FEATURES

Features

- Easily integrates with 1600 Wall Systems
- Flush grid exterior has a 2-1/2" (63.5) sightline
- Rafter are available in 3-1/8" (79.4), 4-3/4" (120.7) and 6" (152.4) depths
- Accepts 3/16" (4.8) to 1-5/16" (33.3) thick glazing material
- · Silicone Glazed option for purlins is standard
- · Stick system is fully factory fabricated for quality control
- · Corner and Splayed application available
- · Two color option
- Permanodic® anodized finishes option
- Painted finishes in standard and custom choices

Optional Features

- · Heavyweight purlins available
- 8-5/8" (219.1) rafter available for long spans

Product Applications

- Slope Glazing integrated with vertical Curtain Wall
- · Slopes terminating on a parapet wall or curb
- Slopes applied to a grid subframe



KAWNEER

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EC 97911-307

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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1600 Sloped Glazing **INDEX**

Architects - Most extrusion and window types illustrated in this catalog are standard products for Kawneer. These concepts have been expanded and modified to afford you design freedom. Some miscellaneous details are non-standard and are intended to demonstrate how the system can be modified to expand design flexibility. Please contact your Kawneer representative for further assistance.

PICTORIAL VIEW/GENERAL INFORMATION	4
CONSTRUCTION DETAILS	5, 6
SLOPE APPLIED TO STEEL GRID	7
SLOPE APPLIED TO CORNERS	8
STRUCTURAL CHARTS	9-14
THERMAL CHARTS	15-22

Metric (SI) conversion figures are included throughout these details for reference. Numbers in parentheses) are millimeters unless otherwise noted.

The following metric (SI) units are found in these details:

m - meter

cm - centimeter

mm - millimeter

s - second

Pa – pascal

MPa - megapascal



APPLICATION

1600 S.G. is designed to accommodate three primary configurations. 1) Slopes integrated with vertical 1600 Wall. 2) Slopes terminating on a curb or parapet wall, 3) Slopes applied to steel grid or part of a sloped roof. Outside or Inside corners may be adapted to the first two configurations.

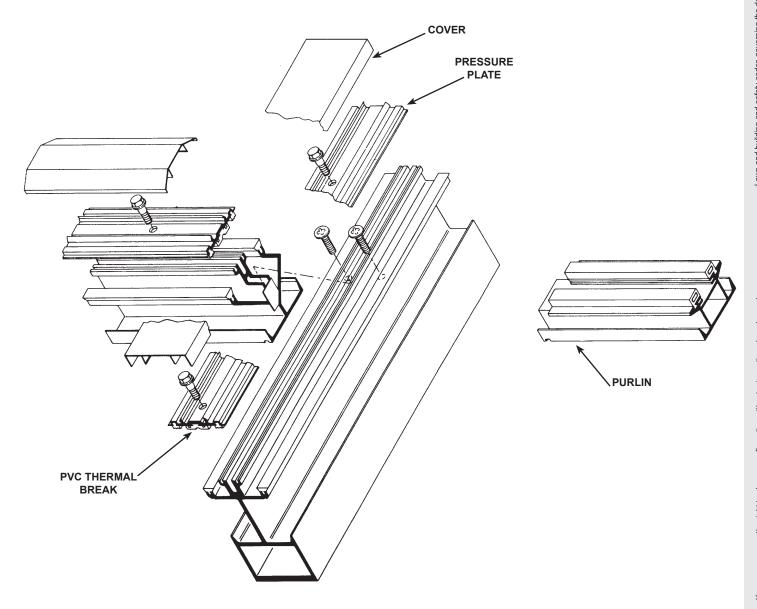
Standard members are shown in this section. Their use will result in the most economic application of the system. Deviations from the standard are possible but should be reviewed with your Kawneer representative.

DEGREE OF SLOPE

Degree of slope is figured from the horizontal plane. Permitted slope angles are 15° to 60° inclusive.

GLAZING

The system is designed to accept infills of 3/16" to 1-5/16", made of either glass or polycarbonate materials. When plexiglass or lexan type glazing is used, manufacturers guidelines for glazing material, and maximum size must be consulted. Other infill thicknesses are possible but must be reviewed with your Kawneer representative.

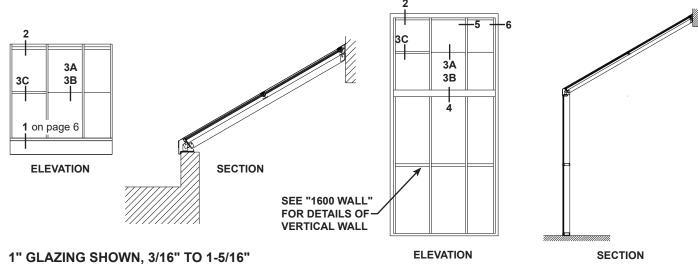




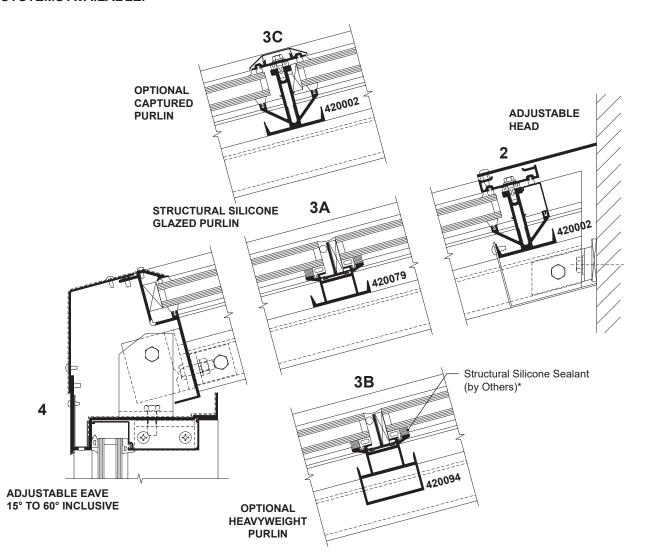
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CONSTRUCTION DETAILS

Additional information and CAD details are available at www.kawneer.com



GLAZING AVAILABLE. 4-3/4" SYSTEM SHOWN, 3-1/8" AND 6" SYSTEMS AVAILABLE.



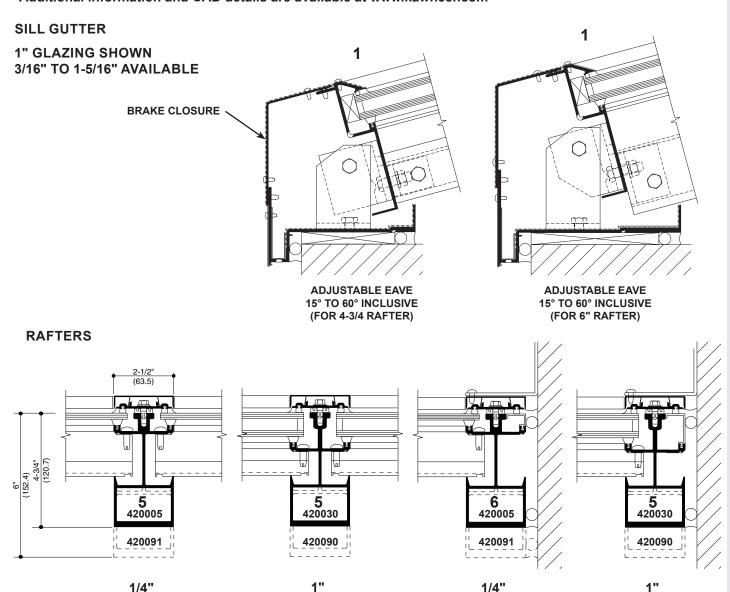
^{*} INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.



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CONSTRUCTION DETAILS

Additional information and CAD details are available at www.kawneer.com



NOTE: Optional 8-5/8" rafter is also available. See structural charts for capabilities.

Structural Silicone Sealant (by Others)* 1/4" 1" PURLINS PURLINS

NOTE: Optional heavyweight purlin for 1" infill (420094) is also available. See structural charts for capabilities.

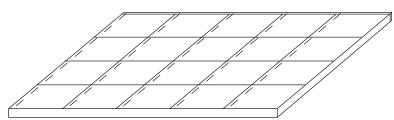
^{*} INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.



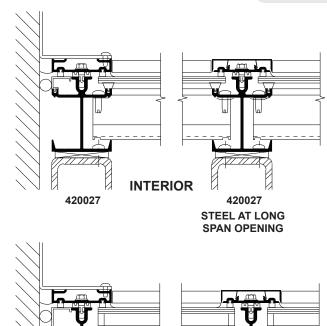
1600 Sloped Glazing

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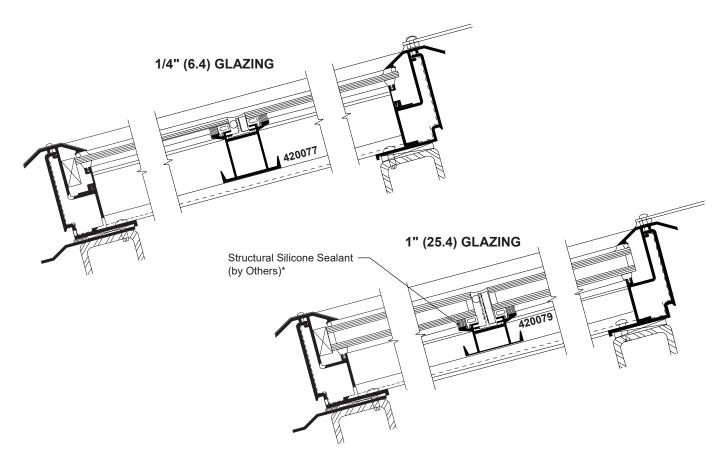
LONG SPAN APPLIED TO STRUCTURAL GRID



INTERIOR

420028

420028



^{*} INSTALLER NOTE: Installer is responsible for all required compatibility review and approvals with the Structural Silicone Manufacturer and the Insulating Glass Unit Manufacturer.

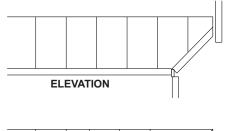


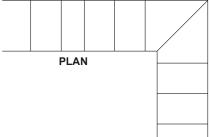
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SLOPE APPLIED TO CORNERS

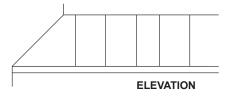
Additional information and CAD details are available at www.kawneer.com

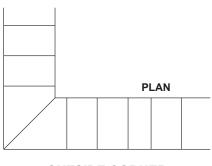
VALLEY RAFTER



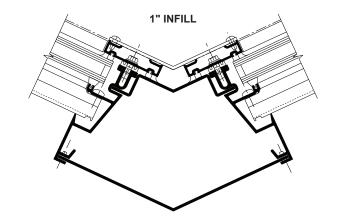


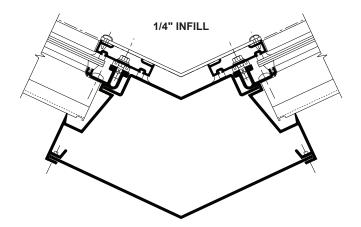
INSIDE CORNER





OUTSIDE CORNER



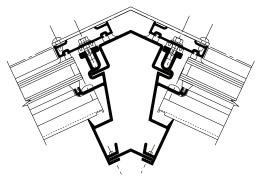


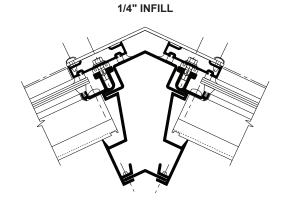
NOTE: ANGLES ARE VARIABLE AND ARE ACCOMPLISHED BY USE OF BRAKE FILLER INSERTS.

NOTE: FOR CONDITIONS NOT SHOWN CONSULT YOUR KAWNEER REPRESENTATIVE.

HIP RAFTER









WIND LOAD CHARTS

Mullions are designed for deflection limitations in accordance with AAMA TIR-A11 of L/175 up to 13' 6" and L/240 +1/4" above 13' 6". These curves are for mullions WITH HORIZONTALS and are based on engineering calculations for stress and deflection. Allowable wind load stress for ALUMINUM 15,152 psi (104 MPa), STEEL 30,000 psi (207 MPa). Charted curves, in all cases are for the limiting value. Wind load charts contained herein are based upon nominal wind load utilized in allowable stress design. A conversion from Load Resistance Factor Design (LRFD) is provided. To convert ultimate wind loads to nominal loads, multiply ultimate wind loads by a factor of 0.6 per ASCE/SEI 7. A 4/3 increase in allowable stress has not been used to develop these curves. For special situations not covered by these curves, contact your Kawneer representative for additional information.

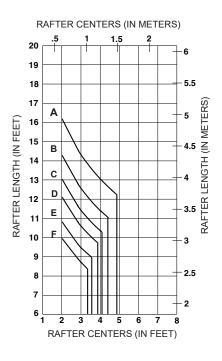


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STRUCTURAL CHARTS

CHARTS ARE FOR RAFTERS WITH S.S.G. PURLINS 1" INFILL

THE INTERSECTION OF RAFTER LENGTH AND RAFTER CENTERS REPRESENTS THE MAXIMUM COMBINED LOAD FOR THE SECTIONS SHOWN ADJACENT TO THE CHARTS. CONSULT A KAWNEER REPRESENTATIVE.



RAFTER CENTERS (IN METERS)

7.5

RAFTER LENGTH (IN METERS)

25

24 23 22

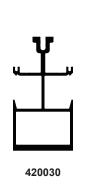
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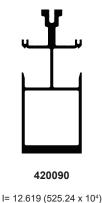
19 18 17

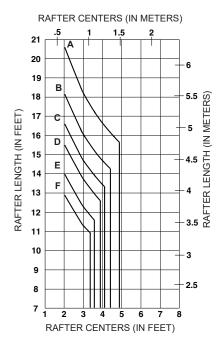
16

15 14

RAFTER LENGTH (IN FEET)







I= 5.811 (241.87 x 10⁴) S= 2.114 (34.64 x 10³)

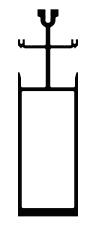


I= 0.232 (9.66 x 104)

S= 0.343 (5.62 x 103)

420079 I= 0.232 (9.66 x 10⁴) S= 0.343 (5.62 x 10³)

 $S = 3.723 (61.01 \times 10^3)$



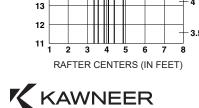
420092

I= 33.319 (1386.83 x 10⁴) S= 7.086 (116.12 x 10³)



I= 0.232 (9.66 x 10⁴) S= 0.343 (5.62 x 10³)

	Allowable Stress	LRFD Ultimate
	Design Load	Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
D =	50 PSF (2400)	83 PSF (4000)
E =	70 PSF (3360)	117 PSF (5600)
F =	90 PSF (4310)	150 PSF (7200)

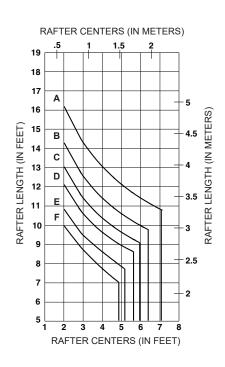


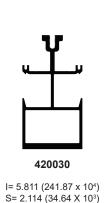
Laws and building and safety codes governing the design and use of Kawneer products, such as glazade afratance, window, and outfain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

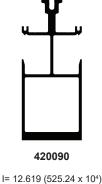
STRUCTURAL CHARTS EC 97911-307

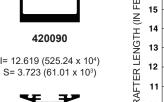
CHARTS ARE FOR RAFTERS WITH S.S.G. PURLINS 1" INFILL

THE INTERSECTION OF RAFTER LENGTH AND RAFTER CENTERS REPRESENTS THE MAXIMUM COMBINED LOAD FOR THE SECTIONS SHOWN ADJACENT TO THE CHARTS. CONSULT A KAWNEER REPRESENTATIVE.









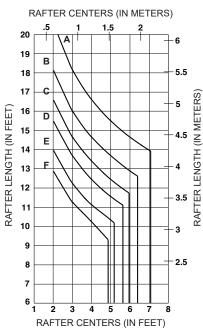


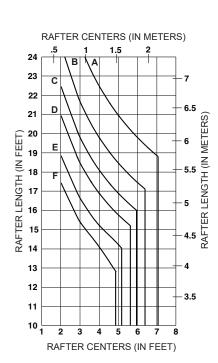
I= 1.040 (43.29 x 10⁴)

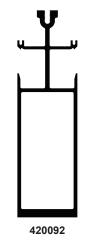
S= 0.817 (13.39 x 10³)











I= 33.319 (1386.83 x 104) S= 7.086 (116.12 x 10³)

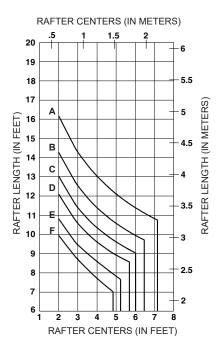


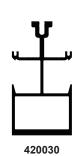
I= 1.040 (43.29 x 104) $S = 0.817 (13.39 \times 10^3)$

	Allowable Stress	LRFD Ultimate
	Design Load	Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
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E =	70 PSF (3360)	117 PSF (5600)
F=	90 PSF (4310)	150 PSF (7200)



THE INTERSECTION OF RAFTER LENGTH AND RAFTER CENTERS REPRESENTS THE MAXIMUM COMBINED LOAD FOR THE SECTIONS SHOWN ADJACENT TO THE CHARTS. CONSULT A KAWNEER REPRESENTATIVE.



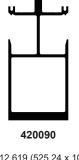


I= 5.811 (241.87 x 10⁴) S= 2.114 (34.64 x 10³)

420002

I= 1.090 (45.37 x 10⁴)

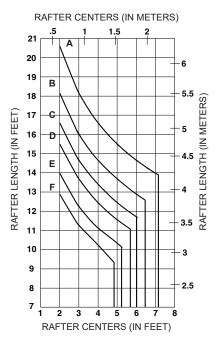
 $S = 0.668 (10.95 \times 10^3)$

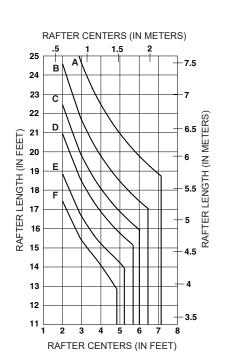


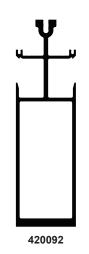
I= 12.619 (525.24 x 104) S= 3.723 (61.01 x 10³)



I= 1.090 (45.37 x 104) $S = 0.668 (10.95 \times 10^3)$







I= 33.319 (1386.83 x 104) S= 7.086 (116.12 x 10³)



I= 1.090 (45.37 x 10⁴) $S = 0.668 (10.95 \times 10^3)$

	Allowable Stress	LRFD Ultimate
	Design Load	Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
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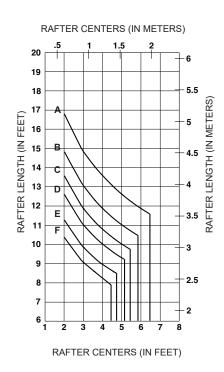
Laws and building and safety codes governing the design and use of Kawneer brodicts, such as glazed entrance, window, and cutain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

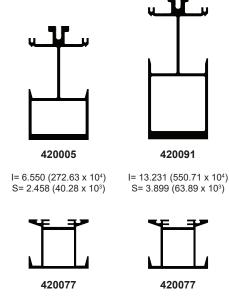
Laws and building and safety codes governing the design and use of Kawneer products, such as glazade afratance, window, and outfain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

EC 97911-307 STRUCTURAL CHARTS

CHARTS ARE FOR RAFTERS WITH S.S.G. PURLINS 1/4" INFILL

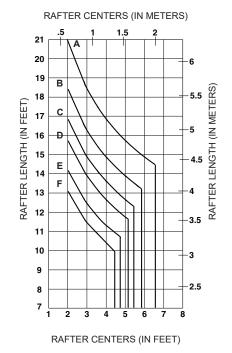
THE INTERSECTION OF RAFTER LENGTH AND RAFTER CENTERS REPRESENTS THE MAXIMUM COMBINED LOAD FOR THE SECTIONS SHOWN ADJACENT TO THE CHARTS. CONSULT A KAWNEER REPRESENTATIVE.

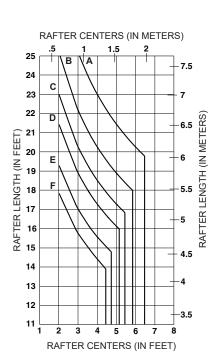


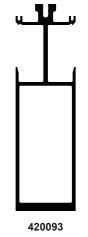


I= 0.729 (30.34 x 104)

 $S = 0.701 (11.49 \times 10^3)$







I= 0.729 (30.34 x 104)

 $S = 0.701 (11.49 \times 10^3)$

I= 35.851 (1492.23 x 10 ⁴)	
S= 7.791 (127.67 x 10 ³)	

7	F -3	-
	420077	

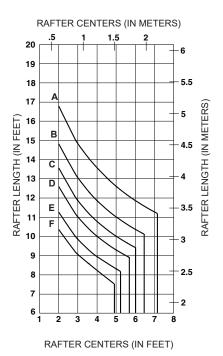
I= 0.729 (30.34 x 10⁴) S= 0.701 (11.49 x 10³)

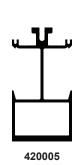
	Allowable Stress	LRFD Ultimate
	Design Load	Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
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D =	50 PSF (2400)	83 PSF (4000)
E =	70 PSF (3360)	117 PSF (5600)
F=	90 PSF (4310)	150 PSF (7200)



STRUCTURAL CHARTS

THE INTERSECTION OF RAFTER LENGTH AND RAFTER CENTERS REPRESENTS THE MAXIMUM COMBINED LOAD FOR THE SECTIONS SHOWN ADJACENT TO THE CHARTS. CONSULT A KAWNEER REPRESENTATIVE.





420091 I= 13.231 (550.71 x 104)

RAFTER CENTERS (IN METERS) 20 -6 19 В 18 RAFTER LENGTH (IN METERS) 17 RAFTER LENGTH (IN FEET 16 15 Е 14 13 12 11 10 -2.5

I= 6.550 (272.63 x 104) S= 2.458 (40.28 x 10³)

420004

I= 1.087 (45.24 x 104)

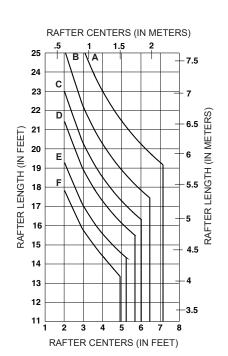
S= 0.792 (12.98 x 103)

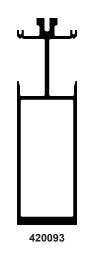
420004

 $S = 3.899 (63.89 \times 10^3)$

I= 1.087 (45.24 x 104) S= 0.792 (12.98 x 10³)

RAFTER CENTERS (IN FEET)





I= 35.851 (1492.23 x 104) S= 7.791 (127.67 x 103)



I= 1.087 (45.24 x 10⁴) $S = 0.792 (12.98 \times 10^{3})$

	Allowable Stress	LRFD Ultimate
	Design Load	Design Load
A =	20 PSF (960)	33 PSF (1580)
B =	30 PSF (1440)	50 PSF (2400)
C =	40 PSF (1920)	67 PSF (3200)
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ADMF010EN

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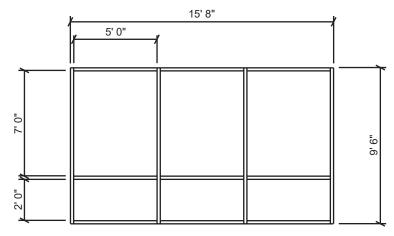
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THERMAL CHARTS

Generic Project Specific U-factor Example Calculation (Percent of Glass will Vary on specific products depending on sitelines)



Example Glass Ufactor = 0.42 Btu/hr·ft^{2.}°F

Total Daylight Opening = $3(5' \times 7') + 3(5' \times 2') = 135ft^2$

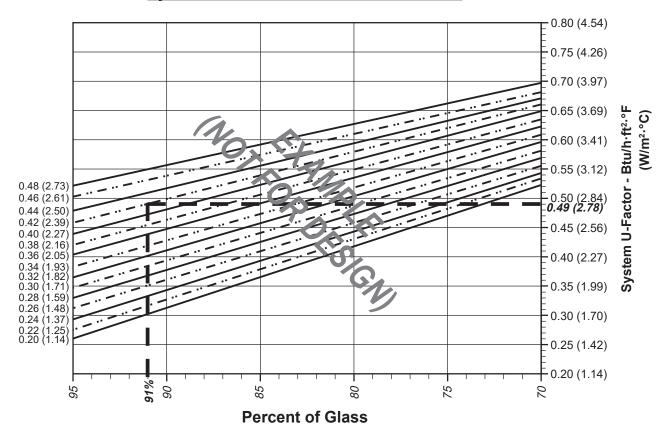
Total Projected Area = (Total Daylight Opening + Total Area of Framing System)

= 15'8" x 9'6" = 148.83ft²

Percent of Glass = (Total Daylight Opening ÷ Total Projected Area)

 $= (135 \div 148.83)100 = 91\%$

System U-factor vs Percent of Glass Area



Based on 91% glass and Center of Glass (COG) Ufactor of 0.42 System Ufactor is equal to 0.49 Btu/hr·ft²-°F



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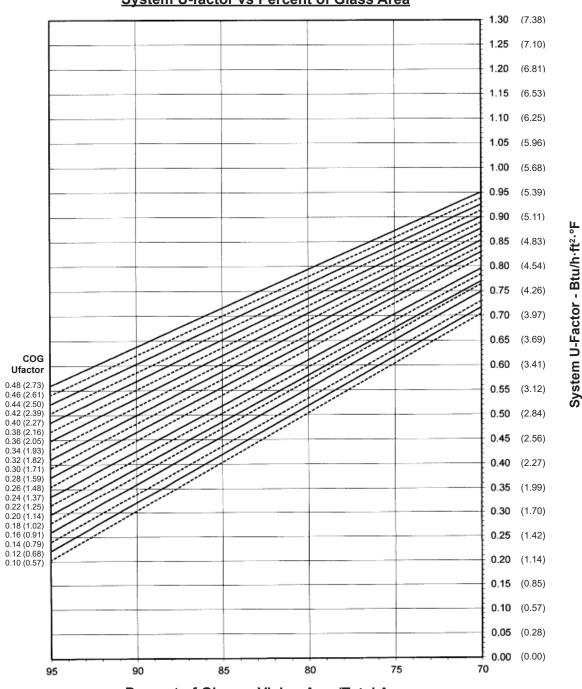
THERMAL CHARTS

CAPTURED GLAZING 1" Double Glazed - Aluminum Glazing Spacer

Note:

Values in parentheses are metric. COG = Center of Glass. Charts are generated per AAMA 507

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

Notes for System U-factor, SHGC and VT charts:

For glass values that are not listed, linear interpolation is permitted.

Glass properties are based on center of glass values and are obtained from your glass supplier.



ADMF010EN

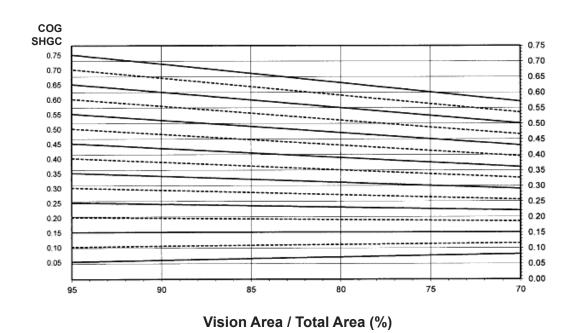
kawneer.com

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EC 97911-307 THERMAL CHARTS

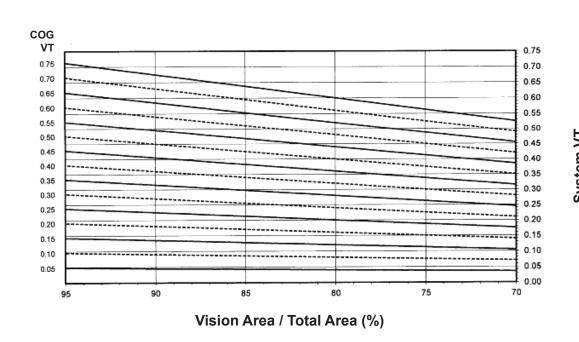
CAPTURED GLAZING 1" Double Glazed - Aluminum Glazing Spacer

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.



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Thermal Transmittance ¹ (BTU/hr • ft ² • °F)

Theimai mansimilance (Bro/ill • R • F)	
Glass U-Factor ³	Overall U-Factor 4
0.48	0.64
0.46	0.62
0.44	0.60
0.42	0.59
0.40	0.57
0.38	0.55
0.36	0.54
0.34	0.52
0.32	0.50
0.30	0.48
0.28	0.47
0.26	0.45
0.24	0.43
0.22	0.41
0.20	0.39
0.18	0.38
0.16	0.36
0.14	0.34
0.12	0.32
0.10	0.31

CAPTURED GLAZING 1" Double Glazed Aluminum Glazing Spacer

NOTE: For glass values that are not listed, linear interpolation is permitted.

- 1. U-Factors are determined in accordance with NFRC 100.
- SHGC and VT values are determined in accordance with NFRC 200.
- 3. Glass properties are based on center of glass values and are obtained from your glass supplier.
- 4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

SHGC Matrix ²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.69
0.70	0.64
0.65	0.60
0.60	0.55
0.55	0.51
0.50	0.47
0.45	0.42
0.40	0.38
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20
0.15	0.15
0.10	0.11
0.05	0.06

Visible Transmittance ²

Glass VT ³	Overall VT ⁴
0.75	0.67
0.70	0.63
0.65	0.58
0.60	0.54
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04



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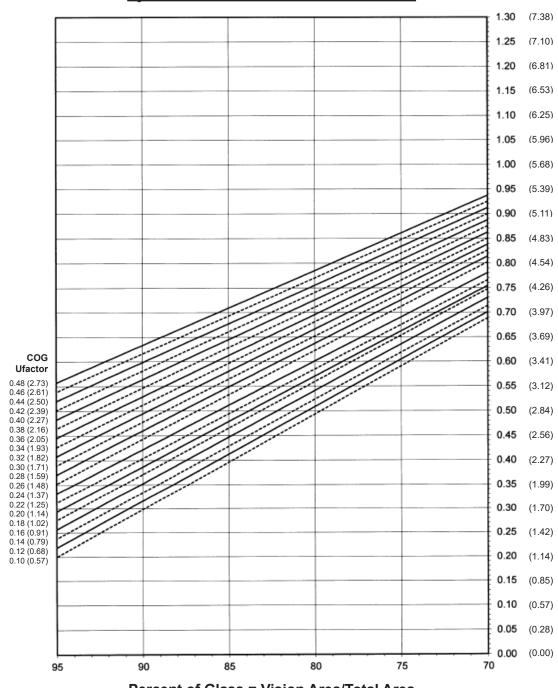
THERMAL CHARTS

SSG GLAZING 1" Double Glazed - Aluminum Glazing Spacer

Note:

Values in parentheses are metric. COG = Center of Glass. Charts are generated per AAMA 507

System U-factor vs Percent of Glass Area



Percent of Glass = Vision Area/Total Area (Total Daylight Opening / Projected Area)

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Notes for System U-factor, SHGC and VT charts:

For glass values that are not listed, linear interpolation is permitted. Glass properties are based on center of glass values and are obtained from your glass supplier.



System U-Factor - Btu/h-ft²-°F

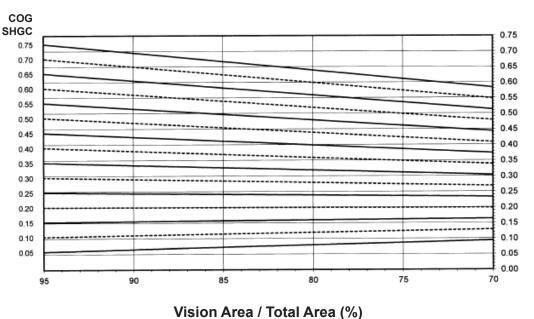
System SHGC

EC 97911-307

THERMAL CHARTS

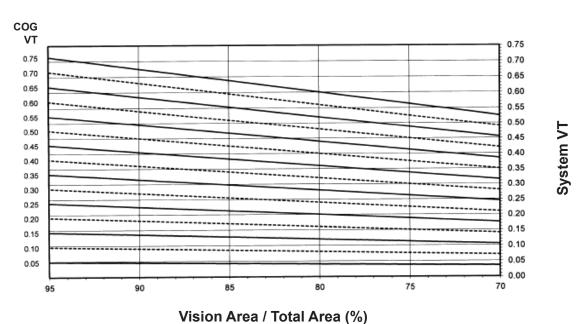
SSG GLAZING 1" Double Glazed - Aluminum Glazing Spacer

System Solar Heat Gain Coefficient (SHGC) vs Percent of Vision Area



Charts are generated per AAMA 507.

System Visible Transmittance (VT) vs Percent of Vision Area



Charts are generated per AAMA 507.



ne design and use of Kawneer curtain wall products, vary widely. ct configurations, operating responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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THERMAL PERFORMANCE MATRIX

Thermal Transmittance 1 (BTU/hr • ft 2 • °F)

Glass U-Factor ³	Overall U-Factor 4
0.48	0.63
0.46	0.62
0.44	0.60
0.42	0.58
0.40	0.56
0.38	0.55
0.36	0.53
0.34	0.51
0.32	0.49
0.30	0.48
0.28	0.46
0.26	0.44
0.24	0.42
0.22	0.40
0.20	0.39
0.18	0.37
0.16	0.35
0.14	0.33
0.12	0.32
0.10	0.30

SSG GLAZING 1" Double Glazed Aluminum Glazing Spacer

NOTE: For glass values that are not listed, linear interpolation is permitted.

- 1. U-Factors are determined in accordance with NFRC 100.
- SHGC and VT values are determined in accordance with NFRC 200.
- 3. Glass properties are based on center of glass values and are obtained from your glass supplier.
- 4. Overall U-Factor, SHGC, and VT Matricies are based on the standard NFRC specimen size of 2,000 mm wide by 2,000 mm high (78-3/4" by 78-3/4").

SHGC Matrix²

Glass SHGC ³	Overall SHGC ⁴
0.75	0.69
0.70	0.65
0.65	0.60
0.60	0.56
0.55	0.51
0.50	0.47
0.45	0.42
0.40	0.38
0.35	0.33
0.30	0.29
0.25	0.24
0.20	0.20
0.15	0.15
0.10	0.11
0.05	0.06

Visible Transmittance 2

Glass VT ³	Overall VT ⁴
0.75	0.68
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05



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Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.
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