



CASEMENT

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General Notes:

Specifications subject to change without notice. Go to www.PellaADM.com for most current technical data.

For complete CSI Format Specifications browse online at www.PellaADM.com.

Abbreviations:

P = Pending. Data not available at time of publication. Go to www.PellaADM.com for most current technical data.

HGP = Hinged Glass Panel

PVB = Polyvinyl butyral. This is a laminate material used in Pella HurricaneShield® glazing and is the same material traditionally used in car windshield applications.

SGP = SentryGlas® Plus from DuPont®. This is a stiffer laminate material which is optional in select HurricaneShield impact-resistant glazing products.

SentryGlas Plus and DuPont are registered trademarks of E. I. DuPont De Nemours & Company.

HA = High Altitude Glass. See Wood / Clad Overview section for more information.



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BRAND SUMMARY



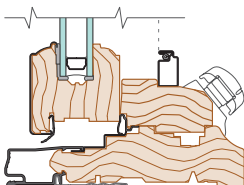
Casement Windows are traditional in every detail - with all the Pella innovations you demand. Pella's EnduraGuard protection formula, together with our immersion-treatment method, provides strong protection on every exterior wood surface of your windows and patio doors. This innovation provides advanced protection against the effects of moisture, decay, stains from mold and mildew - as well as termite damage. The exterior of the wood windows are protected by Pella's low-maintenance EnduraClad® protective finish, or EnduraClad® Plus protective finish. We maintain our high standard of energy efficiency with weatherstripping at the sides of sash, and full perimeter weatherstripping to reduce air infiltration. Pella maintains its high standards by taking the time to test virtually every vent unit for air infiltration, so you know you're getting a quality product.



Midtown Community Elementary School, Neptune Township, NJ, SSP Architectural Group

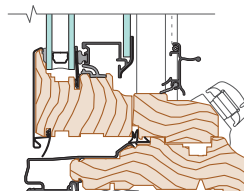
ARCHITECT SERIES®

- A wide range of glazing options as well as HurricaneShield® impact-resistant Casements
- Divided light options available in Integral Light Technology® grilles, Grilles-Between-the-Glass or wood removable grilles in standard and custom patterns
- EnduraClad® protective finish in standard and feature colors plus nearly unlimited custom colors
- EnduraClad Plus protective finish in standard and feature colors plus nearly unlimited custom colors
- InView™ screens or Vivid View® screens or Rolscreen



DESIGNER SERIES®

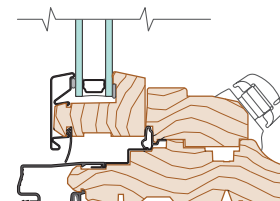
- Simplicity of insulated glass with the distinction of exclusive options
- Snap-in between-glass shades, and blinds as well as removable between-glass grilles—the ultimate solution for dressing a window
- EnduraClad aluminum-clad exteriors in standard and feature colors plus nearly unlimited custom colors
- InView™ screens or Vivid View® screens or Rolscreen



Triple-Pane Glazing System

PELLA® PROLINE 450

- EnduraClad aluminum clad exteriors in standard and feature colors
- Removable room side grilles, Grilles-Between-the-Glass, Simulated-Divided-Lite grilles
- Prefinished stain, prefinished White, Bright White, Linen White or factory primed interiors
- Stainless steel operating arms and hinges resist rust and corrosion
- InView™ screens or Vivid View® screens





CASEMENT

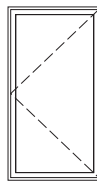
PRODUCT SELECTION GUIDE

Size and Performance Data

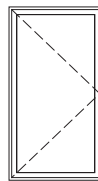


	ARCHITECT SERIES		DESIGNER SERIES	PELLA PROLINE 450
	Clad	Wood	Clad	Clad
SIZES				
Standard Vent/Fixed Sizes	●	●	●	●
Standard Fixed Companion Sizes	●	●	●	●
Standard Quarter and Half Circle	●	●	—	—
Standard Elliptical	●	●	—	—
Standard Springline	●	●	—	—
Standard Full Circle	●	●	—	—
Standard Oval	●	●	—	—
Arch Head Sizes—Full and Partial	●	●	—	—
Transom Sizes	●	●	●	●
Egress Sizes	●	●	●	●
Special Sizes Available	●	●	●	●
Custom Shapes and Sizes	●	●	—	—
PERFORMANCE ₁				
Meets or Exceeds AAMA/WDMA Ratings	CW30-CW50 Hallmark Certified	CW30-CW50 Hallmark Certified	R20-R50 Hallmark Certified	R30-R50 Hallmark Certified
Air Infiltration (cfm/ft ² of frame @ 1.57 psf wind pressure)	0.05	0.05	0.05	0.05
Water Resistance	7.5 psf	7.5 psf	7.5-10.5 psf	7.5 psf
Design Pressure	50 psf	50 psf	50 psf	30-50 psf
With HurricaneShield® Impact-Resistant Glass	C-R/CW75 - C-R/CW85 Hallmark Certified	C-CW60 Hallmark Certified	—	—
OTHER PERFORMANCE CRITERIA				
Forced Entry Resistance Level (Minimum Security Grade) ₂	10	10	10	10
Maximum Operating Force (lb) Initiate Motion/Maintain Motion	15/6	15/6	15/6	15/6

All vent sizes are available with left- or right-hand hinging, as viewed from the exterior.



Left



Right

(-) = Not Applicable

(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. Values shown are for standard and special sizes; Custom shapes and sizes may not have the same values. Contact your local sales representative for complete information.

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



CASEMENT

PRODUCT SELECTION GUIDE

Features and Options



	ARCHITECT SERIES		DESIGNER SERIES	PELLA PROLINE
	Clad	Wood		
GLAZING				
Glazing Type				
Dual-Pane Insulating Glass	S	S	-	S
Triple-Pane Insulating Glass	O	O	-	-
Designer Series® triple-pane glazing	-	-	S	-
Insulated Glass Options/Low-E Types				
Advanced Low-E	S	S	S	S
SunDefense™ Low-E	O	O	O	O
AdvancedComfort Low-E	O	O	O	O
NaturalSun Low-E	O	O	O	O
Insulating Glass with Clear Hinged Glass Panel	-	-	O	-
Clear (no Low-E coating)	O	O	O	-
Additional Glass Options				
Annealed Glass	S	S	S	S
Tempered Glass	O	O	O	O
Obscure Glass ₁	O	O	O	O
Tinted Glass (Bronze, Gray and Green)	O	O	O	-
Non-Impact Laminated Single-Pane Glass	O	O	-	-
Non-Impact Laminated Dual-Pane Insulating Glass	O	O	O	-
Hurricaneshield® Impact Resistant Products with Laminated Single-Pane Glass	O	O	-	-
Hurricaneshield® Impact Resistant Products with Laminated Dual-Pane 11/16" Insulating Glass	O	O	-	-
Gas Fill/High Altitude				
Argon	S	S	S	S
Krypton ₈	O	O	-	-
High altitude	O	O	O	O
High altitude with argon	O ₅	O	-	-
EXTERIOR				
EnduraClad® protective finish	S	-	S	S
EnduraClad Plus protective finish	O	-	O	-
Primed Pine Wood Exterior	-	S	-	-
Unfinished Mahogany Wood Exterior	-	O	-	-
Cladding Colors				
White, Tan, Putty or Brown	S	-	S	S
23 Feature Colors ₄	O	-	O	O
Custom Colors ₁	O	-	O	-
INTERIOR				
Unfinished Wood	S	S	S	S
Factory primed	O	O	O	O
Factory prefinished paint ₇	O ₆	O ₆	O	O
Factory prefinished stain ₁	O	O	O	O
WOOD TYPES				
Pine	S ₆	S	S	S
Mahogany, Alder, Douglas Fir	O ₆	O	-	-

	ARCHITECT SERIES		DESIGNER SERIES	PELLA PROLINE
	Clad	Wood		
HARDWARE				
Champagne, White or Brown	S	S	S	S
Bright Brass, Satin Nickel or Oil-Rubbed Bronze	O	O	O	O
Sash Locks				
SureLock® System	S	S	S	S
Unison Lock System ₂	S	S	S	S
SCREENS				
InView™ screens	O	O	O	O
Vivid View® screens	O	O	O	O
Rolscreen® Retractable screens	O	O	O	-
GRILLES				
Integral Light Technology®				
Traditional, Prairie, Top Row, Cross, New England, Victorian, Simulated French, Custom	O	O	-	-
Removable Pine Wood Interior				
Traditional	O	O	-	O
Prairie, Top Row, Cross, New England, Victorian, Custom	O	O	-	-
Removable Between-Glass				
Traditional, Prairie, Top Row, Cross, New England, Custom	-	-	O	-
Grilles-Between-the-Glass				
Traditional, Prairie, Cross, Top Row ₁ , Custom-Equally Divided	O	O	-	O
Simulated Divided Light₅ with Optional Spacer				
Traditional, Prairie, Cross, Top Row, Custom-Equally Divided	-	-	-	O
WINDOW FASHIONS₃				
Cellular Fabric Shades₁				
Between-Glass Bottom-Up	-	-	O	-
Between-Glass Top-Down	-	-	O	-
Slimshade® Blinds₁				
Between-Glass Bottom-Up	-	-	O	-
Between-Glass Tilt-Only	-	-	O	-

S = Standard; O = Optional; (-) = Not Available

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

(2) Unit height determines availability.

(3) For detailed information see between-the-glass options in the Overview section.

(4) See the Clad/Wood Overview section for feature color options. Popular White, Hartford Green, Black and Brick Red are the only feature color options available for Pella ProLine. Morning Sky Gray and Portobello in Spring 2015.

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

(6) Pine is standard exterior for wood exterior unit. Mahogany is an option for wood exterior.

(7) Not available on mahogany, alder and douglas fir interiors.

(8) Only available with Architect Series products with triple glazing. Not available with high altitude glazing.



CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Vent



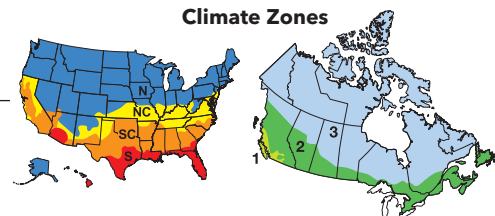
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performane Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown							
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²			
										Zone				ER	Zone		
										N	NC	SC	S				
VENT																	
11/16"	Clear IG	PEL-N-11-09073-00001	2.5	2.5	air	0.44	0.55	57	44								
	with grilles-between-the-glass	PEL-N-11-09695-00001				0.44	0.50	52	44								
	with integral grilles	PEL-N-11-09283-00001				0.44	0.50	52	44								
11/16"	Clear IG	PEL-N-11-09074-00001	3	3	air	0.44	0.54	56	44								
	with grilles-between-the-glass	PEL-N-11-09696-00001				0.44	0.49	51	44								
	with integral grilles	PEL-N-11-09284-00001				0.44	0.49	51	44								
11/16"	Advanced Low-E IG	PEL-N-11-09031-00001	2.5	2.5	argon	0.28	0.26	48	61					20			
	with grilles-between-the-glass	PEL-N-11-09653-00001				0.28	0.24	44	61					19			
	with integral grilles	PEL-N-11-09241-00001				0.29	0.24	44	61								
11/16"	Advanced Low-E IG	PEL-N-11-09032-00001	3	3	argon	0.28	0.26	48	60					20			
	with grilles-between-the-glass	PEL-N-11-09654-00001				0.28	0.24	43	60					19			
	with integral grilles	PEL-N-11-09242-00001				0.29	0.24	43	61								
11/16"	SunDefense™ Low-E IG	PEL-N-11-09044-00001	2.5	2.5	argon	0.28	0.19	45	62					16			
	with grilles-between-the-glass	PEL-N-11-09666-00001				0.28	0.18	41	62								
	with integral grilles	PEL-N-11-09254-00001				0.29	0.18	41	62								
11/16"	SunDefense™ Low-E IG	PEL-N-11-09045-00001	3	3	argon	0.28	0.19	44	61					16			
	with grilles-between-the-glass	PEL-N-11-09667-00001				0.28	0.18	40	61								
	with integral grilles	PEL-N-11-09255-00001				0.29	0.18	40	61								
11/16"	AdvancedComfort Low-E IG	PEL-N-11-10701-00001	2.5	2.5	argon	0.25	0.26	47	49					23			
	with grilles-between-the-glass	PEL-N-11-10687-00001				0.25	0.23	43	49					22			
	with integral grilles	PEL-N-11-10659-00001				0.25	0.23	43	49					22			
11/16"	AdvancedComfort Low-E IG	PEL-N-11-10646-00001	3	3	argon	0.25	0.25	47	48					23			
	with grilles-between-the-glass	PEL-N-11-10688-00001				0.25	0.23	42	48					22			
	with integral grilles	PEL-N-11-10660-00001				0.26	0.23	42	48					20			
11/16"	NaturalSun Low-E IG	PEL-N-11-09002-00001	2.5	2.5	argon	0.29	0.48	55	61					31			
	with grilles-between-the-glass	PEL-N-11-09624-00001				0.29	0.44	50	61					29			
	with integral grilles	PEL-N-11-09212-00001				0.30	0.44	50	61					28			
11/16"	NaturalSun Low-E IG	PEL-N-11-09003-00001	3	3	argon	0.29	0.48	54	60					31			
	with grilles-between-the-glass	PEL-N-11-09625-00001				0.29	0.43	49	60					28			
	with integral grilles	PEL-N-11-09213-00001				0.30	0.43	49	60					27			
TINTED GLAZING																	
11/16"	Bronze Advanced Low-E IG	PEL-N-11-08989-00001	5	3	argon	0.29	0.23	31	60								
	with grilles-between-the-glass	PEL-N-11-09611-00001				0.30	0.21	28	60								
	with integral grilles	PEL-N-11-09199-00001				0.30	0.21	28	60								
11/16"	Gray Advanced Low-E IG	PEL-N-11-09015-00001	5	3	argon	0.29	0.21	27	60								
	with grilles-between-the-glass	PEL-N-11-09637-00001				0.30	0.19	24	60								
	with integral grilles	PEL-N-11-09225-00001				0.30	0.19	24	60								
11/16"	Green Advanced Low-E IG	PEL-N-11-09022-00001	5	3	argon	0.29	0.23	38	60								
	with grilles-between-the-glass	PEL-N-11-09644-00001				0.30	0.21	34	60								
	with integral grilles	PEL-N-11-09232-00001				0.30	0.21	34	60								

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 based on NFRC 100, NFRC 200 and NFRC 500. ENERGY STAR® values are updated to 2015 (Version 6) criteria.

(2) The values shown are based on Canada's updated ENERGY STAR® 2015 initiative.

See the Product Performance section for more detailed information or visit www.energystar.gov for Energy Star guidelines.





CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Vent



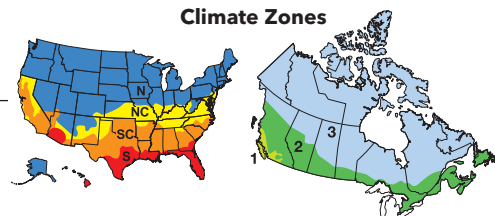
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.									
										Zone		ER	Zone						
										N	NC	SC	S						
HIGH ALTITUDE GLAZING																			
11/16"	Advanced Low-E IG	PEL-N-11-09108-00001	2.5	2.5	air	0.31	0.26	48	58										
	with grilles-between-the-glass	PEL-N-11-09730-00001				0.31	0.24	44	58										
	with integral grilles	PEL-N-11-09318-00001				0.32	0.24	44	58										
11/16"	Advanced Low-E IG	PEL-N-11-09109-00001	3	3	air	0.32	0.26	48	57										
	with grilles-between-the-glass	PEL-N-11-09731-00001				0.32	0.24	43	57										
	with integral grilles	PEL-N-11-09319-00001				0.32	0.24	43	57										
11/16"	SunDefense Low-E IG	PEL-N-11-09121-00001	2.5	2.5	air	0.31	0.20	45	58										
	with grilles-between-the-glass	PEL-N-11-09743-00001				0.31	0.18	41	58										
	with integral grilles	PEL-N-11-09331-00001				0.32	0.18	41	58										
11/16"	SunDefense Low-E IG	PEL-N-11-09122-00001	3	3	air	0.31	0.20	44	57										
	with grilles-between-the-glass	PEL-N-11-09744-00001				0.31	0.18	40	57										
	with integral grilles	PEL-N-11-09332-00001				0.32	0.18	40	57										
11/16"	AdvancedComfort Low-E IG	PEL-N-11-10652-00001	2.5	2.5	air	0.27	0.26	47	45							21			
	with grilles-between-the-glass	PEL-N-11-10694-00001				0.27	0.23	43	45							19			
	with integral grilles	PEL-N-11-10666-00001				0.28	0.23	43	45							18			
11/16"	AdvancedComfort Low-E IG	PEL-N-11-10653-00001	3	3	air	0.27	0.26	47	44							21			
	with grilles-between-the-glass	PEL-N-11-10695-00001				0.27	0.23	42	44							19			
	with integral grilles	PEL-N-11-10667-00001				0.28	0.23	42	44							18			
11/16"	NaturalSun Low-E IG	PEL-N-11-09079-00001	2.5	2.5	air	0.32	0.48	55	57							27			
	with grilles-between-the-glass	PEL-N-11-09701-00001				0.32	0.44	50	57							25			
	with integral grilles	PEL-N-11-09289-00001				0.33	0.44	50	57										
11/16"	NaturalSun Low-E IG	PEL-N-11-09080-00001	3	3	air	0.32	0.47	54	56							27			
	with grilles-between-the-glass	PEL-N-11-09702-00001				0.32	0.43	49	56							25			
	with integral grilles	PEL-N-11-09290-00001				0.33	0.43	49	56										

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GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Triple-Pane Glazing



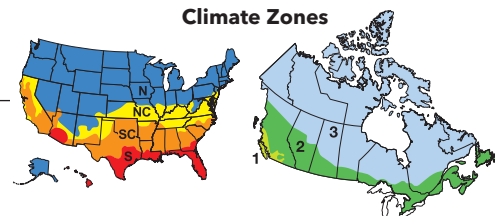
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			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²					
											Zone				ER	Zone				
											N	NC	SC	S				1	2	3
VENT																				
1"	Advanced Low-E IG	PEL-N-11-09149-00001	3	3	3	argon	0.22	0.24	42	70					26					
	with grilles-between-the-glass	PEL-N-11-09771-00001					0.22	0.22	38	70					25					
	with integral grilles	PEL-N-11-10829-00001					0.23	0.22	38	70					24					
1"	Advanced Low-E IG	PEL-N-11-10789-00001	3	3	3	Krypton	0.19	0.23	42	74					29					
	with grilles-between-the-glass	PEL-N-11-10790-00001					0.19	0.21	38	74					28					
	with integral grilles	PEL-N-11-10791-00001					0.20	0.21	38	74					27					
1"	SunDefense™ Low-E IG	PEL-N-11-09156-00001	3	3	3	argon	0.22	0.18	39	70					23					
	with grilles-between-the-glass	PEL-N-11-09778-00001					0.22	0.16	35	70					21					
	with integral grilles	PEL-N-11-10837-00001					0.23	0.16	35	70					20					
1"	SunDefense™ Low-E IG	PEL-N-11-10805-00001	3	3	3	Krypton	0.19	0.17	39	74					26					
	with grilles-between-the-glass	PEL-N-11-10806-00001					0.19	0.16	35	74					25					
	with integral grilles	PEL-N-11-10807-00001					0.20	0.16	35	74					24					
1"	NaturalSun Low-E IG	PEL-N-11-09144-00001	3	3	3	argon	0.22	0.39	48	69					35					
	with grilles-between-the-glass	PEL-N-11-09766-00001					0.23	0.36	43	69					32					
	with integral grilles	PEL-N-11-10821-00001					0.23	0.36	43	69					32					
1"	NaturalSun Low-E IG	PEL-N-11-10773-00001	3	3	3	Krypton	0.19	0.39	48	74					38					
	with grilles-between-the-glass	PEL-N-11-10774-00001					0.19	0.36	43	74					37					
	with integral grilles	PEL-N-11-10775-00001					0.20	0.36	43	74					35					
HIGH ALTITUDE GLAZING																				
1"	Advanced Low-E IG	PEL-N-11-09165-00001	3	3	3	air	0.25	0.24	42	66					22					
	with grilles-between-the-glass	PEL-N-11-09787-00001					0.26	0.22	38	65					20					
	with integral grilles	PEL-N-11-10853-00001					0.26	0.22	38	65					20					
1"	SunDefense Low-E IG	PEL-N-11-09172-00001	3	3	3	air	0.25	0.18	39	66					19					
	with grilles-between-the-glass	PEL-N-11-09794-00001					0.26	0.16	35	66					16					
	with integral grilles	PEL-N-11-10861-00001					0.26	0.16	35	66					16					
1"	NaturalSun Low-E IG	PEL-N-11-09160-00001	3	3	3	air	0.26	0.39	48	65					30					
	with grilles-between-the-glass	PEL-N-11-09782-00001					0.26	0.35	43	65					27					
	with integral grilles	PEL-N-11-10845-00001					0.27	0.35	43	65					26					

R-Value = 1/U-Factor
 SHGC = Solar Heat Gain Coefficient
 VLT % = Visible Light Transmission
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(1) Glazing performance values are calculated based on NFRC 100, NFRC 200 and NFRC 500. ENERGY STAR® values are updated to 2015 (Version 6) criteria.

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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood

Fixed



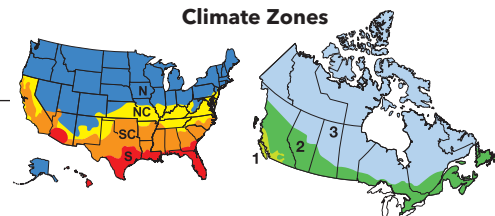
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown							
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.							
										Zone		ER	Zone				
FIXED										N	NC	SC	S				
11/16"	Clear IG	PEL-N-1-17120-00001	2.5	2.5	air	0.45	0.63	66	45								
	with grilles-between-the-glass	PEL-N-1-17742-00001				0.45	0.57	59	45								
	with integral grilles	PEL-N-1-17330-00001				0.45	0.57	59	45								
11/16"	Clear IG	PEL-N-1-17121-00001	3	3	air	0.46	0.62	65	44								
	with grilles-between-the-glass	PEL-N-1-17743-00001				0.46	0.56	58	44								
	with integral grilles	PEL-N-1-17331-00001				0.46	0.56	58	44								
11/16"	Advanced Low-E IG	PEL-N-1-17078-00001	2.5	2.5	argon	0.27	0.30	56	61					23			
	with grilles-between-the-glass	PEL-N-1-17700-00001				0.27	0.27	50	61					22			
	with integral grilles	PEL-N-1-17288-00001				0.28	0.27	50	61					20			
11/16"	Advanced Low-E IG	PEL-N-1-17079-00001	3	3	argon	0.27	0.30	56	60					23			
	with grilles-between-the-glass	PEL-N-1-17701-00001				0.27	0.27	50	60					22			
	with integral grilles	PEL-N-1-17289-00001				0.28	0.27	50	60					20			
11/16"	SunDefense™ Low-E IG	PEL-N-1-17091-00001	2.5	2.5	argon	0.27	0.22	52	62					19			
	with grilles-between-the-glass	PEL-N-1-17713-00001				0.27	0.20	46	62					17			
	with integral grilles	PEL-N-1-17301-00001				0.27	0.20	46	62					17			
11/16"	SunDefense™ Low-E IG	PEL-N-1-17092-00001	3	3	argon	0.27	0.22	51	61					19			
	with grilles-between-the-glass	PEL-N-1-17714-00001				0.27	0.20	46	61					17			
	with integral grilles	PEL-N-1-17302-00001				0.27	0.20	46	61					17			
11/16"	AdvancedComfort Low-E IG	PEL-N-1-20356-00001	2.5	2.5	argon	0.23	0.29	54	48					28			
	with grilles-between-the-glass	PEL-N-1-20398-00001				0.23	0.26	49	49					26			
	with integral grilles	PEL-N-1-20370-00001				0.24	0.26	59	49					25			
11/16"	AdvancedComfort Low-E IG	PEL-N-1-20357-00001	3	3	argon	0.23	0.29	54	48					28			
	with grilles-between-the-glass	PEL-N-1-20399-00001				0.23	0.26	49	48					26			
	with integral grilles	PEL-N-1-20371-00001				0.24	0.26	49	48					25			
11/16"	NaturalSun Low-E IG	PEL-N-1-17049-00001	2.5	2.5	argon	0.28	0.56	64	61					37			
	with grilles-between-the-glass	PEL-N-1-17671-00001				0.28	0.50	57	61					34			
	with integral grilles	PEL-N-1-17259-00001				0.29	0.50	57	61					32			
11/16"	NaturalSun Low-E IG	PEL-N-1-17050-00001	3	3	argon	0.28	0.55	63	60					36			
	with grilles-between-the-glass	PEL-N-1-17672-00001				0.28	0.49	56	60					33			
	with integral grilles	PEL-N-1-17260-00001				0.29	0.49	56	60					32			

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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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Fixed



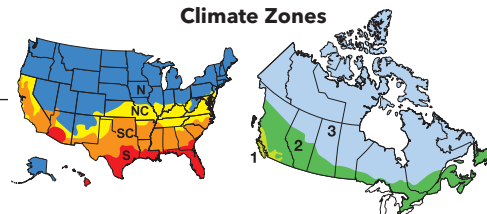
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performane Values ₁				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ₂					
										Zone				ER	Zone				
										N	NC	SC	S				1	2	3
TINTED GLAZING																			
11/16"	Bronze Advanced Low-E	PEL-N-1-17036-00001	5	3	argon	0.28	0.26	36	60						20				
	with grilles-between-the-glass	PEL-N-1-17658-00001				0.29	0.24	32	60										
	with integral grilles	PEL-N-1-17246-00001				0.29	0.24	32	60										
11/16"	Gray Advanced Low-E IG	PEL-N-1-17062-00001	5	3	argon	0.28	0.24	31	60						19				
	with grilles-between-the-glass	PEL-N-1-17684-00001				0.29	0.22	28	60										
	with integral grilles	PEL-N-1-17272-00001				0.29	0.22	28	60										
11/16"	Green Advanced Low-E IG	PEL-N-1-17069-00001	5	3	argon	0.28	0.26	44	60						20				
	with grilles-between-the-glass	PEL-N-1-17691-00001				0.29	0.23	39	60										
	with integral grilles	PEL-N-1-17279-00001				0.29	0.23	39	60										
HIGH ALTITUDE GLAZING																			
11/16"	Advanced Low-E IG	PEL-N-1-17155-00001	2.5	2.5	air	0.31	0.30	56	57										
	with grilles-between-the-glass	PEL-N-1-17777-00001				0.31	0.27	50	57										
	with integral grilles	PEL-N-1-17365-00001				0.32	0.27	50	57										
11/16"	Advanced Low-E IG	PEL-N-1-17156-00001	3	3	air	0.31	0.30	56	56										
	with grilles-between-the-glass	PEL-N-1-17778-00001				0.31	0.27	50	56										
	with integral grilles	PEL-N-1-17366-00001				0.32	0.27	50	56										
11/16"	SunDefense Low-E IG	PEL-N-1-17168-00001	2.5	2.5	air	0.30	0.22	52	58										
	with grilles-between-the-glass	PEL-N-1-17790-00001				0.30	0.20	46	58										
	with integral grilles	PEL-N-1-17378-00001				0.31	0.20	46	58										
11/16"	SunDefense Low-E IG	PEL-N-1-17169-00001	3	3	air	0.31	0.23	51	57										
	with grilles-between-the-glass	PEL-N-1-17791-00001				0.31	0.20	46	57										
	with integral grilles	PEL-N-1-17379-00001				0.32	0.20	46	57										
11/16"	AdvancedComfort Low-E IG	PEL-N-1-20363-00001	2.5	2.5	air	0.26	0.29	55	45						24				
	with grilles-between-the-glass	PEL-N-1-20405-00001				0.26	0.27	49	45						23				
	with integral grilles	PEL-N-1-20377-00001				0.26	0.27	49	45						23				
11/16"	AdvancedComfort Low-E IG	PEL-N-1-20364-00001	3	3	air	0.26	0.29	54	44						24				
	with grilles-between-the-glass	PEL-N-1-20406-00001				0.26	0.26	49	44						22				
	with integral grilles	PEL-N-1-20378-00001				0.27	0.26	49	44						21				
11/16"	NaturalSun Low-E IG	PEL-N-1-17126-00001	2.5	2.5	air	0.32	0.56	64	57						32				
	with grilles-between-the-glass	PEL-N-1-17748-00001				0.32	0.50	57	57						29				
	with integral grilles	PEL-N-1-17336-00001				0.33	0.50	57	57						27				
11/16"	NaturalSun Low-E IG	PEL-N-1-17127-00001	3	3	air	0.32	0.55	63	56						31				
	with grilles-between-the-glass	PEL-N-1-17749-00001				0.32	0.49	56	56						28				
	with integral grilles	PEL-N-1-17337-00001				0.33	0.49	56	56						27				

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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Triple-Pane Glazing



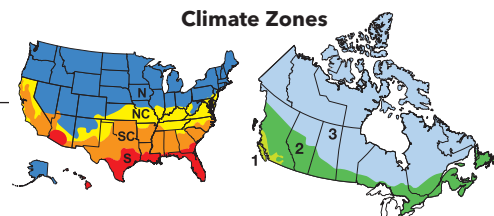
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)			Gap Fill	Performane Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²					
											Zone				ER	Zone				
FIXED											N	NC	SC	S				1	2	3
1"	Advanced Low-E IG	PEL-N-1-17196-00001	3	3	3	argon	0.20	0.27	49	71						30				
	with grilles-between-the-glass	PEL-N-1-17818-00001					0.21	0.24	44	71						27				
	with integral grilles	PEL-N-1-20700-00001					0.22	0.24	43	71						26				
1"	Advanced Low-E IG	PEL-N-1-20660-00001	3	3	3	Krypton	0.17	0.26	48	73						33				
	with grilles-between-the-glass	PEL-N-1-20661-00001					0.17	0.24	43	73						32				
	with integral grilles	PEL-N-1-20662-00001					0.18	0.24	43	73						31				
1"	SunDefense™ Low-E IG	PEL-N-1-17203-00001	3	3	3	argon	0.20	0.20	45	71						26				
	with grilles-between-the-glass	PEL-N-1-17825-00001					0.21	0.18	40	71						24				
	with integral grilles	PEL-N-1-20708-00001					0.22	0.18	40	71						23				
1"	SunDefense™ Low-E IG	PEL-N-1-20676-00001	3	3	3	Krypton	0.17	0.19	44	73						29				
	with grilles-between-the-glass	PEL-N-1-20677-00001					0.17	0.18	39	73						29				
	with integral grilles	PEL-N-1-20678-00001					0.18	0.18	39	73						28				
1"	NaturalSun Low-E IG	PEL-N-1-17191-00001	3	3	3	argon	0.21	0.45	55	70						39				
	with grilles-between-the-glass	PEL-N-1-17813-00001					0.21	0.40	49	70						36				
	with integral grilles	PEL-N-1-20692-00001					0.22	0.40	48	70						35				
1"	NaturalSun Low-E IG	PEL-N-1-20644-00001	3	3	3	Krypton	0.17	0.44	54	73						44				
	with grilles-between-the-glass	PEL-N-1-20645-00001					0.17	0.40	48	73						41				
	with integral grilles	PEL-N-1-20646-00001					0.18	0.40	48	73						40				
HIGH ALTITUDE GLAZING																				
1"	Advanced Low-E IG	PEL-N-1-17212-00001	3	3	3	air	0.24	0.27	49	66						25				
	with grilles-between-the-glass	PEL-N-1-17834-00001					0.24	0.25	44	66						24				
	with integral grilles	PEL-N-1-20724-00001					0.26	0.24	44	66						21				
1"	SunDefense Low-E IG	PEL-N-1-17219-00001	3	3	3	air	0.24	0.20	45	66						21				
	with grilles-between-the-glass	PEL-N-1-17841-00001					0.24	0.19	40	66						21				
	with integral grilles	PEL-N-1-20732-00001					0.25	0.18	39	66						19				
1"	NaturalSun Low-E IG	PEL-N-1-17207-00001	3	3	3	air	0.24	0.45	55	66						36				
	with grilles-between-the-glass	PEL-N-1-17829-00001					0.25	0.40	49	66						32				
	with integral grilles	PEL-N-1-20716-00001					0.26	0.40	48	66						30				

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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Wood Exterior
Triple-Pane Glazing



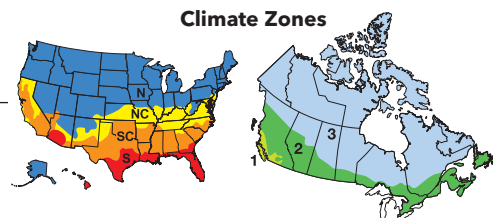
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)			Gap Fill	Performane Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²					
											Zone				ER	Zone				
											N	NC	SC	S				1	2	3
VENT UNITS																				
1"	Advanced Low-E IG	PEL-N-39-04858-00001	3	3	3	argon	0.21	0.23	42	71					27					
	with grilles-between-the-glass	PEL-N-39-05464-00001					0.21	0.21	38	71					26					
	with integral grilles	PEL-N-39-05060-00001					0.21	0.21	38	71					26					
1"	Advanced Low-E IG	PEL-N-39-06443-00001	3	3	3	Krypton	0.18	0.23	42	76					30					
	with grilles-between-the-glass	PEL-N-39-06444-00001					0.18	0.21	38	76					29					
	with integral grilles	PEL-N-39-06445-00001					0.18	0.21	38	76					29					
1"	SunDefense™ Low-E IG	PEL-N-39-04865-00001	3	3	3	argon	0.21	0.18	39	71					24					
	with grilles-between-the-glass	PEL-N-39-05471-00001					0.21	0.16	35	71					23					
	with integral grilles	PEL-N-39-05067-00001					0.21	0.16	35	71					23					
1"	SunDefense™ Low-E IG	PEL-N-39-06459-00001	3	3	3	Krypton	0.17	0.17	39	76					28					
	with grilles-between-the-glass	PEL-N-39-06460-00001					0.18	0.16	35	76					26					
	with integral grilles	PEL-N-39-06461-00001					0.18	0.16	35	76					26					
1"	NaturalSun Low-E IG	PEL-N-39-04853-00001	3	3	3	argon	0.21	0.39	48	70					36					
	with grilles-between-the-glass	PEL-N-39-05459-00001					0.21	0.35	43	70					34					
	with integral grilles	PEL-N-39-05055-00001					0.21	0.35	43	70					34					
1"	NaturalSun Low-E IG	PEL-N-39-06427-00001	3	3	3	Krypton	0.18	0.39	48	75					40					
	with grilles-between-the-glass	PEL-N-39-06428-00001					0.18	0.35	43	75					37					
	with integral grilles	PEL-N-39-06429-00001					0.19	0.35	43	75					36					
HIGH ALTITUDE GLAZING																				
1"	Advanced Low-E IG	PEL-N-39-04874-00001	3	3	3	air	0.24	0.24	42	67					24					
	with grilles-between-the-glass	PEL-N-39-05480-00001					0.24	0.22	38	67					22					
	with integral grilles	PEL-N-39-05076-00001					0.24	0.22	38	67					22					
1"	SunDefense Low-E IG	PEL-N-39-04881-00001	3	3	3	air	0.24	0.18	39	67					20					
	with grilles-between-the-glass	PEL-N-39-05487-00001					0.24	0.16	35	67					19					
	with integral grilles	PEL-N-39-05083-00001					0.24	0.16	35	67					19					
1"	NaturalSun Low-E IG	PEL-N-39-04869-00001	3	3	3	air	0.24	0.39	48	66					32					
	with grilles-between-the-glass	PEL-N-39-05475-00001					0.24	0.35	43	66					30					
	with integral grilles	PEL-N-39-05071-00001					0.24	0.35	43	66					30					

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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Wood Exterior
Triple-Pane Glazing



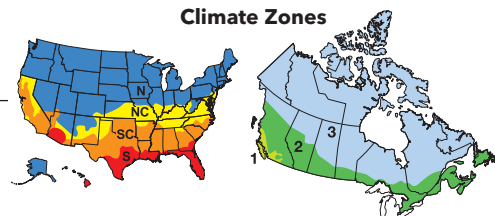
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)			Gap Fill	Performane Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown										
			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²						
											Zone				ER	Zone					
											N	NC	SC	S				1	2	3	
1"	Advanced Low-E IG	PEL-N-41-07114-00001	3	3	3	argon	0.19	0.27	49	71					31						
	with grilles-between-the-glass	PEL-N-41-07720-00001					0.20	0.24	43	71					28						
	with integral grilles	PEL-N-41-07316-00001					0.20	0.24	43	71					28						
1"	Advanced Low-E IG	PEL-N-41-10426-00001	3	3	3	Krypton	0.16	0.26	48	76					35						
	with grilles-between-the-glass	PEL-N-41-10427-00001					0.16	0.24	43	76					33						
	with integral grilles	PEL-N-41-10428-00001					0.17	0.24	43	76					32						
1"	SunDefense™ Low-E IG	PEL-N-41-07121-00001	3	3	3	argon	0.19	0.20	45	71					27						
	with grilles-between-the-glass	PEL-N-41-07727-00001					0.20	0.18	40	71					25						
	with integral grilles	PEL-N-41-07323-00001					0.20	0.18	40	71					25						
1"	SunDefense™ Low-E IG	PEL-N-41-10442-00001	3	3	3	Krypton	0.16	0.19	44	76					31						
	with grilles-between-the-glass	PEL-N-41-10443-00001					0.16	0.18	39	76					30						
	with integral grilles	PEL-N-41-10444-00001					0.17	0.18	39	76					29						
1"	NaturalSun Low-E IG	PEL-N-41-07109-00001	3	3	3	argon	0.20	0.45	55	71					41						
	with grilles-between-the-glass	PEL-N-41-07715-00001					0.20	0.40	50	71					38						
	with integral grilles	PEL-N-41-07311-00001					0.20	0.40	50	71					38						
1"	NaturalSun Low-E IG	PEL-N-41-10410-00001	3	3	3	Krypton	0.16	0.44	54	75					45						
	with grilles-between-the-glass	PEL-N-41-10411-00001					0.16	0.40	48	75					43						
	with integral grilles	PEL-N-41-10412-00001					0.17	0.40	48	75					41						
HIGH ALTITUDE GLAZING																					
1"	Advanced Low-E IG	PEL-N-41-07130-00001	3	3	3	air	0.23	0.27	49	67					26						
	with grilles-between-the-glass	PEL-N-41-07736-00001					0.24	0.24	44	67					24						
	with integral grilles	PEL-N-41-07332-00001					0.24	0.24	44	67					24						
1"	SunDefense Low-E IG	PEL-N-41-07137-00001	3	3	3	air	0.23	0.20	45	67					22						
	with grilles-between-the-glass	PEL-N-41-07743-00001					0.23	0.18	40	67					21						
	with integral grilles	PEL-N-41-07339-00001					0.23	0.18	40	67					21						
1"	NaturalSun Low-E IG	PEL-N-41-07125-00001	3	3	3	air	0.23	0.45	55	66					37						
	with grilles-between-the-glass	PEL-N-41-07731-00001					0.24	0.40	50	66					33						
	with integral grilles	PEL-N-41-07327-00001					0.24	0.40	50	66					33						

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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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Vent



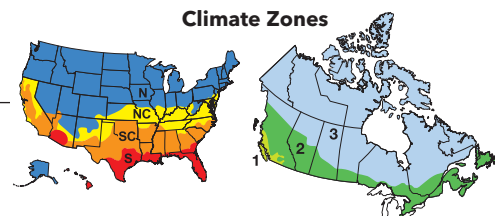
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)			Gap Fill	Performance Values ₁				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ₂					
											Zone				ER	Zone				
											N	NC	SC	S				1	2	3
VENT WITH TRIPLE-PANE GLAZING WITH CLEAR HGP																				
5/8"	Clear IG	PEL-N-16-01343-00001	3	3	3	air	0.36	0.44	47	58										
5/8"	Advanced Low-E IG	PEL-N-16-01396-00001	2.5	2.5	2.5	argon	0.28	0.22	40	62					17					
5/8"	AdvancedComfort Low-E IG	PEL-N-16-01576-00001	2.5	2.5	2.5	argon	0.25	0.22	39	62					21					
5/8"	SunDefense™ Low-E IG	PEL-N-16-01354-00001	2.5	2.5	2.5	argon	0.28	0.17	37	62										
5/8"	SunDefense™ Low-E IG	PEL-N-16-01361-00001	3	3	3	argon	0.28	0.17	37	62										
5/8"	SunDefense™ Low-E IG	PEL-N-16-01368-00001	4	4	4	argon	0.29	0.17	36	61										
5/8"	NaturalSun Low-E IG	PEL-N-16-01750-00001	2.5	2.5	2.5	argon	0.28	0.39	46	62					27					
TINTED GLAZING WITH CLEAR HGP																				
5/8"	Bronze Advanced Low-E IG	PEL-N-16-01432-00001	5	3	2.5	argon	0.30	0.19	26	61										
5/8"	Bronze Advanced Low-E IG	PEL-N-16-01433-00001	5	3	3	argon	0.30	0.19	26	61										
5/8"	Gray Advanced Low-E IG	PEL-N-16-01456-00001	5	3	2.5	argon	0.30	0.18	22	61										
5/8"	Gray Advanced Low-E IG	PEL-N-16-01457-00001	5	3	3	argon	0.30	0.18	22	61										
5/8"	Green Advanced Low-E IG	PEL-N-16-01480-00001	5	3	2.5	argon	0.30	0.19	31	61										
5/8"	Green Advanced Low-E IG	PEL-N-16-01481-00001	5	3	3	argon	0.30	0.19	31	60										
HIGH ALTITUDE GLAZING WITH CLEAR HGP																				
5/8"	Advanced Low-E IG	PEL-N-16-01421-00001	3	3	3	air	0.30	0.22	40	61										
5/8"	Advanced Low-E IG	PEL-N-16-01428-00001	4	4	4	air	0.32	0.22	39	61										
5/8"	AdvancedComfort Low-E IG	PEL-N-16-01618-00001	3	3	3	air	0.28	0.22	39	62					17					
5/8"	AdvancedComfort Low-E IG	PEL-N-16-01666-00001	4	4	4	air	0.29	0.21	38	62										
5/8"	SunDefense Low-E IG	PEL-N-16-01379-00001	3	3	3	air	0.30	0.17	37	61										
5/8"	SunDefense Low-E IG	PEL-N-16-01386-00001	4	4	4	air	0.32	0.17	36	61										

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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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood

Fixed



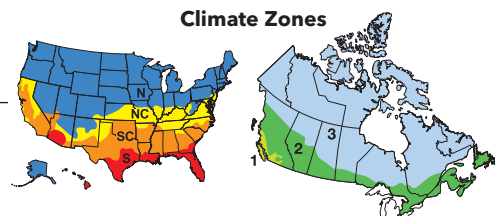
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)			Gap Fill	Performane Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown							
			Ext.	Mid.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²			
											Zone				ER	Zone		
FIXED WITH TRIPLE-PANE GLAZING WITH CLEAR HGP											N	NC	SC	S				
5/8"	Clear IG	PEL-N-19-01343-00001	3	3	3	air	0.35	0.53	57	58					27			
5/8"	Advanced Low-E IG	PEL-N-19-01396-00001	2.5	2.5	2.5	argon	0.25	0.26	49	62					24			
5/8"	Advanced Low-E IG	PEL-N-19-01403-00001	3	3	3	argon	0.25	0.26	48	62					24			
5/8"	Advanced Low-E IG	PEL-N-19-01410-00001	4	4	4	argon	0.27	0.26	47	61					21			
5/8"	SunDefense™ Low-E IG	PEL-N-19-01354-00001	2.5	2.5	2.5	argon	0.24	0.20	45	62					22			
5/8"	SunDefense™ Low-E IG	PEL-N-19-01361-00001	3	3	3	argon	0.25	0.20	44	62					20			
5/8"	SunDefense™ Low-E IG	PEL-N-19-01368-00001	4	4	4	argon	0.27	0.20	44	62					18			
5/8"	AdvancedComfort Low-E IG	PEL-N-19-01576-00001	2.5	2.5	2.5	argon	0.22	0.26	48	63					27			
5/8"	AdvancedComfort Low-E IG	PEL-N-19-01624-00001	3	3	3	argon	0.23	0.26	47	63					26			
5/8"	AdvancedComfort Low-E IG	PEL-N-19-01672-00001	4	4	4	argon	0.24	0.25	46	62					24			
5/8"	NaturalSun Low-E IG	PEL-N-19-01750-00001	2.5	2.5	2.5	argon	0.25	0.46	55	62					35			
5/8"	NaturalSun Low-E IG	PEL-N-19-01757-00001	3	3	3	argon	0.26	0.45	55	62					33			
5/8"	NaturalSun Low-E IG	PEL-N-19-01764-00001	4	4	4	argon	0.27	0.44	54	61					32			
TINTED GLAZING WITH CLEAR HGP																		
5/8"	Bronze Advanced Low-E IG	PEL-N-19-01433-00001	5	3	3	argon	0.27	0.23	31	61					20			
5/8"	Gray Advanced Low-E IG	PEL-N-19-01457-00001	5	3	3	argon	0.27	0.21	27	61					18			
5/8"	Green Advanced Low-E IG	PEL-N-19-01481-00001	5	3	3	argon	0.27	0.22	38	61					19			
HIGH ALTITUDE GLAZING WITH CLEAR HGP																		
5/8"	Advanced Low-E IG	PEL-N-19-01421-00001	3	3	3	air	0.28	0.26	0.48	61					20			
5/8"	Advanced Low-E IG	PEL-N-19-01428-00001	4	4	4	air	0.30	0.26	0.47	61								
5/8"	AdvancedComfort Low-E IG	PEL-N-19-01618-00001	3	3	3	air	0.25	0.26	0.47	62					24			
5/8"	AdvancedComfort Low-E IG	PEL-N-19-01666-00001	4	4	4	air	0.26	0.25	0.46	62					22			
5/8"	SunDefense Low-E IG	PEL-N-19-01379-00001	3	3	3	air	0.28	0.20	0.44	61					17			
5/8"	SunDefense Low-E IG	PEL-N-19-01386-00001	4	4	4	air	0.29	0.20	0.44	61								
5/8"	NaturalSun Low-E IG	PEL-N-19-01775-00001	3	3	3	air	0.28	0.45	0.55	61					31			
5/8"	NaturalSun Low-E IG	PEL-N-19-01782-00001	4	4	4	air	0.30	0.43	0.54	61					27			

R-Value = 1/U-Factor
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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood
Fixed



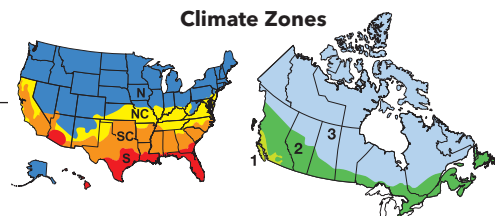
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ₁				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown								
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ₂				
										Zone				ER	Zone			
FIXED UNITS										N	NC	SC	S		1	2	3	
11/16"	Advanced LowE IG	PEL-N-22-00398-00001	2.5	2.5	argon	0.28	0.31	58	59						23			
	with grilles-between-the-glass	PEL-N-22-00399-00001				0.28	0.28	52	59						21			
	with Simulated Divided Light	PEL-N-22-00400-00001				0.28	0.28	52	59						21			
11/16"	Advanced LowE IG	PEL-N-22-00401-00001	3	3	argon	0.28	0.31	58	58						23			
	with grilles-between-the-glass	PEL-N-22-00402-00001				0.28	0.28	52	58						21			
	with Simulated Divided Light	PEL-N-22-00403-00001				0.28	0.28	52	58						21			
11/16"	Advanced LowE IG	PEL-N-22-00404-00001	4	4	argon	0.28	0.30	57	56						22			
	with grilles-between-the-glass	PEL-N-22-00405-00001				0.30	0.27	51	56									
	with Simulated Divided Light	PEL-N-22-00406-00001				0.29	0.27	51	56									
11/16"	SunDefense™ Low-E IG	PEL-N-22-00434-00001	2.5	2.5	argon	0.28	0.23	54	57						18			
	with grilles-between-the-glass	PEL-N-22-00435-00001				0.28	0.21	48	57						17			
	with Simulated Divided Light	PEL-N-22-00436-00001				0.28	0.21	48	57						17			
11/16"	SunDefense Low-E IG	PEL-N-22-00437-00001	3	3	argon	0.27	0.23	53	58						19			
	with grilles-between-the-glass	PEL-N-22-00438-00001				0.27	0.21	48	58						18			
	with Simulated Divided Light	PEL-N-22-00439-00001				0.27	0.21	48	58						18			
11/16"	SunDefense Low-E IG	PEL-N-22-00440-00001	4	4	argon	0.28	0.23	53	56						18			
	with grilles-between-the-glass	PEL-N-22-00441-00001				0.29	0.21	47	56									
	with Simulated Divided Light	PEL-N-22-00442-00001				0.29	0.21	47	56									
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00497-00001	2.5	2.5	argon	0.24	0.30	57	45						27			
	with grilles-between-the-glass	PEL-N-22-00498-00001				0.24	0.27	51	45						25			
	with Simulated Divided Light	PEL-N-22-00499-00001				0.24	0.27	51	45						25			
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00500-00001	3	3	argon	0.24	0.30	56	46						27			
	with grilles-between-the-glass	PEL-N-22-00501-00001				0.24	0.27	50	46						25			
	with Simulated Divided Light	PEL-N-22-00502-00001				0.24	0.27	50	46						25			
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00503-00001	4	4	argon	0.24	0.30	56	44						27			
	with grilles-between-the-glass	PEL-N-22-00504-00001				0.25	0.27	50	44						24			
	with Simulated Divided Light	PEL-N-22-00505-00001				0.25	0.27	50	44						24			
11/16"	NaturalSun LowE IG	PEL-N-22-00416-00001	2.5	2.5	argon	0.31	0.59	66	56						35			
	with grilles-between-the-glass	PEL-N-22-00417-00001				0.31	0.53	59	56						32			
	with Simulated Divided Light	PEL-N-22-00418-00001				0.31	0.53	59	56						32			
11/16"	NaturalSun LowE IG	PEL-N-22-00419-00001	3	3	argon	0.29	0.57	65	57						36			
	with grilles-between-the-glass	PEL-N-22-00420-00001				0.29	0.51	58	57						33			
	with Simulated Divided Light	PEL-N-22-00421-00001				0.29	0.51	58	57						33			
11/16"	NaturalSun LowE IG	PEL-N-22-00422-00001	4	4	argon	0.29	0.55	65	56						35			
	with grilles-between-the-glass	PEL-N-22-00423-00001				0.31	0.50	58	56						30			
	with Simulated Divided Light	PEL-N-22-00424-00001				0.30	0.50	58	56						31			

R-Value = 1/U-Factor
 SHGC = Solar Heat Gain Coefficient
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CASEMENT

GLAZING PERFORMANCE - TOTAL UNIT

Aluminum-Clad Wood

Fixed



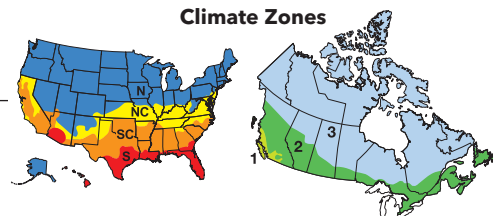
Glazing Thickness	Type of Glazing	NFRC Certified Product #	Glass (mm)		Gap Fill	Performance Values ¹				Shaded Areas Meet ENERGY STAR® Performance Criteria in Zones Shown									
			Ext.	Int.		U-Factor	SHGC	VLT %	CR	U. S.				Canada ²					
										Zone				ER	Zone				
FIXED UNITS - HIGH ALTITUDE GLAZING										N	NC	SC	S				1	2	3
11/16"	Advanced LowE IG	PEL-N-22-00407-00001	2.5	2.5	air	0.32	0.31	58	54						18				
	with grilles-between-the-glass	PEL-N-22-00408-00001				0.32	0.28	52	54						16				
	with Simulated Divided Light	PEL-N-22-00409-00001				0.32	0.28	52	54						16				
11/16"	Advanced LowE IG	PEL-N-22-00410-00001	3	3	air	0.32	0.31	58	55						18				
	with grilles-between-the-glass	PEL-N-22-00411-00001				0.32	0.28	52	55						16				
	with Simulated Divided Light	PEL-N-22-00412-00001				0.32	0.28	52	55						16				
11/16"	Advanced LowE IG	PEL-N-22-00413-00001	4	4	air	0.33	0.31	57	52										
	with grilles-between-the-glass	PEL-N-22-00414-00001				0.35	0.28	51	52										
	with Simulated Divided Light	PEL-N-22-00415-00001				0.34	0.28	51	52										
11/16"	SunDefense™ Low-E IG	PEL-N-22-00443-00001	2.5	2.5	air	0.32	0.23	54	54						13				
	with grilles-between-the-glass	PEL-N-22-00444-00001				0.32	0.21	48	54										
	with Simulated Divided Light	PEL-N-22-00445-00001				0.32	0.21	48	54										
11/16"	SunDefense Low-E IG	PEL-N-22-00446-00001	3	3	air	0.31	0.23	53	55						15				
	with grilles-between-the-glass	PEL-N-22-00447-00001				0.31	0.21	48	55						13				
	with Simulated Divided Light	PEL-N-22-00448-00001				0.31	0.21	48	55						13				
11/16"	SunDefense Low-E IG	PEL-N-22-00449-00001	4	4	air	0.33	0.24	53	53										
	with grilles-between-the-glass	PEL-N-22-00450-00001				0.34	0.21	47	53										
	with Simulated Divided Light	PEL-N-22-00451-00001				0.34	0.21	47	53										
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00506-00001	2.5	2.5	air	0.27	0.30	57	42						24				
	with grilles-between-the-glass	PEL-N-22-00507-00001				0.27	0.27	51	42						22				
	with Simulated Divided Light	PEL-N-22-00508-00001				0.27	0.27	51	42						22				
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00509-00001	3	3	air	0.26	0.30	56	42						25				
	with grilles-between-the-glass	PEL-N-22-00510-00001				0.26	0.27	50	42						23				
	with Simulated Divided Light	PEL-N-22-00511-00001				0.26	0.27	50	42						23				
11/16"	AdvancedComfort Low-E IG	PEL-N-22-00512-00001	4	4	air	0.28	0.30	56	40						22				
	with grilles-between-the-glass	PEL-N-22-00513-00001				0.29	0.27	50	40						19				
	with Simulated Divided Light	PEL-N-22-00514-00001				0.28	0.27	50	40						21				
11/16"	NaturalSun LowE IG	PEL-N-22-00425-00001	2.5	2.5	air	0.34	0.58	66	52						31				
	with grilles-between-the-glass	PEL-N-22-00426-00001				0.34	0.53	59	52						28				
	with Simulated Divided Light	PEL-N-22-00427-00001				0.34	0.53	59	52						28				
11/16"	NaturalSun LowE IG	PEL-N-22-00428-00001	3	3	air	0.32	0.56	65	54						32				
	with grilles-between-the-glass	PEL-N-22-00429-00001				0.32	0.51	58	54						29				
	with Simulated Divided Light	PEL-N-22-00430-00001				0.32	0.51	58	54						29				
11/16"	NaturalSun LowE IG	PEL-N-22-00431-00001	4	4	air	0.34	0.55	65	52						29				
	with grilles-between-the-glass	PEL-N-22-00432-00001				0.35	0.49	58	52						25				
	with Simulated Divided Light	PEL-N-22-00433-00001				0.35	0.49	58	52						25				

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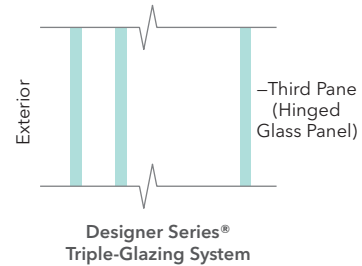
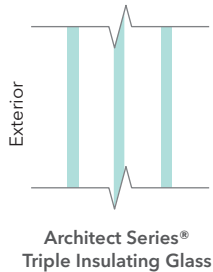
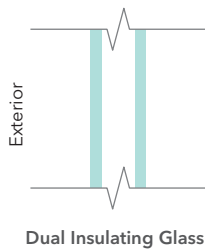
CASEMENT

SOUND TRANSMISSION CLASS

Outdoor-Indoor Transmission Class



Product	Frame Size Tested ¹	Glazing System				STC Rating	OITC Rating
		Overall Glazing Thickness	Exterior Glass Thickness	Interior Glass Thickness	Third Pane Thickness (HGP)		
ARCHITECT SERIES CLAD WINDOW	VENT WITH INTEGRAL GRILLES						
	23" x 59"	11/16"	2.5mm	2.5mm	–	28	27
	VENT WITH REMOVABLE OR NO GRILLES						
	23" x 59"	11/16"	2.5mm	2.5mm	–	28	25
	FIXED WITH INTEGRAL GRILLES						
	47" x 59"	11/16"	3mm	3mm	–	30	27
FIXED WITH REMOVABLE OR NO GRILLS							
47" x 59"	11/16"	3mm	3mm	–	29	24	
ARCHITECT SERIES CLAD WINDOW WITH HURRICANESHIELD® IMPACT-RESISTANT	VENT WITH REMOVABLE OR NO GRILLES						
	29" x 53"	9/16"	13.6mm SGP	–	–	35	32
	29" x 53"	9/16"	13.6mm PVB	–	–	36	32
	29" x 53"	11/16"	3mm	7.6mm PVB	–	35	30
	29" x 53"	1"	5mm	10.1mm SGP	–	35	31
	29" x 53"	1"	5mm	10.1mm PVB	–	34	30
	FIXED WITH REMOVABLE OR NO GRILLES						
	53" x 53"	9/16"	13.6 SGP	–	–	34	31
53" x 53"	1"	5mm	10.1mm SGP	–	35	30	
DESIGNER SERIES CLAD WINDOW	VENT - TRIPLE-PANE GLAZING						
	23"x 59"	5/8"	2.5mm	2.5mm	2.5mm	31	26
	23"x 59"	5/8"	6.1mm PVB ₂	3mm	3mm	34	30
	FIXED - TRIPLE-PANE GLAZING						
47"x 59"	5/8"	3mm	3mm	3mm	32	28	
PELLA PROLINE CLAD WINDOW	VENT						
	23" x 59"	11/16"	2.5mm	2.5mm	–	27	24
	FIXED						
47" x 59"	11/16"	3mm	3mm	–	27	24	



(–) = Not Applicable

NOTE: Performance with additional options may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.

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

(2) Custom glass.



CASEMENT

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.

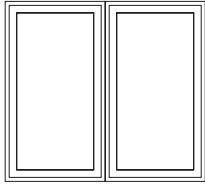
Pella window combinations are available in an endless variety of arrangements. Below are available factory-assembled combinations. Some units can be fixed or vent depending on availability, and may vary between Architect Series®, Designer Series® and ProLine®. See Installation and Performance at www.PellaADM.com for typical combinations and requirements and limitations related to mulling various combinations.

Contact your local Pella sales representative for more information.

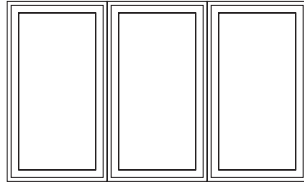


[Click to view Clad-Wood Combinations Sections](#)

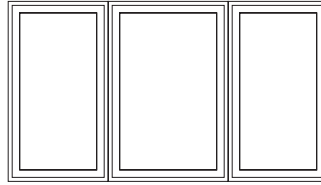
- [Combination Recommendations Downloadable PDF.](#)
- [Combination Size Tables Downloadable PDF.](#)



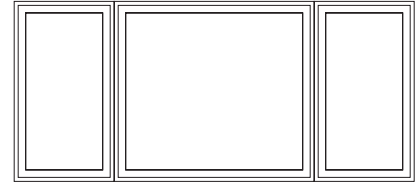
Two-Wide



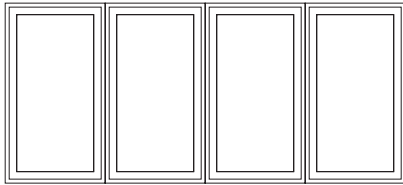
Three-Wide Equal



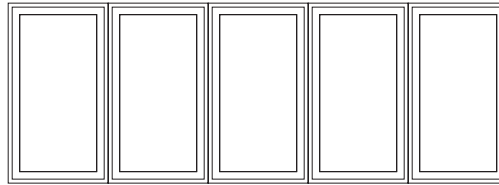
Three-Wide Unequal



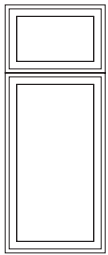
Center Fixed with Flankers



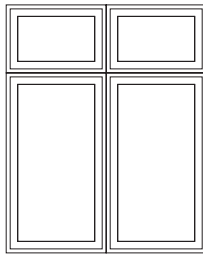
Four-Wide



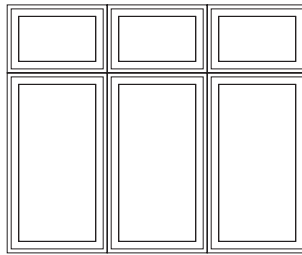
Five-Wide



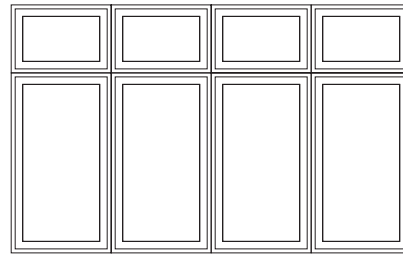
Transom over Single



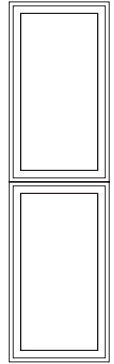
Two-Wide Transom over Two-Wide



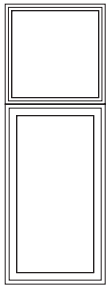
Three-Wide Transom over Three-Wide



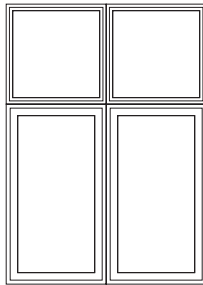
Four-Wide Transom over Four-Wide



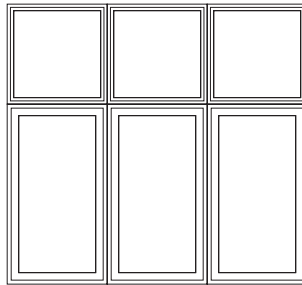
Two-High



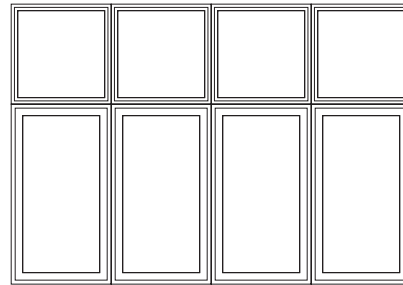
Clad Frame over Single



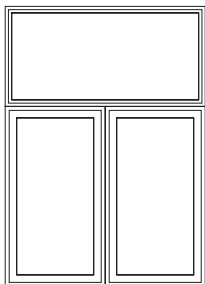
Two-Wide Clad Frame over Two-Wide



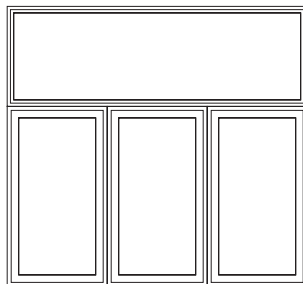
Three-Wide Clad Frame over Three-Wide



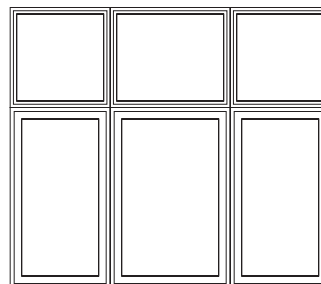
Four-Wide Clad Frame over Four-Wide



Single Clad Frame over Two-Wide



Single Clad Frame over Three-Wide



Three-Wide Clad Frame over Three-Wide Unequal



CASEMENT

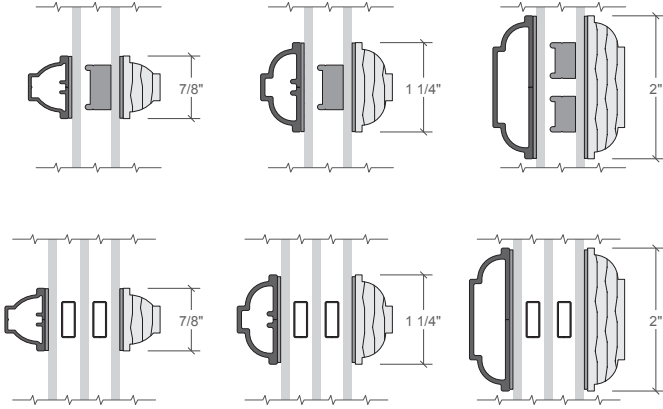
GRILLE TYPES

Typical Grille Profiles

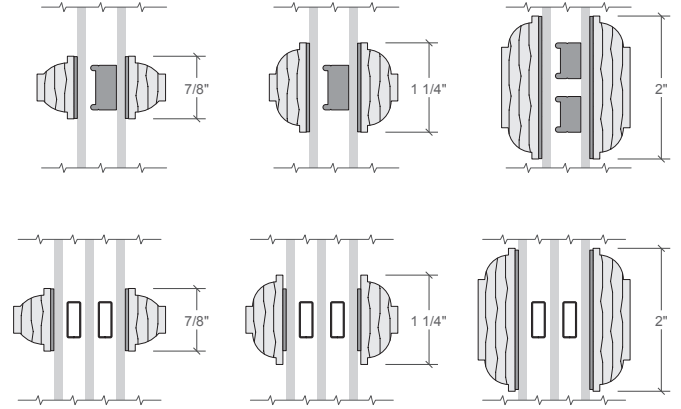


Integral Light Technology

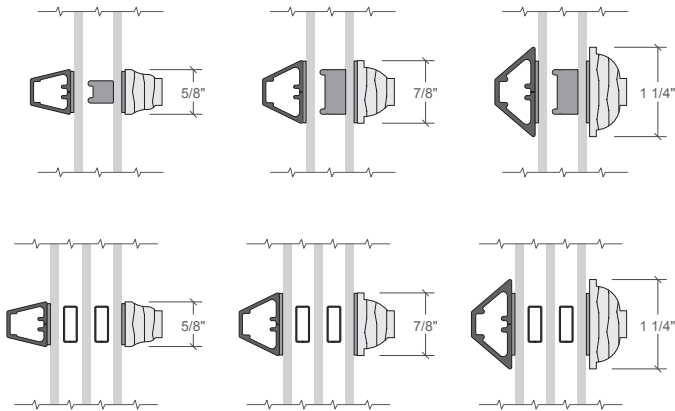
Ogee Grilles Clad Exterior - Wood Interior₁



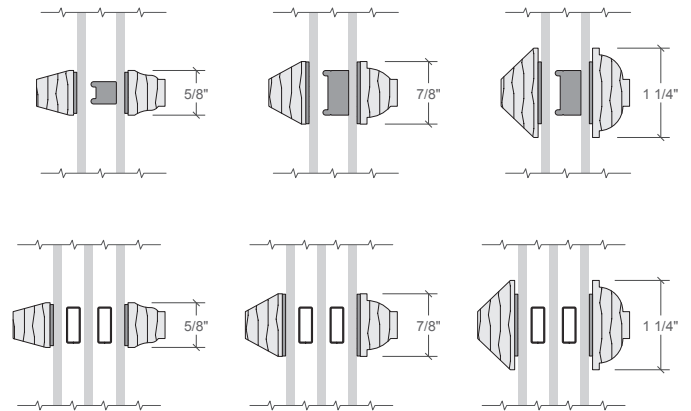
Ogee Grilles Wood Exterior - Wood Interior₂



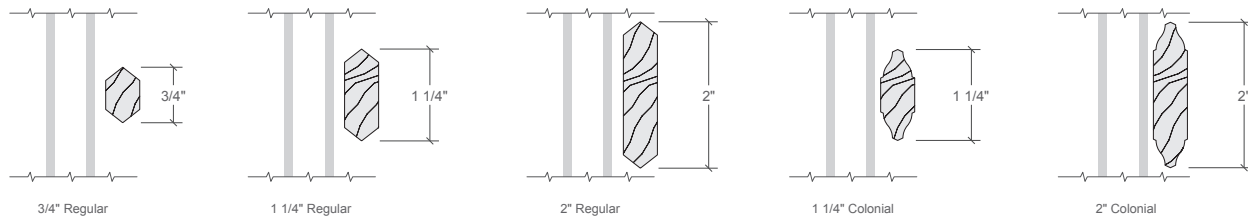
Putty Glaze and Ogee Grilles Clad Exterior - Wood Interior_{1,3}



Putty Glaze and Ogee Grilles Wood Exterior - Wood Interior_{2,3}



Removable Interior Pine Grilles



3/4" Regular

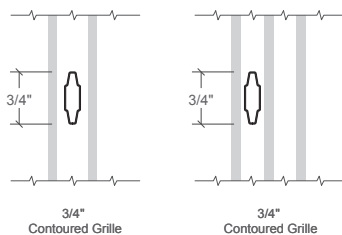
1 1/4" Regular

2" Regular

1 1/4" Colonial

2" Colonial

Grilles-Between-the-Glass



3/4" Contoured Grille

3/4" Contoured Grille

(1) Available in Pine, Mahogany, Alder or Douglas Fir to match complete unit.
 (2) Available in Pine or Mahogany to match complete unit.
 (3) Putty Exterior/Putty Interior, Ogee Exterior/Putty Interior are also available.



CASEMENT

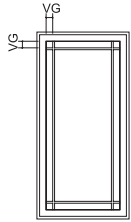
GRILLE TYPES

Typical Grille Patterns

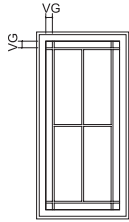


Integral Light Technology® Grilles and Removable Grille Patterns

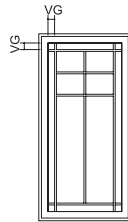
PRAIRIE LITE PATTERNS



9-Lite



12-Lite



14-Lite

Size range availability is for 3/4", 7/8" and 1-1/4" grille width.
Standard corner lite dimension for Prairie patterns = 2-1/2" VG.

9-Lite

- Available in all standard and special sizes.

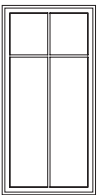
12-Lite

- Available in units $\geq 1'9"$ and $\leq 2'11"$ in width, and $\geq 1'9"$ in height.

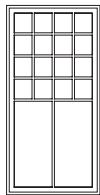
14-Lite

- Available in units $\geq 1'9"$ in width and $\geq 2'11"$ in height.

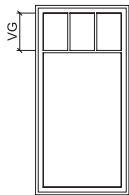
OTHER AVAILABLE PATTERNS



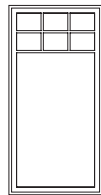
Cross



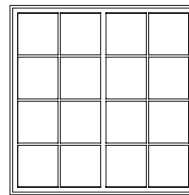
New England



Top Row



Victorian



Simulated French

Cross

- Standard visible glass to separator bar = one-quarter of total visible glass height.

New England

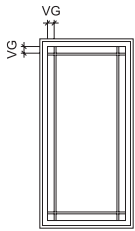
- Standard visible glass to separator bar = half of total visible glass height.

Top Row

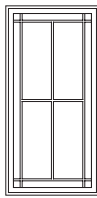
- Standard visible glass to separator bar = 14" or half of total visible glass height, whichever is smaller.

Grilles-Between-the-Glass Patterns

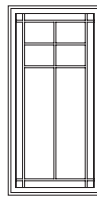
PRAIRIE LITE PATTERNS



9-Lite

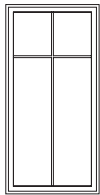


12-Lite

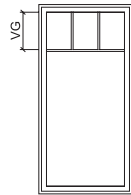


14-Lite

OTHER AVAILABLE PATTERNS



Cross



Top Row

Cross

- Available for units with frame heights $\geq 35"$. Standard visible glass to separator bar = 1/4 of total visible glass height.

Top Row

- Standard visible glass to separator bar = 14" for frame heights $> 35"$. Standard visible glass to separator bar = 21" for 35" frame heights and optional for 41" frame height. Separator bar at 12" or 16" optional for frame heights $> 41"$.

For traditional patterns, see size tables.

VG = Visible Glass
Lite dimensions noted can vary.
Custom configurations are also available, for details contact your local Pella sales representative.



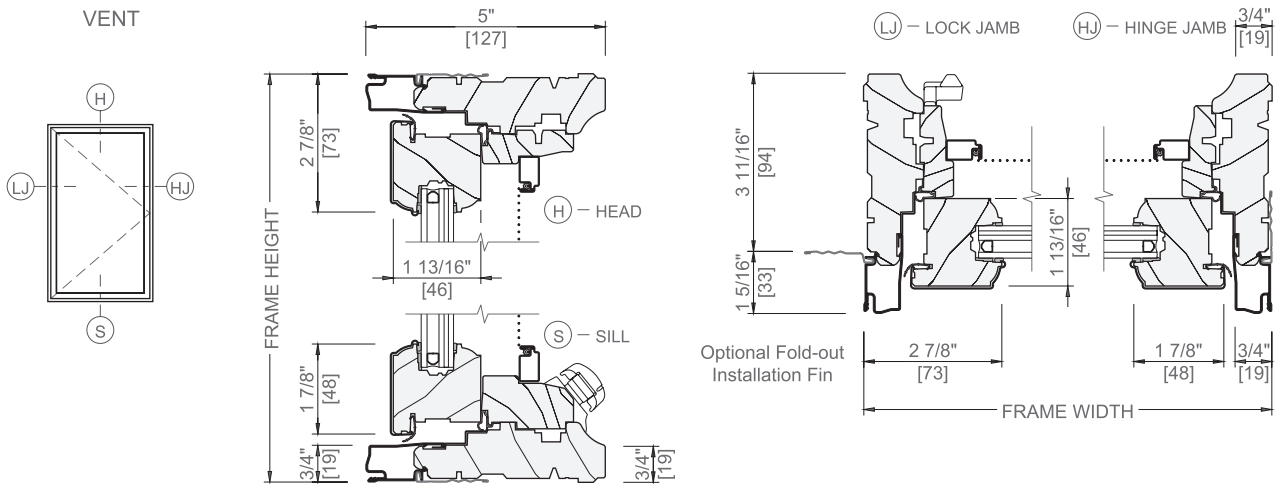
CASEMENT

HURRICANESHIELD® IMPACT-RESISTANT Casement Window



For a complete list of the HurricaneShield Impact-Resistant Glazing ratings, refer to the Coastal and High Winds section.

Product	Design Pressure Large Missile Rating D		Hallmark Certified	Miami-Dade County Approved	Florida Product Approval System
	Minimum	Maximum			
VENT UNITS					
9/16" Single-Laminated PVB	75	75	–	14-0811.24	FL10015.2
9/16" Single-Laminated SGP	75	+75 / -85	–	14-0811.24	FL10015.3
11/16" Insulated Glass PVB	75	75	411-H-1339	14-0811.24	FL10015.1
1" Insulated Glass PVB	75	75	411-H-1339	14-0811.24	FL10015.2
1" Insulated Glass SGP	75	+75 / -85	411-H-1339	14-0811.24	FL10015.3
FIXED UNITS					
9/16" Single-Laminated PVB	75	75	–	14-0811.25	FL10022.2
9/16" Single-Laminated SGP	+75 / -85	+75 / -85	–	14-0811.25	FL10022.4
11/16" Insulated Glass PVB	75	75	411-H-1339	14-0811.25	FL10022.1
1" Insulated Glass PVB	75	75	411-H-1339	14-0811.25	FL10022.2
1" Insulated Glass SGP	+75 / -85	+75 / -85	411-H-1339	14-0811.25	FL10022.4
LARGE FIXED UNITS					
9/16" Single-Laminated PVB	75	75	–	13-0829.19	FL10022.2
9/16" Single-Laminated SGP	75	+75 / -85	–	13-0829.19	FL10022.4
11/16" Insulated Glass PVB	75	75	411-H-1339	13-0829.19	FL10022.1
1" Insulated Glass PVB	75	75	411-H-1339	13-0829.19	FL10022.2
1" Insulated Glass SGP	75	+75 / -85	411-H-1339	13-0829.19	FL10022.4



(-) = Not Available

All sizes and glass types are tested for air/water/structural and impact-resistance, and are certified for wind zone 4, large missile rating D.

Florida Product Approval System number not needed if Miami-Dade County approved.



CASEMENT

CASEMENT SHAPES AND OPTIONS



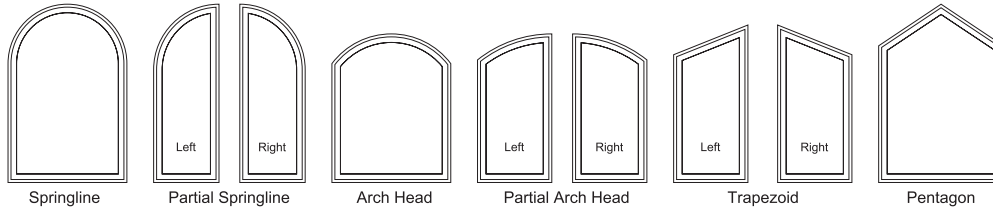
The following additional options are available:

- Wood Types
- Grille Types and Patterns
- Glazing
- Width and height rectangular units
- Width sash stiles and rails
- Curved Top Glass in rectangular sash
- Shape vent and fixed windows
- Corner Window Units (Fixed Only)
- Specialty Windows - See the Specialty Windows section

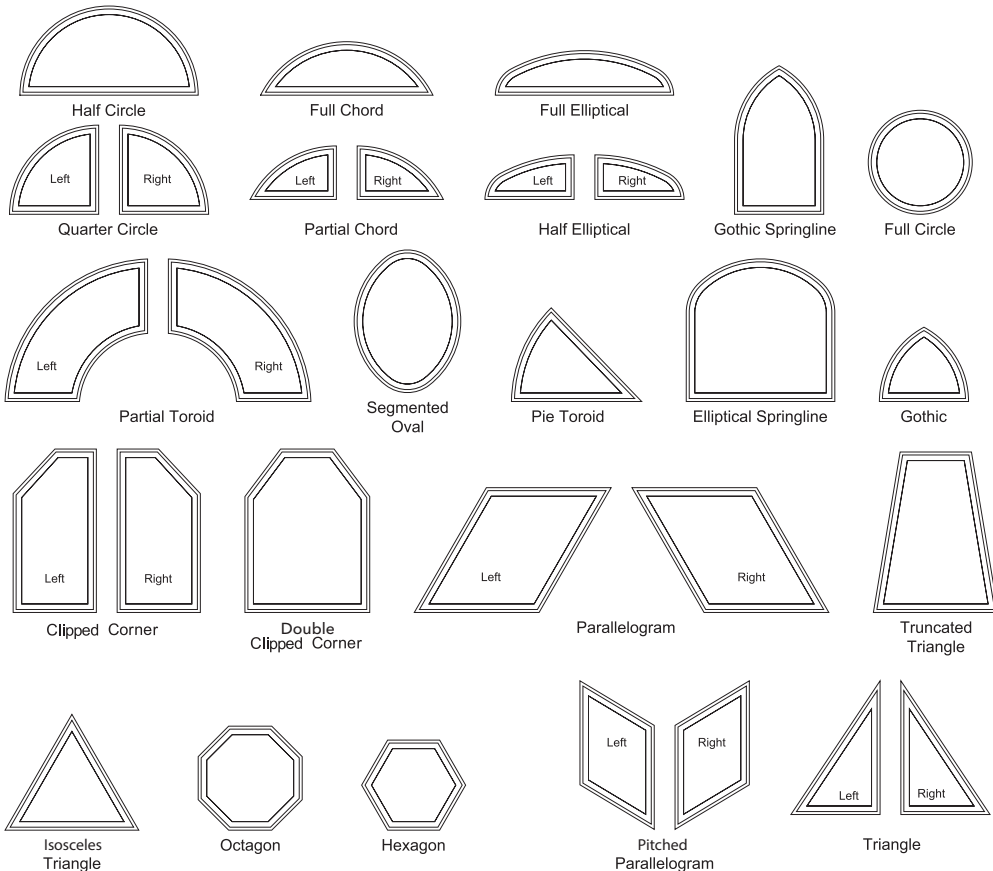


CASEMENT SHAPES (as viewed from the exterior)

Vent or Fixed Shapes



Fixed Shapes Only (see fixed window section for design parameters)



NOTE: Performance Class and Grade for a Casement with additional options and Specialty windows may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.



CASEMENT

DESIGN DATA - CURVED SHAPES

Wood and Aluminum-Clad Wood



Curved Shapes - Fixed

Frame cannot exceed 96" in both directions.

For units with colored glazing (bronze, gray or green), frame cannot exceed 11' 0-3/4" in either direction.

Maximum frame < 54.5 ft² (based on rectangular unit).

Curved Shapes - Roto Operator with Side Pivot Hinge

Maximum frame size is 19.5 ft² (based on rectangular unit).

Sash opening will be limited to the angle shown on chart below.

Units will not meet egress requirements.

Frame width cannot exceed hinge jamb height.

$$\text{Hinge Side Height} \geq \text{Frame Width} / 2955 \times \text{Frame Area} + 18.175"$$

* Calculate Frame Area as if unit was a rectangle. = Frame Height x Frame Width

Unit must be hinged off of short jamb if arc height (Y) divided by arc width (W) is greater than 0.364".

Unit is not valid if arc height (Y) is greater than arc width (W).

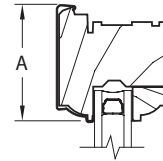
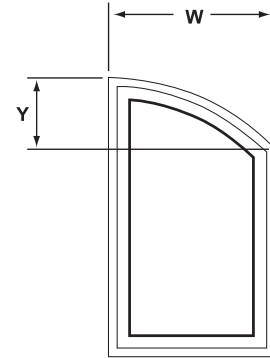
Partial units must be true half springlines to vent (R = W).

Custom Stile and Rail Widths

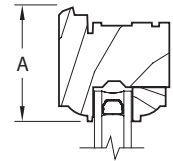
The A dimension shown can vary from 1-7/8" to 5-3/4".

Any members meeting at an angle not equal to 90° and springline must be the same width.

Bottom rail available with A dimension from 1-7/8" to 9".



CLAD UNIT



WOOD UNIT

NOTE: Performance Class and Grade for a Casement with additional options and Specialty windows may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.

SIDE PIVOT CLEAR OPENING FORMULAS

UNIT FRAME WIDTH	CLEAR OPENING WIDTH FORMULA	
	CLAD EXTERIOR	WOOD EXTERIOR
13.75" to < 17"	(Unit Width x 0.8) - 2.95	(Unit Width x 0.892) - 4.219
17" to < 19"	(Unit Width x 0.9) - 4.65	(Unit Width x 0.9) - 4.35
19" to < 25"	(Unit Width x 0.883) - 4.433	(Unit Width x 0.883) - 4.133
25" to 29"	Unit Width - 5.55	Unit Width - 5.55
> 29" to <= 35"	(Unit Width x 0.9) - 4.15	(Unit Width x 0.917) - 4.533

Clear opening height = unit short jamb height - 4.125"

RESTRICTED OPENING

Frame Width	Approximate Sash Opening Angle
>35	28 degrees
36	26 degrees
37	25 degrees
38	24 degrees
39	23 degrees
40	22 degrees
41	21 degrees

Sash opening will be limited to the angle shown.

Units over 35 inches wide do NOT meet Egress.



CASEMENT

DESIGN DATA - CURVED SHAPES

Wood and Aluminum-Clad Wood



NOTE: Performance Class and Grade for Casement with additional options and Specialty windows may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.

		MINIMUM	MAXIMUM	RESTRICTIONS
<p>SPRINGLINE</p>	Fixed			
	W	1' 6"	10' 2-5/8"	
	H	11"	12' 0"	
	R1	9"	6' 0"	
	S	2"	-	
	Vent with Side Pivot Hinge			
	W	1' 6"	3' 5"	S ≥ W/2955 x (WxH) + 18.175"
	H	2' 3"	8' 0"	
	R1	9"	1" 8-1/2"	
	S	1' 1-3/4"	-	
<p>PARTIAL SPRINGLINE</p>	Fixed			
	W	9"	7" 2-7/8"	
	H	11"	12' 0"	
	R1	9"	500"	
	S	2"	-	
	Vent with Side Pivot Hinge			
	W	1' 1-3/4"	3' 5"	Partial units must be true half springlines to vent. S ≥ W/2955 x (WxH) + 18.175"
	H	2' 3-1/2"	8' 0"	
	R1	1' 1-3/4"	3' 5"	
	Hinge Side	1' 1-3/4"	FH-Radius	
	Lock Jamb Side	2' 3-1/2"	8' 0"	
<p>ARCH HEAD</p>	Fixed			
	W	9"	12' 0"	S ≥ FH - (0.35 x FW). Fixed and Vent Units.
H	9"	12' 0"		
	R1	9"	500"	
	S	8"	-	
	Vent with Side Pivot Hinge			
	W	1' 1-3/4"	3' 5"	S ≥ W/2955 x (WxH) + 18.175"
	H	1' 2"	8' 0"	
	R1	9"	500"	
	S	1' 1-3/4"	-	
<p>PARTIAL ARCH HEAD</p>	Fixed			
	W	9"	12' 0"	Side must be less than overall height. Custom stiles and top rail must be the same size, the bottom rail may vary. Width can not exceed 1/2 full arch head.
H	9"	12' 0"		
	R1	9"	500"	
	S	8"	-	
	Vent with Side Pivot Hinge			
	W	1' 1-3/4"	3' 5"	S ≥ H - (0.70 x W). Width can not exceed 1/2 full arch head. S ≥ W/2955 x (WxH) + 18.175"
	H	1' 2"	8' 0"	
	R1	1' 6"	-	
	Hinge Side	1' 1-3/4"	-	
	Lock Jamb Side	1' 1-3/4"	-	



CASEMENT

DESIGN DATA - ANGLED SHAPES

Wood and Aluminum Clad Wood



GENERAL RESTRICTIONS ALL ANGLE TOP

Angled Shapes - Fixed

Frame cannot exceed 96" in both directions.

Minimum angle between adjoining members is 20°, and maximum angle is < 160°.

Maximum frame < 54.5 ft² (based on rectangular unit).

Angled Shapes - Roto Operator

Maximum frame area equals 19.5 ft² (based on rectangular unit).

Not all units meet egress requirements.

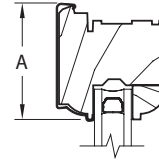
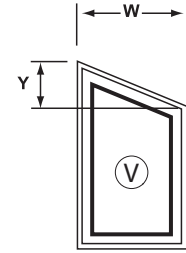
Frame width cannot exceed hinge jamb height.

Hinge Side Height ≥ Frame Width / 2955 x Frame Area + 18.175"
 * Calculate Frame Area as if unit was a rectangle. = Frame Height x Frame Width

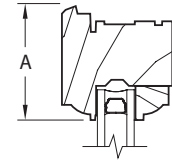
Unit must be hinged off short jamb, if angle height (Y) divided by angle width (W) is greater than 0.364.

Unit is not valid if angle height (Y) is greater than angle width (X).

Short Side (S1) must be less than overall height.



CLAD UNIT



WOOD UNIT

Custom Stile and Rail Widths

The A dimension shown can vary from 1-7/8" to 5-3/4".

Any members meeting at an angle not equal to 90° must be the same width.

Bottom rail available with A dimension from 1-7/8" to 1' 3".

RESTRICTED OPENING

Frame Width	Approximate Sash Opening Angle
>35	28 degrees
36	26 degrees
37	25 degrees
38	24 degrees
39	23 degrees
40	22 degrees
41	21 degrees

Sash opening will be limited to the angle shown.

Units over 35 inches wide do NOT meet Egress.

SIDE PIVOT CLEAR OPENING FORMULAS

UNIT FRAME WIDTH	CLEAR OPENING WIDTH FORMULA	
	CLAD EXTERIOR	WOOD EXTERIOR
13.75" to < 17"	(Unit Width x 0.8) - 2.95	(Unit Width x 0.892) - 4.219
17" to < 19"	(Unit Width x 0.9) - 4.65	(Unit Width x 0.9) - 4.35
19" to < 25"	(Unit Width x 0.883) - 4.433	(Unit Width x 0.883) - 4.133
25" to 29"	Unit Width - 5.55	Unit Width - 5.55
> 29" to ≤ 35"	(Unit Width x 0.9) - 4.15	(Unit Width x 0.917) - 4.533

Clear opening height = unit short jamb height - 4.125"

NOTE: Performance Class and Grade for a Casement with additional options and Specialty windows may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.

		MINIMUM	MAXIMUM	RESTRICTIONS		
<p>TRAPEZOID</p>	Fixed	W	9"	12' 0"	See Restricted Opening.	
		H	9"	12' 0"		
		Short Side	1' 1-3/4"	-		
		Vent with Side Pivot Hinge	W	1' 1-3/4"	3' 5"	S ≥ W/2955 x (WxH) + 18.175"
	(Hinge Side)	1' 1-3/4"	8' 0"			
	Lock Jamb Side	9"	8' 0"			
<p>PENTAGON</p>	Fixed	W	9"	12' 0"	Peak must be centered. This shape is defined with peak centered for calculation purposes. If peak is not centered, it must be reviewed manually for acceptability.	
		H	1' 4-13/16"	12' 0"		
		S1 / S2	9"	-		
		Vent with Side Pivot Hinge	W	1' 1-3/4"	3' 5"	See Restricted Opening.
		H	1' 7-9/16"	8' 0"		
		S1	13-3/4"	< 8' 0"		
	S2	9"	-			



CASEMENT

DESIGN DATA - RECTANGULAR SHAPES

Wood and Aluminum-Clad Wood



Rectangular Units - Fixed

Frame cannot exceed 96" in both directions

For units with colored glazing (bronze, gray or green), frame cannot exceed 11' 0-3/4" in either direction.

Maximum frame < 54.5 ft²

Rectangular Units - Roto Operator with Side Pivot hinge

Maximum frame size is 19.5 ft² (based on rectangular unit).

Sash openings >35" will be limited to the angle shown on the Restricted Opening chart.

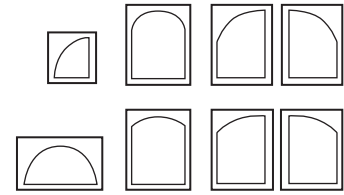
Frame width cannot exceed height

Custom Stile and Rail Widths

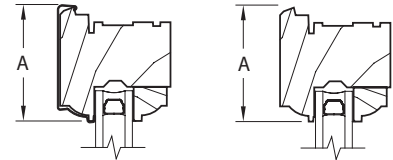
The A dimension shown can vary from 1-7/8" to 5-3/4".

Any members meeting at an angle not equal to 90° and springline must be the same width.

Bottom rail available with A dimension from 1-7/8" to 9".



GLASS SHAPES



CLAD UNIT

WOOD UNIT

SIDE PIVOT CLEAR OPENING FORMULAS				
HINGE	FRAME WIDTH	FRAME HEIGHT	CLEAR OPENING WIDTH FORMULA	
			CLAD EXTERIOR	WOOD EXTERIOR
STD	17" to ≤ 29"	17" to ≤ 73"	Unit Width - 4.375	Unit Width - 4.375
	> 29" to ≤ 35"	29" to < 47"	Unit Width - 4.375	Unit Width - 4.375
HEAVY DUTY*	13.75" to < 17"	13.75" to ≤ 96"	(Unit Width x 0.8) - 2.95	(Unit Width x 0.892) - 4.219
	17" to < 19"	13.75" to ≤ 96"	(Unit Width x 0.9) - 4.65	(Unit Width x 0.9) - 4.35
	19" to < 25"	13.75" to ≤ 96"	(Unit Width x 0.883) - 4.433	(Unit Width x 0.883) - 4.133
	25" to 29"	13.75" to ≤ 96"	Unit Width - 5.55	Unit Width - 5.55
	> 29" to ≤ 35"	13.75" to ≤ 96"	(Unit Width x 0.9) - 4.15	(Unit Width x 0.917) - 4.533

RESTRICTED OPENING	
Frame Width	Approximate Sash Opening Angle
>35	28 degrees
36	26 degrees
37	25 degrees
38	24 degrees
39	23 degrees
40	22 degrees
41	21 degrees

Clear opening height = unit height - 4.125"

* All units with Impact glass or standard IG glass weighing 56 lbs. or more require heavy duty hinges.

Sash opening will be limited to the angle shown.

Units over 35 inches wide do NOT meet Egress.

NOTE: Performance Class and Grade for a Casement with additional options and Specialty windows may not be the same as Standard and Special size units. Please contact your local Pella representative for complete information.

RECTANGLE	MINIMUM		MAXIMUM	RESTRICTIONS	
	Fixed				
	W	10"	144"	Maximum Glass weight is 400 Pounds	
	H	10"	144"		
	Vent w/Roto Operator (See standard product for Clear Opening formulas)				
	W	17"	35"	Maximum Glass weight is 72 pounds	
	H	17"	73"		
	Vent - w/ Roto Operator w/ Side Pivot				
	W	13-3/4"	35"	Maximum Glass weight is 100 pounds.	
	H	13-3/4"	96"		
	Vent - w/ Roto Operator w/Side Pivot Restricted Opening				
	W	35"	41"	Maximum Glass weight is 100 pounds Units will NOT meet egress requirements. Applies to all vent units with Width (W) > 35"	
	H	35"	96"		

Glass Weight Formula: Actual Glass Width (W) x Actual Glass Height (H) x Actual Glass Thickness ÷ 11

Glazing weight in pounds, all Glass Width (W), Height (H) and Thickness are in inches.



CASEMENT

SIZE TABLES

Wood and Aluminum-Clad Wood



	(451) (432)	(552) (533)	(603) (584)	(654) (635)	(756) (737)	(832) (813)	(908) (889)
Opening	1' 5 3/4"	1' 9 3/4"	1' 11 3/4"	2' 1 3/4"	2' 5 3/4"	2' 8 3/4"	2' 11 3/4"
Frame	1' 5"	1' 9"	1' 11"	2' 1"	2' 5"	2' 8"	2' 11"
(375) (356)							
(451) (432)							
(552) (533)							
(603) (584)							
(654) (635)							
(756) (737)							

Opening Dimensions

CLAD EXTERIOR UNITS: Dimensions shown in 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	
Brickmould	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 HurricaneShield® impact-resistant glass, see the product installation instructions or refer to local building code requirements.

Not to scale.

Ⓡ = Fixed Unit Only

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.

Venting transoms are available as casements or awnings.



CASEMENT

SIZE TABLES

Wood and Aluminum-Clad Wood



Vent and Fixed Units

	(451) (432)	(552) (533)	(603) (584)	(654) (635)	(756) (737)	(832) (813)	(908) (889)
Opening	1' 5 3/4"	1' 9 3/4"	1' 11 3/4"	2' 1 3/4"	2' 5 3/4"	2' 8 3/4"	2' 11 3/4"
Frame	1' 5"	1' 9"	1' 11"	2' 1"	2' 5"	2' 8"	2' 11"
(908) (889)							
(1 060) (1 041)							
(1 213) (1 194)							
(1 365) (1 346)							
(1 518) (1 499)							
(1 670) (1 651)							
(1 822) (1 803)							
(1 873) (1 854)							

Opening Dimensions

CLAD EXTERIOR UNITS: Dimensions shown in 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 HurricaneShield® 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.

E2 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E3 = With optional side pivot hardware, 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.

Side pivot hardware reduces Performance class to 'R'.

Not to scale.

(T) = Tempered glass due to aspect ratio.

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.



CASEMENT

SIZE TABLES

Wood and Aluminum-Clad Wood



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)				
(1 060) (1 041)				
(1 213) (1 194)				
(1 365) (1 346)				
(1 518) (1 499)				
(1 670) (1 651)				
(1 822) (1 803)				
(1 873) (1 854)				

Special Size Frame Dimensions*

	MINIMUM	MAXIMUM
VENT	1'5" W x 1'5" H (432 x 432)	2'11" W x 6'1" H (889 x 1 854)
FIXED	1'5" W x 1'5" H (432 x 432)	4'11" W x 6'1" H (1499 x 1 854)

* Available within size range shown.

Keep frame dimensions to the nearest 1/4" increment. Frame width cannot exceed frame height on special size vent units. See the Curved, Angled and Rectangular shapes pages or contact your Pella representative for the availability of custom sizes smaller or larger than the parameters.

Opening Dimensions

CLAD EXTERIOR UNITS: Dimensions shown in 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 sill.

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 HurricaneShield® impact-resistant glass, see the product installation instructions or refer to local building code requirements.

Not to scale.

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.



CASEMENT

DESIGN DATA

Wood and Aluminum-Clad Wood



FIXED UNITS

Unit	Visible Glass Ft²	Standard Glass Thickness (mm)			Performance Class & Grade ₁
		Dual-Pane Glazing		Triple-Pane Glazing	
		Annealed	Tempered	Annealed or Tempered	
4135	7.2	2.5	3	3	CW50
4141	8.6	2.5	3	3	CW50
4147	10.1	3	3	3	CW50
4153	11.6	3	3	3	CW50
4159	13.0	3	3	3	CW50
4165	14.5	3	3	3	CW50
4171	16.0	3	3	3	CW45/CW50
4173	16.5	3	3	3	CW45/CW50
4735	8.4	2.5	3	3	CW50
4741	10.1	3	3	3	CW50
4747	11.8	3	3	3	CW50
4753	13.5	3	3	3	CW50
4759	15.3	3	3	3	CW50
4765	17.0	3	3	3	CW45/CW50
4771	18.7	4	4	4	CW50
4773	19.3	4	4	4	CW50
5335	9.6	2.5	3	3	CW45/CW50
5341	11.6	3	3	3	CW50
5347	13.5	3	3	3	CW50
5353	15.5	3	4	4	CW45/CW50
5359	17.5	4	4	4	CW40/CW50
5365	19.4	4	4	4	CW50
5371	21.4	4	4	4	CW50
5373	22.1	4	4	4	CW50
5935	10.8	3	3	3	CW50
5941	13.0	3	3	3	CW50
5947	15.3	3	3	3	CW50
5953	17.5	4	4	4	CW40/CW50
5959	19.7	4	4	4	CW50
5965	21.9	4	4	4	CW50
5971	24.1	4	4	4	CW45/CW50
5973	24.9	4	4	4	CW50

TRANSOM UNITS

Unit	Clear Opening (Inches)			Vent Area Ft²	Visible Glass Ft²	Standard Glass Thickness (mm)			Performance Class & Grade ₁
	Width	Height	Ft²			Dual-Pane Glazing		Triple-Pane Glazing	
						Annealed	Tempered	Annealed or Tempered	
1714F	-	-	-	-	0.6	2.5	3	3	CW50
1717	7-1/4	12-7/8	0.6	1.0	0.9	2.5	3	3	CW50
1725F	-	-	-	-	1.5	2.5	3	3	CW50
2114F	-	-	-	-	0.9	2.5	3	3	CW50
2117F	-	-	-	-	1.2	2.5	3	3	CW50
2121	11-1/4	16-7/8	1.3	1.8	1.6	2.5	3	3	CW50
2125F	-	-	-	-	2.0	2.5	3	3	CW50
2314F	-	-	-	-	1.0	2.5	3	3	CW50
2317F	-	-	-	-	1.3	2.5	3	3	CW50
2323	13-1/4	18-7/8	1.7	2.3	2.1	2.5	3	3	CW50
2325F	-	-	-	-	2.3	2.5	3	3	CW50
2514F	-	-	-	-	1.1	2.5	3	3	CW50
2517F	-	-	-	-	1.5	2.5	3	3	CW50
2525	15-1/4	20-7/8	2.2	2.8	2.6	2.5	3	3	CW50
2914F	-	-	-	-	1.3	2.5	3	3	CW50
2917F	-	-	-	-	1.8	2.5	3	3	CW50
2925F	-	-	-	-	3.1	2.5	3	3	CW50
2929	20	24-7/8	3.5	4.0	3.8	2.5	3	3	CW50
3214F	-	-	-	-	1.5	2.5	3	3	CW50
3217F	-	-	-	-	2.1	2.5	3	3	CW50
3225F	-	-	-	-	3.5	2.5	3	3	CW50
3514F	-	-	-	-	1.7	2.5	3	3	CW50
3517F	-	-	-	-	2.3	2.5	3	3	CW50
3525F	-	-	-	-	3.9	2.5	3	3	CW50

Miscellaneous Formulas

VISIBLE GLASS	Width = Frame - 5-3/4" Height = Frame - 5-3/4"
ACTUAL GLASS	Width = Frame - 4-3/8" Height = Frame - 4-3/8"

CLEAR OPENING HEIGHT

Frame Height - 4-1/8"

CLEAR OPENING WIDTH

Hinge	Frame Width	Formula
Standard	FW ≥ 29" and ≤ 30-1/2"	FW - 9"
Standard	FW > 30-1/2"	FW - 9-3/4"
Side Pivot	FW ≥ 25" and ≤ 35"	FW - 4-3/8"

For units with FW >35" reference degree opening chart.

(-) = Not Applicable

F = Fixed only

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

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



CASEMENT

DETAILED PRODUCT DESCRIPTIONS

Aluminum-Clad Wood



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 [pine] [mahogany] [alder] [douglas fir] (standard rectangular units only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are clad with aluminum.
- Overall frame depth is 5" (127mm) for a wall depth of 3-11/16" (94mm).
- Optional factory-applied jamb extensions available between 4-9/16" (116mm) and 7-3/16" (183mm) wall depths.
- 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] [alder] [douglas fir] (standard rectangular units only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are clad with aluminum, lap-jointed and sealed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is [1-13/16" (46mm) for 11/16"] [1-11/16" (43mm) for 9/16"] [2-1/8" (54mm) for 1"] glazing.

WEATHERSTRIPPING

- Dual weatherstripping.
 - Flexible santoprene material compressed between frame and sash for positive seal on all four sides.
 - Secondary thermoplastic vulcanizate (TPV) leaf-type weatherstrip between edge of sash and frame.

GLAZING SYSTEM 1

- Quality float glass complying with ASTM C 1036.
- Silicone-glazed 11/16" dual-seal insulating glass [[annealed] [tempered]] [[clear] [Advanced Low-E with Argon] [SunDefense™ Low-E with Argon] [NaturalSun Low-E with Argon] [AdvancedComfort Low-E coated with argon]] [[bronze] [gray] [green] [Advanced Low-E coated with Argon]].
- Custom and high altitude [with argon] glazing available for 11/16" glazing only.
 - or -
- Silicone-glazed 1" triple-seal insulating glass [[annealed] [tempered]] [[Advanced Low-E with argon] [Advanced Low-E with krypton] [SunDefense™ Low-E with argon] [SunDefense™ Low-E with krypton] [NaturalSun Low-E with argon] [NaturalSun Low-E with krypton]].
 - or -
- Impact-Resistant
 - Silicone-glazed 1" dual-seal impact-resistant insulating glass 1 [PVB] [SGP]. [[tempered] [annealed]] exterior light is [[Advanced Low-E coated with argon] [clear] [bronze] [gray] [green]]. Laminated clear interior light.
 - or -
 - Silicone-glazed 11/16" dual-seal impact-resistant insulating glass 1 [PVB]. [[tempered] [annealed]] exterior light is [[Advanced Low-E coated with argon] [clear]]. Laminated [clear] interior light, or [[tempered] [annealed]] exterior light is [[Advanced Low-E coated with argon] [clear]]. Laminated [[bronze] [gray] [green]] interior light.
 - or -
 - Silicone-glazed 9/16" [PVB] laminated glass [[clear] [bronze] [gray] [green]].
 - or -
 - Silicone-glazed 9/16" [SGP] laminated glass [[clear] [multi-layer Low-E] [bronze] [gray] [green]].

EXTERIOR

- Aluminum clad exteriors shall be finished with EnduraClad® protective finish, in a multi-step, baked-on finish.
- Color is [White] [Tan] [Brown] [Putty] [feature 2] [custom 2].
 - 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 [White] [Tan] [Brown] [Putty] [feature 2] [custom 2].

(1) Insulating glass with argon is Low-E coated (except high altitude). All other insulating glass (including high altitude Low-E) is air-filled.

(2) Contact your local Pella sales representative for current color options.

(3) Available in clear or Low-E insulating glass only. White exterior grille color is the only option available for clear insulating glass.

(4) 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.

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

INTERIOR

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [factory prefinished [White] [Linen White] [Bright White] [stain 2]].

HARDWARE

- Roto operator assembly
 - Steel worm gear sash operator with hardened gears.
 - Operator base is zinc die cast with painted finish.
 - Operator linkage, hinge slide, and hinge arms are stainless steel.
 - Exposed fasteners are stainless steel.
 - Hardware shall exceed 1,000 hours salt spray exposure per ASTM B 117.
- Finish of integrated fold-away crank is [[baked enamel] [Champagne] [White] [Brown]] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze]. All vent units are available with left- or right-hand hinging.
- SureLock® System—A single handle locking system operates positive-acting arms that reach out and pull the sash into a locked position: one unison operating lock installed on units with frame height 29" and smaller, two installed on units with frame height greater than 29".
- Lock handle finish is [baked enamel, champagne] [baked enamel, White] [baked enamel, Brown] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze].

OPTIONAL PRODUCTS

Grilles

- Integral Light Technology® grilles
 - Interior grilles are [5/8" [putty] [ogee] profile] [7/8" [putty] [ogee] profile] [1-1/4" [putty] [ogee] profile] [2" ogee profile] that are solid [Pine] [Mahogany] [Alder] [Douglas Fir]. Interior surfaces are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain 2]].
 - Exterior grilles are [5/8" putty profile] [7/8" [putty] [ogee] profile] [1-1/4" [putty] [ogee] profile] [2" ogee profile] that are extruded aluminum to match window cladding.
 - Patterns are [Traditional] [Prairie] [Top Row] [Cross] [New England] [Victorian] [Simulated French].
 - 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-Glass 3
 - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass (exterior air-space on triple-pane insulating glass).
 - Patterns are [Traditional] [Prairie] [Cross] [Top Row] [Custom - Equally Divided].
 - Interior color is [White] [Tan 4] [Brown 4] [Putty 4] [Ivory] [Brickstone] [Harvest] [Cordovan].
 - Exterior color 5 is [White] [Tan] [Brown] [Putty] [feature 2].
 - or -

Removable Grilles

- [[3/4"] [1-1/4"] [2"] Regular] [[1-1/4"] [2"] Colonial] profile, with [Traditional] [Prairie] patterns that are removable solid pine wood bars steel-pinned at joints and fitted to sash with steel clips and tacks.
- Interior [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain 2]].
- Exterior [unfinished, ready for site finishing] [Factory Primed] [finish color matched to exterior cladding 5].

Screens

- InView™ Screens
 - Vinyl-coated 18/18 mesh fiberglass screen cloth complying with SMA 1201, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
 - or -
- Vivid View® Screens
 - PVDF 21/17 mesh, minimum 78 percent light transmissive screen, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
 - or -
- Rolscreen® Retractable Screen (for rectangular units only)
 - Self-storing, rolling, black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201 mounted behind overhead cover.
 - Cover finish is [factory prefinished paint] [[pine] [mahogany] [alder] [douglas fir] veneer wrapped over extruded aluminum with factory prefinished [stain 2] [paint 2]].
 - Guides are aluminum extrusion with [[pine] [mahogany] veneer wrapped over extruded aluminum with factory prefinished [stain 2] [paint 2]].

Hardware

- Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.
- Optional window opening control device available for field installation. 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.



CASEMENT

DETAILED PRODUCT DESCRIPTIONS

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 [pine] [mahogany] (standard rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are [pine: Factory Primed] [mahogany: [factory primed] [ready-to-stain]].
- Overall frame depth is 4-3/8" (111mm) for a wall depth of 4-3/16" (106mm).
- Optional factory-applied jamb extensions available between 4-9/16" (116mm) and 7-3/16" (183mm) wall depths, with Pella's standard wood 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 [pine] [mahogany] (standard rectangular windows only). Any curved member may have visible finger-jointed surfaces.
- Exterior surfaces are [pine: Factory Primed] [mahogany: [factory primed] [ready-to-stain]].
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-13/16" (46mm).

WEATHERSTRIPPING

- Dual weatherstripping.
 - Flexible santoprene material compressed between frame and sash for positive seal on all four sides.
 - Secondary thermoplastic vulcanizate (TPV) leaf-type weatherstrip between edge of sash and frame.

GLAZING SYSTEM 1

- Quality float glass complying with ASTM C 1036.
- Silicone-glazed 11/16" dual-seal insulating glass [[annealed] [tempered]] [[clear] [Advanced Low-E with argon] [SunDefense™ Low-E with argon] [AdvancedComfort Low-E with argon] [NaturalSun Low-E with Argon]] [[bronze] [gray] [green] Advanced Low-E with argon]].
- Custom and high altitude [with argon] glazing available.
 - or -
- Silicone-glazed 1" triple-seal insulating glass [[annealed] [tempered]] [[Advanced Low-E with argon] [Advanced Low-E with krypton] [SunDefense™ Low-E with argon] [SunDefense™ Low-E with krypton] [NaturalSun Low-E with argon] [NaturalSun Low-E with krypton]].

INTERIOR

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [factory prefinished [White] [Linen White] [Bright White] [stain₃]].

HARDWARE

- Roto operator assembly
 - Steel worm gear sash operator with hardened gears.
 - Operator base is zinc die cast with painted finish.
 - Operator linkage, hinge slide, and hinge arms are stainless steel.
 - Exposed fasteners are stainless steel.
 - Hardware will exceed 1,000 hours salt spray exposure per ASTM B 117.
- Finish of integrated fold-away crank is [[baked enamel [Champagne] [White] [Brown]] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze]]. All vent units are available with left- or right-hand hinging.
- SureLock® System—A single handle locking system operates positive-acting arms that reach out and pull the sash into a locked position: one unison operating lock installed on units with frame height 29" and smaller, two installed on units with frame height greater than 29".
- Lock handle finish is [[baked enamel [Champagne] [White] [Brown]] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze]].

OPTIONAL PRODUCTS

Grilles

- Integral Light Technology® grilles
 - Interior grilles are solid [5/8" [putty] [ogee] profile] [7/8" [putty] [ogee] profile] [1-1/4" [putty] [ogee] profile] [2" ogee profile] that are solid [pine] [mahogany]. Interior surfaces are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain₃]].
 - Exterior grilles are solid [5/8" putty profile] [7/8" [putty] [ogee] profile] [1-1/4" [putty] [ogee] profile] [2" ogee 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] [Cross] [New England] [Victorian] [Simulated French].
 - 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 (exterior air-space on triple-pane insulating glass).
 - Patterns are [Traditional] [Prairie] [Cross] [Top Row] [Custom - Equally Divided].
 - Interior color is [White] [Tan₄] [Brown₄] [Putty₄] [Ivory] [Brickstone] [Harvest] [Cordovan].
 - Exterior color is [White] [Tan] [Brown] [Putty] [feature₃].
 - or -
- Removable Grilles
 - [3/4" [1-1/4" [2" Regular] [[1-1/4" [2" profile, with [Traditional] [Prairie] patterns that are removable solid pine wood grilles steel-pinned at joints and fitted to sash with steel clips and tacks.
 - Interior [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain₃]].
 - Exterior [unfinished, ready for site finishing] [Factory Primed] [finish color matched to exterior cladding].
 - When the unit exterior is mahogany then removable grilles is not an option.

Screens

- InView™ Screens
 - Vinyl-coated 18/18 mesh fiberglass screen cloth complying with SMA 1201, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
 - or -
- Vivid View® Screens
 - PVDF 21/17 mesh, minimum 78 percent light transmissive screen, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
 - or -
- Rolscreen® Retractable Screen (for rectangular units only)
 - Self-storing, rolling, black vinyl-coated 18 / 16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201 mounted behind overhead cover.
 - Cover finish is [factory prefinished paint] [[pine] [mahogany] veneer wrapped over extruded aluminum with factory prefinished [stain₃] [paint₃]].
 - Guides are aluminum extrusion with [[pine] [mahogany] veneer wrapped over extruded aluminum with factory prefinished [stain₃] [paint₃]].

Hardware

- Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.
- Optional window opening control device available for field installation. 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.

(1) Insulating glass with argon is Low-E coated. All other insulating glass is air-filled.

(2) Available in clear or Low-E insulating glass only with argon, clear insulated glass and obscure insulated glass. White exterior grille color and traditional patterns are the only options available for clear insulating glass.

(3) Contact your local Pella sales representative for current color options.

(4) Tan, Brown or 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.



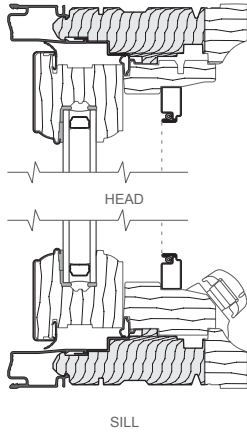
CASEMENT

UNIT SECTIONS – WOOD COLLECTION

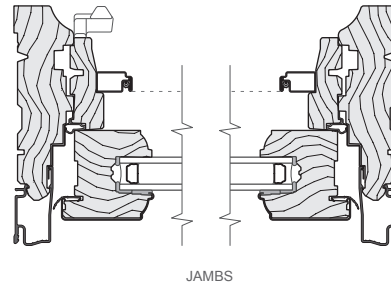
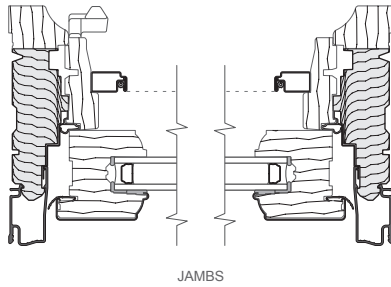
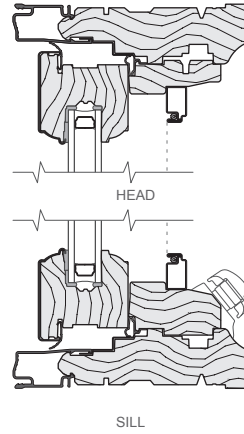
Aluminum-Clad Wood



Alder or Douglas Fir Interior



Pine or Mahogany Interior



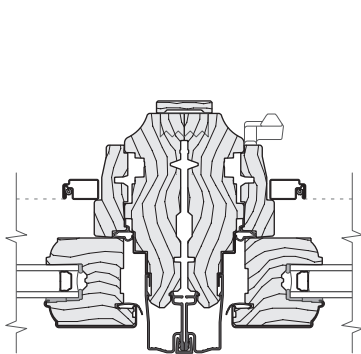
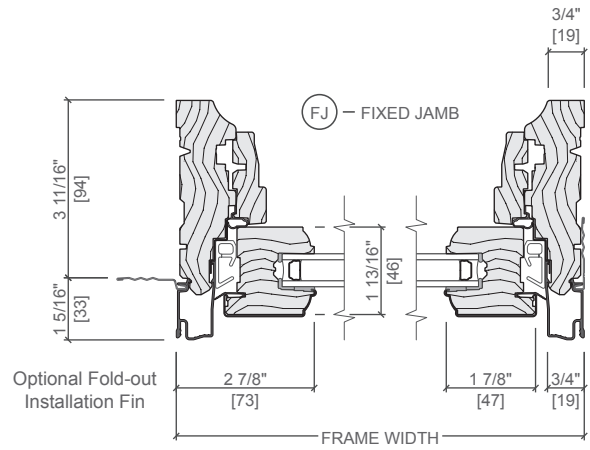
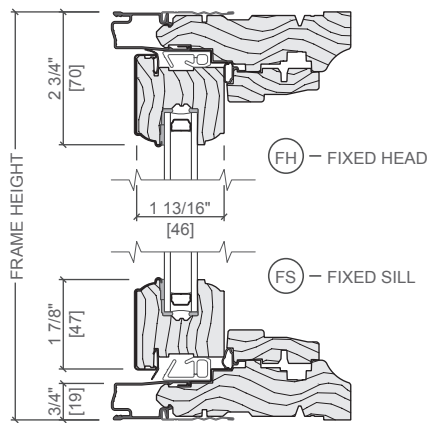
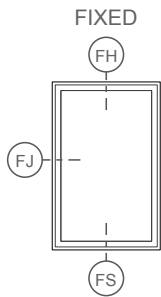
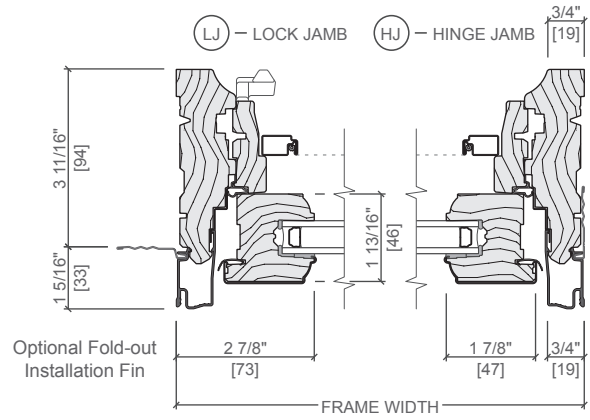
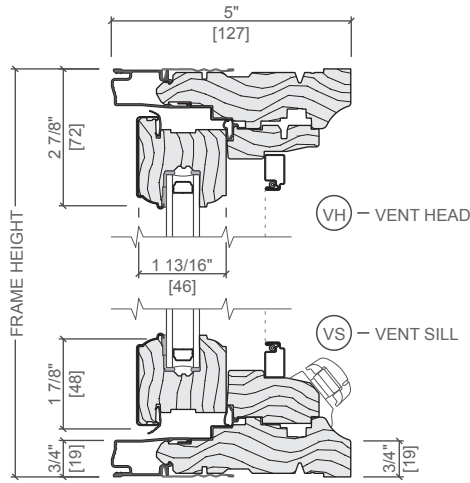
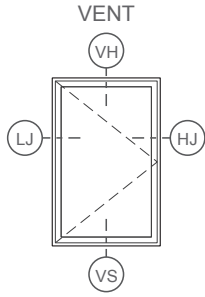
Not to Scale



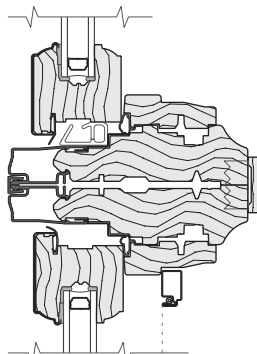
CASEMENT

UNIT SECTIONS

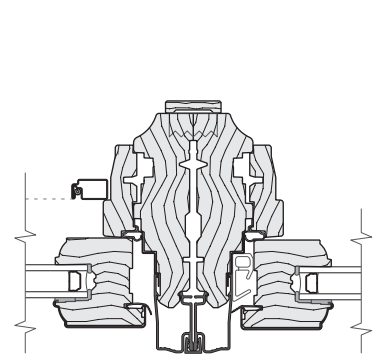
Aluminum-Clad Wood



VERTICAL JOINING MULLION
VENT / VENT



HORIZONTAL JOINING MULLION
TRANSOM / VENT



VERTICAL JOINING MULLION
VENT / FIXED

Scale 3" = 1' 0"

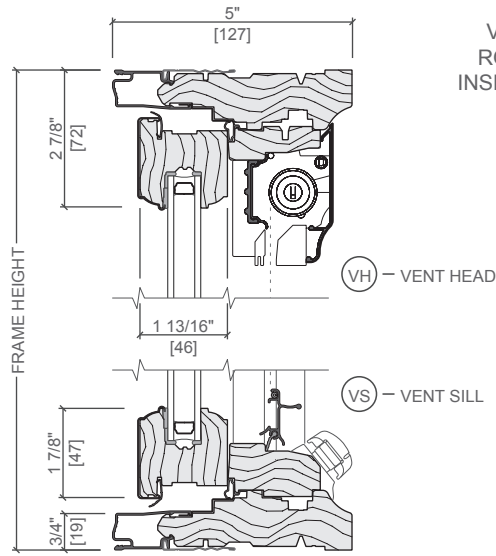
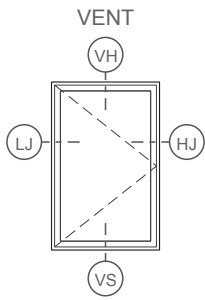
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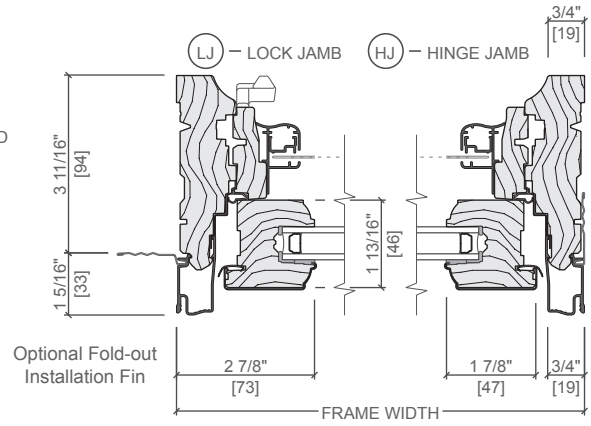
CASEMENT

UNIT SECTIONS

Aluminum-Clad Wood



VENT WITH
ROLSCREEN®
INSECT SCREEN



Scale 3" = 1' 0"

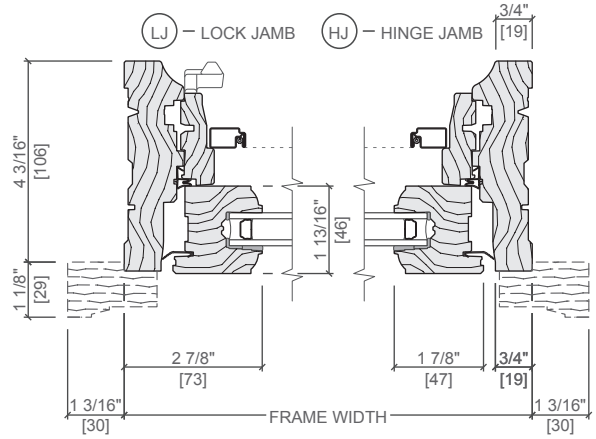
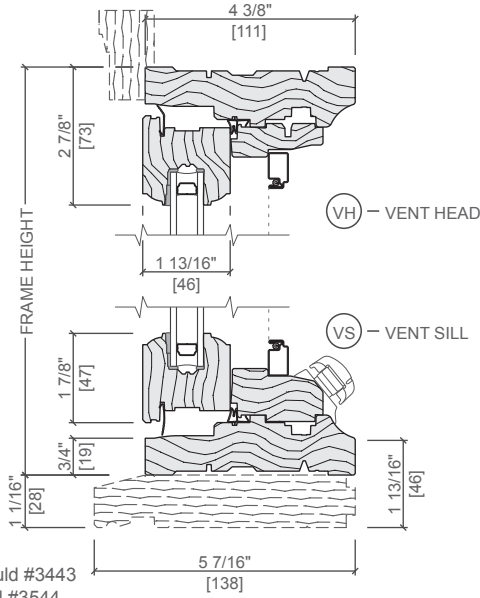
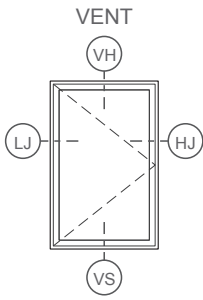
See Installation and Performance at www.PellaADM.com for mullion limitations and reinforcing requirements.



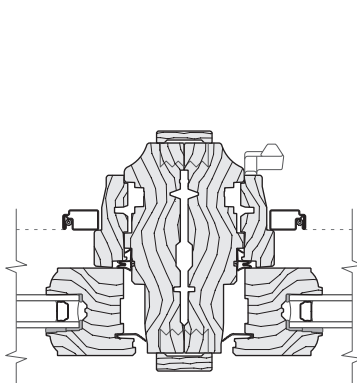
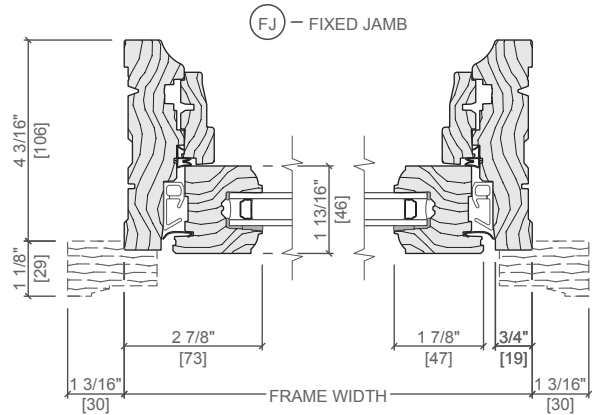
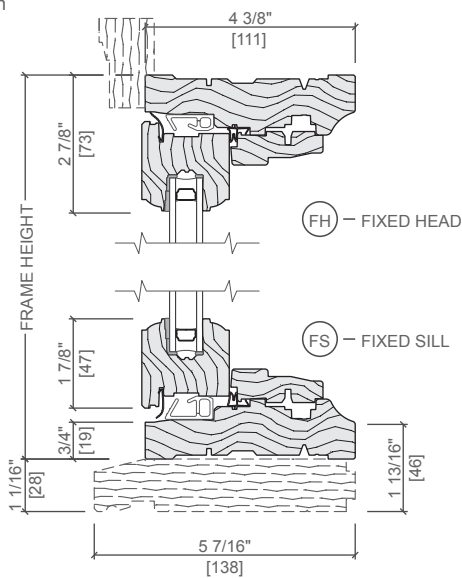
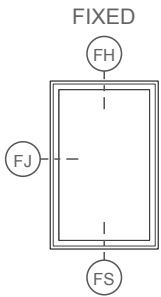
CASEMENT

UNIT SECTIONS

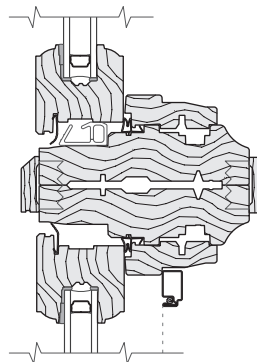
Wood Exterior



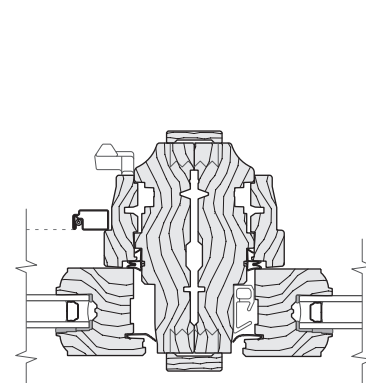
1-7/8" Brickmould #3443
1-1/8" Sub sill #3544
Shown



VERTICAL JOINING MULLION
VENT / VENT



HORIZONTAL JOINING MULLION
FIXED / VENT



VERTICAL JOINING MULLION
VENT / FIXED

Scale 3" = 1' 0"

All dimensions are approximate.

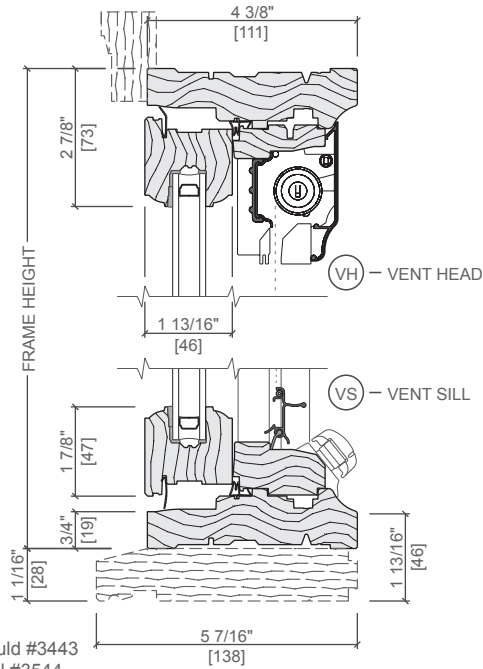
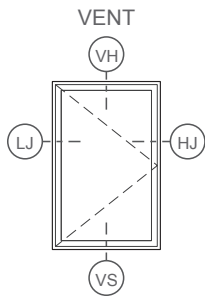


CASEMENT

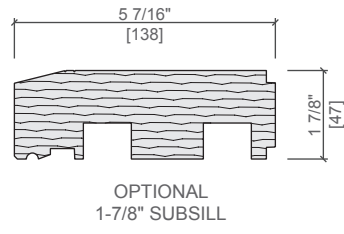
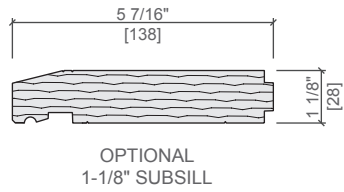
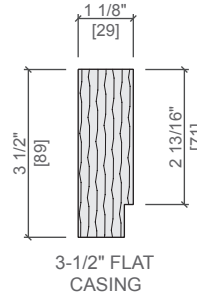
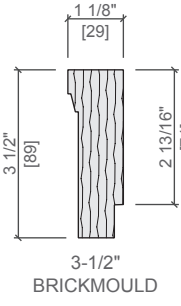
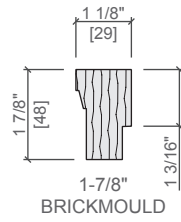
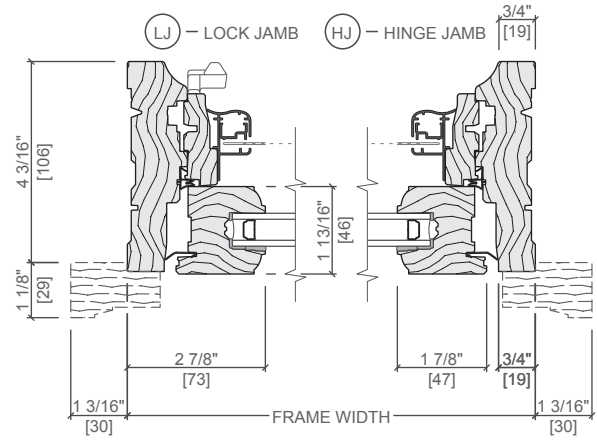
UNIT SECTIONS

Wood Exterior

Rolscreen Retractable Screen



1-7/8" Brickmould #3443
1-1/8" Subsill #3544
Shown



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



CASEMENT

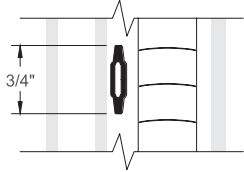
GRILLE TYPES

Removable Between-Glass

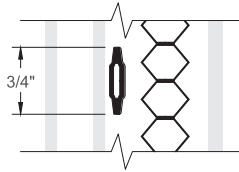


Grille Profiles

Removable Grilles Between-the-Glass



3/4" Triple-Pane with Slimshade Blind

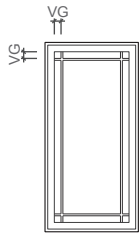


3/4" Triple-Pane with Cellular Fabric Shade

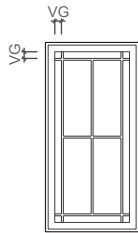
Grille Patterns

Removable Grilles-Between-the-Glass

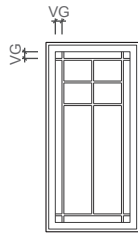
PRAIRIE LITE PATTERNS



9-Lite



12-Lite



14-Lite

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

9-Lite

- Available in all standard and special sizes.

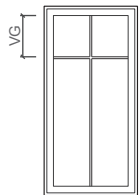
12-Lite

- Available in units ≥ 2'0" in width and ≥ 2'0" in height.

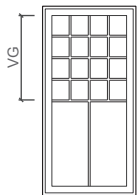
14-Lite

- Available in units ≥ 2'0" in width and ≥ 3'0" in height.

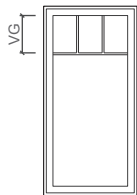
OTHER AVAILABLE PATTERNS



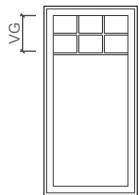
Cross



New England



Top Row



Cross

- Standard visible glass to separator bar = one-quarter of total visible glass height.

New England

- Standard visible glass to separator bar = half of total visible glass height.

Top Row

- Standard visible glass to separator bar = 14" or half of total visible glass height, whichever is smaller.

For traditional patterns, see size tables.

VG = Visible Glass

Lite dimensions noted can vary.

Custom configurations are also available, for details contact your local Pella sales representative.

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



CASEMENT

SIZE TABLES

Aluminum-Clad Wood



Transoms

	(451) (432)	(552) (533)	(603) (584)	(654) (635)	(756) (737)	(832) (813)	(908) (889)
Opening	1' 5 3/4"	1' 9 3/4"	1' 11 3/4"	2' 1 3/4"	2' 5 3/4"	2' 8 3/4"	2' 11 3/4"
Frame	1' 5"	1' 9"	1' 11"	2' 1"	2' 5"	2' 8"	2' 11"
1' 5"	1717	2117 (F)	2317 (F)	2517 (F)	2917 (F)	3217 (F)	3517 (F)
1' 9"		2121					
1' 11"			2323				
2' 1"	1725 (F)	2125 (F)	2325 (F)	2525 (F)	2925 (F)	3225 (F)	3525 (F)
2' 5"				2929			

Vent and Fixed Units

	(908) (889)	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)	(1 670) (1 651)	(1 822) (1 803)	(1 873) (1 854)
Opening	2' 11 3/4"	3' 5"	3' 11"	4' 5"	4' 11"	5' 5"	5' 11"	6' 1"
Frame	2' 11"	3' 5"	3' 11"	4' 5"	4' 11"	5' 5"	5' 11"	6' 1"
2' 11 3/4"	1735	2135	2335	2535	2935 E ₃	3235 E ₂	3535 E ₁	
3' 5"		1741	2141	2341	2541 E ₃	2941 E ₂	3241 E ₂	3541 E
3' 11"			1747	2147	2347	2547	2947	3247
4' 5"				1753	2153	2353	2553	2953
4' 11"					1759	2159	2359	2559
5' 5"						1765	2165	2365
5' 11"							1771	2171
6' 1"								1773

Special Size Frame Dimensions*

	MINIMUM	MAXIMUM
VENT	1'5" W x 1'5" H (432 x 432)	2'11" W x 6'1" H (889 x 1 854)
FIXED	1'5" W x 1'5" H (432 x 432)	4'11" W x 6'1" H (1499 x 1 854)

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.
- E2 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
- E3 = With optional side pivot hardware, 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.
* Available within size range shown

(F) Fixed units only.
(T) Tempered glass is standard.

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.

Vent transoms are available as casements or awnings.



CASEMENT

SIZE TABLES

Aluminum-Clad Wood



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) (899)	2' 11 3/4"	2' 11 3/4"	2' 11 3/4"	2' 11 3/4"
(1 060) (1 041)	3' 5"	3' 5"	3' 5"	3' 5"
(1 213) (1 194)	3' 11 3/4"	3' 11 3/4"	3' 11 3/4"	3' 11 3/4"
(1 365) (1 346)	4' 5 3/4"	4' 5 3/4"	4' 5 3/4"	4' 5 3/4"
(1 518) (1 499)	4' 11 3/4"	4' 11 3/4"	4' 11 3/4"	4' 11 3/4"
(1 670) (1 651)	5' 5 3/4"	5' 5 3/4"	5' 5 3/4"	5' 5 3/4"
(1 822) (1 803)	5' 11 3/4"	5' 11 3/4"	5' 11 3/4"	5' 11 3/4"
(1 873) (1 854)	6' 1 3/4"	6' 1 3/4"	6' 1 3/4"	6' 1 3/4"
	4135	4735	5335	5935
	4141	4741	5341	5941
	4147	4747	5347	5947
	4153	4753	5353	5953
	4159	4759	5359	5959
	4165	4765	5365	5965
	4171	4771	5371	5971
	4173	4773	5373	5973

Not to scale.

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.



CASEMENT

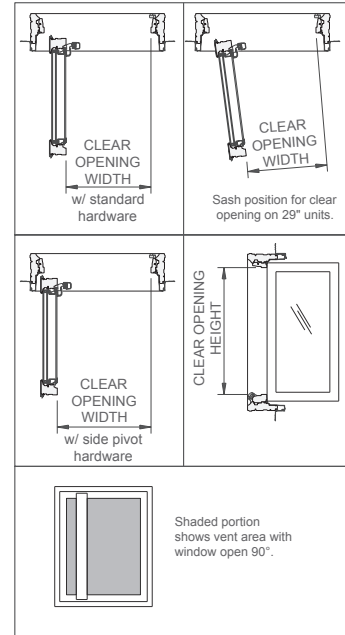
DESIGN DATA

Aluminum-Clad Wood



VENT AND FIXED UNITS

Unit	Egress		Clear Opening			Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ⁽¹⁾
	without Rolscreen	with Rolscreen	Width (Inches)	Height (Inches)	Ft ²			Annealed	Tempered	
1735			7-1/4	30-7/8	1.6	2.4	2.1	2.5	3	R50
1741			7-1/4	36-7/8	1.9	2.8	2.5	2.5	3	R50
1747			7-1/4	42-7/8	2.2	3.3	3.0	2.5	3	R50
1753			7-1/4	48-7/8	2.5	3.7	3.4	2.5	3	R50
1759			7-1/4	54-7/8	2.8	4.2	3.8	2.5	3	R50
1765T			7-1/4	60-7/8	3.1	4.7	4.3	-	3	R50
1771T			7-1/4	66-7/8	3.4	5.1	4.7	-	3	R50
1773T			7-1/4	68-7/8	3.5	5.3	4.8	-	3	R50
2135			11-1/4	30-7/8	2.4	3.2	2.9	2.5	3	R50
2141			11-1/4	36-7/8	2.9	3.8	3.5	2.5	3	R45/R50
2147			11-1/4	42-7/8	3.3	4.5	4.1	2.5	3	R40/R50
2153			11-1/4	48-7/8	3.8	5.1	4.7	2.5	3	R35/R50
2159			11-1/4	54-7/8	4.3	5.7	5.3	2.5	3	R30/R50
2165			11-1/4	60-7/8	4.8	6.3	5.9	2.5	3	R30/R50
2171			11-1/4	66-7/8	5.2	7.0	6.5	2.5	3	R30/R50
2173			11-1/4	68-7/8	5.4	7.2	6.7	2.5	3	R30/R50
2335			13-1/4	30-7/8	2.8	3.7	3.3	2.5	3	R50
2341			13-1/4	36-7/8	3.4	4.4	4.0	2.5	3	R45/R50
2347			13-1/4	42-7/8	3.9	5.1	4.6	2.5	3	R35/R50
2353			13-1/4	48-7/8	4.5	5.8	5.3	2.5	3	R30/R50
2359			13-1/4	54-7/8	5.0	6.5	6.0	2.5	3	R25/R50
2365			13-1/4	60-7/8	5.6	7.2	6.7	2.5	3	R25/R50
2371			13-1/4	66-7/8	6.2	7.9	7.4	2.5	3	R20/R50
2373			13-1/4	68-7/8	6.3	8.1	7.6	2.5	3	R20/R50
2535			15-1/4	30-7/8	3.3	4.1	3.7	2.5	3	R50
2541	E3		20-5/8	36-7/8	5.3	5.5	4.4	2.5	3	R45/R50
2547	E2		20-5/8	42-7/8	6.1	6.3	5.2	2.5	3	R35/R50
2553	E2		20-5/8	48-7/8	7.0	7.2	6.0	2.5	3	R30/R50
2559	E2		20-5/8	54-7/8	7.9	8.1	6.7	2.5	3	R25/R50
2565	E2		20-5/8	60-7/8	8.7	9.0	7.5	2.5	3	R20/R50
2571	E2		20-5/8	66-7/8	9.6	9.9	8.3	2.5	3	R20/R50
2573	E2		20-5/8	68-7/8	9.9	10.2	8.5	2.5	3	R20/R50
2935	E3		24-5/8	30-7/8	5.3	5.4	4.5	2.5	3	R50
2941	E2	E2	24-5/8	36-7/8	6.3	6.5	5.4	2.5	3	R45/R50
2947	E	E2	20	42-7/8	6.0	6.9	6.3	2.5	3	R35/R50
2953	E	E2	20	48-7/8	6.8	7.8	7.3	2.5	3	R30/R50
2959	E	E2	20	54-7/8	7.6	8.8	8.2	2.5	3	R25/R50
2965	E	E2	20	60-7/8	8.5	9.7	9.1	2.5	3	R20/R50
2971	E	E2	20	66-7/8	9.3	10.7	10.1	2.5	3	R20/R50
2973	E	E2	20	68-7/8	9.6	11.0	10.4	3	3	R25/R50
3235	E2		27-5/8	30-7/8	5.9	6.1	5.0	2.5	3	R45/R50
3241	E2	E1	27-5/8	36-7/8	5.6	7.3	6.1	2.5	3	R35/R50
3247	E	E	22-1/4	42-7/8	6.6	7.7	7.2	2.5	3	R30/R50
3253	E	E	22-1/4	48-7/8	7.6	8.8	8.2	2.5	3	R25/R50
3259	E	E	22-1/4	54-7/8	8.5	9.9	9.3	2.5	3	R25/R50
3265	E	E	22-1/4	60-7/8	9.4	11.0	10.4	3	3	R30/R50
3271	E	E	22-1/4	66-7/8	10.3	12.1	11.4	3	3	R25/R50
3273	E	E	22-1/4	68-7/8	10.6	12.4	11.8	3	3	R25/R50
3535	E1		25-1/4	30-7/8	5.4	6.2	5.6	2.5	3	R45/R50
3541	E	E	25-1/4	36-7/8	6.5	7.4	6.8	2.5	3	R35/R50
3547	E	E	25-1/4	42-7/8	7.5	8.6	8.0	2.5	3	R30/R50
3553	E	E	25-1/4	48-7/8	8.6	9.9	9.2	2.5	3	R25/R50
3559	E	E	25-1/4	54-7/8	9.6	11.1	10.4	3	3	R25/R50
3565	E	E	25-1/4	60-7/8	10.7	12.3	11.6	3	3	R30/R50
3571	E	E	25-1/4	66-7/8	11.7	13.5	12.8	3	3	R25/R50
3573	E	E	25-1/4	68-7/8	12.1	13.9	13.2	3	4	R25/R50



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.
- E2 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
- E3 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

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 Applicable

(T) = Tempered glass due to aspect ration.

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

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



CASEMENT

DESIGN DATA

Aluminum-Clad Wood



FIXED UNITS

Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
		Annealed	Tempered	
4135	6.8	2.5	3.0	CW35/CW50
4141	8.3	2.5	3.0	CW30/CW50
4147	9.7	2.5	3.0	R25/CW50
4153	11.1	3.0	3.0	CW35/CW50
4159	12.6	3.0	3.0	CW30/CW50
4165	14.0	3.0	3.0	CW30/CW50
4171	15.5	3.0	3.0	R25/CW50
4173	15.9	3.0	3.0	R25/CW50
4735	8.0	2.5	3.0	CW30/CW50
4741	9.7	2.5	3.0	R25/CW50
4747	11.4	3.0	3.0	CW35/CW50
4753	13.1	3.0	3.0	CW30/CW50
4759	14.8	3.0	3.0	R25/CW50
4765	16.5	3.0	3.0	R25/CW50
4771	18.1	4.0	4.0	CW30/CW50
4773	18.7	4.0	4.0	CW30/CW50
5335	9.2	2.5	3.0	R25/CW50
5341	11.1	3.0	3.0	CW35/CW50
5347	13.1	3.0	3.0	CW30/CW50
5353	15.0	3.0	4.0	R25/CW50
5359	17.0	3.0	4.0	R25/CW50
5365	18.9	4.0	4.0	CW30/CW50
5371	20.8	4.0	4.0	CW30/CW50
5373	21.5	4.0	4.0	CW30/CW50
5935	10.4	3.0	3.0	R25/CW50
5941	12.6	3.0	3.0	CW30/CW50
5947	14.8	3.0	3.0	R25/CW50
5953	17.0	3.0	4.0	R25/CW50
5959	19.1	4.0	4.0	CW30/CW50
5965	21.3	4.0	4.0	CW30/CW50
5971	23.5	4.0	4.0	R25/CW50
5973	24.2	4.0	4.0	R25/CW50

TRANSOM UNITS

Unit	Clear Opening (Inches)			Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
	Width	Height	Ft ²			Annealed	Tempered	
1717	7-1/4	12-7/8	0.6	1.0	0.8	2.5	3	R50
1725F	–	–	–	–	1.3	2.5	3	R50
2117F	–	–	–	–	1.1	2.5	3	R50
2121	11-1/4	16-7/8	1.3	1.8	1.5	2.5	3	R50
2125F	–	–	–	–	1.9	2.5	3	R50
2317F	–	–	–	–	1.2	2.5	3	R50
2323	13-1/4	18-7/8	1.7	2.2	1.9	2.5	3	R50
2325F	–	–	–	–	2.1	2.5	3	R50
2517F	–	–	–	–	1.3	2.5	3	R50
2525	15-1/4	20-7/8	2.2	2.8	2.4	2.5	3	R50
2917F	–	–	–	–	1.6	2.5	3	R50
2925F	–	–	–	–	2.9	2.5	3	R50
2929	19-1/4	24-7/8	3.3	4.0	3.5	2.5	3	R50
3217F	–	–	–	–	1.9	2.5	3	R50
3225F	–	–	–	–	3.3	2.5	3	R50
3517F	–	–	–	–	2.1	2.5	3	R50
3525F	–	–	–	–	3.7	2.5	3	R50

(-) = Not Applicable

F = Fixed Only

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



CASEMENT

MISCELLANEOUS FORMULAS

Aluminum-Clad Wood



Miscellaneous Formulas

VISIBLE GLASS

Width = Frame - 6-1/2"
Height = Frame - 6-1/2"

ACTUAL GLASS *

Width = Frame - 5-1/2"
Height = Frame - 5-1/2"

CLEAR OPENING HEIGHT **

Frame Height - 4-1/8"

CLEAR OPENING WIDTH **

Hinge	Frame Width	Formula
Standard	FW ≥ 29" and ≤ 30-1/2"	FW - 9"
Standard	FW > 30-1/2"	FW - 9-3/4"
Side Pivot	FW ≥ 25" and < 35"	FW - 4-3/8"

Shade Handing Guide

	UNIT TYPE	SHADE OPERATOR LOCATION FROM EXTERIOR	INTERIOR HINGED GLASS STYLE
FRAME HEIGHT > 29"	Right-Hand Vent	Right	Side Hinge
	Left-Hand Vent	Left	Side Hinge
	Fixed	Left	Side Hinge
	Large Fixed	Left	Side Hinge
FRAME HEIGHT ≤ 29"	Right-Hand Vent	Right	Bottom Hinge
	Left-Hand Vent	Left	Bottom Hinge
	Fixed	Left	Bottom Hinge

* Actual glass of exterior light. Interior Hinged Glass Panel is 9/16" smaller.
Keep frame dimensions to the nearest 1/4" increment.
Frame width cannot exceed frame height on special size vent units.

** 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.



CASEMENT

DETAILED PRODUCT DESCRIPTIONS

Aluminum-Clad Wood



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.
- Exterior surfaces are clad with aluminum.
- Overall frame depth is 5" (127mm) for a wall depth of 3-11/16" (94mm).
- Optional factory-applied jamb extensions available between 4-9/16" (116mm) and 6-9/16" (167mm) wall depths.
- 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.
- Exterior surfaces are clad with aluminum, lap-jointed and sealed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 2-3/16" (55mm).

WEATHERSTRIPPING

- Dual weatherstripping.
 - Flexible santoprene material compressed between frame and sash for positive seal on all four sides.
 - Secondary thermoplastic vulcanizate (TPV) leaf-type weatherstrip between edge of sash and frame.

GLAZING SYSTEM

- Quality float glass complying with ASTM C 1036.
- Triple-Pane Glazing
 - Exterior dual-seal insulating glass, silicone-glazed, [[annealed / heat strengthened] [tempered]] [[clear] [[Advanced] [SunDefense™] [AdvancedComfort] [NaturalSun] Low-E coated, with argon] [[bronze] [gray] [green] [non-impact laminated] Advanced Low-E coated, with argon]].
 - High altitude glazing available.
 - Interior hinged glass panel set in veneer covered aluminum frame, fitted to sash with continuous gasket seal, [[annealed] [tempered]] [[clear] [obscure]].
 - Airspace is 1-3/32".

EXTERIOR

- Aluminum clad exteriors shall be finished with EnduraClad® protective finish, in a multi-step, baked-on finish.
- Color is [White] [Tan] [Brown] [Putty] [feature₁] [custom₁].
- or -
- Aluminum clad exteriors shall be finished with EnduraClad Plus protective finish with 70% fluoropolymer resin in a multi-step, baked-on finish.
- Color shall be [White] [Tan] [Brown] [Putty] [feature₁] [custom₁].

INTERIOR

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [factory prefinished [White] [Linen White] [Bright White] [stain₁]].

HARDWARE

- Roto operator assembly
 - Steel worm gear sash operator with hardened gears.
 - Operator base is zinc die cast with painted finish.
 - Operator linkage, hinge slide, and hinge arms are stainless steel.
 - Exposed fasteners are stainless steel.
 - Hardware shall exceed 1,000 hours salt spray exposure per ASTM B 117.
- Finish of integrated fold-away crank is [[baked enamel [Champagne] [White] [Brown]] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze].
- SureLock® System—A single handle locking system operates positive-acting arms that reach out and pull the sash into a locked position: one unison operating lock installed on units with frame height 29" and smaller, installed on units with frame height greater than 29".
- Lock handle finish is [[baked enamel [Champagne] [White] [Brown]] [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze].

OPTIONAL PRODUCTS

Grilles

- Removable Between-Glass Grilles
 - 3/4" profile with [Traditional] [Prairie] [Cross] [Top Row] [New England] patterns that are a contoured aluminum grille installed on the edge of the hinged glass panel.
 - Interior [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain₁]].
 - Exterior finish will match exterior color cladding.

Screens

- InView™ Screens
 - Vinyl-coated 18/18 mesh fiberglass screen cloth complying with SMA 1201, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
- or -
- Vivid View® Screens
 - PVDF 21/17 mesh, minimum 78 percent light transmissive screen, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
- or -

Rolscreen® Retractable Screens

- Self-storing, rolling, black vinyl-coated 18/16 mesh fiberglass screen cloth complying with ASTM D 3656 and SMA 1201 mounted behind overhead cover.
- Cover finish is [factory prefinished paint] [pine veneer wrapped over extruded aluminum with factory prefinished [stain₁] [paint₁]].
- Guides are aluminum extrusion with [pine veneer wrapped over extruded aluminum with factory prefinished [stain₁] [paint₁]].

Window Fashions

- Slimshade® Blinds₁
 - 15mm aluminum slat [tilt-only] [bottom-up] blinds with polyester cord ladder.
 - Installed on the hinged glass panel and controlled by a built-in cordless operating mechanism.
- or -
- Cellular Fabric Shades₁
 - Spun bond Polyethylene Terephthalate (PET) cellular fabric, 1 1/16" in width, hidden polyester cord [bottom-up] [top-down].
 - Installed on the hinged glass panel and controlled by a built-in cordless operating mechanism.

Hardware

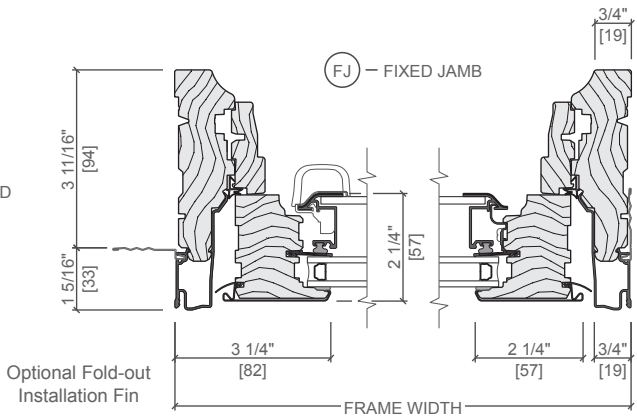
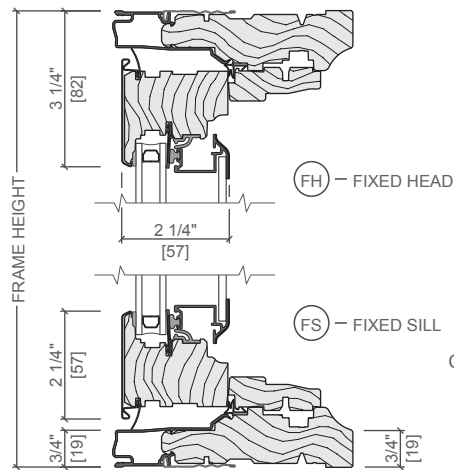
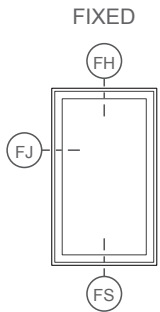
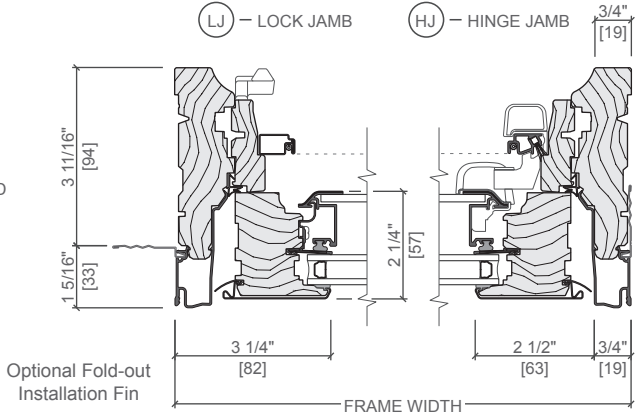
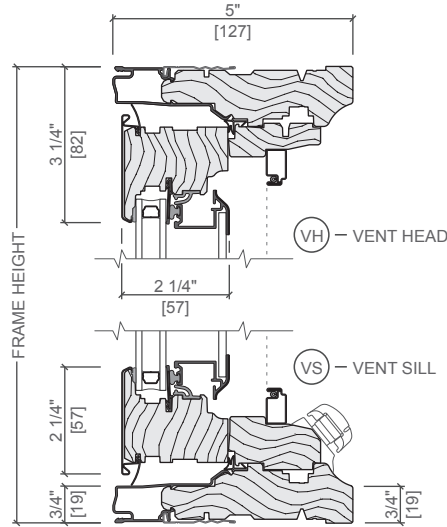
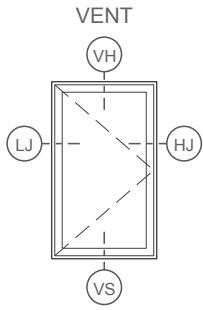
- Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.
- Optional window opening control device available for field installation. Device allows window to open less than 4" with normal operation, with a release mechanism that allows the sash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

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

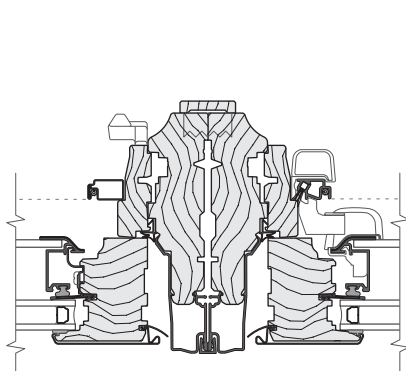


CASEMENT

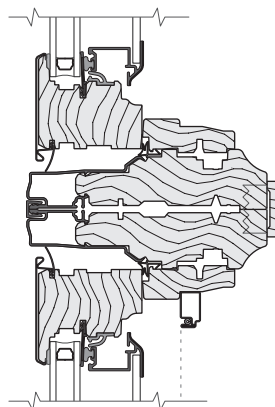
UNIT SECTIONS
Aluminum-Clad Wood
Triple-Pane Glazing



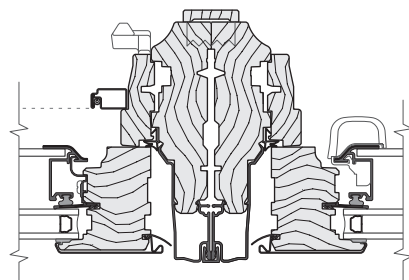
TYPICAL JOINING MULLIONS



VERTICAL JOINING MULLION
VENT / VENT



HORIZONTAL JOINING MULLION
TRANSOM / VENT



VERTICAL JOINING MULLION
VENT / FIXED

Scale 3" = 1' 0"

All dimensions are approximate.

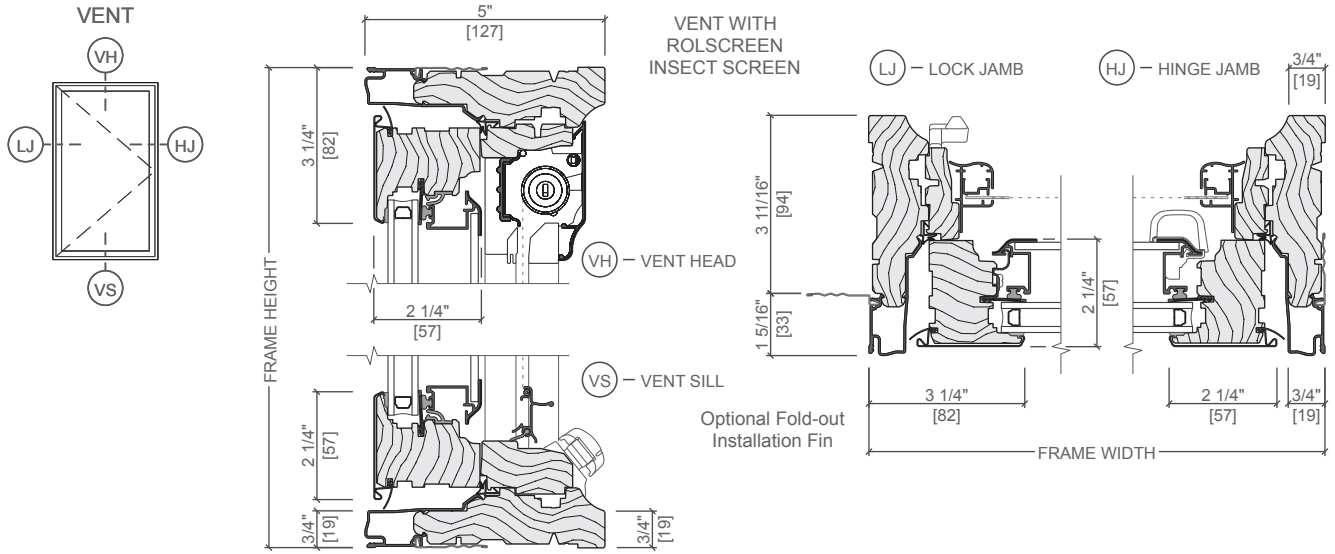
See Installation and Performance at www.PellaADM.com for mullion limitations and reinforcing requirements.



CASEMENT

UNIT SECTIONS

Aluminum-Clad Wood
 Rolscreen Retractable Screen



Scale 3" = 1' 0"

All dimensions are approximate.

See Installation and Performance at www.PellaADM.com for mullion limitations and reinforcing requirements.



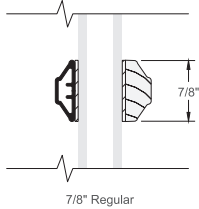
CASEMENT

GRILLE TYPES

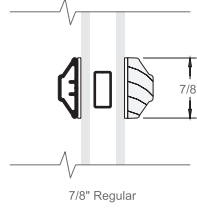


Grille Profiles

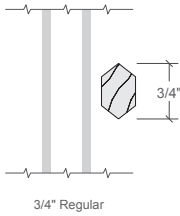
Simulated-Divided-Light Grilles



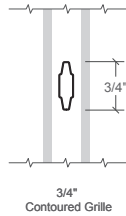
Simulated-Divided-Light Grilles with optional spacer



Removable Interior Pine Grilles

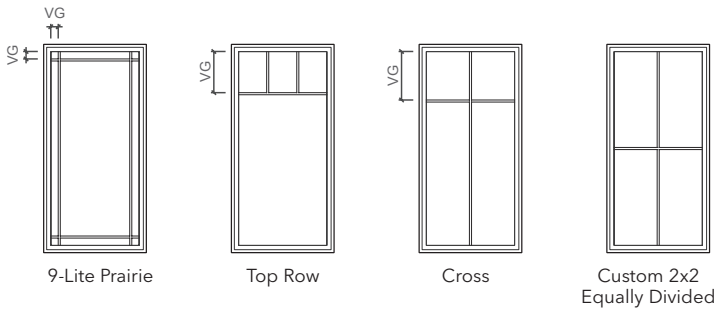


Grilles-Between-the-Glass



Grille Patterns

Grilles-Between-the-Glass and Simulated-Divided-Light Grilles



Prairie

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

Cross

- Available for units with frame heights $\geq 35"$.
- Standard visible glass to separator bar = 1/4 of total visible glass height.

Top Row

- Standard visible glass to separator bar = 12" for a frame height equal to 35".
- Standard visible glass to separator bar = 12" or 14" for a frame height equal to 41".
- Standard visible glass to separator bar = 12", 14" or 16" for frame heights greater than 41".

For traditional patterns, see size tables.

VG = Visible Glass

(1) Grilles are available in traditional patterns only.

Lite dimensions noted can vary.

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



CASEMENT

SIZE TABLES

Aluminum-Clad Wood



Transoms

Opening	1' 5 3/4"	1' 9 3/4"	1' 11 3/4"	2' 1 3/4"	2' 5 3/4"	2' 8 3/4"	2' 11 3/4"
	(451) (432)	(552) (533)	(603) (584)	(654) (635)	(756) (737)	(832) (813)	(908) (889)
Frame	1' 5"	1' 9"	1' 11"	2' 1"	2' 5"	2' 8"	2' 11"
1' 2"	1714	2114	2314	2514	2914	3214	3514
1' 5"	1717	2117	2317	2517	2917	3217	3517
1' 9"		2121					
1' 11"			2323				
2' 1"	1725	2125	2325	2525	2925	3225	3525
2' 5"					2929		

Fixed Units

Opening	3' 5 3/4"	3' 11 3/4"	4' 5 3/4"	4' 11 3/4"
	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)
Frame	3' 5"	3' 11"	4' 5"	4' 11"
3' 5"	4141	4741	5341	5941
3' 11"	4147	4747	5347	5947
4' 5"	4153	4753	5353	5953
4' 11"	4159	4759	5359	5959
5' 5"	4165	4765	5365	5965
5' 11"	4171	4771	5371	5971

Vent and Fixed Units

Opening	2' 11 3/4"	3' 5 3/4"	3' 11 3/4"	4' 5 3/4"	4' 11 3/4"	5' 5 3/4"	5' 11 3/4"
	(908) (889)	(1 060) (1 041)	(1 213) (1 194)	(1 365) (1 346)	(1 518) (1 499)	(1 670) (1 651)	(1 822) (1 803)
Frame	2' 11"	3' 5"	3' 11"	4' 5"	4' 11"	5' 5"	5' 11"
2' 11"	1735	2135	2335	2535	2935	3235	3535
3' 5"	1741	2141	2341	2541	2941	3241	3541
3' 11"	1747	2147	2347	2547	2947	3247	3547
4' 5"	1753	2153	2353	2553	2953	3253	3553
4' 11"	1759	2159	2359	2559	2959	3259	3559
5' 5"	1765	2165	2365	2565	2965	3265	3565
5' 11"	1771	2171	2371	2571	2971	3271	3571

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.

E2 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E3 = With optional side pivot hardware, 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.

Not to scale.

Ⓜ Fixed units only.

Ⓜ Tempered glass is standard.

Traditional grille patterns shown. Refer to Clad/Wood Overview Section for additional patterns and profiles.



CASEMENT

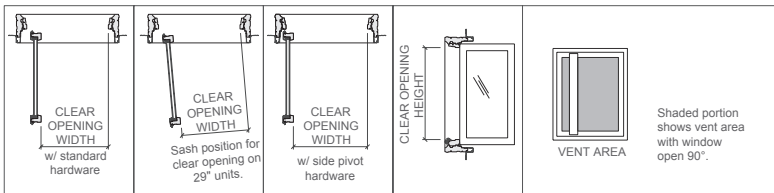
DESIGN DATA

Aluminum-Clad Wood



VENT AND FIXED UNITS

Unit	Egress	Clear Opening(Inches)			Vent Area Ft²	Visible Glass Ft²	Standard Glass Thickness (mm)				Performance Class & Grade ¹	
		Width	Height	Ft²			Vent		Fixed		Vent	Fixed
							Annealed	Tempered	Annealed	Tempered		
1735		7-1/4	30-7/8	1.6	2.5	2.5	3	3	3	R50	R50	
1741		7-1/4	36-7/8	1.9	2.9	3.0	2.5	3	3	R50	R50	
1747		7-1/4	42-7/8	2.2	3.4	3.5	2.5	3	3	R50	R50	
1753		7-1/4	48-7/8	2.5	3.9	4.0	2.5	3	3	R50	R50	
1759		7-1/4	54-7/8	2.8	4.4	4.5	2.5	3	3	R50	R50	
1765		7-1/4	60-7/8	3.1	4.9	5.0	2.5	3	3	R50	R50	
1771T		7-1/4	66-7/8	3.4	5.3	5.5	-	3	3	R50	R50	
2135		11-1/4	30-7/8	2.4	3.3	3.4	2.5	3	2.5(2)	R50	R50	
2141		11-1/4	36-7/8	2.9	4.0	4.0	2.5	3	2.5(2)	R50	R50	
2147		11-1/4	42-7/8	3.3	4.6	4.7	2.5	3	2.5(2)	R50	R50	
2153		11-1/4	48-7/8	3.8	5.3	5.4	2.5	3	2.5(2)	R50	R50	
2159		11-1/4	54-7/8	4.3	5.9	6.0	2.5	3	2.5(2)	R45/R50TR	R50	
2165		11-1/4	60-7/8	4.8	6.6	6.7	2.5	3	3	R45/R50TR	R50	
2171		11-1/4	66-7/8	5.2	7.2	7.4	2.5	3	3	R40/R50TR	R50	
2335		13-1/4	30-7/8	2.8	3.8	3.8	2.5	3	2.5(2)	R50	R50	
2341		13-1/4	36-7/8	3.4	4.5	4.5	2.5	3	2.5(2)	R50	R50	
2347		13-1/4	42-7/8	3.9	5.2	5.3	2.5	3	2.5(2)	R50	R50	
2353		13-1/4	48-7/8	4.5	5.9	6.0	2.5	3	2.5(2)	R50	R50	
2359		13-1/4	54-7/8	5.0	6.7	6.8	2.5	3	2.5(2)	R45/R50TR	R50	
2365		13-1/4	60-7/8	5.6	7.4	7.5	2.5	3	3	R40/R50TR	R50	
2371		13-1/4	66-7/8	6.2	8.1	8.3	2.5	3	3	R30/R50TR3	R50	
2535		15-1/4	30-7/8	3.3	4.2	4.2	2.5	3	2.5(2)	R50	R50	
2541	E3	20-5/8	36-7/8	3.9	5.0	5.0	2.5	3	2.5(2)	R50	R50	
2547	E2	20-5/8	42-7/8	4.5	5.8	5.9	2.5	3	2.5(2)	R50	R50	
2553	E2	20-5/8	48-7/8	5.2	6.6	6.7	2.5	3	2.5(2)	R50	R50	
2559	E2	20-5/8	54-7/8	5.8	7.4	7.5	2.5	3	2.5(2)	R45/R50TR	R50	
2565	E2	20-5/8	60-7/8	6.4	8.2	8.4	2.5	3	2.5(2)	R40/R50TR	R50	
2571	E2	20-5/8	66-7/8	7.1	9.1	9.2	3	3	3	R30/R50TR3	R50	
2935	E3	24-5/8	30-7/8	5.3	5.0	5.0	2.5	3	2.5(2)	R50	R50	
2941	E2	24-5/8	36-7/8	6.3	6.0	6.0	2.5	3	2.5(2)	R50	R50	
2941	E1	20	36-7/8	5.1	6.0	6.0	2.5	3	2.5(2)	R50	R50	
2947	E	20	42-7/8	6.0	7.0	7.0	2.5	3	2.5(2)	R50	R50	
2953	E	20	48-7/8	6.8	8.0	8.0	2.5	3	2.5(2)	R50	R50	
2959	E	20	54-7/8	7.6	9.0	9.0	2.5	3	2.5(2)	R45/R50TR	R50	
2965	E	20	60-7/8	8.5	9.9	10.0	2.5	3	2.5(2)	R30/R50TR3	R50	
2971	E	20	66-7/8	9.3	10.9	11.1	3	3	3	R30/R50TR3	R45/R50TR	
3235	E2	27-5/8	30-7/8	5.9	6.1	5.7	2.5	3	2.5(2)	R50	R50	
3241	E2	27-5/8	36-7/8	7.1	7.3	6.8	2.5	3	2.5(2)	R50	R50	
3247	E	22-1/4	42-7/8	6.6	7.9	7.9	2.5	3	2.5(2)	R50	R50	
3253	E	22-1/4	48-7/8	7.5	9.0	9.0	2.5	3	2.5(2)	R50	R50	
3259	E	22-1/4	54-7/8	8.4	10.1	10.2	2.5	3	2.5(2)	R45/R50TR	R50	
3265	E	22-1/4	60-7/8	9.4	11.2	11.3	3	3	3	R30/R50TR3	R50	
3271	E	22-1/4	66-7/8	10.3	12.3	12.4	3	3	3	R30/R50TR3	R45/R50TR	
3535	E1	25-1/4	30-7/8	5.4	6.3	6.3	2.5	3	2.5(2)	R50	R50	
3541	E	25-1/4	36-7/8	6.5	7.6	7.5	2.5	3	2.5(2)	R50	R50	
3547	E	25-1/4	42-7/8	7.5	8.8	8.8	2.5	3	2.5(2)	R50	R50	
3553	E	25-1/4	48-7/8	8.6	10.0	10.0	2.5	3	2.5(2)	R45/R50TR	R50	
3559	E	25-1/4	54-7/8	9.6	11.2	11.3	3	3	3	R30/R50TR3	R50	
3565	E	25-1/4	60-7/8	10.7	12.5	12.6	3	3	3	R30/R50TR3	R50	
3571	E	25-1/4	66-7/8	11.7	13.7	13.8	3	3	3	R30/R50TR3	R45/R50TR	



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.
- E2 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
- E3 = With optional side pivot hardware, window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

(-) = Not Applicable

TR = Second number shown requires tempered glass.

TR3 = Second number shown requires tempered glass and DP Kit.

T = Tempered required due to aspect ratio.

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

(2) Glass thickness shown for Advanced Low-E. Other Low-E types and clear use 3mm glass

Refer to the Product Performance section at PellaADM.com for more information.



CASEMENT

DESIGN DATA

Aluminum-Clad Wood



FIXED UNITS

Unit	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
		Annealed	Tempered	
4141	9.0	3	3	R50
4147	10.5	3	3	R50
4153	12.0	3	3	R50
4159	13.6	3	3	R50
4165	15.1	3	3	R50
4171	16.6	3	3	R45/R50TR
4741	10.5	3	3	R50
4747	12.3	3	3	R50
4753	14.1	3	3	R50
4759	15.8	3	3	R45/R50TR
4765	17.6	3	3	R45/R50TR
4771	19.3	4	4	R50
5341	12.0	3	3	R50
5347	14.1	3	3	R50
5353	16.1	4	4	R45/R50TR
5359	18.1	4	4	R50
5365	20.1	4	4	R50
5371	22.1	4	4	R50
5941	13.6	3	3	R50
5947	15.8	3	3	R45/R50TR
5953	18.1	4	4	R50
5959	20.3	4	4	R50
5965	22.6	4	4	R50
5971	24.8	4	4	R45/R50TR

TRANSOM UNITS

Unit	Clear Opening (Inches)			Vent Area Ft ²	Visible Glass Ft ²	Standard Glass Thickness (mm)		Performance Class & Grade ¹
	Width	Height	Ft ²			Annealed	Tempered	
1714F	–	–	–	–	0.8	3	3	R50
1717	7-1/4	12-7/8	0.6	1.1	1.0	3	3	R50
1725F	–	–	–	–	1.7	3	3	R50
2114F	–	–	–	–	1.0	3	3	R50
2117F	–	–	–	–	1.3	3	3	R50
2121	11-1/4	16-7/8	1.3	2.0	1.8	3	3	R50
2125F	–	–	–	–	2.2	3	3	R50
2314F	–	–	–	–	1.1	3	3	R50
2317F	–	–	–	–	1.5	3	3	R50
2323	13-1/4	18-7/8	1.7	2.4	2.3	3	3	R50
2325F	–	–	–	–	2.5	3	3	R50
2514F	–	–	–	–	1.3	3	3	R50
2517F	–	–	–	–	1.7	3	3	R50
2525	15-1/4	20-7/8	2.2	3.0	2.8	3	3	R50
2914F	–	–	–	–	1.5	3	3	R50
2917F	–	–	–	–	2.0	3	3	R50
2925F	–	–	–	–	3.4	3	3	R50
2929	20-1/4	24-7/8	3.3	4.3	4.0	3	3	R50
3214F	–	–	–	–	1.7	3	3	R50
3217F	–	–	–	–	2.3	3	3	R50
3225F	–	–	–	–	3.8	3	3	R50
3514F	–	–	–	–	1.9	3	3	R50
3517F	–	–	–	–	2.5	3	3	R50
3525F	–	–	–	–	4.2	2.5(2)	3	R50

CLEAR OPENING HEIGHT

Frame Height - 4-1/8"

CLEAR OPENING WIDTH

Hinge	Frame Width	Formula
Standard	FW ≥ 29" and ≤ 30-1/2"	FW - 9"
Standard	FW > 30-1/2"	FW - 9-3/4"
Side Pivot	FW ≥ 25" and < 35"	FW - 4-3/8"

Miscellaneous Formulas

VISIBLE GLASS	Width = Frame - 4-15/16" Height = Frame - 4-15/16"
ACTUAL GLASS	Width = Frame - 4" Height = Frame - 4"

Special Size Frame Dimensions*

	MINIMUM	MAXIMUM
VENT	1'5" W x 1'5" H (432 x 432)	2'11" W x 5' 11" H (889 x 1 803)
FIXED	1'5" W x 1'5" H (432 x 432)	4'11" W x 5'11" H (1499 x 1 803)

* Available within size range shown.
Keep frame dimensions to the nearest 1/4" increment.
Frame width cannot exceed frame height on special size vent units.

(-) = Not Applicable

F = Fixed units only.

TR = Second number shown requires tempered glass.

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

(2) Glass thickness shown for Advanced Low-E. Other Low-E types and clear use 3mm glass

Refer to the Product Performance section at PellaADM.com for more information.



CASEMENT

DETAILED PRODUCT DESCRIPTIONS

Aluminum-Clad Wood



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.
- Exterior surfaces are clad with aluminum.
- Overall frame depth is 5" (127mm) for a wall depth of 3-11/16" (94mm).
- Optional factory-applied jamb extensions available.
- 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.
- Exterior surfaces are clad with aluminum, lap-jointed and sealed.
- Corners mortised and tenoned, glued and secured with metal fasteners.
- Sash thickness is 1-3/4" (45mm).

WEATHERSTRIPPING

- Vent units use Dual weatherstripping.
 - Flexible santoprene material compressed between frame and sash for positive seal on all four sides.
 - Secondary thermoplastic vulcanizate (TPV) leaf-type weatherstrip between edge of sash and frame on the vertical sides and bottom, and Santoprene® bulb-type weatherstrip between the edge of sash and frame on the top.
- Fixed units use a Flexible EPDM material compressed between frame and sash for positive seal on all four sides.

GLAZING SYSTEM

- Quality float glass complying with ASTM C 1036.
 - Silicone-glazed 11/16" [obscure 1] dual-seal insulating glass [[annealed] [tempered]] [Advanced] [SunDefense™] [AdvancedComfort] [NaturalSun] Low-E coated, with argon .
 - High altitude glazing available.

EXTERIOR

- Aluminum clad exteriors shall be finished with EnduraClad® protective finish, in a multi-step, baked-on finish.
- Color is [Standard: [White] [Tan] [Brown] [Putty]] [Feature: [Poplar White] [Hartford Green] [Black] [Brick Red] [Morning Sky Gray (Spring 2015)] [Portobello (Spring 2015)]]].

INTERIOR

- [Unfinished, ready for site finishing] [factory primed with one coat acrylic latex] [factory prefinished [White] [Linen White] [Bright White] [stain 3]].

HARDWARE

- Roto operator assembly
 - Steel worm gear sash operator with hardened gears.
 - Operator base is zinc die cast with painted finish.
 - Operator linkage, hinge slide, and hinge arms are stainless steel.
 - Exposed fasteners are stainless steel.
 - Hardware will exceed 1,000 hours salt spray exposure per ASTM B 117.
- Finish of operator crank is [[baked enamel [Champagne, for unfinished prime units] [White, for prefinished White units] [Brown]]. Operator crank also available in optional [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze]. All vent units are available with left- or right-hand hinging.
- SureLock® System—A single handle locking system operates positive-acting arms that reach out and pull the sash into a locked position: one unison operating lock installed on units with frame height 29" and smaller, two installed on units with frame height greater than 29".
- Lock handle finish is [[baked enamel [Champagne, for unfinished prime units] [White, for prefinished White units] [Brown]]. Lock handle also available in optional [Bright Brass] [Satin Nickel] [Oil-Rubbed Bronze].

OPTIONAL PRODUCTS

Grilles

- Removable Grilles
 - 3/4" Traditional removable solid wood grilles steel-pinned at joints and fitted to sash with steel clips and tacks.
 - Interior [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain 1]].
 - Exterior [unfinished, ready for site finishing] [Factory Primed] [factory prefinished, finish color matched to exterior cladding].
 - or -
- Grilles-Between-the-Glass 1
 - Insulating glass contains 3/4" contoured aluminum grilles permanently installed between two panes of glass.
 - Patterns are [Traditional] [9-Lite Prairie] [Cross] [Top Row] [Custom - Equally Divided].
 - Interior color is [White] [Tan2] [Brown2] [Putty2] [Ivory] [Brickstone] [Harvest] [Cordovan].
 - Exterior grilles match the exterior cladding color4.
 - or -
- Simulated Divided Light [with spacer]
 - Grilles permanently bonded to the interior and exterior of glass.
 - Interior grilles are [unfinished, ready for site finishing] [factory primed] [pine: factory prefinished [White] [Linen White] [Bright White] [stain 3]].
 - Patterns are [Traditional] [9-Lite Prairie] [Cross] [Top Row] [Custom - Equally Divided].
 - Exterior grilles match the exterior cladding color.

Screens

- InView™ screens
 - Vinyl-coated 18/18 mesh fiberglass screen cloth complying with SMA 1201, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel, [Champagne] [White] [Brown].
 - or -
- Vivid View® screens
 - PVDF 21/17 mesh, minimum 78 percent light transmissive screen, set in aluminum frame fitted to inside of window, supplied complete with all necessary hardware.
 - Screen frame finish is baked enamel [Champagne] [White] [Brown].

Hardware

- Optional factory applied limited opening hardware available for vent units in stainless steel; nominal 3" opening.
- Optional window opening control device available for field installation. 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.

(1) Available on units glazed with Low-E insulated glass with argon and obscure insulated glass.

(2) Tan, brown and putty Interior GBG colors are available in single-tone (Brown/Brown, Tan/Tan or Putty/Putty) (Putty mono available spring 2015). Other interior colors are also available with tan or brown exterior.

(3) Contact your local Pella sales representative for current color options.

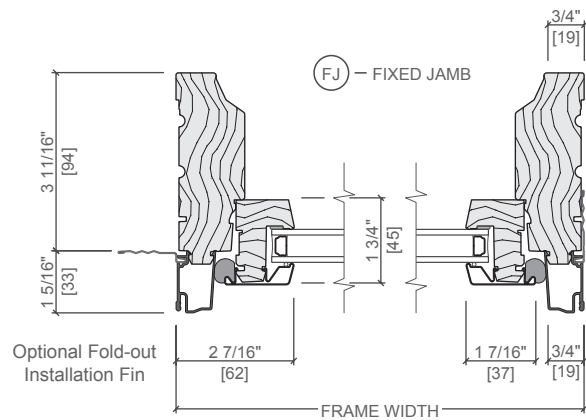
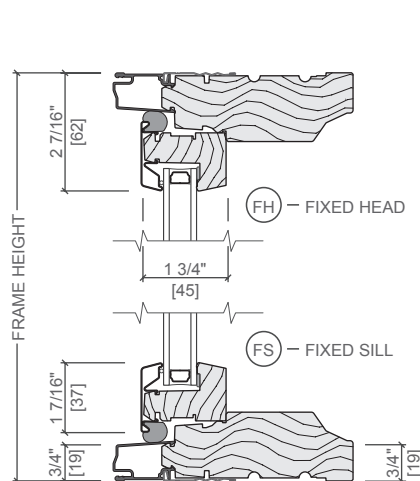
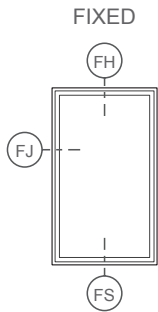
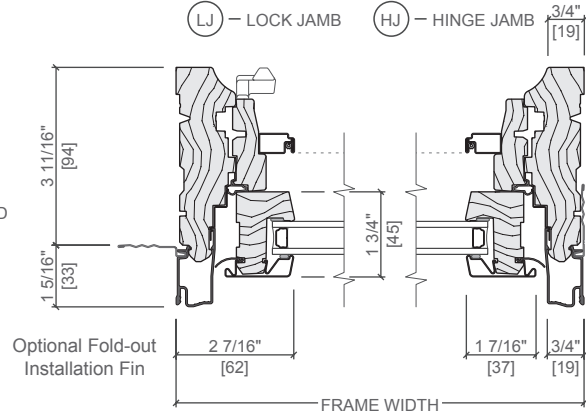
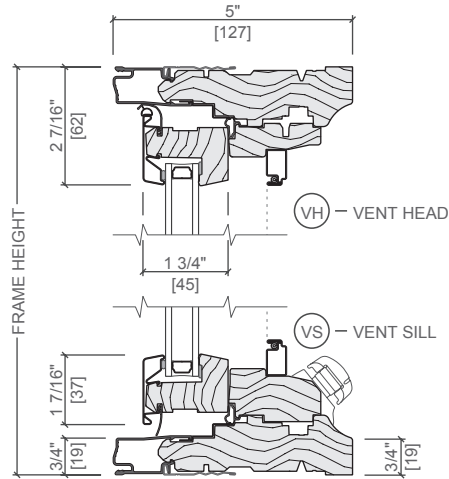
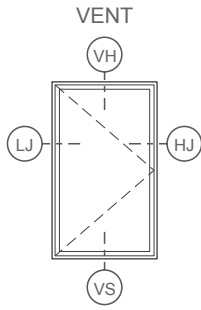
(4) Appearance of exterior grille color will vary depending on Low-E coating on glass.



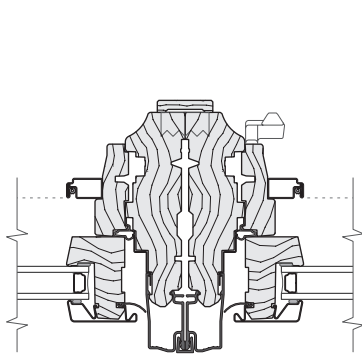
CASEMENT

UNIT SECTIONS

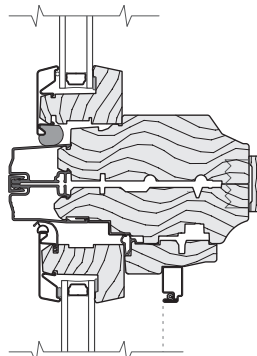
Aluminum-Clad Wood



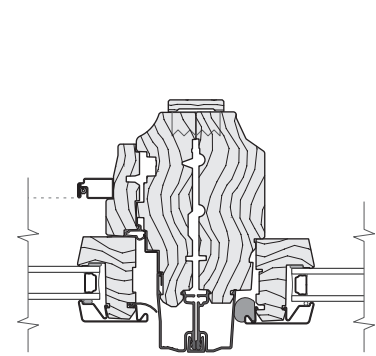
TYPICAL JOINING MULLIONS



VERTICAL JOINING MULLION
VENT / VENT



HORIZONTAL JOINING MULLION
FIXED / VENT



VERTICAL JOINING MULLION
VENT / FIXED

Scale 3" = 1' 0"
 All dimensions are approximate.
 See Installation and Performance at www.PellaADM.com for mullion limitations and reinforcing requirements.