral grilles	PEL-N-232-01811-00001				0.28	0.19	0.42	44			SC	S			
11/16"	SunDefense+ Low-E IG	PEL-N-232-01817-00001	3	3	air	0.27	0.21	0.47	44			SC	S			
	with grilles-between-the-glass	PEL-N-232-01818-00001				0.27	0.19	0.42	44			SC	S			
	with integral grilles	PEL-N-232-01819-00001				0.28	0.19	0.42	43			SC	S			
11/16"	AdvancedComfort Low-E IG	PEL-N-232-01177-00001	2.5	2.5	air	0.27	0.28	0.52	44							
	with grilles-between-the-glass	PEL-N-232-01178-00001				0.27	0.25	0.46	44							
	with integral grilles	PEL-N-232-01179-00001				0.28	0.25	0.46	44							
11/16"	AdvancedComfort Low-E IG	PEL-N-232-01181-00001	3	3	air	0.28	0.27	0.51	43							
	with grilles-between-the-glass	PEL-N-232-01182-00001				0.28	0.25	0.45	43							
	with integral grilles	PEL-N-232-01183-00001				0.28	0.25	0.45	43							
11/16"	NaturalSun Low-E IG	PEL-N-232-01129-00001	2.5	2.5	air	0.33	0.52	0.60	56							
	with grilles-between-the-glass	PEL-N-232-01130-00001				0.33	0.47	0.53	56							
	with integral grilles	PEL-N-232-01131-00001				0.34	0.47	0.53	55							
11/16"	NaturalSun Low-E IG	PEL-N-232-01133-00001	3	3	air	0.33	0.51	0.59	55							
	with grilles-between-the-glass	PEL-N-232-01134-00001				0.33	0.46	0.52	55							
	with integral grilles	PEL-N-232-01135-00001				0.34	0.46	0.52	55							
11/16"	NaturalSun+ Low-E IG	PEL-N-232-01777-00001	2.5	2.5	air	0.28	0.48	0.58	43							
	with grilles-between-the-glass	PEL-N-232-01778-00001				0.28	0.43	0.52	43							
	with integral grilles	PEL-N-232-01779-00001				0.29	0.43	0.52	43							
11/16"	NaturalSun+ Low-E IG	PEL-N-232-01785-00001	3	3	air	0.28	0.47	0.58	43							
	with grilles-between-the-glass	PEL-N-232-01786-00001				0.28	0.42	0.51	43							
	with integral grilles	PEL-N-232-01787-00001				0.29	0.42	0.51	42							

R-Value = 1/U-Factor
 SHGC = Solar Heat Gain Coefficient
 VLT % = Visible Light Transmission
 CR = Condensation Resistance
 ER = Canadian Energy Rating

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Pella® Reserve™ Traditional Hung Window

Glazing Performance - Total Unit

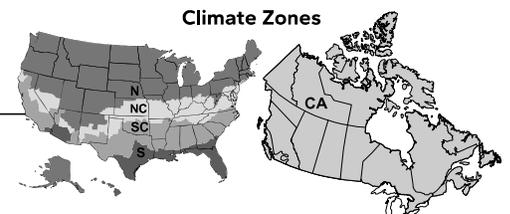
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown								
			Ext.	Int.		U-Factor	SHGC	VLT	CR	U. S.				Canada ²				
										Zone				ER	Zone			
Vent Dual-Pane Glazing - Wood Exterior										N	NC	SC	S					
11/16"	Clear IG	PEL-N-234-01105-00001	2.5	2.5	air	0.45	0.60	0.62	44									
	with grilles-between-the-glass	PEL-N-234-01106-00001				0.45	0.54	0.56	44									
	with integral grilles	PEL-N-234-01107-00001				0.45	0.54	0.56	44									
11/16"	Clear IG	PEL-N-234-01109-00001	3	3	air	0.45	0.59	0.62	43									
	with grilles-between-the-glass	PEL-N-234-01110-00001				0.45	0.53	0.55	43									
	with integral grilles	PEL-N-234-01111-00001				0.46	0.53	0.55	43									
11/16"	Advanced Low-E IG	PEL-N-234-01141-00001	2.5	2.5	argon	0.28	0.28	0.53	59									
	with grilles-between-the-glass	PEL-N-234-01142-00001				0.28	0.25	0.47	59									
	with integral grilles	PEL-N-234-01143-00001				0.29	0.25	0.47	59									
11/16"	Advanced Low-E IG	PEL-N-234-01145-00001	3	3	argon	0.28	0.28	0.52	58									
	with grilles-between-the-glass	PEL-N-234-01146-00001				0.28	0.25	0.47	58									
	with integral grilles	PEL-N-234-01147-00001				0.29	0.25	0.47	58									
11/16"	SunDefense™ Low-E IG	PEL-N-234-01189-00001	2.5	2.5	argon	0.28	0.21	0.49	60			SC	S					
	with grilles-between-the-glass	PEL-N-234-01190-00001				0.28	0.19	0.44	60			SC	S					
	with integral grilles	PEL-N-234-01191-00001				0.28	0.19	0.44	60			SC	S					
11/16"	SunDefense™ Low-E IG	PEL-N-234-01193-00001	3	3	argon	0.28	0.21	0.49	59			SC	S					
	with grilles-between-the-glass	PEL-N-234-01194-00001				0.28	0.19	0.43	59			SC	S					
	with integral grilles	PEL-N-234-01195-00001				0.28	0.19	0.43	59			SC	S					
11/16"	SunDefense+ Low-E IG	PEL-N-234-01813-00001	2.5	2.5	argon	0.24	0.21	0.48	49		NC	SC	S					
	with grilles-between-the-glass	PEL-N-234-01814-00001				0.24	0.19	0.43	49		NC	SC	S					
	with integral grilles	PEL-N-234-01815-00001				0.25	0.19	0.43	49		NC	SC	S					
11/16"	SunDefense+ Low-E IG	PEL-N-234-01821-00001	3	3	argon	0.24	0.21	0.47	47		NC	SC	S					
	with grilles-between-the-glass	PEL-N-234-01822-00001				0.24	0.19	0.42	47		NC	SC	S					
	with integral grilles	PEL-N-234-01823-00001				0.25	0.19	0.42	47		NC	SC	S					
11/16"	AdvancedComfort Low-E IG	PEL-N-234-01165-00001	2.5	2.5	argon	0.24	0.28	0.52	48		NC							
	with grilles-between-the-glass	PEL-N-234-01166-00001				0.24	0.25	0.46	48		NC							
	with integral grilles	PEL-N-234-01167-00001				0.25	0.25	0.46	48		NC							
11/16"	AdvancedComfort Low-E IG	PEL-N-234-01169-00001	3	3	argon	0.24	0.28	0.51	47		NC							
	with grilles-between-the-glass	PEL-N-234-01170-00001				0.24	0.25	0.46	47		NC							
	with integral grilles	PEL-N-234-01171-00001				0.25	0.25	0.46	47		NC							
11/16"	NaturalSun Low-E IG	PEL-N-234-01117-00001	2.5	2.5	argon	0.29	0.53	0.60	59						34	CA		
	with grilles-between-the-glass	PEL-N-234-01118-00001				0.29	0.47	0.53	59									
	with integral grilles	PEL-N-234-01119-00001				0.30	0.47	0.53	59									
11/16"	NaturalSun Low-E IG	PEL-N-234-01121-00001	3	3	argon	0.29	0.52	0.59	58									
	with grilles-between-the-glass	PEL-N-234-01122-00001				0.29	0.46	0.53	58									
	with integral grilles	PEL-N-234-01123-00001				0.30	0.46	0.53	58									
11/16"	NaturalSun+ Low-E IG	PEL-N-234-01781-00001	2.5	2.5	argon	0.25	0.48	0.59	47	N					36	CA		
	with grilles-between-the-glass	PEL-N-234-01782-00001				0.25	0.43	0.52	47	N								
	with integral grilles	PEL-N-234-01783-00001				0.26	0.43	0.52	47	N								
11/16"	NaturalSun+ Low-E IG	PEL-N-234-01789-00001	3	3	argon	0.25	0.47	0.58	46	N					35	CA		
	with grilles-between-the-glass	PEL-N-234-01790-00001				0.25	0.42	0.52	46	N								
	with integral grilles	PEL-N-234-01791-00001				0.26	0.42	0.52	46	N								

R-Value = 1/U-Factor
 SHGC = Solar Heat Gain Coefficient
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Glazing Performance - Total Unit

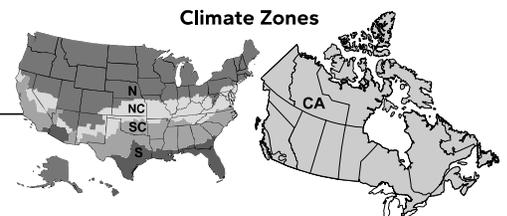
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown					
			Ext.	Int.		U-Factor	SHGC	VLT	CR	U. S.					
										Zone				ER	Zone
Tinted Glazing										N	NC	SC	S		CA
11/16"	Bronze Advanced Low-E IG	PEL-N-234-01225-00002	5	3	argon	0.29	0.25	0.34	57						
	with grilles-between-the-glass	PEL-N-234-01226-00002				0.30	0.23	0.30	57				S		
	with integral grilles	PEL-N-234-01227-00002				0.30	0.23	0.30	57				S		
11/16"	Gray Advanced Low-E IG	PEL-N-234-01225-00003	5	3	argon	0.29	0.23	0.29	57				S		
	with grilles-between-the-glass	PEL-N-234-01226-00003				0.30	0.21	0.26	57				S		
	with integral grilles	PEL-N-234-01227-00003				0.30	0.21	0.26	57				S		
11/16"	Green Advanced Low-E IG	PEL-N-234-01225-00004	5	3	argon	0.29	0.28	0.46	57						
	with grilles-between-the-glass	PEL-N-234-01226-00004				0.30	0.25	0.41	57						
	with integral grilles	PEL-N-234-01227-00004				0.30	0.25	0.41	57						
Vent Dual-Pane High Altitude Glazing - Wood Exterior															
11/16"	Advanced Low-E IG	PEL-N-234-01153-00001	2.5	2.5	air	0.31	0.28	0.53	56						
	with grilles-between-the-glass	PEL-N-234-01154-00001				0.31	0.26	0.47	56						
	with integral grilles	PEL-N-234-01155-00001				0.32	0.26	0.47	56						
11/16"	Advanced Low-E IG	PEL-N-234-01157-00001	3	3	air	0.32	0.28	0.52	55						
	with grilles-between-the-glass	PEL-N-234-01158-00001				0.32	0.26	0.47	55						
	with integral grilles	PEL-N-234-01159-00001				0.33	0.26	0.47	55						
11/16"	SunDefense™ Low-E IG	PEL-N-234-01201-00001	2.5	2.5	air	0.31	0.21	0.49	56				S		
	with grilles-between-the-glass	PEL-N-234-01202-00001				0.31	0.19	0.44	56				S		
	with integral grilles	PEL-N-234-01203-00001				0.32	0.19	0.44	56				S		
11/16"	SunDefense™ Low-E IG	PEL-N-234-01205-00001	3	3	air	0.31	0.21	0.49	55				S		
	with grilles-between-the-glass	PEL-N-234-01206-00001				0.31	0.19	0.43	55				S		
	with integral grilles	PEL-N-234-01207-00001				0.32	0.19	0.43	55				S		
11/16"	SunDefense+ Low-E IG	PEL-N-234-01809-00001	2.5	2.5	air	0.26	0.21	0.48	45			SC	S		
	with grilles-between-the-glass	PEL-N-234-01810-00001				0.26	0.19	0.43	45			SC	S		
	with integral grilles	PEL-N-234-01811-00001				0.27	0.19	0.43	45			SC	S		
11/16"	SunDefense+ Low-E IG	PEL-N-234-01817-00001	3	3	air	0.27	0.21	0.47	43			SC	S		
	with grilles-between-the-glass	PEL-N-234-01818-00001				0.27	0.19	0.42	43			SC	S		
	with integral grilles	PEL-N-234-01819-00001				0.28	0.19	0.42	43			SC	S		
11/16"	AdvancedComfort Low-E IG	PEL-N-234-01177-00001	2.5	2.5	air	0.27	0.28	0.52	44						
	with grilles-between-the-glass	PEL-N-234-01178-00001				0.27	0.25	0.46	44						
	with integral grilles	PEL-N-234-01179-00001				0.27	0.25	0.46	44						
11/16"	AdvancedComfort Low-E IG	PEL-N-234-01181-00001	3	3	air	0.27	0.28	0.51	43						
	with grilles-between-the-glass	PEL-N-234-01182-00001				0.27	0.25	0.46	43						
	with integral grilles	PEL-N-234-01183-00001				0.28	0.25	0.46	43						
11/16"	NaturalSun Low-E IG	PEL-N-234-01129-00001	2.5	2.5	air	0.32	0.53	0.60	55						
	with grilles-between-the-glass	PEL-N-234-01130-00001				0.32	0.47	0.53	55						
	with integral grilles	PEL-N-234-01131-00001				0.33	0.47	0.53	55						
11/16"	NaturalSun Low-E IG	PEL-N-234-01133-00001	3	3	air	0.33	0.52	0.59	54						
	with grilles-between-the-glass	PEL-N-234-01134-00001				0.33	0.46	0.53	54						
	with integral grilles	PEL-N-234-01135-00001				0.33	0.46	0.53	54						
11/16"	NaturalSun+ Low-E IG	PEL-N-234-01777-00001	2.5	2.5	air	0.27	0.48	0.59	44						
	with grilles-between-the-glass	PEL-N-234-01778-00001				0.27	0.43	0.52	44						
	with integral grilles	PEL-N-234-01779-00001				0.28	0.43	0.52	43						
11/16"	NaturalSun+ Low-E IG	PEL-N-234-01785-00001	3	3	air	0.28	0.47	0.58	42						
	with grilles-between-the-glass	PEL-N-234-01786-00001				0.28	0.42	0.52	42						
	with integral grilles	PEL-N-234-01787-00001				0.28	0.42	0.52	42						

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 Non Rectangular Unit thermal values will vary slightly.

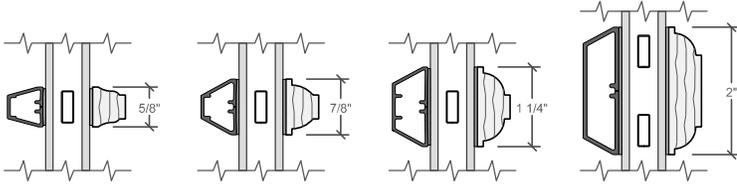




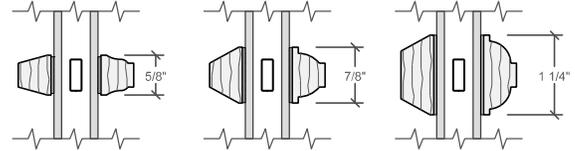
Grille Profiles

Traditional Style Collection - Integral Light Technology®

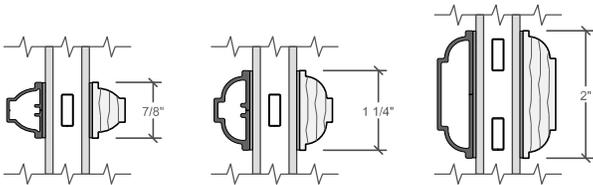
Putty Glaze and Ogee Grilles
Clad Exterior - Wood Interior



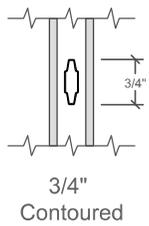
Putty Glaze and Ogee Grilles
Wood Exterior - Wood Interior



Ogee Grilles
Clad Exterior - Wood Interior



Grilles-Between-the-Glass



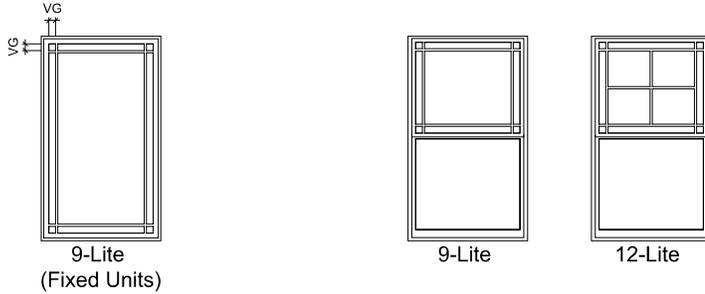
Interior wood ILT grilles available in Pine, Mahogany or Douglas Fir to match complete unit.
Exterior wood ILT grilles available in Pine or Mahogany to match complete unit.



Grille Patterns

Integral light technology® Grilles

Prairie Lite Patterns

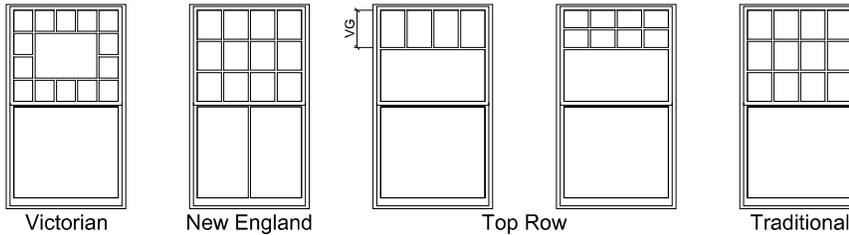


Standard corner lite dimension for Prairie patterns = 2-1/2" VG.

Available in transoms ≥ 1'3" height and width.

Available in all standard and special sizes.

Other Available Patterns

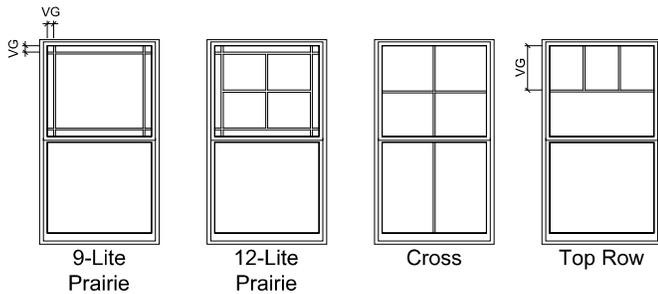


VG = Visible Glass

Lite dimensions noted can vary.

For size and pattern availability contact your local Pella sales representative.

Grilles-Between-the-Glass



Prairie

- Standard corner lite dimension for Prairie patterns = 2-1/2" VG.

- Available in transoms ≥ 1'3" height and width.

Cross

- Minimum DH frame height 35".

- Horizontal bar will be at 1/2" of the VG height of the top sash.

Top Row

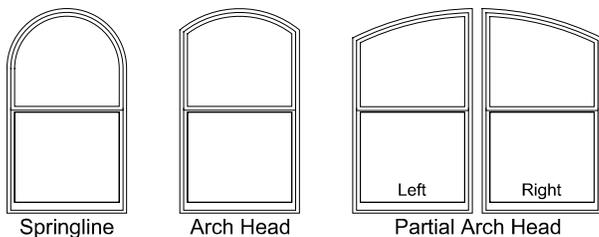
- Minimum DH frame height 35".

- Horizontal bar will be at 1/2" of the VG height of the top sash.

For traditional patterns, see size tables.

Custom shapes

Pella Reserve single-hung windows are available in custom shapes shown below, and additional shapes per drawing. For specifications, size limitations, and details on these units, contact your local Pella sales representative.

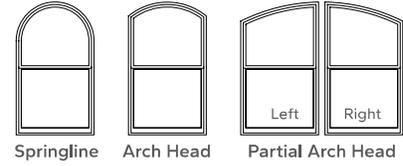




Pella® Reserve™ Traditional Hung Window

Size Tables - Equal Sash

Fixed Transoms		(552)	(654)	(756)	(857)	(959)	(1 060)	(1 162)	(1 238)
		(533)	(635)	(737)	(838)	(940)	(1 041)	(1 143)	(1 219)
Opening	Frame	1' 9 3/4"	2' 1 3/4"	2' 5 3/4"	2' 9 3/4"	3' 1 3/4"	3' 5 3/4"	3' 9 3/4"	4' 0 3/4"
1' 2"	1' 9"	2114	2514	2914	3314	3714	4114	4514	4814
1' 5"	2' 1"	2117	2517	2917	3317	3717	4117	4517	4817
1' 8"	2' 5"	2125	2525	2925	3325	3725	4125	4525	4825
2' 1"	2' 9"								
2' 4"	3' 1"								
2' 7"	3' 5"								
3' 0"	3' 9"								
3' 3"	4' 0"								
Vent Units									
2' 11"	2' 11 3/4"	2135	2535	2935	3335	3735	4135	4535	4835
3' 5"	3' 5 3/4"	2141	2541	2941	3341	3741	4141	4541	4841
3' 11"	3' 11 3/4"	2147	2547	2947	3347	3747	4147	4547	4847
4' 5"	4' 5 3/4"	2153	2553	2953	3353	3753	4153	4553	4853
4' 9"	4' 9 3/4"	2157	2557	2957	3357	3757	4157	4557	4857
4' 11"	4' 11 3/4"	2159	2559	2959	3359	3759	4159	4559	4859
5' 5"	5' 5 3/4"	2165	2565	2965	3365	3765	4165	4565	4865
5' 11"	5' 11 3/4"	2171	2571	2971	3371	3771	4171	4571	4871
6' 5"	6' 5 3/4"	2177	2577	2977	3377	3777	4177	4577	4877
7' 0"	7' 0 3/4"	2184	2584	2984	3384	3784	4184	4584	4884



Pella Reserve single-hung windows are available in shapes shown above, and additional custom shapes per drawing. For specifications, size limitations, and details on these units, contact your local Pella sales representative.

Opening Dimensions

Clad Exterior Units:
Dimensions shown in standard size tables are rough opening dimensions.

Wood Exterior Units:
Use frame dimension plus dimensions below. This dimension includes the use of standard 1-1/8" wood subsill.

Frame	Rough		Masonry	
	Width	Height	Width	Height
Brickmould				
STD	+ 3/4"	+1-7/8"	+ 3-1/8"	+ 3-1/8"
3-1/2"	+ 3/4"	+1-7/8"	+ 6-3/8"	+ 4-3/4"

For clad and wood units with impact-resistant glass, see the product installation instructions or refer to local building code requirements.

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

See Design Data pages in this section for clear opening dimensions.

Clear opening (egress) information does not take into consideration the addition of a Rolscreen (or any other accessory) to the product. You should consult your local building code to ensure products with Rolcreens meet egress requirements.

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.



Pella® Reserve™ Traditional Hung Window

Size Tables - Fixed

Fixed Units

	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)
Opening	3' 5 ³ / ₄ "	3' 11 ³ / ₄ "	4' 5 ³ / ₄ "	4' 11 ³ / ₄ "
Frame	3' 5"	3' 11"	4' 5"	4' 11"
(908) (889)	2' 11 ³ / ₄ "	2' 11"		
(1 060) (1 041)	3' 5 ³ / ₄ "	3' 5"		
(1 213) (1 194)	3' 11 ³ / ₄ "	3' 11"		
(1 365) (1 346)	4' 5 ³ / ₄ "	4' 5"		
(1 467) (1 448)	4' 9 ³ / ₄ "	4' 9"		
(1 518) (1 499)	4' 11 ³ / ₄ "	4' 11"		
(1 670) (1 651)	5' 5 ³ / ₄ "	5' 5"		
(1 822) (1 803)	5' 11 ³ / ₄ "	5' 11"		
	4135	4735	5335	5935
	4141	4741	5341	5941
	4147	4747	5347	5947
	4153	4753	5353	5953
	4157	4757	5357	5957
	4159	4759	5359	5959
	4165	4765	5365	5965
	4171	4771	5371	5971

Opening Dimensions

Clad Exterior Units:

Dimensions shown in standard size tables are rough opening dimensions.

Wood Exterior Units:

Use frame dimension plus dimensions below. This dimension includes the use of standard 1-1/8" wood subsill.

Frame	Rough		Masonry	
	Width	Height	Width	Height
Brickmould				
STD	+ 3/4"	+1-7/8"	+ 3-1/8"	+ 3-1/8"
3-1/2"	+ 3/4"	+1-7/8"	+ 6-3/8"	+ 4-3/4"

For clad and wood units with impact-resistant glass, see the product installation instructions or refer to local building code requirements.

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.

Grille patterns will align with companion hung window with equal sash split.

5-lite high grille patterns may be ordered in 5'5" fixed units to match cottage sash vent units.

Grilles are equally-divided on fixed units with odd-number lites high.



Pella® Reserve™ Traditional Hung Window

Size Tables - Cottage Sash

VENT UNITS

	(552) (533)	(654) (635)	(756) (737)	(857) (838)	(959) (940)	(1 060) (1 041)	(1 162) (1 143)	(1 238) (1 219)
Opening	1' 9 3/4"	2' 1 3/4"	2' 5 3/4"	2' 9 3/4"	3' 1 3/4"	3' 5 3/4"	3' 9 3/4"	4' 0 3/4"
Frame	1' 9"	2' 1"	2' 5"	2' 9"	3' 1"	3' 5"	3' 9"	4' 0"
(1 060) (1 041)								
(1 213) (1 194)								
(1 365) (1 346)								
(1 467) (1 448)								
(1 518) (1 499)								
(1 670) (1 651)								
(1 822) (1 803)								
(1 822) (1 803)								

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

See Design Data pages in this section for clear opening dimensions.

Clear opening (egress) information does not take into consideration the addition of a Rolscreen (or any other accessory) to the product. You should consult your local building code to ensure products with Rolscreens meet egress requirements.

Opening Dimensions

Clad Exterior Units:

Dimensions shown in standard size tables are rough opening dimensions.

Wood Exterior Units:

Use frame dimension plus dimensions below. This dimension includes the use of standard 1-1/8" wood subsill.

Brickmould	Rough		Masonry	
	Width	Height	Width	Height
STD	+ 3/4"	+1-7/8"	+ 3-1/8"	+ 3-1/8"
3-1/2"	+ 3/4"	+1-7/8"	+ 6-3/8"	+ 4-3/4"

For clad and wood units with impact-resistant glass, see the product installation instructions or refer to local building code requirements.

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.

Cottage units have unequal sash split. Sash glass ratio is 40% upper sash to 60% Lower sash.

Vent variable units have unequal sash split. Sash glass ratio is determined by checkrail heights. See unit sections for dimension requirements.



Pella® Reserve™ Traditional Hung Window

Size Tables - Replacement Equal Sash Sizes

Transoms

	(616) (597)	(718) (699)	(762) (749)	(819) (800)	(921) (902)	(1 022) (1 003)	(1 073) (1 054)
Opening	2' 0 1/4"	2' 4 1/4"	2' 6 1/4"	2' 8 1/4"	3' 0 1/4"	3' 4 1/4"	3' 6 1/4"
Frame	1' 11 1/2"	2' 3 1/2"	2' 5 1/2"	2' 7 1/2"	2' 11 1/2"	3' 3 1/2"	3' 5 1/2"
(375) (356)							
	23.5 x 14	27.5 x 14	29.5 x 14	31.5 x 14	35.5 x 14	39.5 x 14	41.5 x 14
(451) (432)							
	23.5 x 17	27.5 x 17	29.5 x 17	31.5 x 17	35.5 x 17	39.5 x 17	41.5 x 17
(654) (635)							
	23.5 x 25	27.5 x 25	29.5 x 25	31.5 x 25	35.5 x 25	39.5 x 25	41.5 x 25

Vent Units

(921) (902)							
	23.5 x 35.5	27.5 x 35.5	29.5 x 35.5	31.5 x 35.5	35.5 x 35.5	39.5 x 35.5	41.5 x 35.5
(972) (953)							
	23.5 x 37.5	27.5 x 37.5	29.5 x 37.5	31.5 x 37.5	35.5 x 37.5	39.5 x 37.5	41.5 x 37.5
(1 073) (1 054)							
	23.5 x 41.5	27.5 x 41.5	29.5 x 41.5	31.5 x 41.5	35.5 x 41.5	39.5 x 41.5	41.5 x 41.5
(1 175) (1 156)							
	23.5 x 45.5	27.5 x 45.5	29.5 x 45.5	31.5 x 45.5	35.5 x 45.5	39.5 x 45.5	41.5 x 45.5
(1 226) (1 206)							
	23.5 x 47.5	27.5 x 47.5	29.5 x 47.5	31.5 x 47.5	35.5 x 47.5	39.5 x 47.5	41.5 x 47.5
(1 327) (1 308)							
	23.5 x 51.5	27.5 x 51.5	29.5 x 51.5	31.5 x 51.5	35.5 x 51.5	39.5 x 51.5	41.5 x 51.5
(1 378) (1 359)							
	23.5 x 53.5	27.5 x 53.5	29.5 x 53.5	31.5 x 53.5	35.5 x 53.5	39.5 x 53.5	41.5 x 53.5
(1 473) (1 461)							
	23.5 x 57.5	27.5 x 57.5	29.5 x 57.5	31.5 x 57.5	35.5 x 57.5	39.5 x 57.5	41.5 x 57.5

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

See Design Data pages in this section for clear opening dimensions.

Clear opening (egress) information does not take into consideration the addition of a RolSCREEN (or any other accessory) to the product. You should consult your local building code to ensure products with RolSCREENS meet egress requirements.

Not to scale.

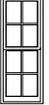
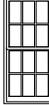
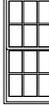
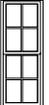
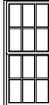
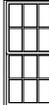
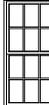
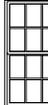
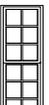
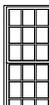
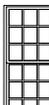
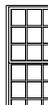
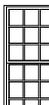
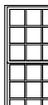
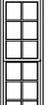
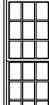
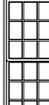
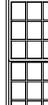
Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.



Pella® Reserve™ Traditional Hung Window

Size Tables - Replacement Sizes

Vent Units

	(616) (597)	(718) (699)	(762) (749)	(819) (800)	(921) (902)	(1 022) (1 003)	(1 073) (1 054)
Opening	2' 0 1/4"	2' 4 1/4"	2' 6"	2' 8 1/4"	3' 0 1/4"	3' 4 1/4"	3' 6 1/4"
Frame	1' 11 1/2"	2' 3 1/2"	2' 5 1/2"	2' 7 1/2"	2' 11 1/2"	3' 3 1/2"	3' 5 1/2"
(1 530) (1 511)							
	23.5 x 59.5	27.5 x 59.5	29.5 x 59.5	31.5 x 59.5	35.5 x 59.5 E1	39.5 x 59.5 E	41.5 x 59.5 E
(1 581) (1 562)							
	23.5 x 61.5	27.5 x 61.5	29.5 x 61.5	31.5 x 61.5 E1	35.5 x 61.5 E	39.5 x 61.5 E	41.5 x 61.5 E
(1 683) (1 664)							
	23.5 x 65.5	27.5 x 65.5	29.5 x 65.5	31.5 x 65.5 E1	35.5 x 65.5 E	39.5 x 65.5 E	41.5 x 65.5 E
(1 835) (1 816)							
	23.5 x 71.5	27.5 x 71.5 E1	29.5 x 71.5 E1	31.5 x 71.5 E	35.5 x 71.5 E	39.5 x 71.5 E	41.5 x 71.5 E

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

See Design Data pages in this section for clear opening dimensions.

Clear opening (egress) information does not take into consideration the addition of a Rolscreen (or any other accessory) to the product. You should consult your local building code to ensure products with Rolcreens meet egress requirements.

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.



Size Tables - Replacement Cottage Sash Sizes

Cottage Vent Units

	(616) (597)	(718) (699)	(762) (749)	(819) (800)	(921) (902)	(1 022) (1 003)	(1 073) (1 054)
Opening	2' 0 1/4"	2' 4 1/4"	2' 6 1/4"	2' 8 1/4"	3' 0 1/4"	3' 4 1/4"	3' 6 1/4"
Frame	1' 11 1/2"	2' 3 1/2"	2' 5 1/2"	2' 7 1/2"	2' 11 1/2"	3' 3 1/2"	3' 5 1/2"
(1 073) (1 054)	23.5 x 41.5	27.5 x 41.5	29.5 x 41.5	31.5 x 41.5	35.5 x 41.5	39.5 x 41.5	41.5 x 41.5
(1 175) (1 156)	23.5 x 45.5	27.5 x 45.5	29.5 x 45.5	31.5 x 45.5	35.5 x 45.5	39.5 x 45.5	41.5 x 45.5
(1 226) (1 206)	23.5 x 47.5	27.5 x 47.5	29.5 x 47.5	31.5 x 47.5	35.5 x 47.5	39.5 x 47.5	41.5 x 47.5
(1 327) (1 308)	23.5 x 51.5	27.5 x 51.5	29.5 x 51.5	31.5 x 51.5	35.5 x 51.5	39.5 x 51.5	41.5 x 51.5
(1 378) (1 359)	23.5 x 53.5	27.5 x 53.5	29.5 x 53.5	31.5 x 53.5	35.5 x 53.5	39.5 x 53.5	41.5 x 53.5
(1 473) (1 461)	23.5 x 57.5	27.5 x 57.5	29.5 x 57.5	31.5 x 57.5	35.5 x 57.5	39.5 x 57.5	41.5 x 57.5
(1 530) (1 511)	23.5 x 59.5	27.5 x 59.5	29.5 x 59.5	31.5 x 59.5	35.5 x 59.5	39.5 x 59.5	41.5 x 59.5
(1 581) (1 561.5)	23.5 x 61.5	27.5 x 61.5	29.5 x 61.5	31.5 x 61.5	35.5 x 61.5	39.5 x 61.5	41.5 x 61.5
(1 683) (1 664)	23.5 x 65.5	27.5 x 65.5	29.5 x 65.5	31.5 x 65.5	35.5 x 65.5	39.5 x 65.5	41.5 x 65.5
(1 835) (1 816)	23.5 x 71.5	27.5 x 71.5	29.5 x 71.5	31.5 x 71.5	35.5 x 71.5	39.5 x 71.5	41.5 x 71.5

Egress Notes:
 Check all applicable local codes for emergency egress requirements.
 E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
 E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².
 See Design Data pages in this section for clear opening dimensions.
 Clear opening (egress) information does not take into consideration the addition of a Rolscreen (or any other accessory) to the product. You should consult your local building code to ensure products with Rolcreens meet egress requirements.

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.



Pella® Reserve™ Traditional Hung Window

Size Tables - Replacement Fixed Sizes

Fixed Units	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)
Opening	3' 5 ³ / ₄ "	3' 11 ³ / ₄ "	4' 5 ³ / ₄ "	4' 11 ³ / ₄ "	3' 5 ³ / ₄ "	3' 11 ³ / ₄ "	4' 5 ³ / ₄ "	4' 11 ³ / ₄ "
Frame	3' 5"	3' 11"	4' 5"	4' 11"	3' 5"	3' 11"	4' 5"	4' 11"
(1 473) (1 461)	4' 10 ¹ / ₄ "	4' 9 ¹ / ₂ "	4' 10 ¹ / ₄ "	4' 9 ¹ / ₂ "	5' 0 ¹ / ₄ "	5' 11 ¹ / ₂ "	5' 0 ¹ / ₄ "	5' 11 ¹ / ₂ "
(1 378) (1 359)	4' 6 ¹ / ₄ "	4' 5 ¹ / ₂ "	4' 6 ¹ / ₄ "	4' 5 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "
(1 327) (1 308)	4' 4 ¹ / ₄ "	4' 3 ¹ / ₂ "	4' 4 ¹ / ₄ "	4' 3 ¹ / ₂ "	5' 2 ¹ / ₄ "	5' 11 ¹ / ₂ "	5' 2 ¹ / ₄ "	5' 11 ¹ / ₂ "
(1 226) (1 206)	4' 0 ¹ / ₄ "	3' 11 ¹ / ₂ "	4' 0 ¹ / ₄ "	3' 11 ¹ / ₂ "	5' 6 ¹ / ₄ "	5' 5 ¹ / ₂ "	5' 6 ¹ / ₄ "	5' 5 ¹ / ₂ "
(1 175) (1 156)	3' 10 ¹ / ₄ "	3' 9 ¹ / ₂ "	3' 10 ¹ / ₄ "	3' 9 ¹ / ₂ "	5' 2 ¹ / ₄ "	5' 11 ¹ / ₂ "	5' 2 ¹ / ₄ "	5' 11 ¹ / ₂ "
(1 073) (1 054)	3' 6 ¹ / ₄ "	3' 5 ¹ / ₂ "	3' 6 ¹ / ₄ "	3' 5 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "
(972) (953)	3' 2 ¹ / ₄ "	3' 1 ¹ / ₂ "	3' 2 ¹ / ₄ "	3' 1 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "
(921) (902)	3' 0 ¹ / ₄ "	2' 11 ¹ / ₂ "	3' 0 ¹ / ₄ "	2' 11 ¹ / ₂ "	4' 11 ¹ / ₂ "			
	41 x 35.5	47 x 35.5	53 x 35.5	59 x 35.5	41 x 59.5	47 x 59.5	53 x 59.5	59 x 59.5
	41 x 37.5	47 x 37.5	53 x 37.5	59 x 37.5	41 x 61.5	47 x 61.5	53 x 61.5	59 x 61.5
	41 x 41.5	47 x 41.5	53 x 41.5	59 x 41.5	41 x 65.5	47 x 65.5	53 x 65.5	59 x 65.5
	41 x 45.5	47 x 45.5	53 x 45.5	59 x 45.5	41 x 71.5	47 x 71.5	53 x 71.5	59 x 71.5
	41 x 47.5	47 x 47.5	53 x 47.5	59 x 47.5				
	41 x 51.5	47 x 51.5	53 x 51.5	59 x 51.5				
	41 x 53.5	47 x 53.5	53 x 53.5	59 x 53.5				
	41 x 57.5	47 x 57.5	53 x 57.5	59 x 57.5				

Not to scale.

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.



Special Size Frame Dimensions*

Sash configuration	Vent-Equal	Cottage	Fixed
Sash Glass Ratio Top % : Bottom %	50 : 50	40 : 60	NA
Shortest Unit Frame Size	24-3/8" (619)	40-1/4" (1 022)	17" (432)
Tallest Unit Frame Size	96" (2 438)	81" (2 057)	71" (1 803)
Unit Frame Width Range	14" to 48" (356 to 1 219)	14" to 48" (356 to 1 219)	17" to 59" (432 to 1 499)

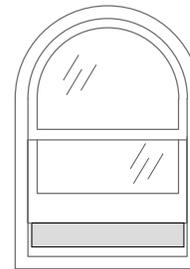
Opening Dimensions

Clad Exterior Units:
Dimensions shown in standard size tables are rough opening dimensions.

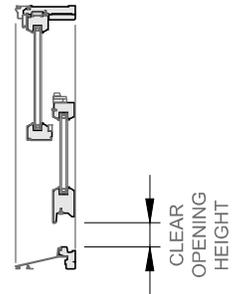
Wood Exterior Units:
Use frame dimension plus dimensions below. This dimension includes the use of standard 1-1/8" wood subsill.

Frame	Rough		Masonry	
	Width	Height	Width	Height
STD	+ 3/4"	+1-7/8"	+ 3-1/8"	+ 3-1/8"
3-1/2"	+ 3/4"	+1-7/8"	+ 6-3/8"	+ 4-3/4"

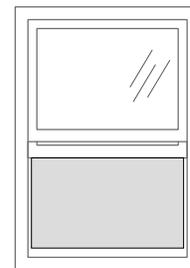
For clad and wood units with impact-resistant glass, see the product installation instructions or refer to local building code requirements.



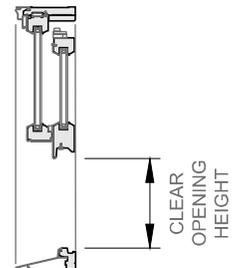
Shaded portion shows vent area.



CLEAR OPENING WIDTH



Shaded portion shows vent area.



Equal Sash Rectangular Only

	Vent Units	Fixed and Transom Units
Visible Glass	Width = Frame - 5.647" Height = (Frame - 8.681") ÷ 2	Width = Frame - 5.75" Height = Frame - 5.75"
Actual Glass	Width = Frame - 4.375" Height = (Frame - 5.983") ÷ 2	Width = Frame - 4.375" Height = Frame - 4.375"
Clear Opening*	COV = Frame Width - 3.4375" COH = (Frame Height ÷ 2) - 4.4375"	— —
Vent Area Ft²	(COV x COH) ÷ 144	—

Traditional grille patterns shown. Refer to Grille Types section for additional patterns and profiles.

* Some units with custom glazing may have limited travel. Integrated Rolscreen® is only available on sizes greater than or equal to 34" tall and 21" wide and less than or equal to 84" tall and 48" wide.

See your local Pella sales representative for specific size information.



Pella® Reserve™ Traditional Hung Window

Design Data

Vent Equal Sash for Single- and Double-Hung									
Unit	Egress	Clear Opening (Inches)		Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ⁽¹⁾	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
2135		17-5/16	13-1/16	1.6	2.8	2.5	3	CW50	CW45
2141		17-5/16	16-1/16	1.9	3.4	2.5	3	CW50	CW45
2147		17-5/16	19-1/16	2.3	4.1	2.5	3	CW50	CW45
2153		17-5/16	22-1/16	2.7	4.7	2.5	3	CW50	CW45
2157		17-5/16	24-1/16	2.9	5.2	2.5	3	CW50	CW45
2159		17-5/16	25-1/16	3.0	5.4	2.5	3	CW50	CW45
2165		17-5/16	28-1/16	3.4	6.0	2.5	3	CW50	CW45
2171		17-5/16	31-1/16	3.7	6.6	2.5	3	CW50	CW45
2177		17-5/16	34-1/16	4.1	7.3	2.5	3	CW50	CW45
2184		17-5/16	37-9/16	4.5	8.0	2.5	3	CW40	CW40
2535		21-5/16	13-1/16	1.9	3.5	2.5	3	CW50	CW45
2541		21-5/16	16-1/16	2.4	4.3	2.5	3	CW50	CW45
2547		21-5/16	19-1/16	2.8	5.1	2.5	3	CW50	CW45
2553		21-5/16	22-1/16	3.3	6.0	2.5	3	CW50	CW45
2557		21-5/16	24-1/16	3.6	6.5	2.5	3	CW50	CW45
2559		21-5/16	25-1/16	3.7	6.8	2.5	3	CW50	CW45
2565		21-5/16	28-1/16	4.2	7.6	2.5	3	CW50	CW45
2571		21-5/16	31-1/16	4.6	8.4	2.5	3	CW50	CW45
2577	E1	21-5/16	34-1/16	5.0	9.2	2.5	3	CW50	CW45
2584	E1	21-5/16	37-9/16	5.6	10.1	2.5	3	CW40	CW40
2935		25-5/16	13-1/16	2.3	4.3	2.5	3	CW50	CW45
2941		25-5/16	16-1/16	2.8	5.2	2.5	3	CW50	CW45
2947		25-5/16	19-1/16	3.4	6.2	2.5	3	CW50	CW45
2953		25-5/16	22-1/16	3.9	7.2	2.5	3	CW50	CW45
2957		25-5/16	24-1/16	4.2	7.8	2.5	3	CW50	CW45
2959		25-5/16	25-1/16	4.4	8.2	2.5	3	CW50	CW45
2965		25-5/16	28-1/16	4.9	9.1	2.5	3	CW50	CW45
2971	E1	25-5/16	31-1/16	5.5	10.1	2.5	3	CW50	CW45
2977	E	25-5/16	34-1/16	6.0	11.1	2.5	3	CW50	CW45
2984	E	25-5/16	37-9/16	6.6	12.2	2.5	3	CW40	CW40
3335		29-5/16	13-1/16	2.7	5.0	2.5	3	CW50	CW45
3341		29-5/16	16-1/16	3.3	6.1	2.5	3	CW50	CW45
3347		29-5/16	19-1/16	3.9	7.3	2.5	3	CW50	CW45
3353		29-5/16	22-1/16	4.5	8.4	2.5	3	CW50	CW45
3357		29-5/16	24-1/16	4.9	9.2	2.5	3	CW50	CW45
3359	E1	29-5/16	25-1/16	5.1	9.6	2.5	3	CW50	CW45
3365	E	29-5/16	28-1/16	5.7	10.7	2.5	3	CW50	CW45
3371	E	29-5/16	31-1/16	6.3	11.8	2.5	3	CW50	CW45
3377	E	29-5/16	34-1/16	6.9	13.0	2.5	3	CW50	CW45
3384	E	29-5/16	37-9/16	7.7	14.3	2.5	3	CW40	CW40

Continued on next page

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum design pressure when glazed with appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data

Vent Equal Sash for Single- and Double-Hung									
Unit	Egress	Clear Opening (Inches)		Vent Area Ft²	Visible Glass Ft²	Standard Glass Thickness (mm)		Performance Class & Grade ⁽¹⁾	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
3735		33-5/16	13-1/16	3.0	5.7	2.5	3	CW50	CW45
3741		33-5/16	16-1/16	3.7	7.0	2.5	3	CW50	CW45
3747		33-5/16	19-1/16	4.4	8.3	2.5	3	CW50	CW45
3753		33-5/16	22-1/16	5.1	9.6	2.5	3	CW50	CW45
3757	E ₁	33-5/16	24-1/16	5.6	10.5	2.5	3	CW50	CW45
3759	E	33-5/16	25-1/16	5.8	11.0	2.5	3	CW50	CW45
3765	E	33-5/16	28-1/16	6.5	12.3	2.5	3	CW50	CW45
3771	E	33-5/16	31-1/16	7.2	13.6	2.5	3	CW50	CW45
3777	E	33-5/16	34-1/16	7.9	14.9	2.5	3	CW50	CW45
3784	E	33-5/16	37-9/16	8.7	16.4	2.5	3	CW40	CW40
4135		37-5/16	13-1/16	3.4	6.5	2.5	3	CW50	CW45
4141		37-5/16	16-1/16	4.2	7.9	2.5	3	CW50	CW45
4147		37-5/16	19-1/16	4.9	9.4	2.5	3	CW50	CW45
4153		37-5/16	22-1/16	5.7	10.9	2.5	3	CW50	CW45
4157	E	37-5/16	24-1/16	6.2	11.9	2.5	3	CW50	CW45
4159	E	37-5/16	25-1/16	6.5	12.4	2.5	3	CW50	CW45
4165	E	37-5/16	28-1/16	7.3	13.8	2.5	3	CW50	CW45
4171	E	37-5/16	31-1/16	8.1	15.3	2.5	3	CW50	CW45
4177	E	37-5/16	34-1/16	8.8	16.8	2.5	3	CW45	CW45
4184	E	37-5/16	37-9/16	9.7	18.5	2.5	3	CW40	CW40
4535		41-5/16	13-1/16	3.7	7.2	2.5	3	CW50	CW45
4541		41-5/16	16-1/16	4.6	8.8	2.5	3	CW50	CW45
4547		41-5/16	19-1/16	5.5	10.5	2.5	3	CW50	CW45
4553		41-5/16	22-1/16	6.3	12.1	2.5	3	CW50	CW45
4557	E	41-5/16	24-1/16	6.9	13.2	2.5	3	CW50	CW45
4559	E	41-5/16	25-1/16	7.2	13.7	2.5	3	CW50	CW45
4565	E	41-5/16	28-1/16	8.1	15.4	2.5	3	CW50	CW45
4571	E	41-5/16	31-1/16	8.9	17.0	2.5	3	CW45	CW45
4577	E	41-5/16	34-1/16	9.8	18.7	2.5	3	CW45	CW45
4584	E	41-5/16	37-9/16	10.8	20.6	3	3	CW40	CW40
4835		44-5/16	13-1/16	4.0	7.7	2.5	3	CW50	CW45
4841		44-5/16	16-1/16	4.9	9.5	2.5	3	CW50	CW45
4847		44-5/16	19-1/16	5.9	11.3	2.5	3	CW50	CW45
4853		44-5/16	22-1/16	6.8	13.0	2.5	3	CW50	CW45
4857	E	44-5/16	24-1/16	7.4	14.2	2.5	3	CW50	CW45
4859	E	44-5/16	25-1/16	7.7	14.8	2.5	3	CW50	CW45
4865	E	44-5/16	28-1/16	8.6	16.6	2.5	3	CW45	CW45
4871	E	44-5/16	31-1/16	9.6	18.3	2.5	3	CW45	CW45
4877	E	44-5/16	34-1/16	10.5	20.1	3	3	CW45	CW45
4884	E	44-5/16	37-9/16	11.6	22.2	3	3	CW40	CW40

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E₁ = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data

Fixed				
Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ₁
		Annealed	Tempered	
4135	7.2	2.5	3	CW50
4141	8.6	2.5	3	CW50
4147	10.1	3	3	CW50
4153	11.6	3	3	CW50
4157	12.5	3	3	CW50
4165	14.5	3	3	CW50
4171	16.0	3	3	CW45/CW50
4735	8.4	2.5	3	CW50
4741	10.1	3	3	CW50
4747	11.8	3	3	CW50
4753	13.5	3	3	CW50
4757	14.7	3	3	CW50
4759	15.3	3	3	CW50
4765	17.0	3	3	CW45/CW50
4771	18.7	4	4	CW50
5335	9.6	2.5	3	CW45/CW50
5341	11.6	3	3	CW50
5347	13.5	3	3	CW50
5353	15.5	3	4	CW45/CW50
5357	16.8	3	4	CW45/CW50
5359	17.5	3	4	CW40/CW50
5365	19.4	4	4	CW50
5371	21.4	4	4	CW50
5935	10.8	3	3	CW50
5941	13.0	3	3	CW50
5953	17.5	3	4	CW40/CW50
5957	19.0	4	4	CW50
5959	19.7	4	4	CW50
5965	21.9	4	4	CW50
5971	24.1	4	4	CW45/CW50

Transoms				
Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ₁
		Annealed	Tempered	
2114	0.9	2.5	3	CW50
2514	1.1	2.5	3	CW50
2914	1.3	2.5	3	CW50
3314	1.6	2.5	3	CW50
3714	1.8	2.5	3	CW50
4114	2.0	2.5	3	CW50
4514	2.2	2.5	3	CW50
4814	2.4	2.5	3	CW50
2117	1.2	2.5	3	CW50
2517	1.5	2.5	3	CW50
2917	1.8	2.5	3	CW50
3317	2.1	2.5	3	CW50
3717	2.4	2.5	3	CW50
4117	2.8	2.5	3	CW50
4517	3.1	2.5	3	CW50
4817	3.3	2.5	3	CW50
2125	2.0	2.5	3	CW50
2525	2.6	2.5	3	CW50
2925	3.1	2.5	3	CW50
3325	3.6	2.5	3	CW50
3725	4.2	2.5	3	CW50
4125	4.7	2.5	3	CW50
4525	5.2	2.5	3	CW50
4825	5.6	2.5	3	CW50

(1) Maximum design pressure when glazed with the appropriate glass thickness. Second number, where shown, requires tempered glass.



Pella® Reserve™ Traditional Hung Window

Design Data

Cottage Sash for Single- and Double-Hung

Unit	Egress	Clear Opening (Inches)		Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹	
		Width	Height			Annealed	Tempered	Clad	Wood
VG2141		17-5/16	12-11/16	1.5	3.4	2.5	3	CW50	CW45
VG2147		17-5/16	15-1/16	1.8	4.1	2.5	3	CW50	CW45
VG2153		17-5/16	17-7/16	2.1	4.7	2.5	3	CW50	CW45
VG2157		17-5/16	19-1/16	2.3	5.2	2.5	3	CW50	CW45
VG2159		17-5/16	19-7/8	2.4	5.4	2.5	3	CW50	CW45
VG2165		17-5/16	22-1/4	2.7	6.0	2.5	3	CW50	CW45
VG2171		17-5/16	24-11/16	3.0	6.6	2.5	3	CW40	CW40
VG2541		21-5/16	12-11/16	1.9	4.3	2.5	3	CW50	CW45
VG2547		21-5/16	15-1/16	2.2	5.1	2.5	3	CW50	CW45
VG2553		21-5/16	17-7/16	2.6	6.0	2.5	3	CW50	CW45
VG2557		21-5/16	19-1/16	2.8	6.5	2.5	3	CW50	CW45
VG2559		21-5/16	19-7/8	2.9	6.8	2.5	3	CW50	CW45
VG2565		21-5/16	22-1/4	3.3	7.6	2.5	3	CW50	CW45
VG2571		21-5/16	24-11/16	3.7	8.4	2.5	3	CW40	CW40
VG2941		25-5/16	12-11/16	2.2	5.2	2.5	3	CW50	CW45
VG2947		25-5/16	15-1/16	2.7	6.2	2.5	3	CW50	CW45
VG2953		25-5/16	17-7/16	3.1	7.2	2.5	3	CW50	CW45
VG2957		25-5/16	19-1/16	3.4	7.8	2.5	3	CW50	CW45
VG2959		25-5/16	19-7/8	3.5	8.2	2.5	3	CW50	CW45
VG2965		25-5/16	22-1/4	3.9	9.1	2.5	3	CW50	CW45
VG2971		25-5/16	24-11/16	4.3	10.1	2.5	3	CW40	CW40
VG3341		29-5/16	12-11/16	2.6	6.1	2.5	3	CW50	CW45
VG3347		29-5/16	15-1/16	3.1	7.3	2.5	3	CW50	CW45
VG3353		29-5/16	17-7/16	3.6	8.4	2.5	3	CW50	CW45
VG3357		29-5/16	19-1/16	3.9	9.2	2.5	3	CW50	CW45
VG3359		29-5/16	19-7/8	4.1	9.6	2.5	3	CW50	CW45
VG3365		29-5/16	22-1/4	4.5	10.7	2.5	3	CW50	CW45
VG3371	E1	29-5/16	24-11/16	5.0	11.8	2.5	3	CW40	CW40

Continued on next page

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data

Cottage Sash for Single- and Double-Hung

Unit	Egress	Clear Opening (Inches)		Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ⁽¹⁾	
		Width	Height			Annealed	Tempered	Clad	Wood
VG3741		33-5/16	12-11/16	2.9	7.0	2.5	3	CW50	CW45
VG3747		33-5/16	15-1/16	3.5	8.3	2.5	3	CW50	CW45
VG3753		33-5/16	17-7/16	4.0	9.6	2.5	3	CW50	CW45
VG3757		33-5/16	19-1/16	4.4	10.5	2.5	3	CW50	CW45
VG3759		33-5/16	19-7/8	4.6	11.0	2.5	3	CW50	CW45
VG3765		33-5/16	22-1/4	5.2	12.3	2.5	3	CW50	CW45
VG3771	E	33-5/16	24-11/16	5.7	13.6	2.5	3	CW40	CW40
VG4141		37-5/16	12-11/16	3.3	7.9	2.5	3	CW50	CW45
VG4147		37-5/16	15-1/16	3.9	9.4	2.5	3	CW50	CW45
VG4153		37-5/16	17-7/16	4.5	10.9	2.5	3	CW50	CW45
VG4157		37-5/16	19-1/16	4.9	11.9	2.5	3	CW50	CW45
VG4159		37-5/16	19-7/8	5.2	12.4	2.5	3	CW50	CW45
VG4165		37-5/16	22-1/4	5.8	13.8	2.5	3	CW45	CW45
VG4171	E	37-5/16	24-11/16	6.4	15.3	2.5	3	CW40	CW40
VG4541		41-5/16	12-11/16	3.6	8.8	2.5	3	CW50	CW45
VG4547		41-5/16	15-1/16	4.3	10.5	2.5	3	CW50	CW45
VG4553		41-5/16	17-7/16	5.0	12.1	2.5	3	CW50	CW45
VG4557		41-5/16	19-1/16	5.5	13.2	2.5	3	CW45	CW45
VG4559		41-5/16	19-7/8	5.7	13.8	2.5	3	CW45	CW45
VG4565		41-5/16	22-1/4	6.4	15.4	2.5	3	CW45	CW45
VG4571	E	41-5/16	24-11/16	7.1	17.0	3	3	CW40	CW40
VG4841		44-5/16	12-11/16	3.9	9.5	2.5	3	CW50	CW45
VG4847		44-5/16	15-1/16	4.6	11.3	2.5	3	CW50	CW45
VG4853		44-5/16	17-7/16	5.4	13.0	2.5	3	CW45	CW45
VG4857		44-5/16	19-1/16	5.9	14.2	2.5	3	CW45	CW45
VG4859		44-5/16	19-7/8	6.1	14.8	2.5	3	CW45	CW45
VG4865		44-5/16	22-1/4	6.9	16.6	3	3	CW40	CW40
VG4871	E	44-5/16	24-11/16	7.6	18.3	3	3	CW40	CW40

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data - Replacement Sizes

Replacement Equal Sash for Single- and Double-Hung									
Unit	Egress	Clear Opening		Vent Area Ft²	Visible Glass Ft²	Standard Glass Thickness (mm)		Performance Class & Grade (1)	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
23.5 x 35.5		19-13/16	13-5/16	1.8	3.3	2.5	3	CW50	CW45
23.5 x 37.5		19-13/16	14-5/16	2.0	3.6	2.5	3	CW50	CW45
23.5 x 41.5		19-13/16	16-5/16	2.2	4.1	2.5	3	CW50	CW45
23.5 x 45.5		19-13/16	18-5/16	2.5	4.6	2.5	3	CW50	CW45
23.5 x 47.5		19-13/16	19-5/16	2.7	4.8	2.5	3	CW50	CW45
23.5 x 51.5		19-13/16	21-5/16	2.9	5.3	2.5	3	CW50	CW45
23.5 x 53.5		19-13/16	22-5/16	3.1	5.6	2.5	3	CW50	CW45
23.5 x 57.5		19-13/16	24-5/16	3.3	6.1	2.5	3	CW50	CW45
23.5 x 59.5		19-13/16	25-5/16	3.5	6.3	2.5	3	CW50	CW45
23.5 x 61.5		19-13/16	26-5/16	3.6	6.5	2.5	3	CW50	CW45
23.5 x 65.5		19-13/16	28-5/16	3.9	7.0	2.5	3	CW50	CW45
23.5 x 71.5		19-13/16	31-5/16	4.3	7.8	2.5	3	CW50	CW45
27.5 x 35.5		23-13/16	13-5/16	2.2	4.1	2.5	3	CW50	CW45
27.5 x 37.5		23-13/16	14-5/16	2.4	4.4	2.5	3	CW50	CW45
27.5 x 41.5		23-13/16	16-5/16	2.7	5.0	2.5	3	CW50	CW45
27.5 x 45.5		23-13/16	18-5/16	3.0	5.6	2.5	3	CW50	CW45
27.5 x 47.5		23-13/16	19-5/16	3.2	5.9	2.5	3	CW50	CW45
27.5 x 51.5		23-13/16	21-5/16	3.5	6.5	2.5	3	CW50	CW45
27.5 x 53.5		23-13/16	22-5/16	3.7	6.8	2.5	3	CW50	CW45
27.5 x 57.5		23-13/16	24-5/16	4.0	7.4	2.5	3	CW50	CW45
27.5 x 59.5		23-13/16	25-5/16	4.2	7.7	2.5	3	CW50	CW45
27.5 x 61.5		23-13/16	26-5/16	4.4	8.0	2.5	3	CW50	CW45
27.5 x 65.5		23-13/16	28-5/16	4.7	8.6	2.5	3	CW50	CW45
27.5 x 71.5	E1	23-13/16	31-5/16	5.2	9.5	2.5	3	CW50	CW45
29.5 x 35.5		25-13/16	13-5/16	2.4	4.4	2.5	3	CW50	CW45
29.5 x 37.5		25-13/16	14-5/16	2.6	4.8	2.5	3	CW50	CW45
29.5 x 41.5		25-13/16	16-5/16	2.9	5.4	2.5	3	CW50	CW45
29.5 x 45.5		25-13/16	18-5/16	3.3	6.1	2.5	3	CW50	CW45
29.5 x 47.5		25-13/16	19-5/16	3.5	6.4	2.5	3	CW50	CW45
29.5 x 51.5		25-13/16	21-5/16	3.8	7.1	2.5	3	CW50	CW45
29.5 x 53.5		25-13/16	22-5/16	4.0	7.4	2.5	3	CW50	CW45
29.5 x 57.5		25-13/16	24-5/16	4.4	8.1	2.5	3	CW50	CW45
29.5 x 59.5		25-13/16	25-5/16	4.5	8.4	2.5	3	CW50	CW45
29.5 x 61.5		25-13/16	26-5/16	4.7	8.7	2.5	3	CW50	CW45
29.5 x 65.5	E1	25-13/16	28-5/16	5.1	9.4	2.5	3	CW50	CW45
29.5 x 71.5	E1	25-13/16	31-5/16	5.6	10.4	2.5	3	CW50	CW45

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Egress Notes:

Check all applicable local codes for emergency egress requirements.

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data - Replacement Sizes

Replacement Equal Sash for Single- and Double-Hung									
Unit	Egress	Clear Opening		Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ⁽¹⁾	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
31.5x35.5		27-13/16	13-5/16	2.6	4.8	2.5	3	CW50	CW45
31.5x37.5		27-13/16	14-5/16	2.8	5.2	2.5	3	CW50	CW45
31.5x41.5		27-13/16	16-5/16	3.2	5.9	2.5	3	CW50	CW45
31.5x45.5		27-13/16	18-5/16	3.5	6.6	2.5	3	CW50	CW45
31.5x47.5		27-13/16	19-5/16	3.7	7.0	2.5	3	CW50	CW45
31.5x51.5		27-13/16	21-5/16	4.1	7.7	2.5	3	CW50	CW45
31.5x53.5		27-13/16	22-5/16	4.3	8.0	2.5	3	CW50	CW45
31.5x57.5		27-13/16	24-5/16	4.7	8.8	2.5	3	CW50	CW45
31.5x59.5		27-13/16	25-5/16	4.9	9.1	2.5	3	CW50	CW45
31.5x61.5	E1	27-13/16	26-5/16	5.1	9.5	2.5	3	CW50	CW45
31.5x65.5	E1	27-13/16	28-5/16	5.5	10.2	2.5	3	CW50	CW45
31.5x71.5	E	27-13/16	31-5/16	6.0	11.3	2.5	3	CW50	CW45
35.5x35.5		31-13/16	13-5/16	2.9	5.6	2.5	3	CW50	CW45
35.5x37.5		31-13/16	14-5/16	3.2	6.0	2.5	3	CW50	CW45
35.5x41.5		31-13/16	16-5/16	3.6	6.8	2.5	3	CW50	CW45
35.5x45.5		31-13/16	18-5/16	4.0	7.6	2.5	3	CW50	CW45
35.5x47.5		31-13/16	19-5/16	4.3	8.0	2.5	3	CW50	CW45
35.5x51.5		31-13/16	21-5/16	4.7	8.9	2.5	3	CW50	CW45
35.5x53.5		31-13/16	22-5/16	4.9	9.3	2.5	3	CW50	CW45
35.5x57.5	E1	31-13/16	24-5/16	5.4	10.1	2.5	3	CW50	CW45
35.5x59.5	E1	31-13/16	25-5/16	5.6	10.5	2.5	3	CW50	CW45
35.5x61.5	E	31-13/16	26-5/16	5.8	10.9	2.5	3	CW50	CW45
35.5x65.5	E	31-13/16	28-5/16	6.3	11.8	2.5	3	CW50	CW45
35.5x71.5	E	31-13/16	31-5/16	6.9	13.0	2.5	3	CW50	CW45
39.5x35.5		35-13/16	13-5/16	3.3	6.3	2.5	3	CW50	CW45
39.5x37.5		35-13/16	14-5/16	3.6	6.8	2.5	3	CW50	CW45
39.5x41.5		35-13/16	16-5/16	4.1	7.7	2.5	3	CW50	CW45
39.5x45.5		35-13/16	18-5/16	4.6	8.7	2.5	3	CW50	CW45
39.5x47.5		35-13/16	19-5/16	4.8	9.1	2.5	3	CW50	CW45
39.5x51.5		35-13/16	21-5/16	5.3	10.1	2.5	3	CW50	CW45
39.5x53.5		35-13/16	22-5/16	5.5	10.5	2.5	3	CW50	CW45
39.5x57.5	E	35-13/16	24-5/16	6.0	11.5	2.5	3	CW50	CW45
39.5x59.5	E	35-13/16	25-5/16	6.3	11.9	2.5	3	CW50	CW45
39.5x61.5	E	35-13/16	26-5/16	6.5	12.4	2.5	3	CW50	CW45
39.5x65.5	E	35-13/16	28-5/16	7.0	13.4	2.5	3	CW50	CW45
39.5x71.5	E	35-13/16	31-5/16	7.8	14.8	2.5	3	CW50	CW45
41.5x35.5		37-13/16	13-5/16	3.5	6.7	2.5	3	CW50	CW45
41.5x37.5		37-13/16	14-5/16	3.8	7.2	2.5	3	CW50	CW45
41.5x41.5		37-13/16	16-5/16	4.3	8.2	2.5	3	CW50	CW45
41.5x45.5		37-13/16	18-5/16	4.8	9.2	2.5	3	CW50	CW45
41.5x47.5		37-13/16	19-5/16	5.1	9.7	2.5	3	CW50	CW45
41.5x51.5		37-13/16	21-5/16	5.6	10.7	2.5	3	CW50	CW45
41.5x53.5		37-13/16	22-5/16	5.9	11.2	2.5	3	CW50	CW45
41.5x57.5	E	37-13/16	24-5/16	6.4	12.2	2.5	3	CW50	CW45
41.5x59.5	E	37-13/16	25-5/16	6.6	12.7	2.5	3	CW50	CW45
41.5x61.5	E	37-13/16	26-5/16	6.9	13.1	2.5	3	CW50	CW45
41.5x65.5	E	37-13/16	28-5/16	7.4	14.1	2.5	3	CW50	CW45
41.5x71.5	E	37-13/16	31-5/16	8.2	15.6	2.5	3	CW50	CW45

Egress Notes:
 Check all applicable local codes for emergency egress requirements.
 E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
 E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data - Replacement Sizes

Replacement Fixed				
Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
		Annealed	Tempered	
41x35.5	7.3	2.5	3	CW50
41x37.5	7.8	2.5	3	CW50
41x41.5	8.8	2.5	3	CW50
41x45.5	9.7	2.5	3	CW45/CW50
41x47.5	10.2	3.0	3	CW50
41x51.5	11.2	3.0	3	CW50
41x53.5	11.7	3.0	3	CW50
41x57.5	12.7	3.0	3	CW50
41x59.5	13.2	3.0	3	CW50
41x61.5	13.6	3.0	3	CW50
41x65.5	14.6	3.0	3	CW50
41x71.5	16.1	3.0	3	CW45/CW50
47x35.5	8.5	2.5	3	CW50
47x37.5	9.1	2.5	3	CW50
47x41.5	10.2	3.0	3	CW50
47x45.5	11.4	3.0	3	CW50
47x47.5	12.0	3.0	3	CW50
47x51.5	13.1	3.0	3	CW50
47x53.5	13.7	3.0	3	CW50
47x57.5	14.8	3.0	3	CW50
47x59.5	15.4	3.0	3	CW45/CW50
47x61.5	16.0	3.0	3	CW45/CW50
47x65.5	17.1	3.0	3	CW45/CW50
47x71.5	18.8	4.0	4	CW50
53x35.5	9.8	2.5	3	CW45/CW50
53x37.5	10.4	3.0	3	CW50
53x41.5	11.7	3.0	3	CW50
53x45.5	13.0	3.0	3	CW50
53x47.5	13.7	3.0	3	CW50
53x51.5	15.0	3.0	4	CW50
53x53.5	15.7	3.0	4	CW45/CW50
53x57.5	17.0	3.0	4	CW45/CW50
53x59.5	17.6	4.0	4	CW50
53x61.5	18.3	4.0	4	CW50
53x65.5	19.6	4.0	4	CW50
53x71.5	21.6	4.0	4	CW50
59x35.5	11.0	3.0	3	CW50
59x37.5	11.7	3.0	3	CW50
59x41.5	13.2	3.0	3	CW50
59x45.5	14.7	3.0	3	CW50
59x47.5	15.4	3.0	3	CW45/CW50
59x51.5	16.9	3.0	4	CW45/CW50
59x53.5	17.7	4.0	4	CW50
59x57.5	19.1	4.0	4	CW50
59x59.5	19.9	4.0	4	CW50
59x61.5	20.6	4.0	4	CW50
59x65.5	22.1	4.0	4	CW50
59x71.5	24.3	4.0	4	CW45/CW50

Replacement Transoms				
Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
		Annealed	Tempered	
23.5x14	1.0	2.5	3	CW50
23.5x17	1.4	2.5	3	CW50
23.5x25	2.4	2.5	3	CW50
27.5x14	1.2	2.5	3	CW50
27.5x17	1.7	2.5	3	CW50
27.5x25	2.9	2.5	3	CW50
29.5x14	1.4	2.5	3	CW50
29.5x17	1.9	2.5	3	CW50
29.5x25	3.2	2.5	3	CW50
31.5x14	1.5	2.5	3	CW50
31.5x17	2.0	2.5	3	CW50
31.5x25	3.4	2.5	3	CW50
35.5x14	1.7	2.5	3	CW50
35.5x17	2.3	2.5	3	CW50
35.5x25	4.0	2.5	3	CW50
39.5x14	1.9	2.5	3	CW50
39.5x17	2.6	2.5	3	CW50
39.5x25	4.5	2.5	3	CW50
41.5x14	2.0	2.5	3	CW50
41.5x17	2.8	2.5	3	CW50
41.5x25	4.8	2.5	3	CW50

(1) Maximum performance when glazed with the appropriate glass thickness. Second number, where shown, requires tempered glass.



Pella® Reserve™ Traditional Hung Window

Design Data

Replacement Cottage Sash for Single- and Double-Hung									
Unit	Egress	Clear Opening		Vent Area Ft²	Visible Glass Ft²	Standard Glass Thickness (mm)		Performance Class & Grade ¹	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
VG23.5 x 41.5		19-13/16	12-7/8	1.8	4.1	2.5	3	CW50	CW45
VG23.5 x 45.5		19-13/16	14-1/2	2.0	4.6	2.5	3	CW50	CW45
VG23.5 x 47.5		19-13/16	15-1/4	2.1	4.8	2.5	3	CW50	CW45
VG23.5 x 51.5		19-13/16	16-7/8	2.3	5.3	2.5	3	CW50	CW45
VG23.5 x 53.5		19-13/16	17-11/16	2.4	5.6	2.5	3	CW50	CW45
VG23.5 x 57.5		19-13/16	19-1/4	2.7	6.1	2.5	3	CW50	CW45
VG23.5 x 59.5		19-13/16	19-15/16	2.8	6.3	2.5	3	CW50	CW45
VG23.5 x 61.5		19-13/16	20-7/8	2.9	6.5	2.5	3	CW50	CW45
VG23.5 x 65.5		19-13/16	22-1/2	3.1	7.0	2.5	3	CW50	CW45
VG23.5 x 71.5		19-13/16	24-7/8	3.4	7.8	2.5	3	CW40	CW40
VG27.5 x 41.5		23-13/16	12-7/8	2.1	5.0	2.5	3	CW50	CW45
VG27.5 x 45.5		23-13/16	14-1/2	2.4	5.6	2.5	3	CW50	CW45
VG27.5 x 47.5		23-13/16	15-1/4	2.5	5.9	2.5	3	CW50	CW45
VG27.5 x 51.5		23-13/16	16-7/8	2.8	6.5	2.5	3	CW50	CW45
VG27.5 x 53.5		23-13/16	17-11/16	2.9	6.8	2.5	3	CW50	CW45
VG27.5 x 57.5		23-13/16	19-1/4	3.2	7.4	2.5	3	CW50	CW45
VG27.5 x 59.5		23-13/16	19-15/16	3.3	7.7	2.5	3	CW50	CW45
VG27.5 x 61.5		23-13/16	20-7/8	3.5	8.0	2.5	3	CW50	CW45
VG27.5 x 65.5		23-13/16	22-1/2	3.7	8.6	2.5	3	CW50	CW45
VG27.5 x 71.5		23-13/16	24-7/8	4.1	9.5	2.5	3	CW40	CW40
VG29.5 x 41.5		25-13/16	12-7/8	2.3	5.4	2.5	3	CW50	CW45
VG29.5 x 45.5		25-13/16	14-1/2	2.6	6.1	2.5	3	CW50	CW45
VG29.5 x 47.5		25-13/16	15-1/4	2.7	6.4	2.5	3	CW50	CW45
VG29.5 x 51.5		25-13/16	16-7/8	3.0	7.1	2.5	3	CW50	CW45
VG29.5 x 53.5		25-13/16	17-11/16	3.2	7.4	2.5	3	CW50	CW45
VG29.5 x 57.5		25-13/16	19-1/4	3.5	8.1	2.5	3	CW50	CW45
VG29.5 x 59.5		25-13/16	19-15/16	3.6	8.4	2.5	3	CW50	CW45
VG29.5 x 61.5		25-13/16	20-7/8	3.7	8.7	2.5	3	CW50	CW45
VG29.5 x 65.5		25-13/16	22-1/2	4.0	9.4	2.5	3	CW50	CW45
VG29.5 x 71.5		25-13/16	24-7/8	4.5	10.4	2.5	3	CW40	CW40
VG31.5 x 41.5		27-13/16	12-7/8	2.5	5.9	2.5	3	CW50	CW45
VG31.5 x 45.5		27-13/16	14-1/2	2.8	6.6	2.5	3	CW50	CW45
VG31.5 x 47.5		27-13/16	15-1/4	3.0	7.0	2.5	3	CW50	CW45
VG31.5 x 51.5		27-13/16	16-7/8	3.3	7.7	2.5	3	CW50	CW45
VG31.5 x 53.5		27-13/16	17-11/16	3.4	8.0	2.5	3	CW50	CW45
VG31.5 x 57.5		27-13/16	19-1/4	3.7	8.8	2.5	3	CW50	CW45
VG31.5 x 59.5		27-13/16	19-15/16	3.9	9.1	2.5	3	CW50	CW45
VG31.5 x 61.5		27-13/16	20-7/8	4.0	9.5	2.5	3	CW50	CW45
VG31.5 x 65.5		27-13/16	22-1/2	4.3	10.2	2.5	3	CW50	CW45
VG31.5 x 71.5		27-13/16	24-7/8	4.8	11.3	2.5	3	CW40	CW40

Continued on next page

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Pella® Reserve™ Traditional Hung Window

Design Data

Replacement Cottage Sash for Single- and Double-Hung

Unit	Egress	Clear Opening		Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹	
		Width (Inches)	Height (Inches)			Annealed	Tempered	Clad	Wood
VG35.5 x 41.5		31-13/16	12-7/8	2.8	6.8	2.5	3	CW50	CW45
VG35.5 x 45.5		31-13/16	14-1/2	3.2	7.6	2.5	3	CW50	CW45
VG35.5 x 47.5		31-13/16	15-1/4	3.4	8.0	2.5	3	CW50	CW45
VG35.5 x 51.5		31-13/16	16-7/8	3.7	8.9	2.5	3	CW50	CW45
VG35.5 x 53.5		31-13/16	17-11/16	3.9	9.3	2.5	3	CW50	CW45
VG35.5 x 57.5		31-13/16	19-1/4	4.3	10.1	2.5	3	CW50	CW45
VG35.5 x 59.5		31-13/16	19-15/16	4.4	10.5	2.5	3	CW50	CW45
VG35.5 x 61.5		31-13/16	20-7/8	4.6	11.0	2.5	3	CW50	CW45
VG35.5 x 65.5		31-13/16	22-1/2	5.0	11.8	2.5	3	CW50	CW45
VG35.5 x 71.5	E ₁	31-13/16	24-7/8	5.5	13.0	2.5	3	CW40	CW40
VG39.5 x 41.5		35-13/16	12-7/8	3.2	7.7	2.5	3	CW50	CW45
VG39.5 x 45.5		35-13/16	14-1/2	3.6	8.7	2.5	3	CW50	CW45
VG39.5 x 47.5		35-13/16	15-1/4	3.8	9.1	2.5	3	CW50	CW45
VG39.5 x 51.5		35-13/16	16-7/8	4.2	10.1	2.5	3	CW50	CW45
VG39.5 x 53.5		35-13/16	17-11/16	4.4	10.5	2.5	3	CW50	CW45
VG39.5 x 57.5		35-13/16	19-1/4	4.8	11.5	2.5	3	CW50	CW45
VG39.5 x 59.5		35-13/16	19-15/16	5.0	11.9	2.5	3	CW50	CW45
VG39.5 x 61.5		35-13/16	20-7/8	5.2	12.4	2.5	3	CW45	CW45
VG39.5 x 65.5		35-13/16	22-1/2	5.6	13.4	2.5	3	CW45	CW45
VG39.5 x 71.5	E	35-13/16	24-7/8	6.2	14.8	2.5	3	CW40	CW40
VG41.5 x 41.5		37-13/16	12-7/8	3.4	8.2	2.5	3	CW50	CW45
VG41.5 x 45.5		37-13/16	14-1/2	3.8	9.2	2.5	3	CW50	CW45
VG41.5 x 47.5		37-13/16	15-1/4	4.0	9.7	2.5	3	CW50	CW45
VG41.5 x 51.5		37-13/16	16-7/8	4.4	10.7	2.5	3	CW50	CW45
VG41.5 x 53.5		37-13/16	17-11/16	4.6	11.2	2.5	3	CW50	CW45
VG41.5 x 57.5		37-13/16	19-1/4	5.1	12.2	2.5	3	CW50	CW45
VG41.5 x 59.5		37-13/16	19-15/16	5.3	12.7	2.5	3	CW50	CW45
VG41.5 x 61.5		37-13/16	20-7/8	5.5	13.2	2.5	3	CW45	CW45
VG41.5 x 65.5		37-13/16	22-1/2	5.9	14.1	2.5	3	CW45	CW45
VG41.5 x 71.5	E	37-13/16	24-7/8	6.5	15.6	2.5	3	CW40	CW40

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E₁ = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(1) Maximum performance when glazed with the appropriate glass thickness.

To convert area to square meters (m²), multiply square feet by 0.0929.



Detailed Product Description - Aluminum-Clad Exterior

Frame

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are [clear pine] [mahogany] [douglas fir].
- Exterior surfaces are clad with aluminum.
- Components are assembled with screws, staples and concealed corner locks.
- Overall frame depth is 5" (127mm) for a wall depth of 3-11/16" (94mm).
- Optional factory applied jamb extensions available between 3-13/16" (97mm) and 9-3/16" (233mm).
- Vinyl jamb liner with wood / clad inserts.
- Optional factory installed fold-out installation fins with flexible fin corners.
- Optional factory-applied EnduraClad® exterior trim.

Sash

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are [clear pine] [mahogany] [douglas fir]. Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are clad with extruded aluminum butt-jointed at all corners of the sash with through-stile construction and sealed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-7/8" (47mm).
- Double-Hung: Upper sash has surface-mounted wash locks for easy tilt-in cleaning] [Single-Hung: Fixed upper sash has surface-mounted wash locks] [Arch Head units have no wash locks].
- Lower sash has concealed wash locks in lower check rail allowing sash to tilt in for easy cleaning.
- Simulated-Hung units have non-operable upper and lower sashes.
- Sash exterior profile is [ogee] [putty glaze], interior profile is ogee.

Weatherstripping

- Water-stop santoprene-wrapped foam at head and sill.
- Thermoplastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner to seal against sides of sash.

Glazing System

- Quality float glass complying with ASTM C 1036.
- Custom and high altitude glazing available.
- Silicone-glazed dual-pane 11/16" dual-seal insulating glass [[annealed] [tempered]], [[clear] [[Advanced] [SunDefense™] [SunDefense+] [NaturalSun] [NaturalSun+] [AdvancedComfort] Low-E [with argon]] [[bronze] [gray] [green] Advanced Low-E [with Argon]] [obscure] [Reflective Bronze].
- or -
- Silicone-glazed dual-pane 13/16" dual-seal [[annealed] [tempered]] non-impact laminated glass [[clear] [[Advanced] [SunDefense] Low-E [with Argon]] [[bronze] [gray] [green] Advanced Low-E [with argon]].

Exterior

- Aluminum-clad exteriors shall be finished with EnduraClad® protective finish, in a multi-step, baked-on finish.
 - Color is [standard] [feature] [custom]₁.
- or -
- Aluminum-clad exteriors shall be finished with EnduraClad Plus protective finish with 70% fluoropolymer resin in a multi-step, baked-on finish.
 - Color is [standard] [feature] [custom]₁.

Interior

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [pine: factory prefinished [paint] [stain]₁].

Hardware

- Galvanized block-and-tackle balances are connected to self-locking balance shoes which are connected to the sashes using zinc die cast terminals and concealed within the frame.
- Sash lock is [standard (cam-action)] [historic spoon-style] [air-conditioner lock] [simulated lock (Single-piece lock ties upper and lower sash together. When removed lower sash becomes operable)]. Two sash locks on units with frame width 37" and greater.
- Optional sash lift furnished for field installation. Two lifts on units with frame width 37" and greater.
- Hardware finish is [baked enamel [Champagne] [White] [Brown] [Matte Black]] [Satin Brass] [Satin Nickel] [Oil-rubbed Bronze] [Distressed Bronze] [Distressed Nickel].

Optional Products

Sash

- Exterior sash lugs
 - Optional factory applied accessory. Exterior finish is [Standard₁] [Custom₁].

Grilles

- Integral Light Technology® grilles
 - Interior grilles are [5/8"] [7/8"] [1-1/4"] [2"] ogee profile that are solid [pine] [mahogany] [douglas fir]. Interior surfaces are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [paint] [stain]₁].
 - Exterior grilles are [5/8" putty glaze profile] [7/8" [putty glaze] [ogee] profile] [1-1/4" [putty glaze] [ogee] profile] [2" ogee profile] that are extruded aluminum.
 - Patterns are [Traditional] [Prairie] [Top Row] [New England] [Victorian].
 - Insulating glass contains non-glare spacer between the panes of glass.
 - Grilles are adhered to both sides of the insulating glass with VHB acrylic adhesive tape and aligned with the non-glare spacer.
- or -
- Grilles-Between-the-Glass₂
 - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass.
 - Patterns are [Traditional] [9-Lite Prairie] [Cross] [Top Row]
 - Interior color is [White] [Tan₃] [Brown₃] [Putty₃] [Black] [Ivory] [Harvest] [Cordovan] [Brickstone].
 - Exterior color₄ is [standard]₁.

Screens

- Integrated Rolscreen® (for rectangular units only)₆
 - Retractable screen integrated into [lower sash] [both upper and lower sash]. Screen rollers are fixed and concealed within the frame, screen is held to the sash by magnets which release when the bottom sash is tilted for cleaning, and when the upper sash is opened past 18".
 - InView Screen cloth, black vinyl-coated 18/18 mesh fiberglass screen cloth complying with ASTM D 3656 and the performance requirements of SMA 1201.
- or -
- InView™ screens
 - [Half-Size] [Full-Size₄] black vinyl-coated 18/18 mesh fiberglass screen cloth complying with the performance requirements of SMA 1201, set in a [standard roll-form] [premium extruded] aluminum frame fitted to outside of window, supplied complete with all necessary hardware.
 - Full screen spreader bar placed on units > 37" width or > 65" height.
 - Screen frame finish is [standard screen: baked enamel] [premium extruded: baked enamel], color to match window cladding.

Hardware

- Optional factory applied limited opening device available for vent units in stainless steel; nominal 3-3/4" opening. Limiting device concealed from view.
- Optional factory applied window opening control device. Device allows window to open less than 4" with normal operation, with a release mechanism that allows the sash to open completely. Complies with ASTM F2090-10.

Sensors

- Optional factory installed integrated security sensors available in vent units.

(1) Contact your local Pella sales representative for current designs and color options.

(2) Available in clear or Low-E insulating glass only.

(3) Tan, Brown and Putty Interior GBG colors are available in single-tone (Brown/Brown, Tan/Tan or Putty/Putty). Other interior colors are also available with Tan or Brown exterior.

(4) Appearance of exterior grille color will vary depending on Low-E coating on glass.

(5) Full screens are available on units ≤ 96" height.

(6) Integrated Rolscreen only available on sizes ≥ 34" tall and 21" wide, and ≤ 84" tall and 48" wide.



Detailed Product Description - Wood Exterior

Frame

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are [clear pine] [mahogany] (standard rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are [pine] [mahogany].
- Overall frame depth is 4-3/8" (111mm) for a wall depth of 4-3/16" (106mm).
- Vinyl Jamb liner includes wood / clad inserts.
- Optional factory applied jamb extensions available between 4-5/16" (110mm) and 9-3/16" (233mm).

Sash

- Select softwood, immersion treated with Pella's EnduraGuard® wood protection formula in accordance with WDMA I.S.-4. The EnduraGuard formula includes three active ingredients for protection against the effects of moisture, decay, stains from mold and mildew. Plus, an additional ingredient adds protection against termite damage.
- Interior exposed surfaces are [clear pine] [mahogany] (standard rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are [pine] [mahogany].
- Sash exterior profile is putty glaze, interior profile is ogee.
- Corners [mortised and tenoned on rectangular units] [mitered on arch head units], glued and secured with metal fasteners.
- Sash thickness is 1-7/8" (47mm).
- [Double-Hung: Upper sash has surface-mounted wash locks] [Single-Hung: Fixed upper sash has surface-mounted wash locks] [Arch Head units have no wash locks].
- Lower sash has concealed wash locks in lower check rail.
- Sashes tilt in for easy cleaning.
- Simulated-Hung units have non-operable upper and lower sashes.

Weatherstripping

- Water-stop santoprene-wrapped foam at head and sill. Thermoplastic elastomer bulb with slip-coating set into lower sash for tight contact at check rail.
- Vinyl-wrapped foam inserted into jamb liner to seal against sides of sash.

Glazing System

- Quality float glass complying with ASTM C 1036.
- Custom and high altitude glazing available.
- Silicone-glazed 11/16" dual-seal insulating glass [[annealed] [tempered]] [[clear] [Advanced] [SunDefense™] [SunDefense+] [AdvancedComfort] [NaturalSun] [NaturalSun+] Low-E [with argon]] [[bronze] [gray] [green] Advanced Low-E with argon].

Exterior

- [Pine: factory primed with one coat acrylic latex] [Mahogany: factory primed with one coat acrylic latex] [Unfinished, ready for site finishing].

Interior

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [pine: factory prefinished [paint] [stain]¹].

Hardware

- Galvanized block-and-tackle balances are connected to self-locking balance shoes which are connected to the sashes using zinc die cast terminals and concealed within the frame.
- Sash lock is [standard (cam-action)] [historic spoon-style] [air-conditioner lock] [simulated lock (Single-piece lock ties upper and lower sash together. When removed lower sash becomes operable)]. Two sash locks on units with frame width 37" and greater.
- Optional sash lift furnished for field installation. Two lifts on units with frame width 37" and greater.
- Hardware finish is [baked enamel [Champagne] [White] [Brown] [Matte Black]] [satin brass] [satin nickel] [oil-rubbed bronze] [distressed bronze] [distressed nickel].

Optional Products

Grilles

- Integral Light Technology® grilles
 - Interior grilles are solid [5/8"] [7/8"] [1-1/4"] ogee profile that are solid [pine] [mahogany]. Interior surfaces are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [paint] [stain]¹].
 - Exterior grilles are solid [5/8"] [7/8"] [1-1/4"] putty glaze profile that are [pine] [mahogany]. Exterior surfaces are water repellent, preservative-treated in accordance with WDMA I.S.-4, and are [unfinished, ready for site finishing] [factory primed].
 - Patterns are [Traditional] [Prairie] [Top Row] [New England] [Victorian].
 - Insulating glass contains non-glare spacer between the panes of glass.
 - Grilles are adhered to both sides of the insulating glass with VHB acrylic adhesive tape and aligned with the non-glare spacer

– or –
- Grilles-Between-the-Glass²
 - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass.
 - Patterns are [Traditional] [9-Lite Prairie] [Cross] [Top Row]
 - Interior color is [White] [Tan³] [Brown³] [Putty³] [Black] [Ivory] [Harvest] [Cordova] [Brickstone].
 - Exterior color⁵ is [standard]¹.

Screens

- InView™ Screens
 - [Half-Size] [Full-Size⁴] black vinyl-coated 18/18 mesh fiberglass screen cloth complying with the performance requirements of SMA 1201, set in a [standard roll-form aluminum frame with 3/4" wide rails and stiles] [premium extruded aluminum frame with 1" wide rails and stiles] fitted to outside of window, supplied complete with all necessary hardware.
 - Full screen spreader bar placed on units > 37" width or > 65" height.
 - Insect screen frame finish is baked enamel.

Hardware

- Optional factory applied limited opening device available for vent units in stainless steel; nominal 3-3/4" opening. Limiting device concealed from view.
- Optional factory applied window opening control device. Device allows window to open less than 4" with normal operation, with a release mechanism that allows the sash to open completely. Complies with ASTM F2090-10.

Sensors

- Optional factory installed integrated security sensors available in vent units.

(1) Contact your local Pella sales representative for current designs and color options.

(2) Available in clear or Low-E insulating glass with argon, and obscure insulated glass.

(3) Tan, Brown and Putty Interior GBG colors are available in single-tone (Brown/Brown, Tan/Tan or Putty/Putty). Other interior colors are also available with Tan or Brown exterior.

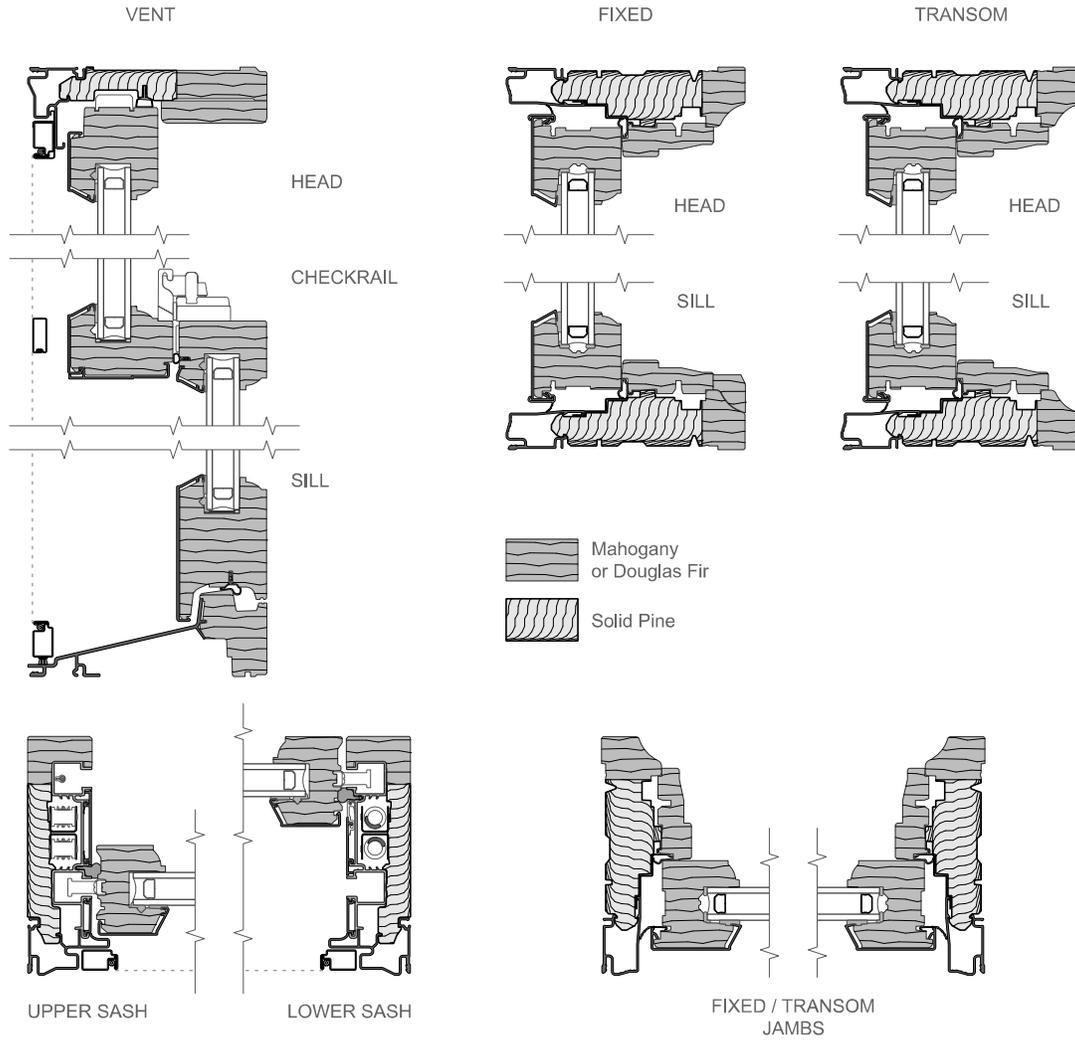
(4) Full screens are available on units ≤ 96" height.

(5) Appearance of exterior grille color will vary depending on Low-E coating on glass.



Pella® Reserve™ Traditional Hung Window

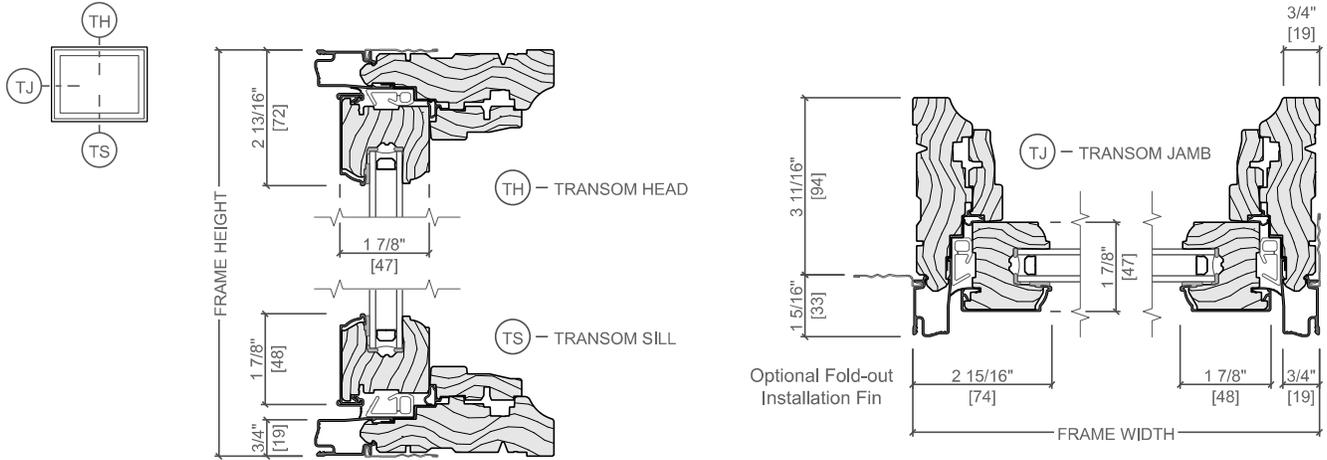
Unit Sections – Wood Collection



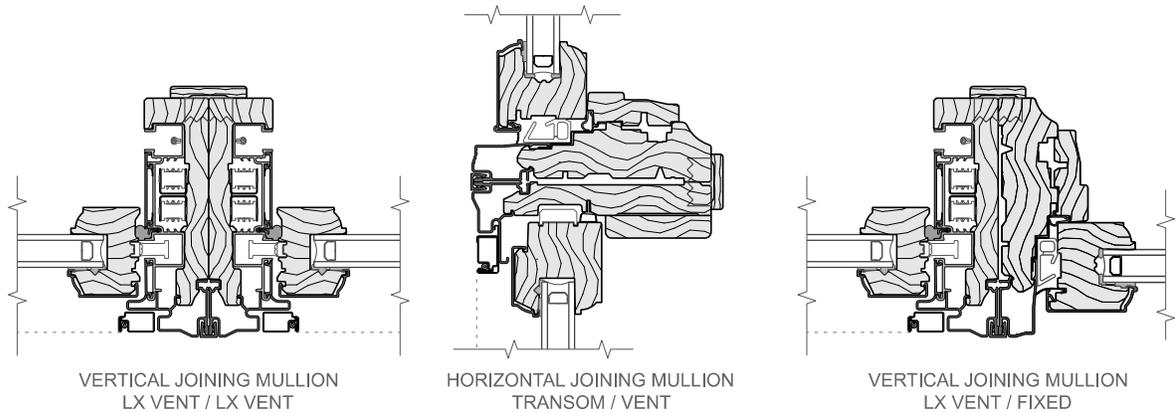


Pella® Reserve™ Traditional Hung Window

Unit Sections - Aluminum-Clad Ogee Exterior Glazing Profile



Typical Joining Mullions



Scale 3" = 1' 0"

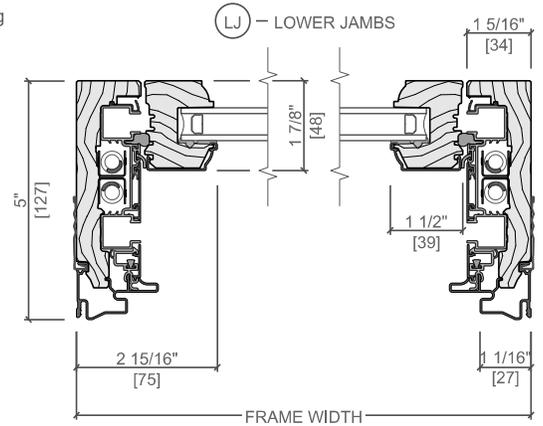
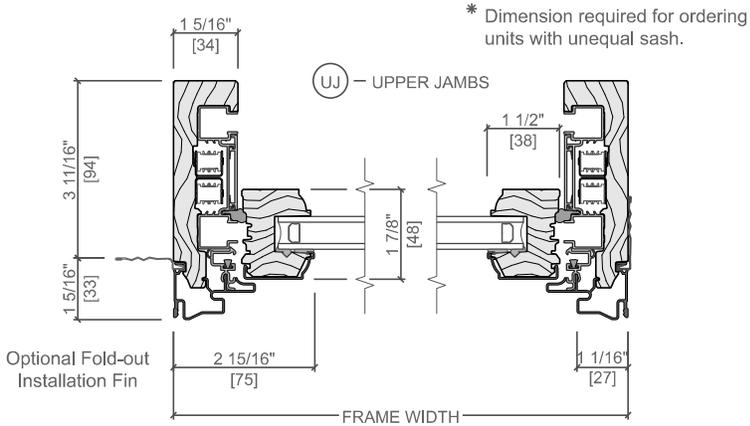
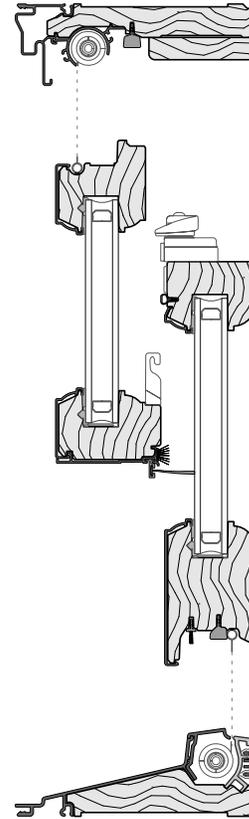
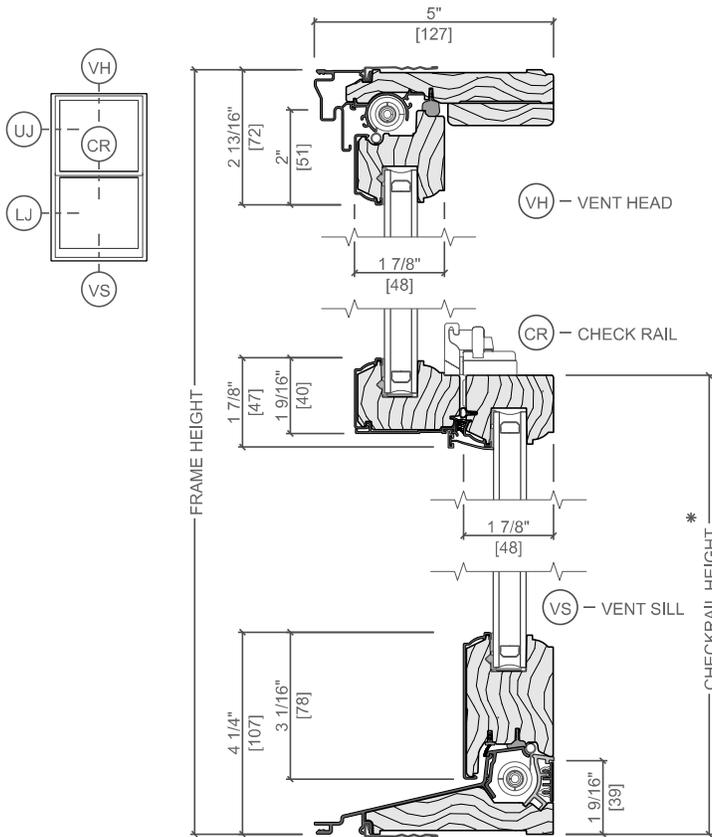
All dimensions are approximate.

See supporting document Combination Recommendations, for mullion limitations and reinforcing requirements.



Pella® Reserve™ Traditional Hung Window

Unit Sections - Aluminum-Clad Ogee Exterior Glazing Profile with Integrated Rolscreen®



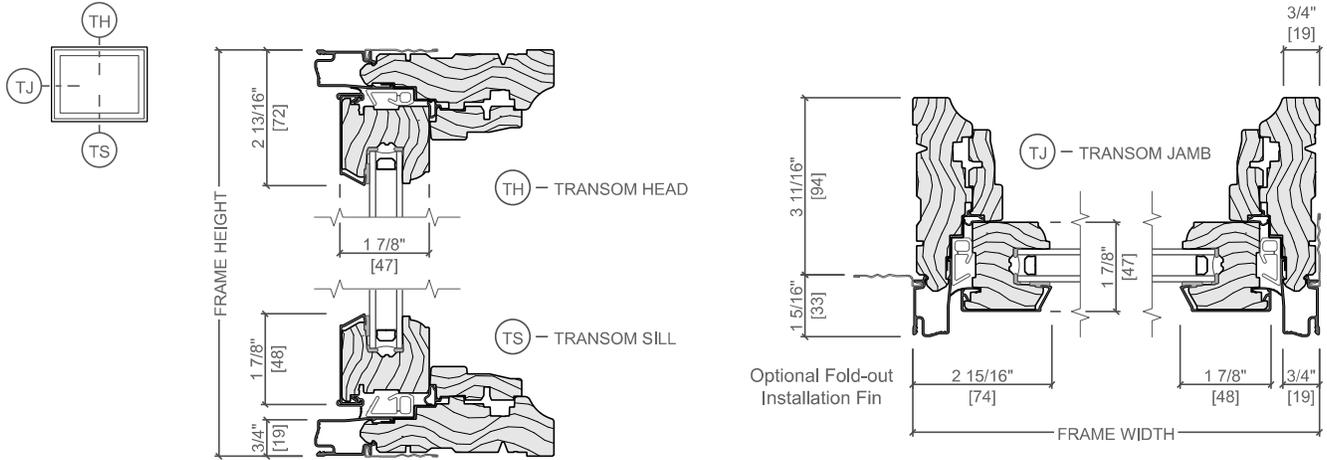
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All dimensions are approximate.

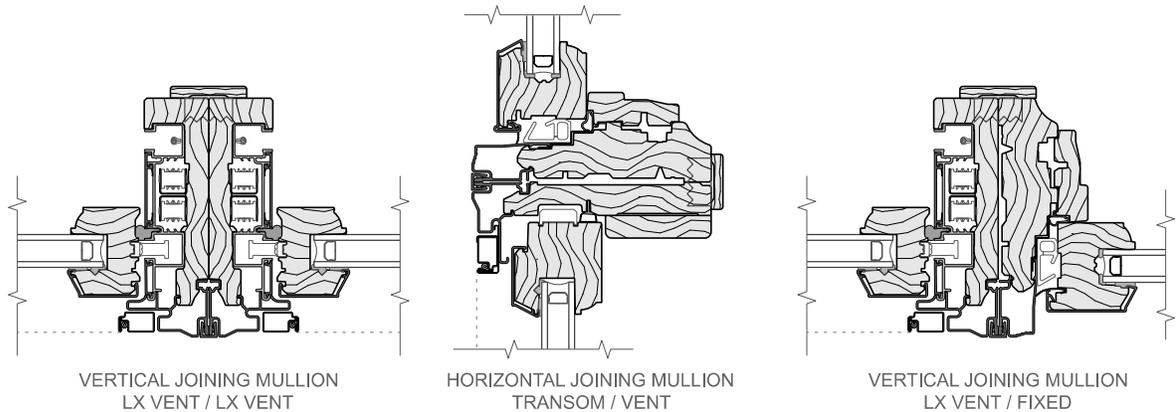


Pella® Reserve™ Traditional Hung Window

Unit Sections - Aluminum-Clad Putty Glaze Exterior Profile



Typical Joining Mullions



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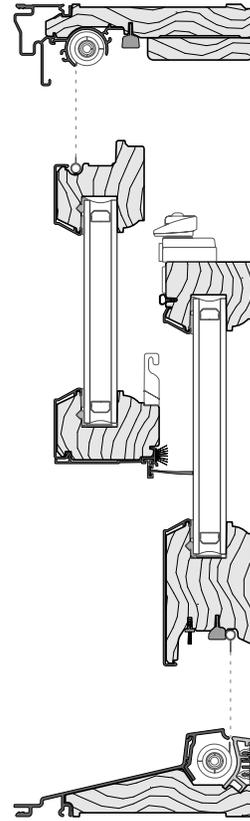
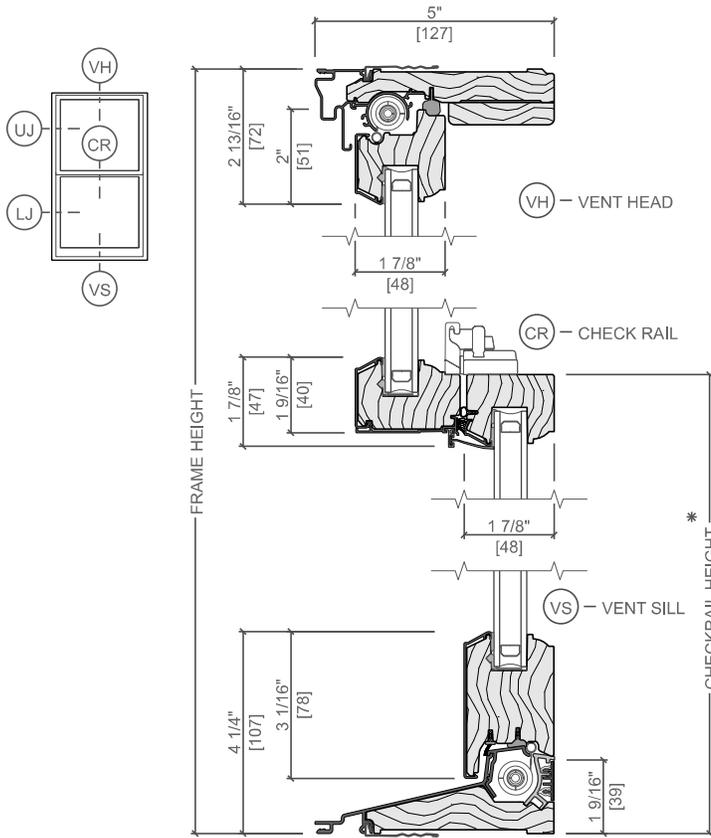
All dimensions are approximate.

See supporting document Combination Recommendations, for mullion limitations and reinforcing requirements.

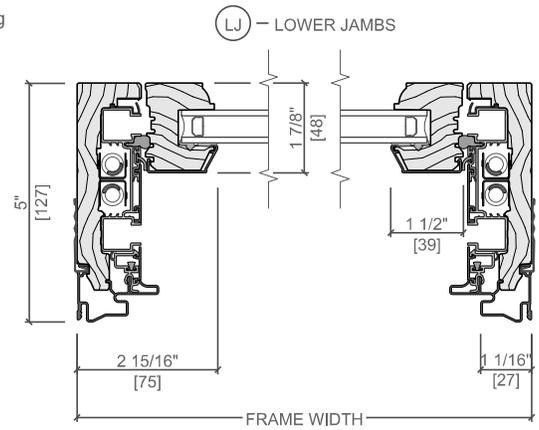
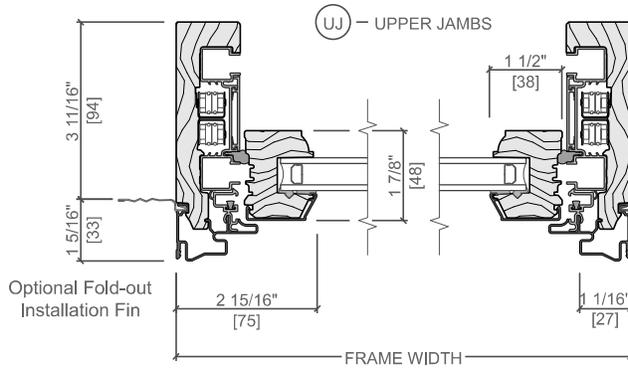


Pella® Reserve™ Traditional Hung Window

Unit Sections - Aluminum-Clad Putty Glaze Exterior Profile with Integrated Roloscreen®



* Dimension required for ordering units with unequal sash.



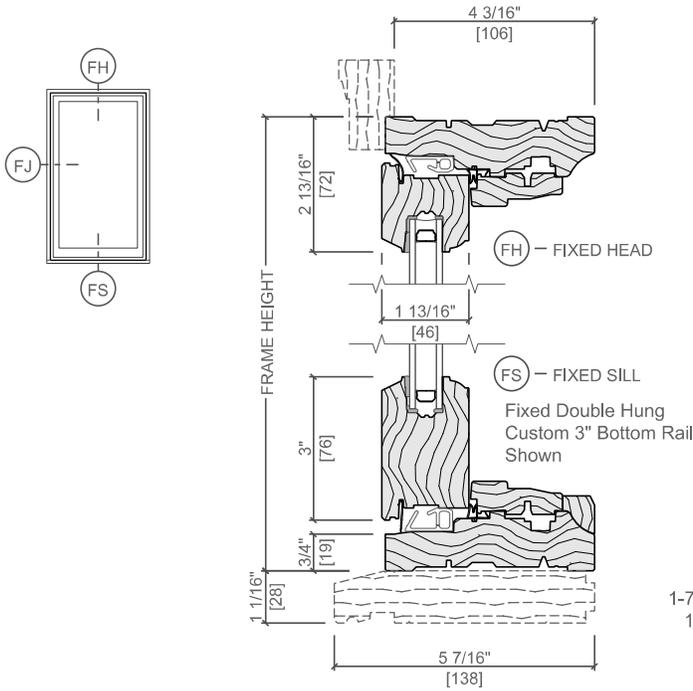
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All dimensions are approximate.

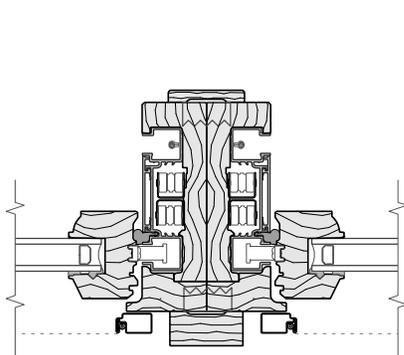
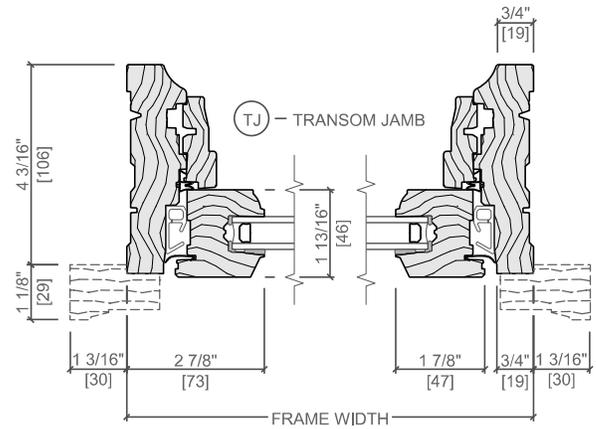
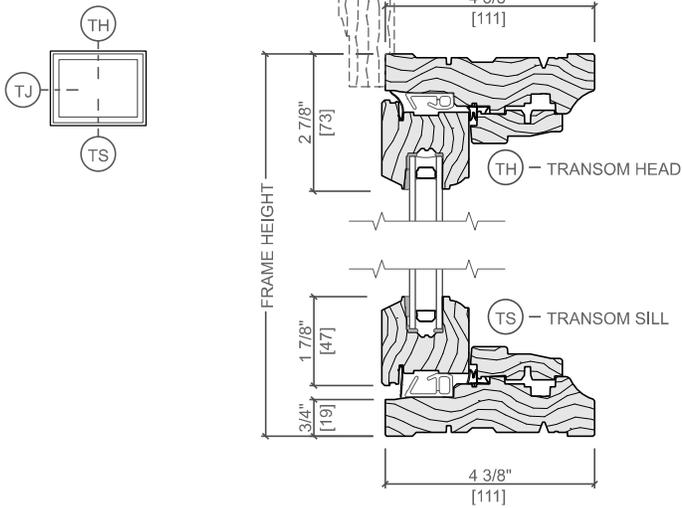
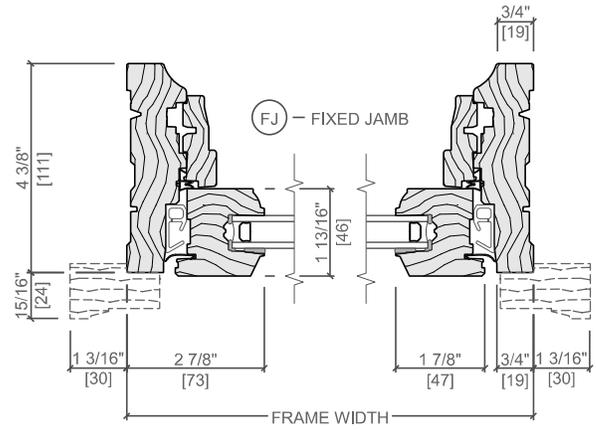


Pella® Reserve™ Traditional Hung Window

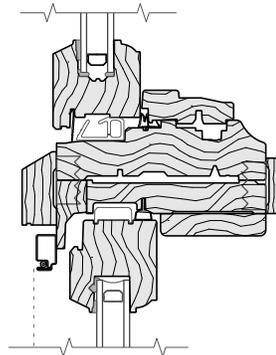
Unit Sections - Wood Exterior Putty Glaze Exterior Profile



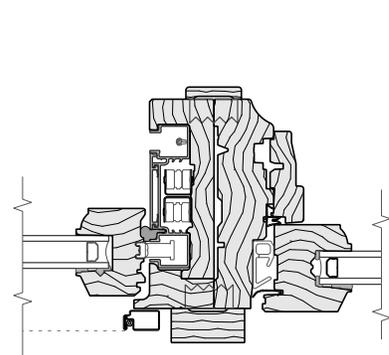
1-78" Brickmould #3443
1-1/8" Subsill #3544
Shown



VERTICAL JOINING MULLION
LX VENT / LX VENT



HORIZONTAL JOINING MULLION
TRANSOM / VENT



VERTICAL JOINING MULLION
LX VENT / FIXED

Scale 3" = 1' 0"

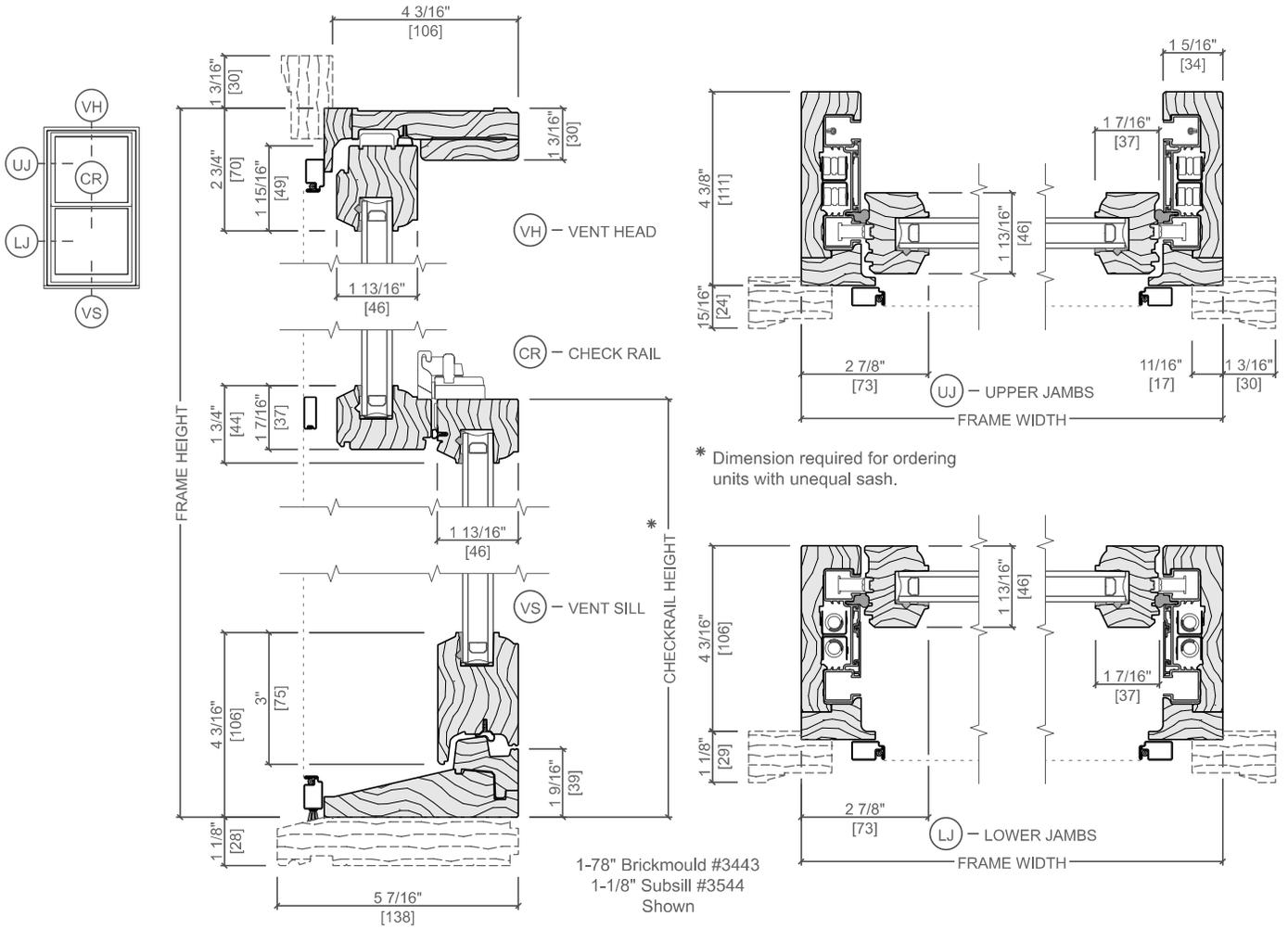
All dimensions are approximate.

See supporting document Combination Recommendations, for mullion limitations and reinforcing requirements.

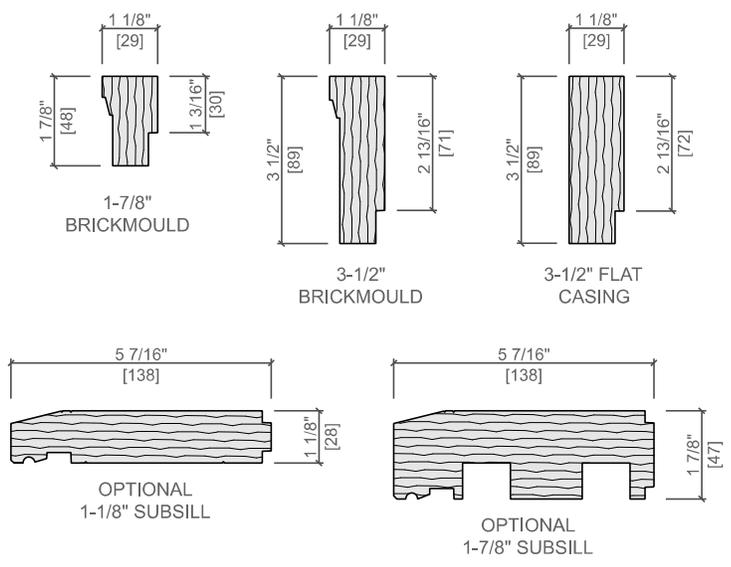


Pella® Reserve™ Traditional Hung Window

Unit Sections - Wood Exterior Putty Glaze Exterior Profile



* Dimension required for ordering units with unequal sash.



Scale 3" = 1' 0"
All dimensions are approximate.

WINDOWS: REPAIR, REPLACEMENT & NEW CONSTRUCTION

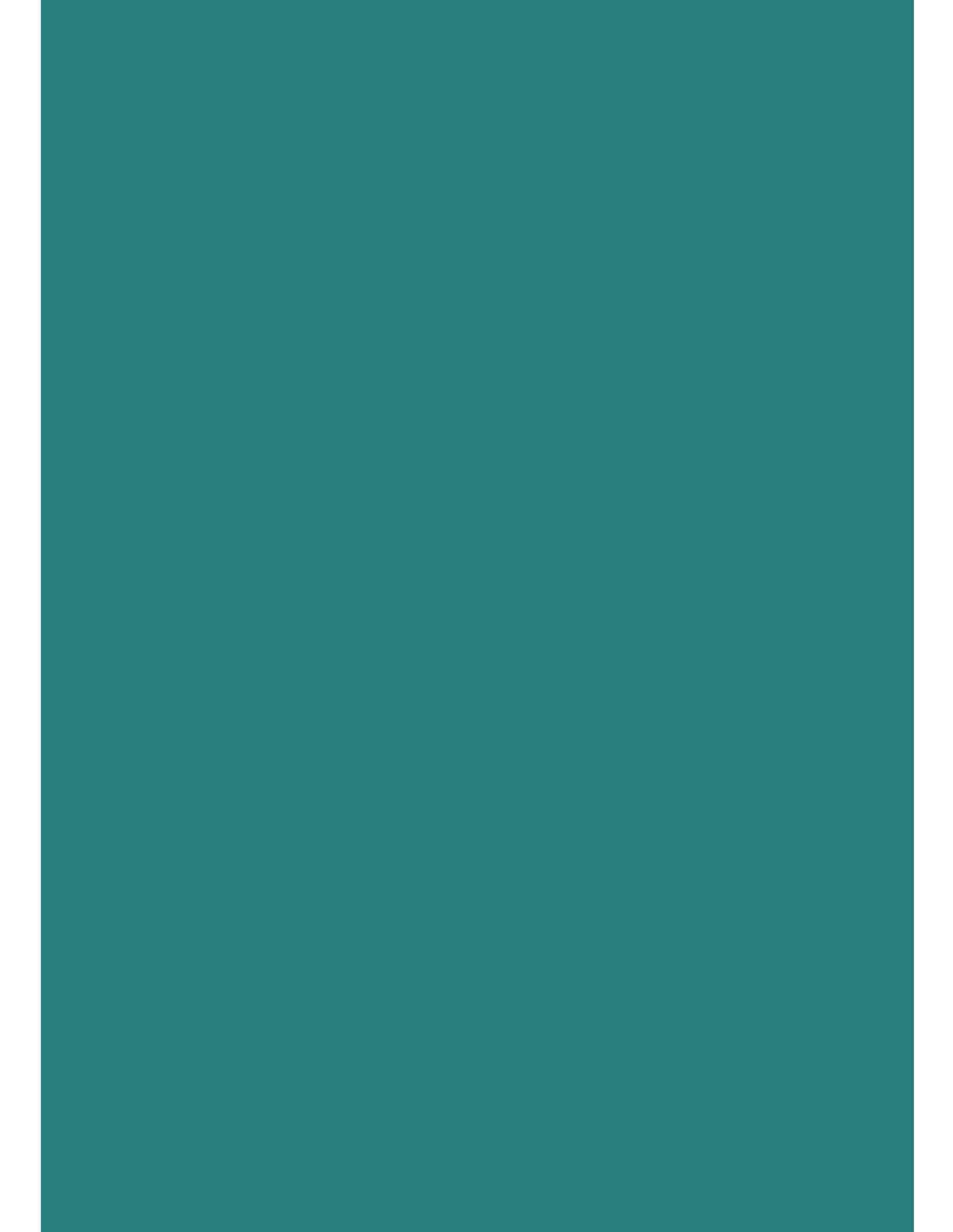


CITY OF SAN ANTONIO
**OFFICE OF HISTORIC
PRESERVATION**

CITY OF SAN ANTONIO
HISTORIC DESIGN GUIDELINES
SUBSTITUTE MATERIALS POLICY GUIDE

SEPTEMBER 2022





WHY ARE WINDOWS IMPORTANT?

A value of a historic home is equal to the sum of its parts. As original materials are removed from a historic property, it begins to lose its integrity and ultimately its historic value. Historic windows greatly contribute to a property in terms of character and craftsmanship. They were expertly designed and constructed from high-quality materials. Preserving historic windows in place keeps original, high quality materials with the property and out of the landfill.

In historic homes, the windows are an integral part of the design. They were designed to not only be aesthetically pleasing, but were necessary as a functioning component to the building by providing light and ventilation. The loss of original windows also has great potential to negatively impact the appearance of a historic home. Building facades lose proportionality and depth as modern replacements are introduced.



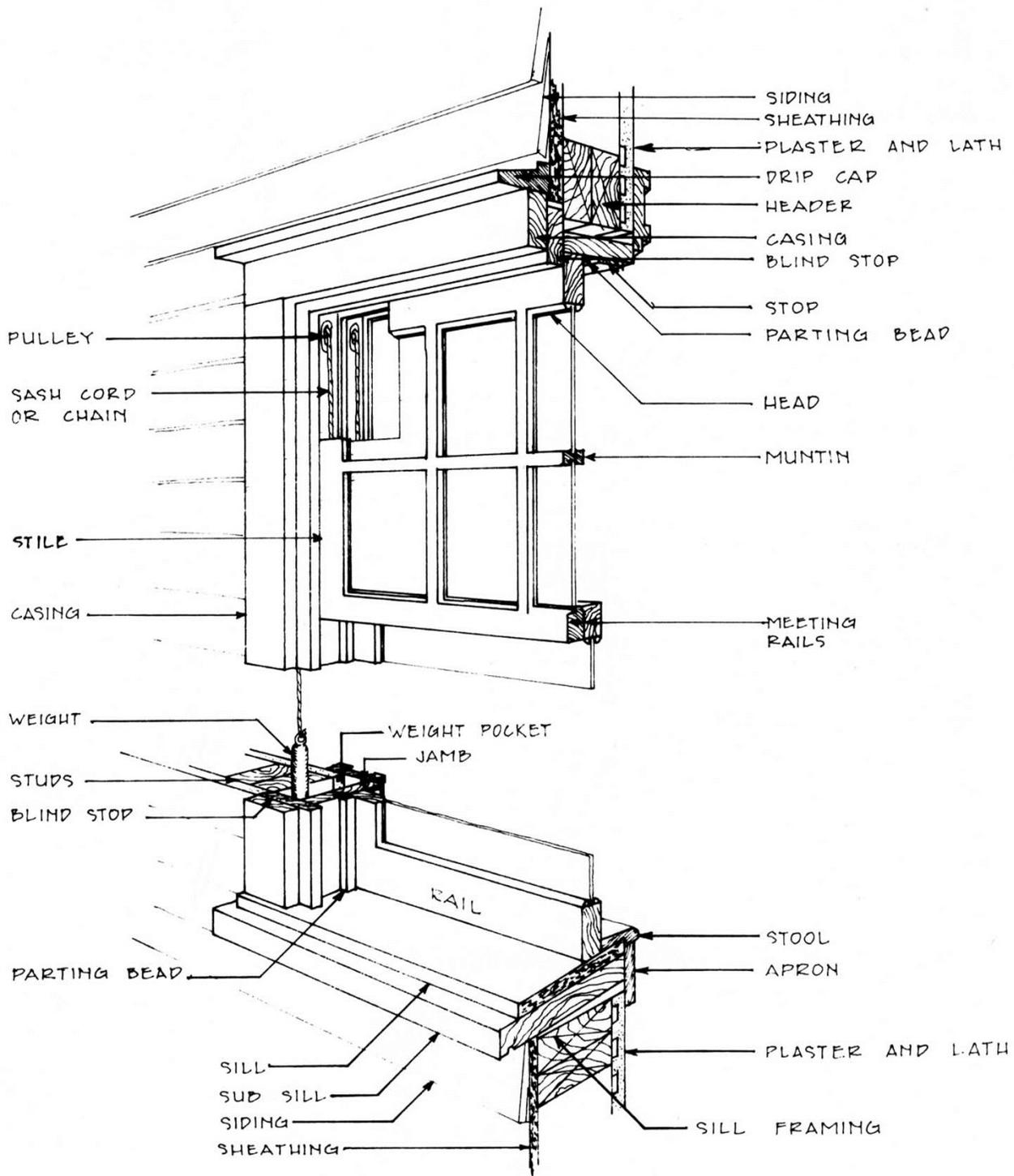
Historic wood windows can certainly be maintained or restored to working order. Preservation of original architectural features, including windows, is encouraged in the City of San Antonio Historic Design Guidelines. Nevertheless, there is an abundance of replacement window products that are too often used by historic home owners seeking to “upgrade” their aging properties.

Did you know?



Even windows in the best condition can be made more energy efficient. Heat gain/loss through windows occurs in three different ways: air infiltration, heat transfer (conduction) and solar gain (radiation). There are a number of low cost, reversible and historically appropriate strategies that can be used to reduce heat gain/loss.

WOOD WINDOW PARTS

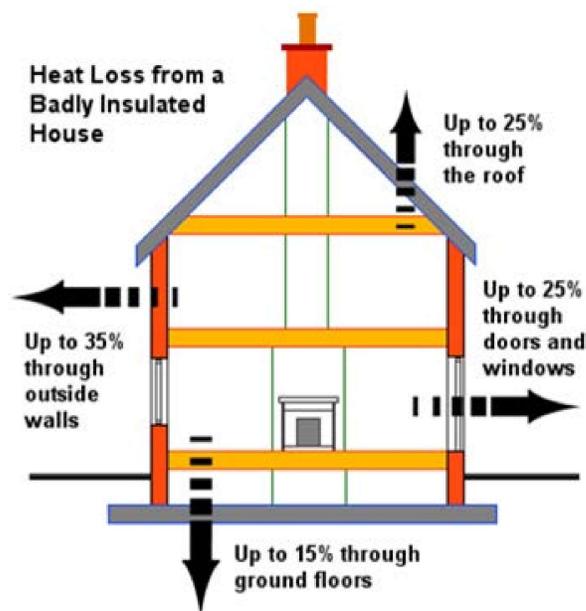


ENERGY EFFICIENCY & WOOD WINDOWS

In an age where energy reduction is at the forefront of every homeowner's mind, windows are often blamed as the leading culprit of heat gain/loss. The criminalization of "drafty old windows" is nothing new; window manufacturers have long been pointing out the faults of old windows while promoting attractive solutions (their products). New low-e, gas-filled and triple pane replacements may seem like an exciting solution for homeowners coping with their monthly energy bill. Walk into any home-improvement store, and you may be feeling the pressure to replace. Door-to-door window salesmen have also been reported in historic districts in San Antonio.

In reality, heat gain/loss occurs evenly throughout the home, with windows only accounting for 25% of waste. Poorly insulated walls and attics are the greater culprit, especially locally. The San Antonio climate offers many days of full sun. While we enjoy these sunny days in the winter, during the hot summer months that same sun bears down on rooftops, turning attics into ovens.

Trying to solve an energy problem by only addressing the windows is like trying to hold water in a leaky bucket and only patching a few of its holes!



Consider the use of the following to increase your historic structure's energy efficiency.

- Weather stripping
- Storm windows (interior and occasionally on the exterior provided they are thin framed and used with a decorative screen that does not obscure architectural elements)
- Shades, shutters and screens
- Interior window film

REPAIR OR REPLACE?

In most cases, window repair is not only the more affordable solution upfront, but offers a much greater return on investment than replacement. Repairing and maintaining an old wood window may seem like a daunting task, but remember that historic windows were intended to be taken apart. If one piece fails, then only that piece may be replaced. By educating themselves on these practices, repairs can become something that any homeowner can tackle one window at a time (although feel free to obtain the services of a professional!)

REPAIRABLE WINDOWS

- Glass missing or broken
- Meeting rails not aligning
- Cords broken or hardware missing
- Sill or frame rotted
- Partially rotted rails and stiles which require patching

BEYOND REPAIR

- Missing components or units such as sashes
- Extreme wood rot
- Where 50% or more of a window's components must be reconstructed



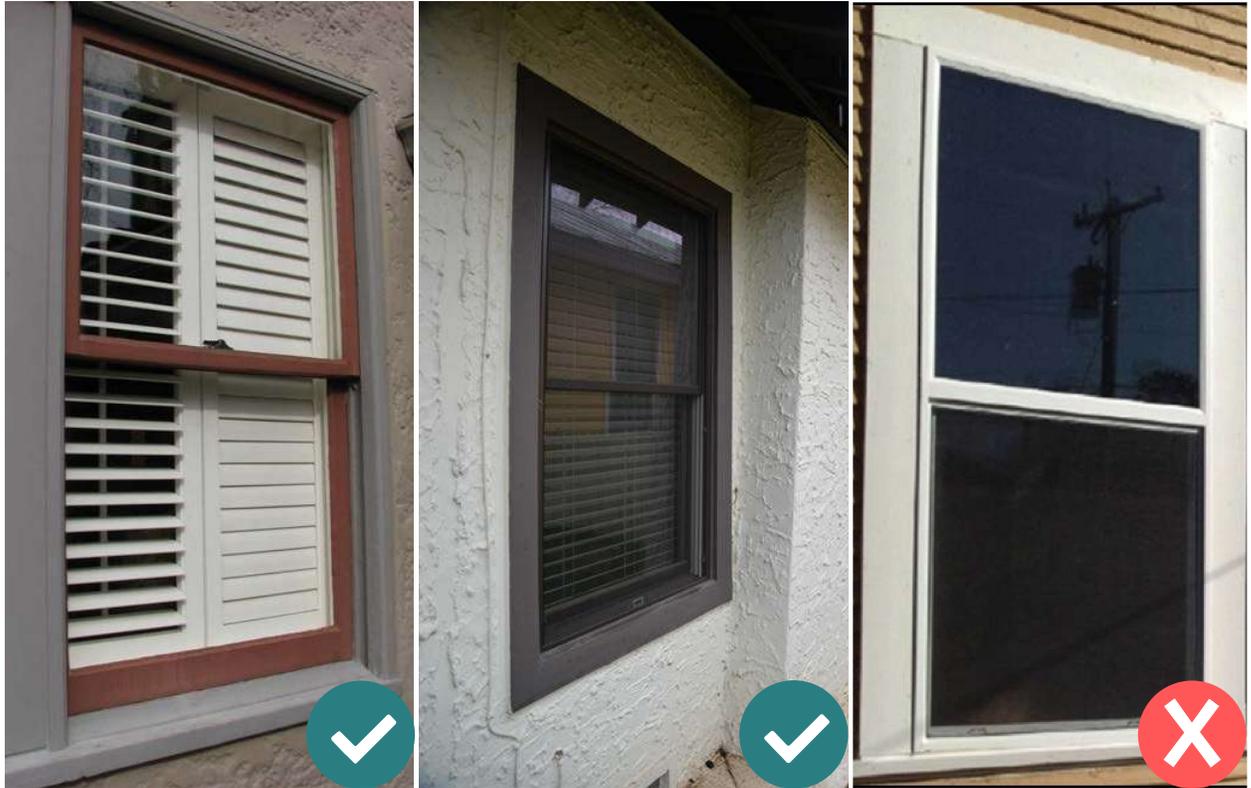
Historic wood frames are restored, and prepped for reglazing.

Did you know?



All windows, new or old, contribute to some level of heat gain or loss in your home. An important strategy in reducing heat gain for any part of your house is to shade your windows! Consider planting a shade tree or utilize solar screens on western exposures. National research also points to cellular shades as an inexpensive and effective strategy.

SELECTING AN APPROPRIATE REPLACEMENT



Wood replacement

Aluminum replacement
(to replace non-historic windows)

Vinyl replacement

Replacement windows standards:

MATERIALS: If full window replacement is approved, the new windows must feature primed and painted wood exterior finish. Clad, composition, or non-wood options are not allowed unless explicitly approved by the commission.

SASHES: Meeting rails must be no taller than 1.25". Stiles must be no wider than 2.25". Top and bottom sashes must be equal in size unless otherwise approved.

DEPTH: There should be a minimum of 2" in depth between the front face of the window trim and the front face of the top window sash. This must be accomplished by recessing the window sufficiently within the opening or with the installation of additional window trim to add thickness.

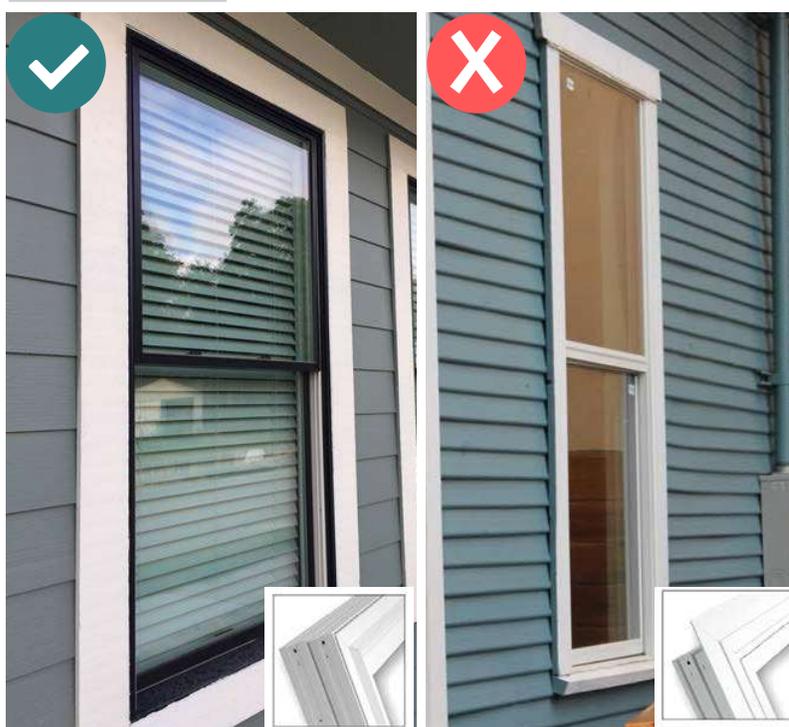
TRIM: Original trim details and sills should be retained or repaired in kind. If approved, new window trim must feature traditional dimensions and architecturally appropriate casing and sloped sill detail. Window track components such as jamb liners must be painted to match the window trim or concealed by a wood window screen set within the opening.

GLAZING: Replacement windows should feature clear glass. Low-e or reflective coatings are not recommended for replacements. The glazing should not feature faux divided lights with an interior grille. If approved to match a historic window configuration, the window should feature real exterior muntins.

COLOR: Replacement windows should feature a painted finished. If a clad product is approved, white or metallic manufacturer's color is not allowed, and color selection must be presented to staff.

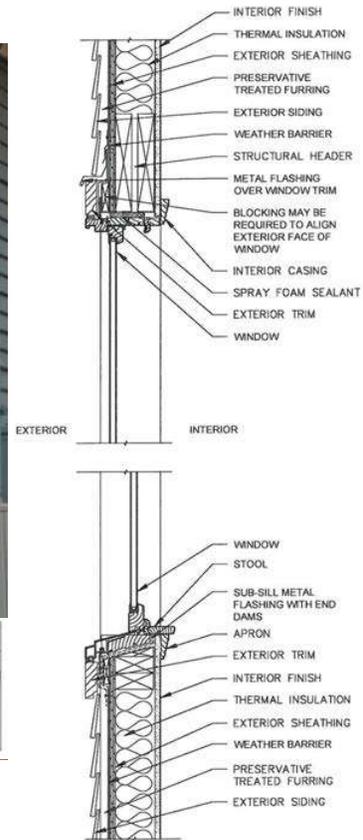
INSTALLATION: Replacement windows should be supplied in a block frame and exclude nailing fins. Window opening sizes should not be altered to accommodate stock sizes prior to approval.

WINDOWS FOR NEW CONSTRUCTION & ADDITIONS



Aluminum clad wood window
block frame

Vinyl window - flush flange)



Window standards for new construction and additions:

GENERAL: New windows on additions should relate to the windows of the primary historic structure in terms of materiality and overall appearance. Windows used in new construction should be similar in appearance to those commonly found within the district in terms of size, profile, and configuration. While no material is expressly prohibited by the Historic Design Guidelines, a high quality wood or aluminum-clad wood window product often meets the Guidelines with the stipulations listed below. Whole window systems should match the size of historic windows on property unless otherwise approved.

SIZE: Windows should feature traditional dimensions and proportions as found within the district.

SASH: Meeting rails must be no taller than 1.25". Stiles must be no wider than 2.25". Top and bottom sashes must be equal in size unless otherwise approved.

DEPTH: There should be a minimum of 2" in depth between the front face of the window trim and the front face of the top window sash. This must be accomplished by recessing the window sufficiently within the opening or with the installation of additional window trim to add thickness.

TRIM: Window trim must feature traditional dimensions and architecturally appropriate casing and sloped sill detail. Window track components such as jamb liners must be painted to match the window trim or concealed by a wood window screen set within the opening.

GLAZING: Windows should feature clear glass. Low-e or reflective coatings are not recommended for replacements. The glazing should not feature faux divided lights with an interior grille. If approved to match a historic window configuration, the window should feature real exterior muntins.

COLOR: Wood windows should feature a painted finished. If a clad product is approved, white or metallic manufacturer's color is not allowed, and color selection must be presented to staff.

INSTALLATION: Wood windows should be supplied in a block frame and exclude nailing fins. Window opening sizes should not be altered to accommodate stock sizes prior to approval.

RESOURCES

Office of Historic Preservation Staff. Consult with a historic preservation specialist to receive property-specific guidance on windows and the Historic Design Guidelines.

www.sapreservation.com | (210) 207-0035 | info@sapreservation.com

Your neighborhood association. Your registered neighborhood association can provide guidance on landscape characteristics, assistance in design and contractor referrals, and more. To find your association, visit **the link below** or inquire with Office of Historic Preservation staff if you live in a historic district.

<https://www.sa.gov/Directory/Departments/CE/Community-Engagement/Neighborhood-Associations>

Find more on the web:

- <https://www.sarehaberclub.com/resource-guides/windows>
- [Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement](#)
- [Energy Retrofits for Hot-Humid Climates \(UTSA Study with Cost-Benefit Analyses\)](#)
- [Green Strategies for Historic Homes](#)
- [Craftsman Blog: Windows Archive](#)