1600 LR Wall® Curtain Wall System

Features

- 1600 LR Wall® is a low rise curtain wall system for stock length sales
- 1600 LR Wall® has a 2-1/2" (63.5) sight line
- Standard 5-3/4" (146.1) or 7-1/4" (184.2) depth systems
- This system is outside, pressure glazed available captured or SSG
- Captured system:
  - No drilled weeps
  - Water deflectors used typically
  - Intermediate horizontals are mullion drained
  - Joint plugs only required at weeped horizontals above vertical splices
- SSG system:
  - Structural silicone glazed verticals and captured horizontals
  - Extruded joint plugs required with weeped intermediate horizontals
- Infill options are 1/8" (3.2), 1/4" (6.4) or 1" (24.5)
- Concealed fastener joinery creates smooth, monolithic appearance
- EPDM gasket and thermal break
- Open back horizontals and perimeters are available for cost savings
- Shear block fabrication method
- Corner mullions available
- Offers integrated entrance framing systems
- Silicone compatible glazing materials for long-lasting seals
- Two color option
- Permanodic® anodized finishes in seven standard choices
- Painted finishes in standard and custom choices

Optional Features

- Steel reinforcing available
- Captured system heavy-weight mullion available for 7-1/4" (184.2) system
- Captured system integrates with standard Kawneer windows
- Integrates with standard Kawneer windows and GLASSvent® windows for storefront framing and curtainwall
- Profit$Maker® Plus die sets available

Product Applications

- Ideal for low rise applications
  - 4 stories or less, no more than one splice per mullion

For specific product applications,
consult your Kawneer representative.

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.

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

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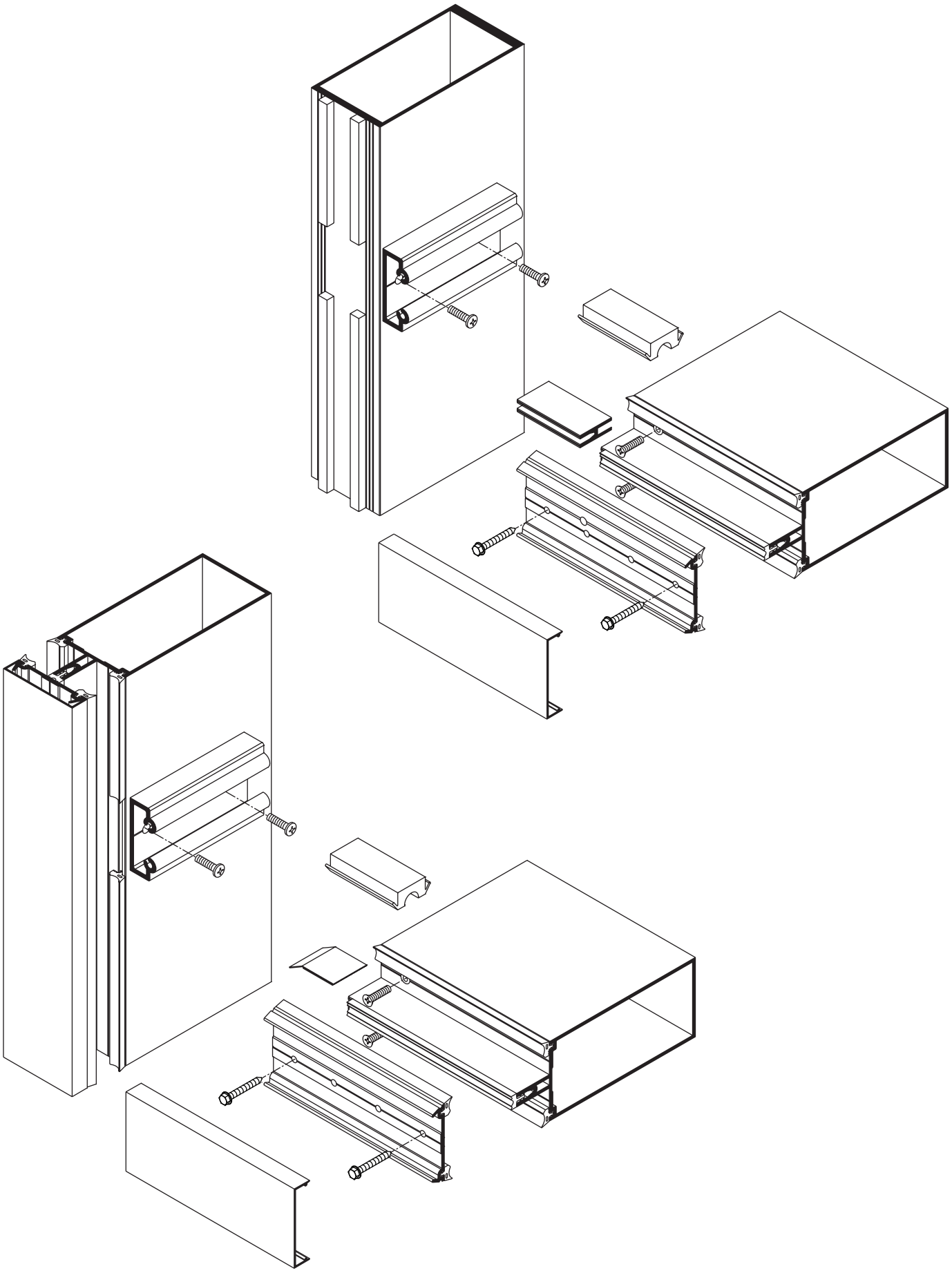
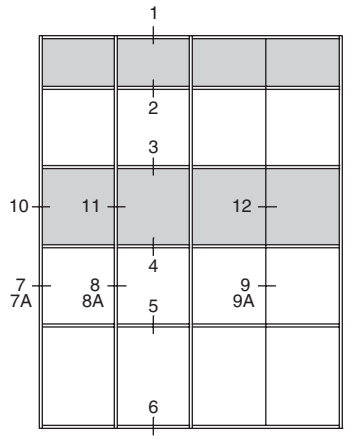
1600 LR Wall® Curtain Wall System

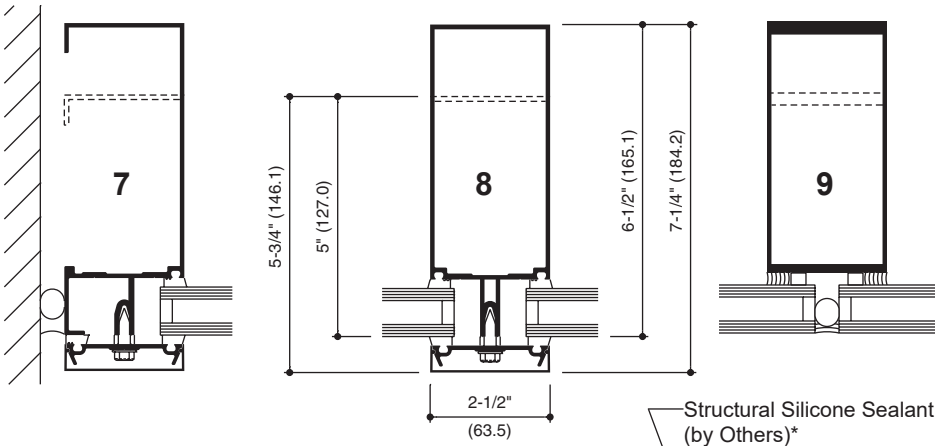
PICTORIAL VIEW

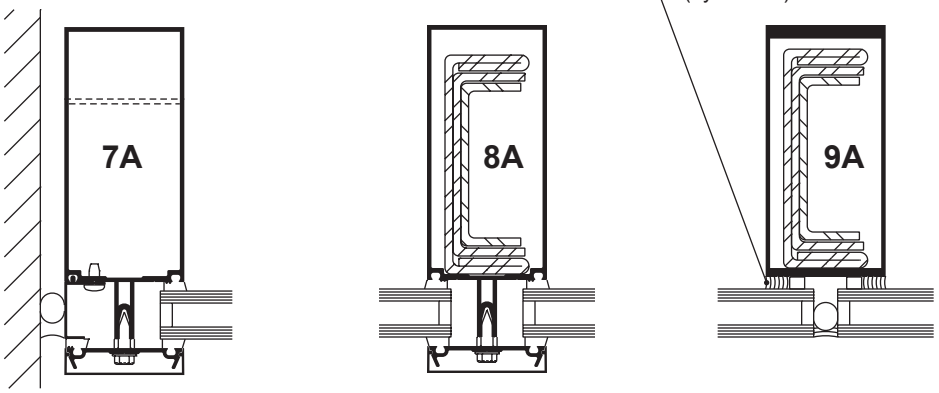


Additional information and CAD details are available at www.kawneer.com



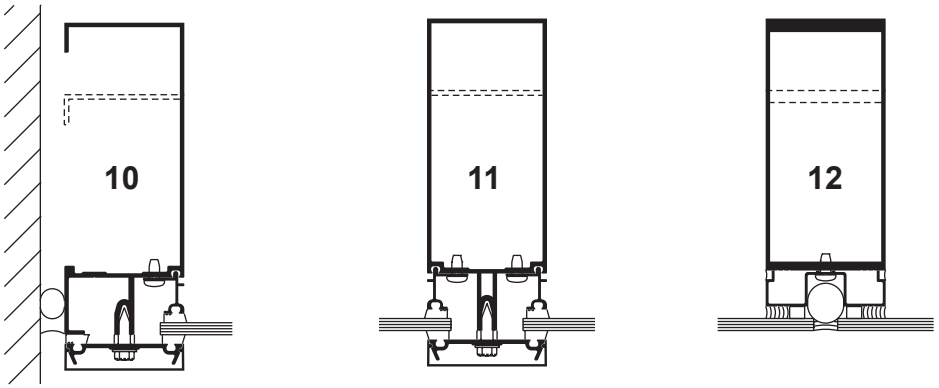
ELEVATION IS NUMBER KEYED TO DETAILS

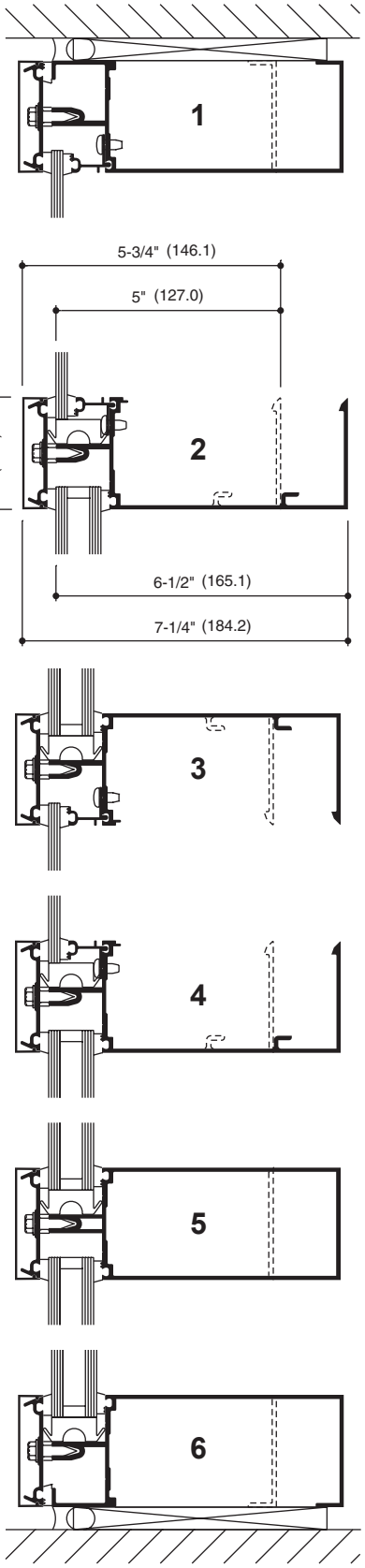




OPTIONAL JAMB

OPTIONAL STEEL REINFORCING AS REQUIRED





*** 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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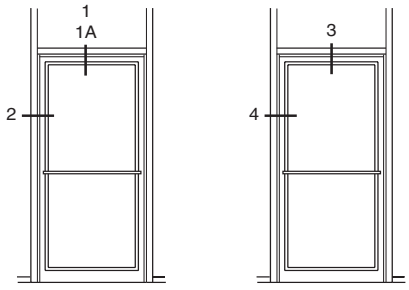
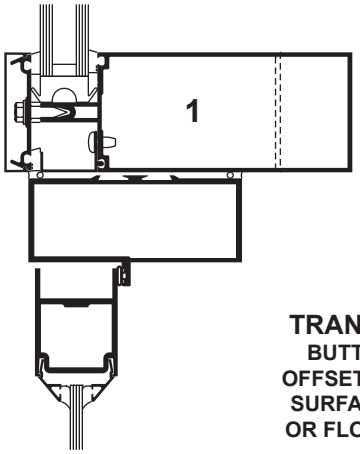
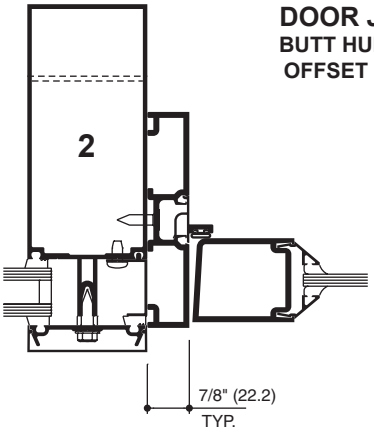


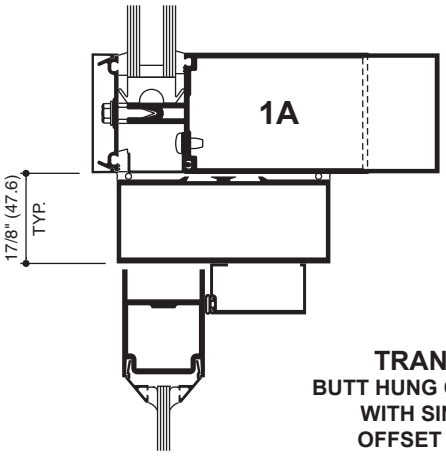
B/H OR O/P **C/H**
ELEVATION IS NUMBER KEYED TO DETAILS



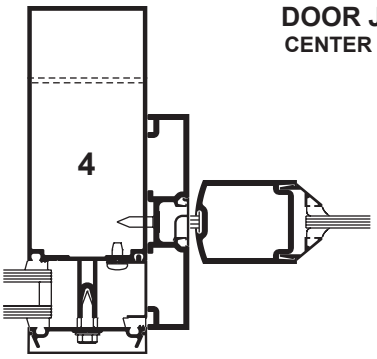
TRANSOM BAR
BUTT HUNG OR OFFSET PIVOT WITH SURFACE CLOSER OR FLOOR CLOSER



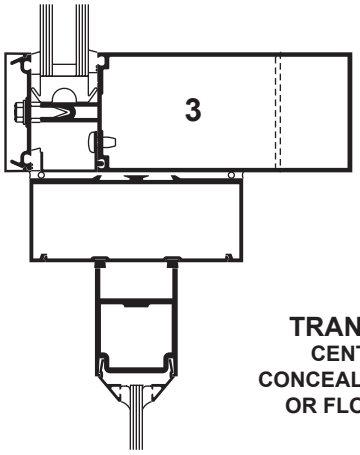
DOOR JAMB
BUTT HUNG OR OFFSET PIVOT



TRANSOM BAR
BUTT HUNG OR OFFSET PIVOT WITH SINGLE ACTING OFFSET ARM CLOSER



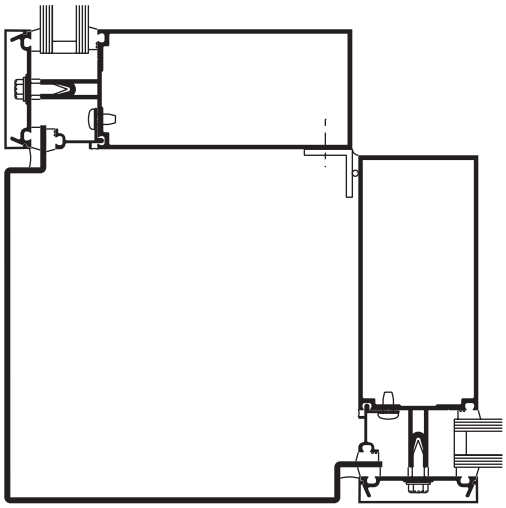
DOOR JAMB
CENTER HUNG



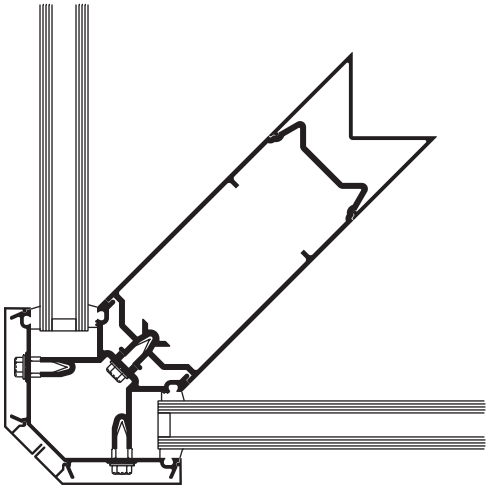
TRANSOM BAR
CENTER HUNG CONCEALED OVERHEAD OR FLOOR CLOSER

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

NOTE: 1" INFILL SHOWN, 1/4" INFILL SIMILAR.
7-1/4" SYSTEM SHOWN, 5-3/4" SYSTEM SIMILAR.



90° OUTSIDE CORNER



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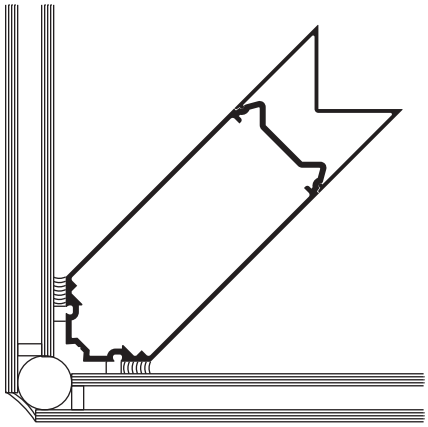
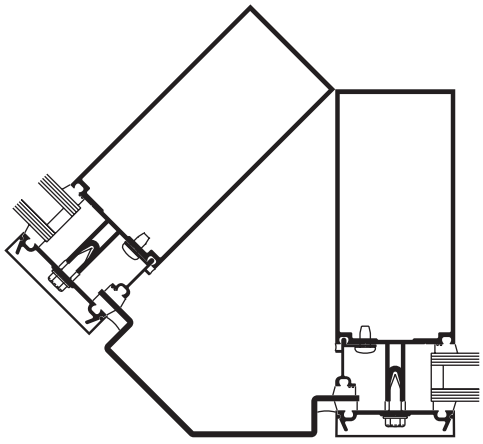
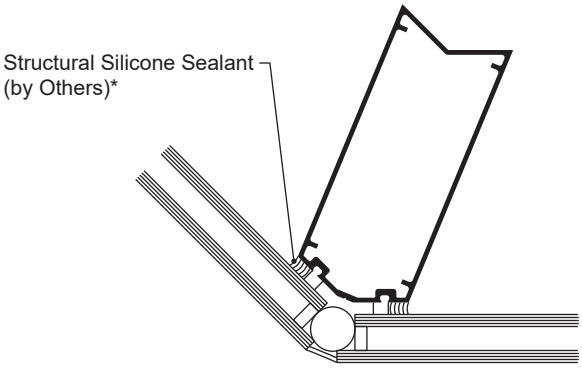


90° SSG OUTSIDE CORNER



135° OUTSIDE CORNER



135° SSG OUTSIDE CORNER

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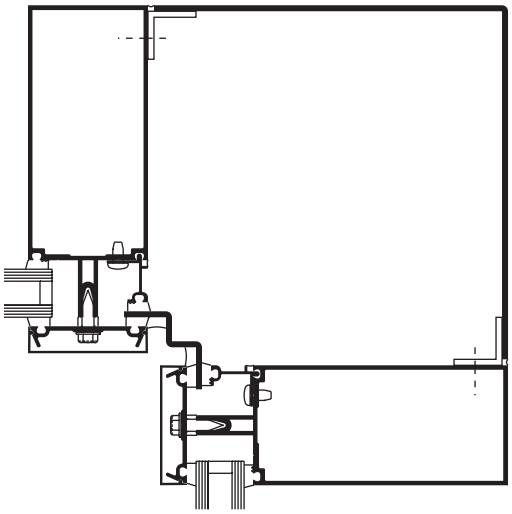
7-1/4" SYSTEM SHOWN, 5-3/4" SYSTEM SIMILAR.



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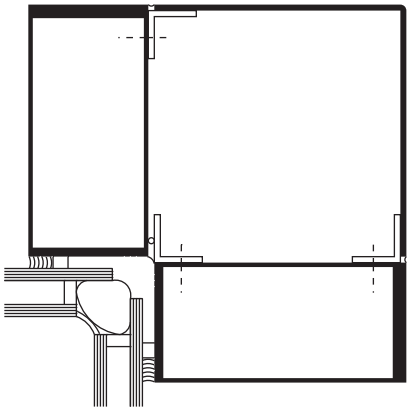

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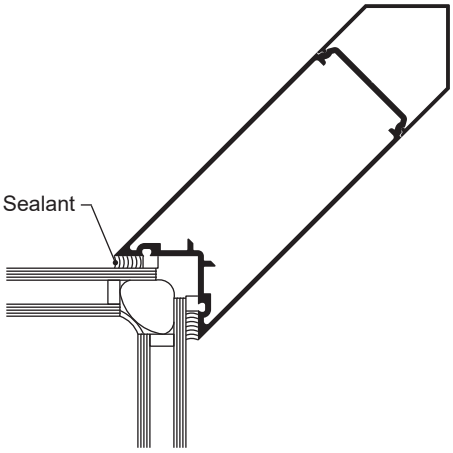

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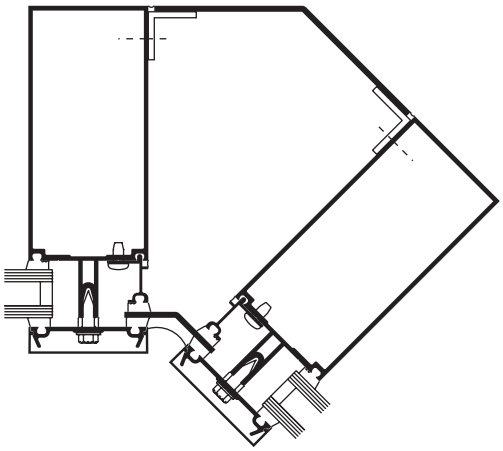
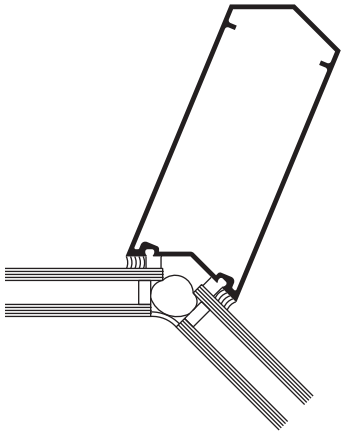


135° INSIDE CORNER



135° SSG INSIDE CORNER

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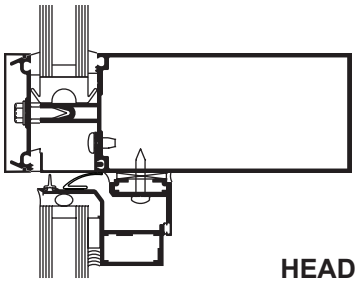
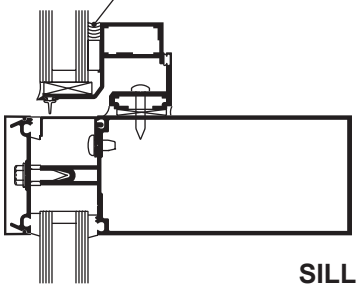
SEF GLASSvent® WINDOWS FOR STOREFRONT FRAMING



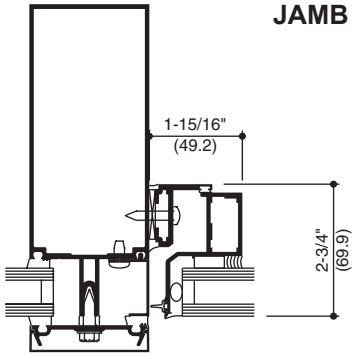
HEAD

Structural Silicone Sealant (by Others)*

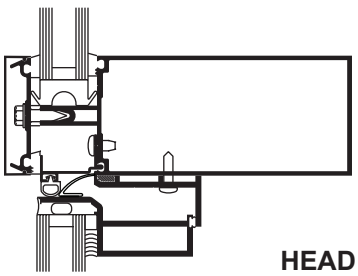


SILL

JAMB



GLASSvent® WINDOWS FOR CURTAIN WALL



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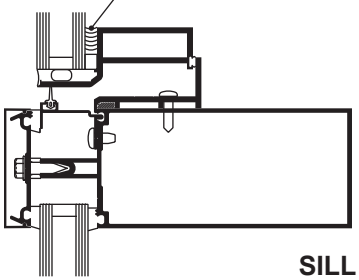
Structural Silicone Sealant (by Others)*



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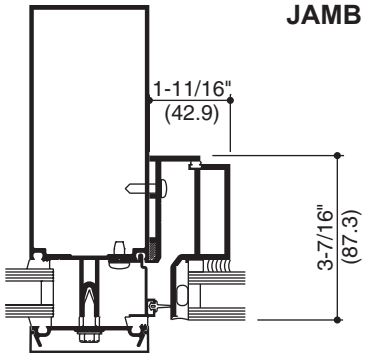

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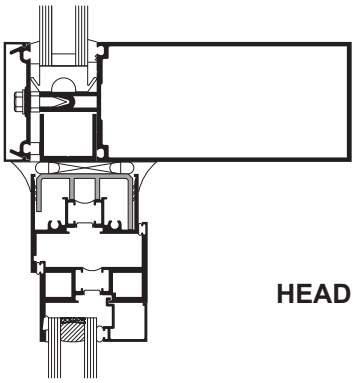
8225TL THERMAL WINDOWS

NOTE: Other vent types can be accommodated. Contact your Kawneer representative for other options.



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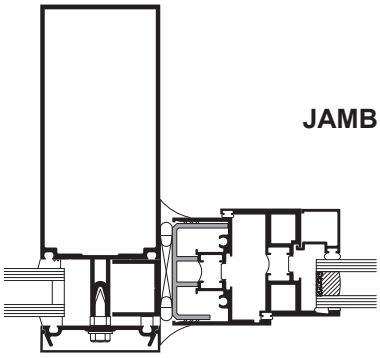
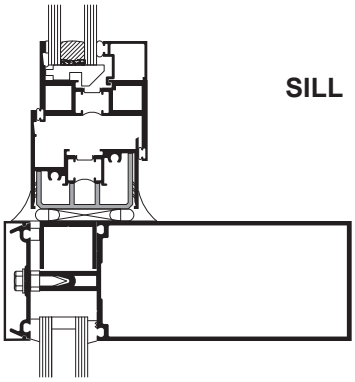


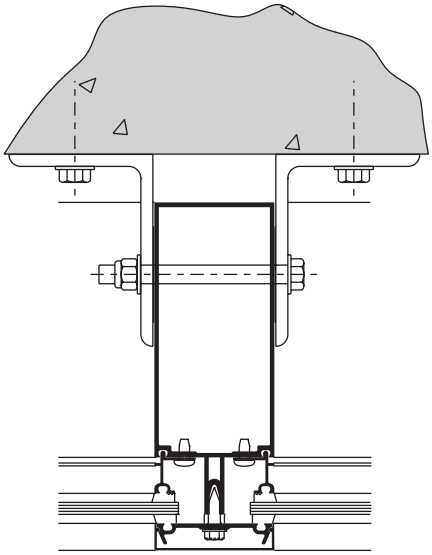
JAMB



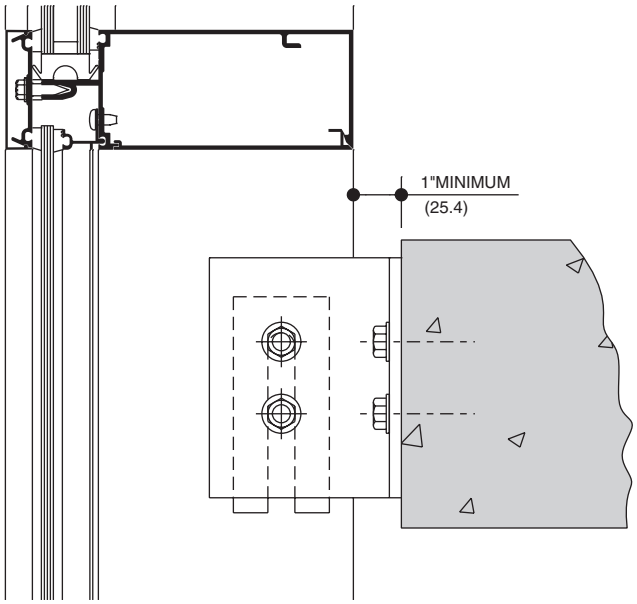
SILL

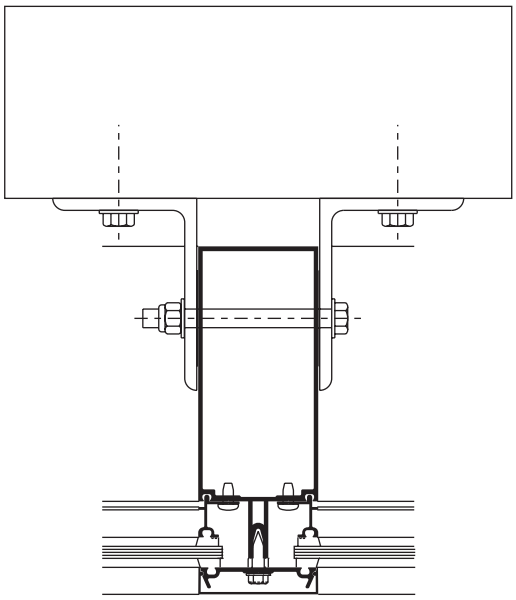
Additional information and CAD details are available at www.kawneer.com

Actual project contitions will determine specific anchor design.
Details on this page are reference only. Captured mullions shown, SSG mullion similar.

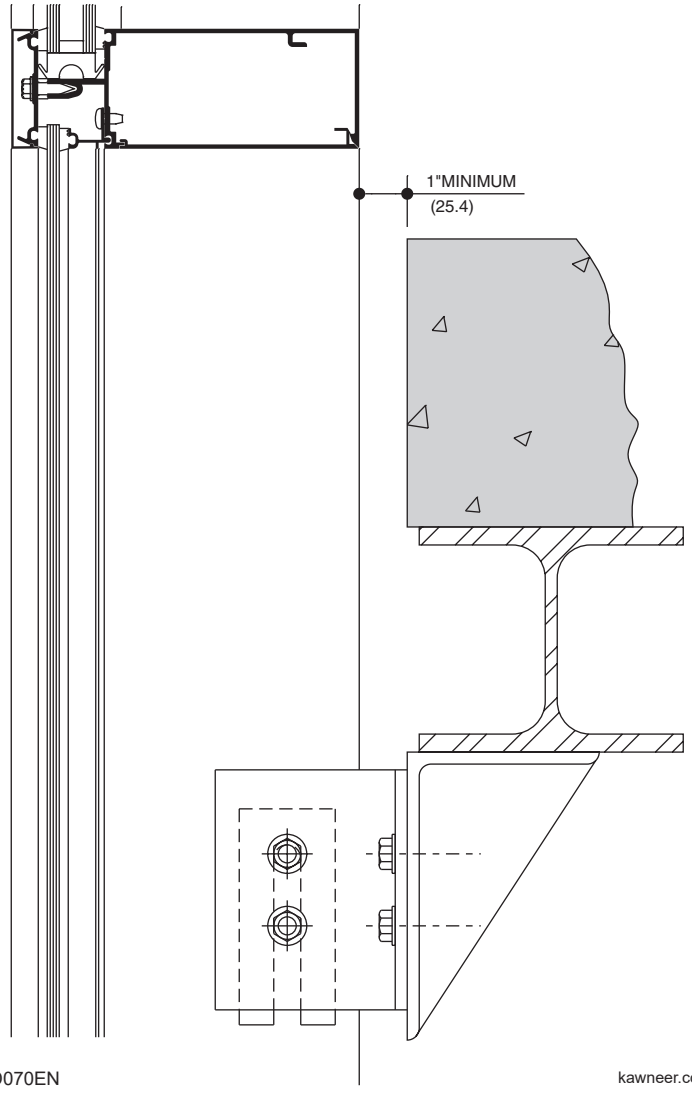


ANCHOR TO FLOOR SLAB





ANCHOR TO SUPPORT STEEL



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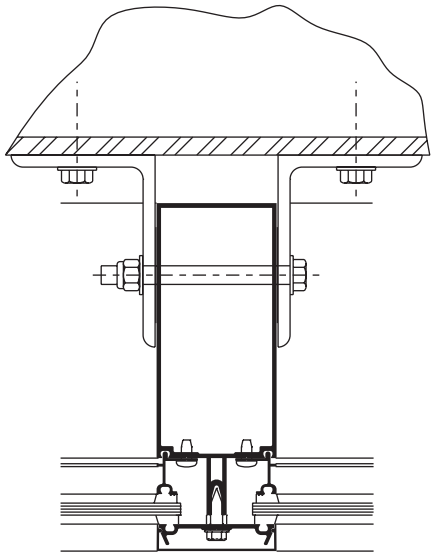
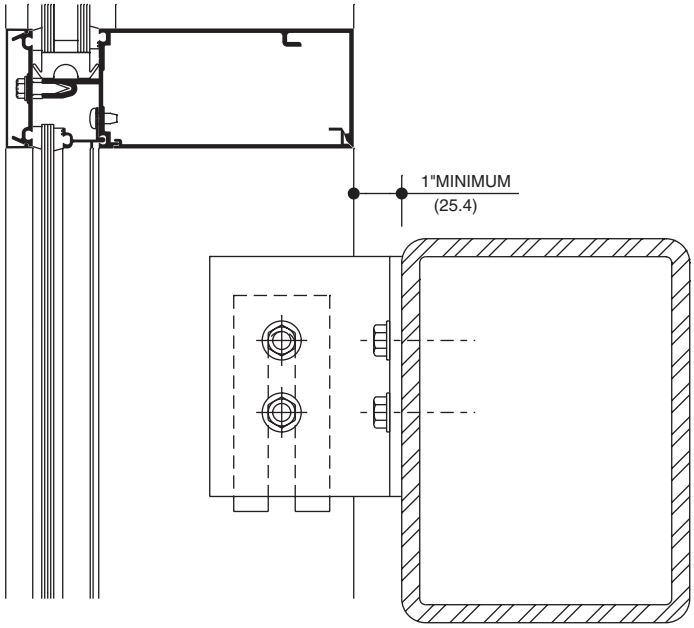
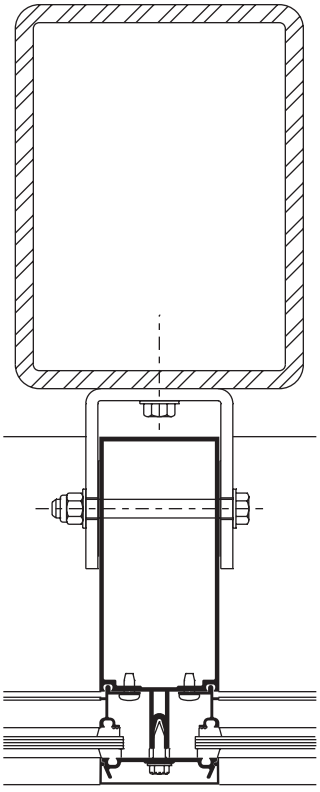
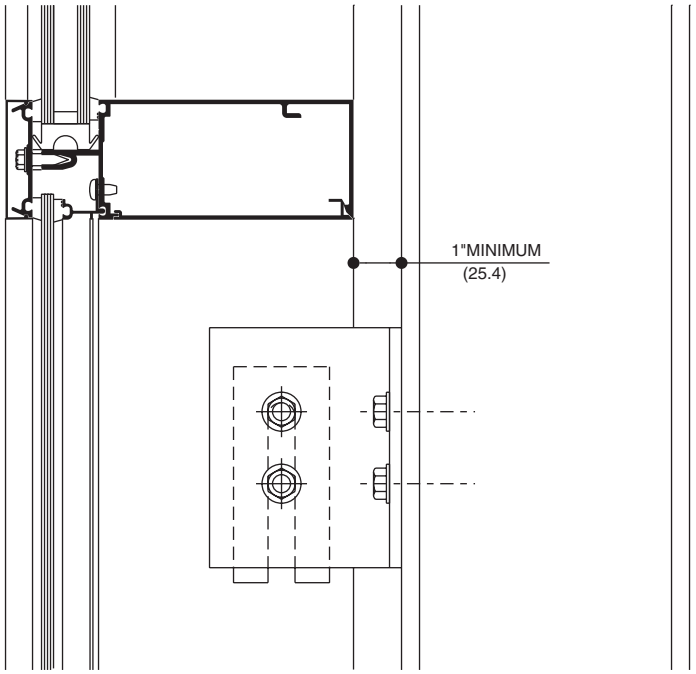




ANCHOR TO HORIZONTAL STEEL STRUCTURE





ANCHOR TO VERTICAL STEEL STRUCTURE

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.

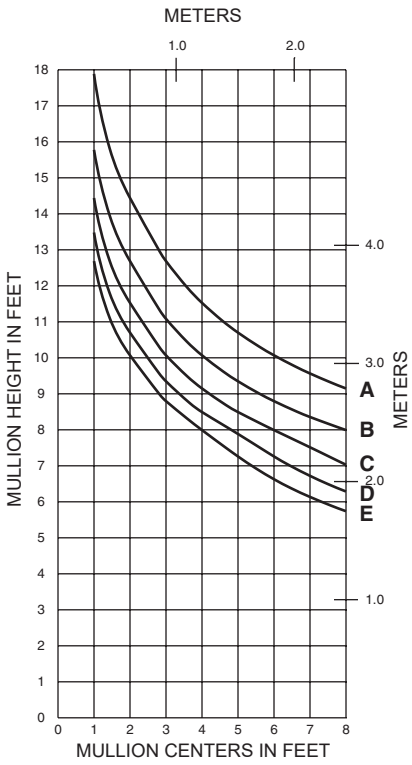
DEADLOAD CHARTS

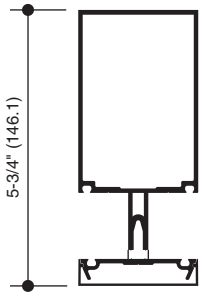
Horizontal or deadload limitations are based upon 1/8" (3.2), maximum allowable deflection at the center of an intermediate horizontal member. The accompanying charts are calculated for 1" (25.4) thick insulating glass or 1-3/4" (44.5) thick glass supported on two setting blocks placed at the loading points shown.

1600 LR Wall® Curtain Wall System

	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

SINGLE SPAN

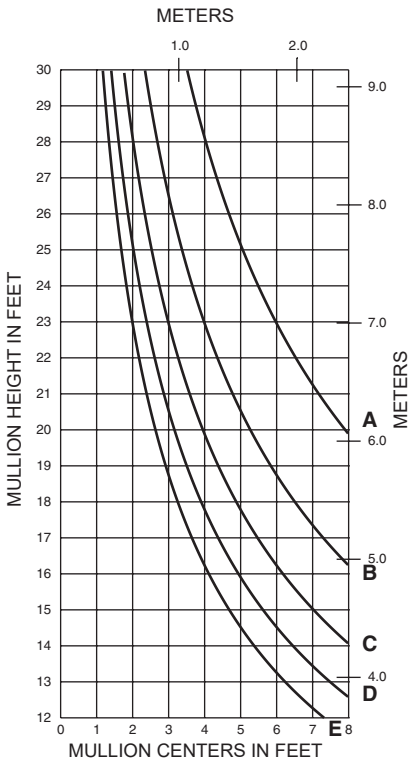




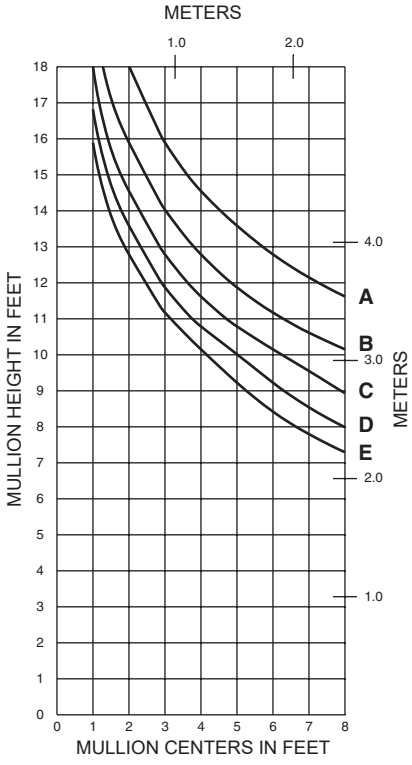
168001

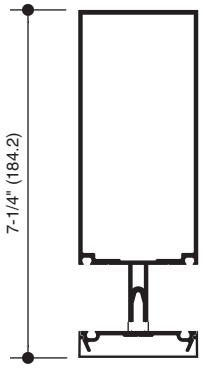
I = 4.025 (167.53 x 10^4)
S = 1.565 (25.65 x10^3)

TWIN SPAN



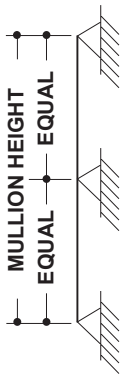
SINGLE SPAN



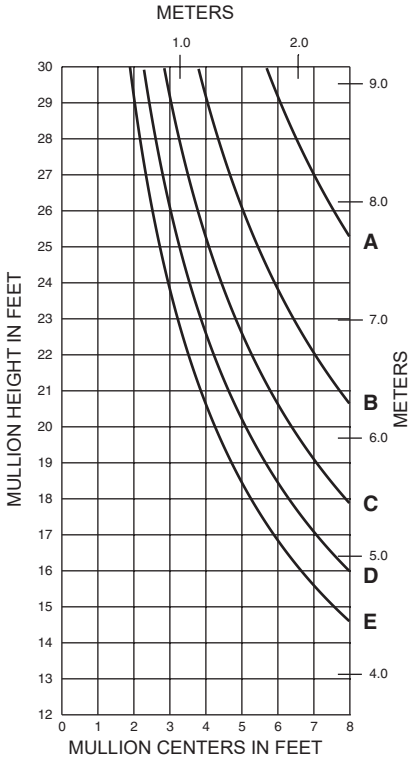


168011

I = 8.250 (343.39 x 10^4)
S = 2.528 (41.43 x10^3)

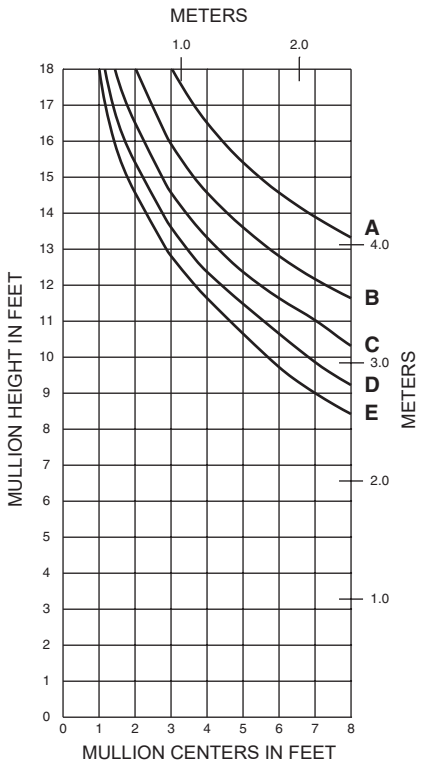


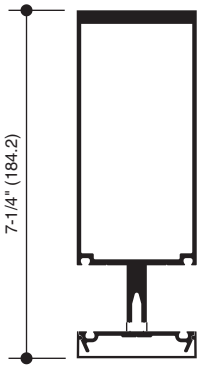
TWIN SPAN



	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

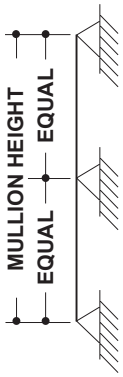
SINGLE SPAN



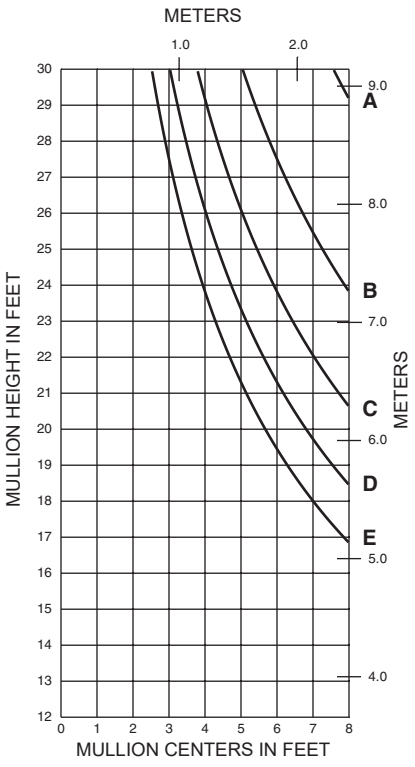


168015

I = 12.438 (517.71 x 10^4)
S = 3.371 (55.24 x 10^3)

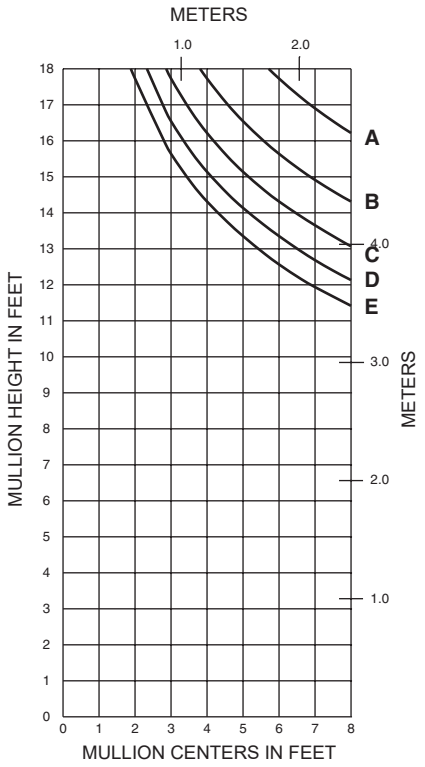


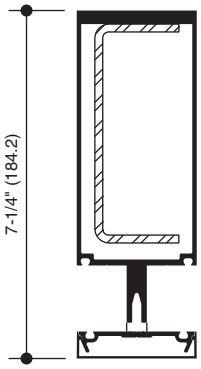
TWIN SPAN



SINGLE SPAN

168015 w/ 162300



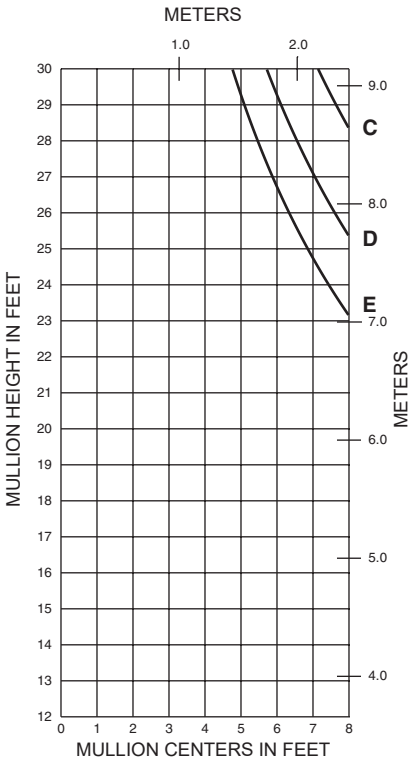


168015 w/ 162300

Ia = 12.438 (517.71 x 10^4)
Sa = 3.371 (55.24 x 10^3)
Is = 3.805 (158.38 x 10^4)
Ss = 1.669 (27.35 x 10^3)

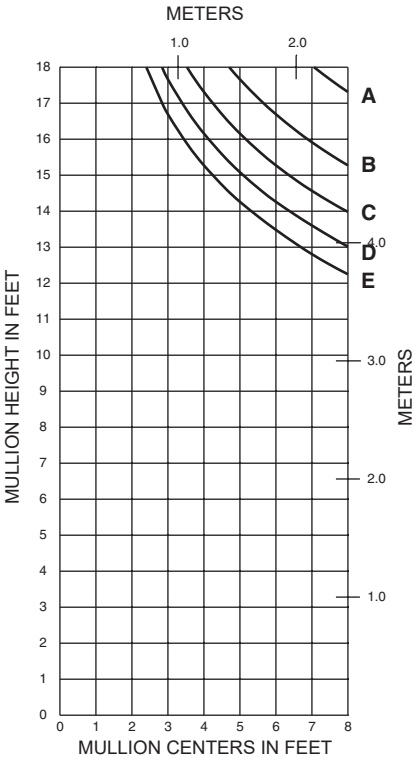
TWIN SPAN

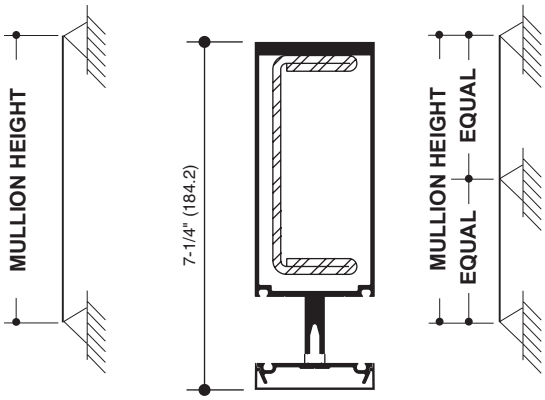
168015 w/ 162300



	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

SINGLE SPAN
168015 w/ 162301

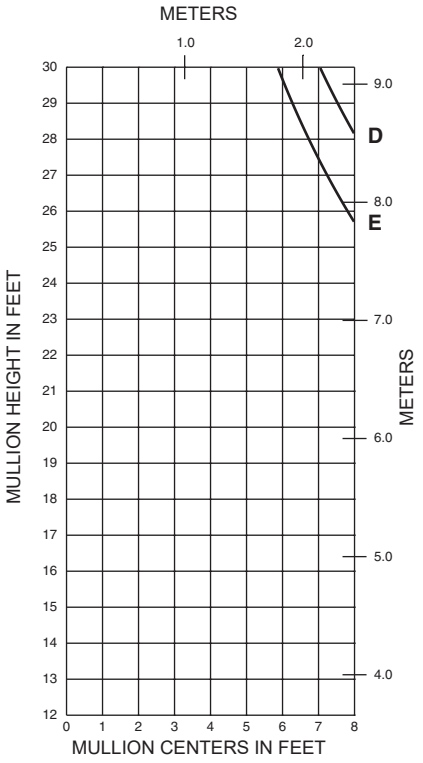




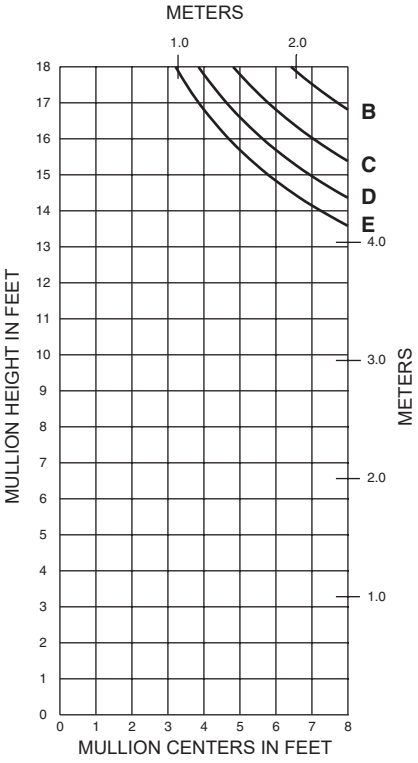
168015 w/ 162301

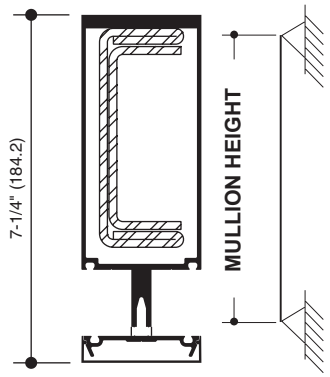
Ia = 12.438 (517.71 x 10^4)
Sa = 3.371 (55.24 x 10^3)
Is = 5.684 (236.59 x 10^4)
Ss = 2.493 (40.85 x 10^3)

TWIN SPAN
168015 w/ 162301



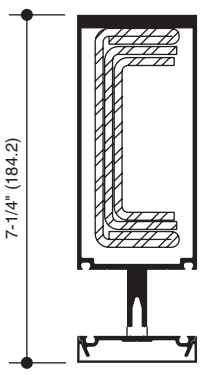
SINGLE SPAN
168015 w/ 162301/302





168015 w/ 162301/302

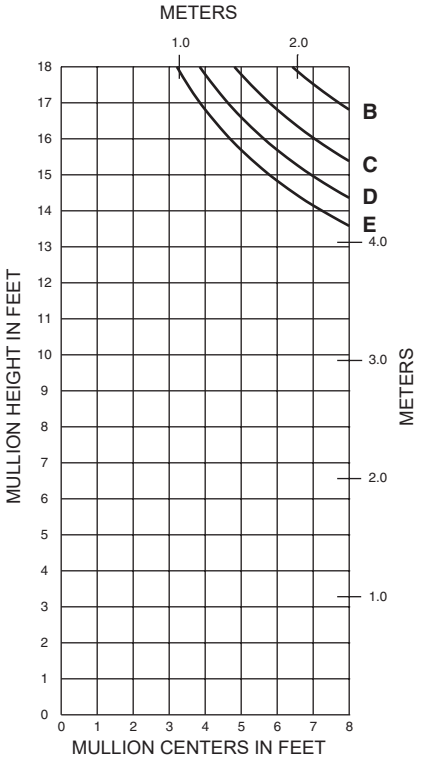
Ia = 12.438 (517.71 x 10^4)
Sa = 3.371 (55.24 x 10^3)
Is = 7.893 (328.53 x 10^4)
Ss = 3.462 (56.73 x 10^3)



168015 w/ 162301/302/303

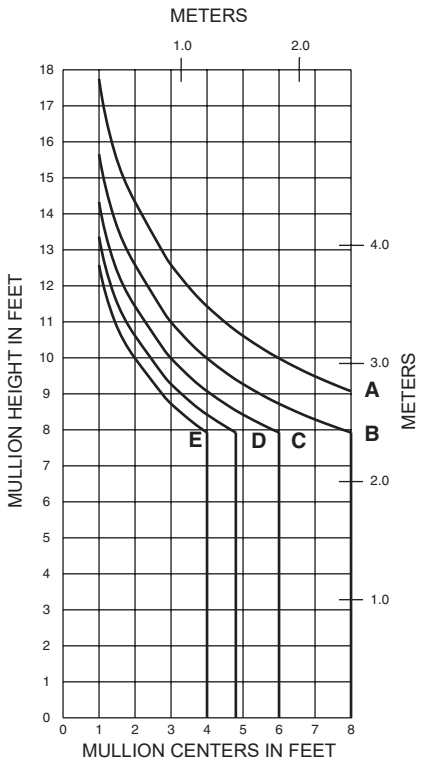
Ia = 12.438 (517.71 x 10^4)
Sa = 3.371 (55.24 x 10^3)
Is = 9.347 (389.05 x 10^4)
Ss = 4.100 (67.19 x 10^3)

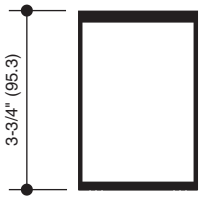
SINGLE SPAN
168015 w/ 162301/302/303



	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

SINGLE SPAN

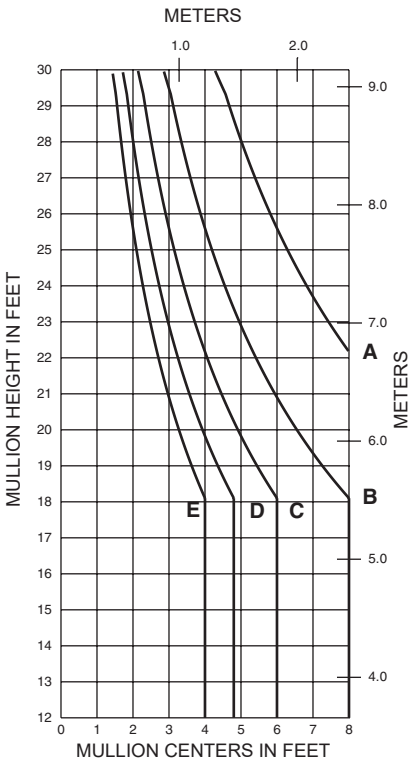




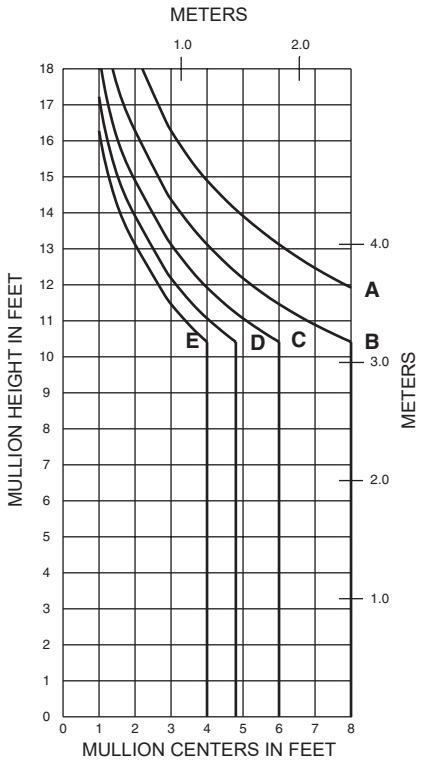
168004

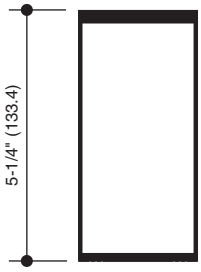
I = 3.926 (163.41 x 10^4)
S = 1.946 (31.89 x 10^3)

TWIN SPAN



SINGLE SPAN

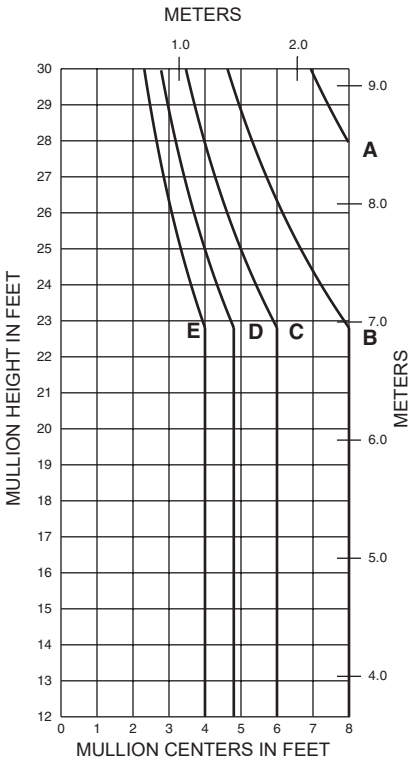




168014

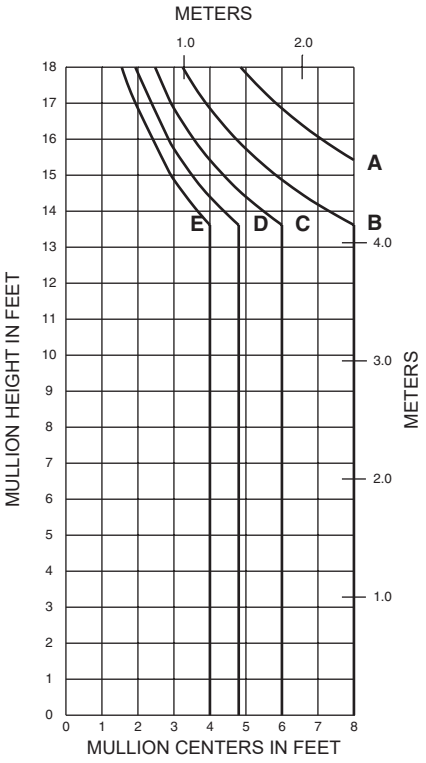
I = 8.912 (370.95 x 10^4)
S = 3.090 (50.64 x 10^3)

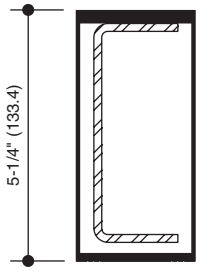
TWIN SPAN



	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

SINGLE SPAN
168014 w/ 162300

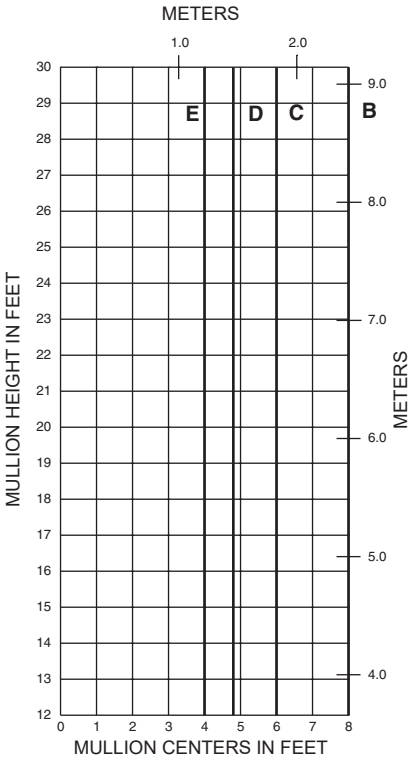




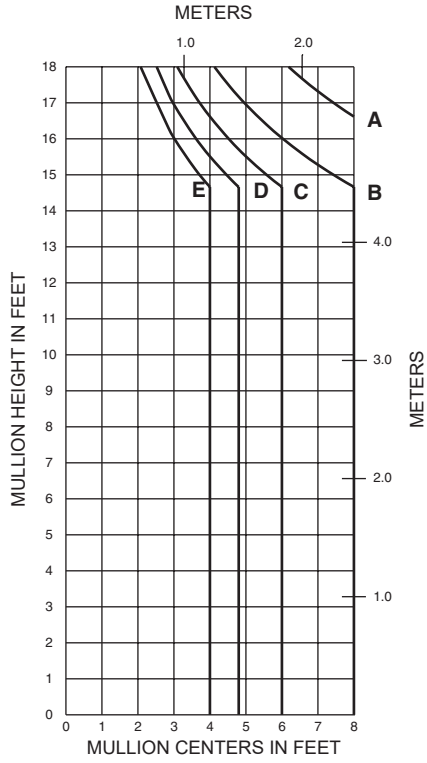
168014 w/ 162300

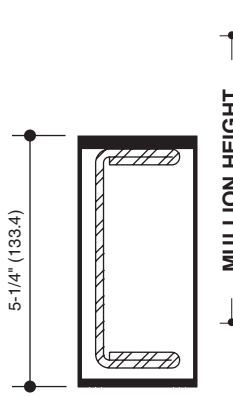
Ia = 8.912 (370.95 x 10^4)
Sa = 3.090 (50.64 x 10^3)
Is = 3.805 (158.38 x 10^4)
Ss = 1.669 (27.35 x 10^3)

TWIN SPAN
168014 w/ 162300



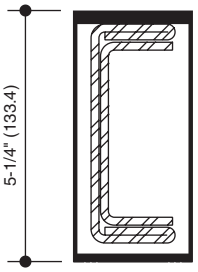
SINGLE SPAN
168014 w/ 162301





168014 w/ 162301

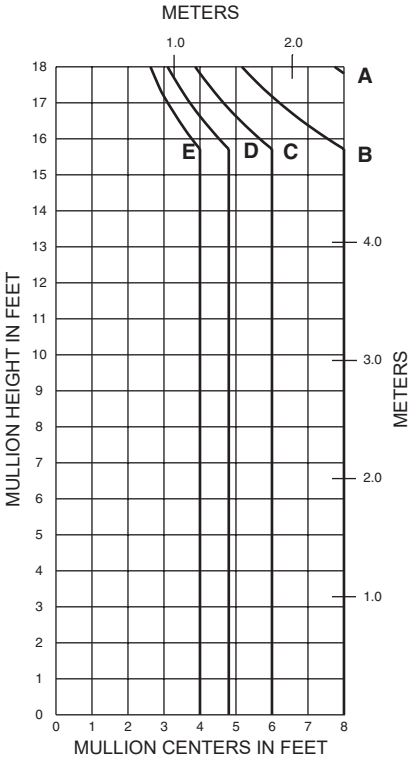
Ia = 8.912 (370.95 x 10^4)
Sa = 3.090 (50.64 x 10^3)
Is = 5.684 (236.59 x 10^4)
Ss = 2.493 (40.85 x 10^3)



168014 w/ 162301/302

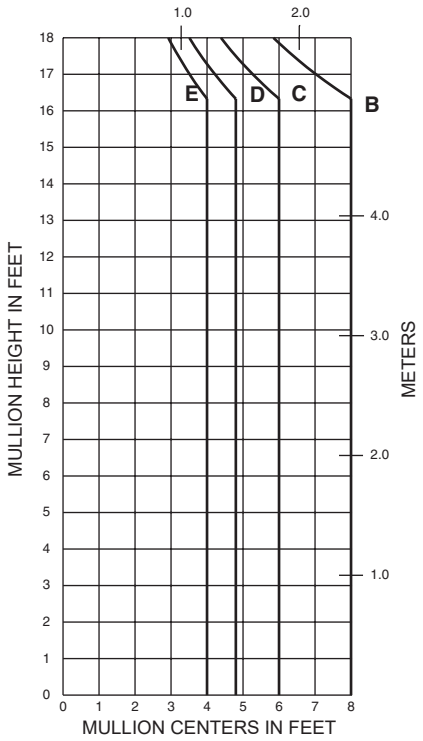
Ia = 8.912 (370.95 x 10^4)
Sa = 3.090 (50.64 x 10^3)
Is = 7.893 (328.53 x 10^4)
Ss = 3.462 (56.73 x 10^3)

SINGLE SPAN
168014 w/ 162301/302

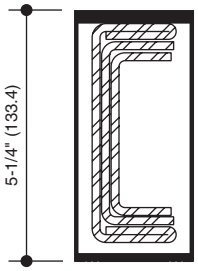


SINGLE SPAN

168014 w/ 162301/302/303



	Allowable Stress Design Load	LRFD Ultimate 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 =	60 PSF (2880)	100 PSF (4790)

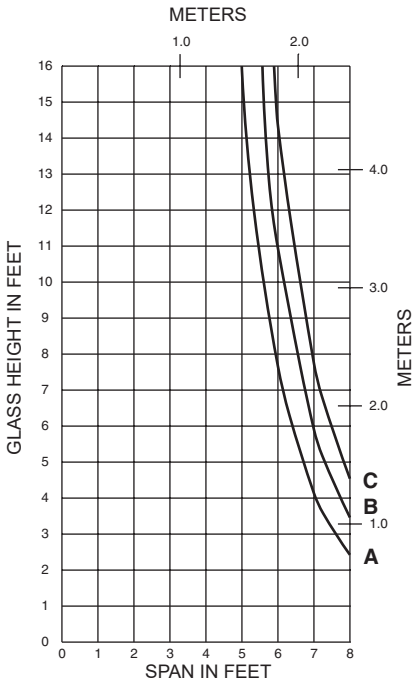


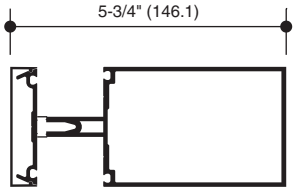
168014 w/ 162301/302/303

Ia = 8.912 (370.95 x 10^4)
Sa = 3.090 (50.64 x 10^3)
Is = 9.347 (389.05 x 10^4)
Ss = 4.100 (67.19 x 10^3)

A = 1/4 POINT LOADING
B = 1/6 POINT LOADING
C = 1/8 POINT LOADING

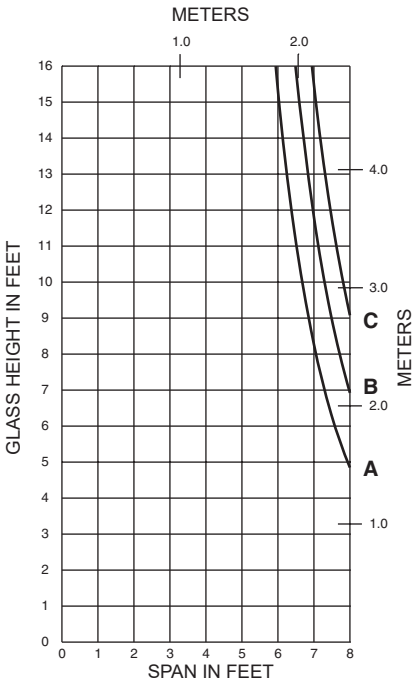
1" GLASS
168001



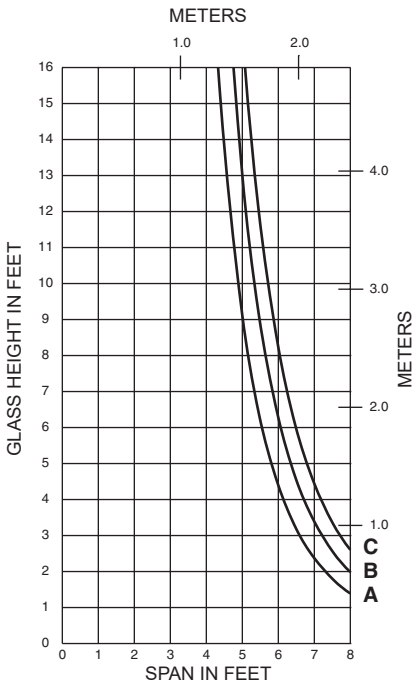


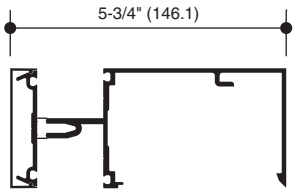
168001
I = 1.278 (53.19 x 10^4)
S = 1.023 (16.76 x 10^3)

1/4" GLASS
168001



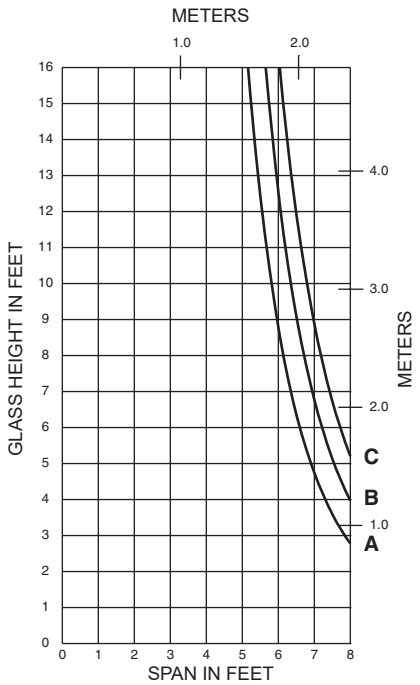
1" GLASS
168003





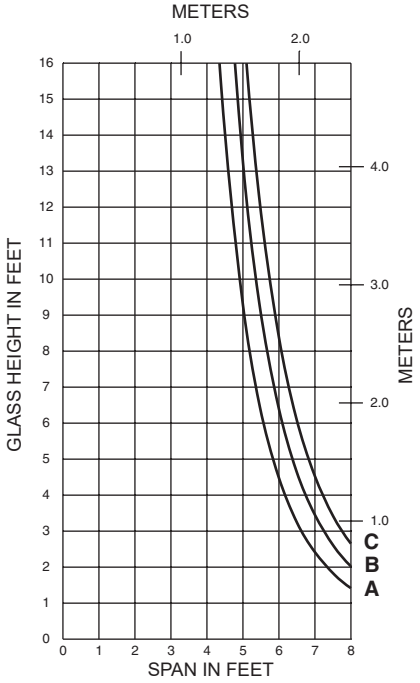
168003
I = 0.733 (30.51 x 10^4)
S = 0.457 (7.49 x 10^3)

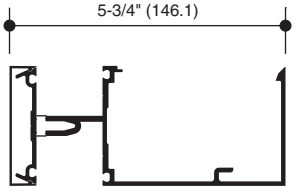
1/4" GLASS
168003



A = 1/4 POINT LOADING
B = 1/6 POINT LOADING
C = 1/8 POINT LOADING

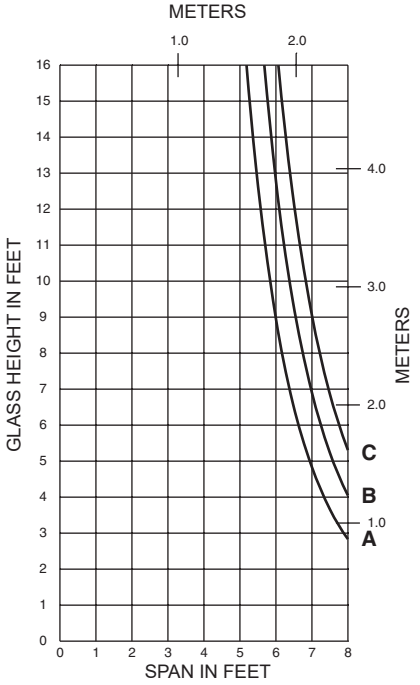
1" GLASS
168006



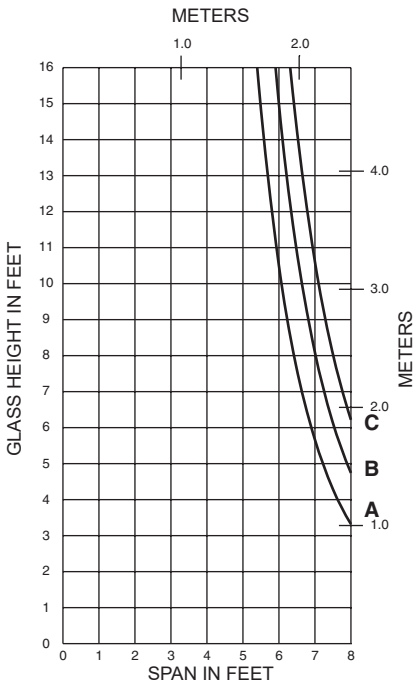


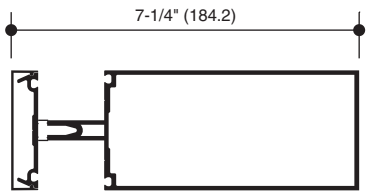
168006
I = 0.747 (31.09 x 10^4)
S = 0.471 (7.72 x 10^3)

1/4" GLASS
168006



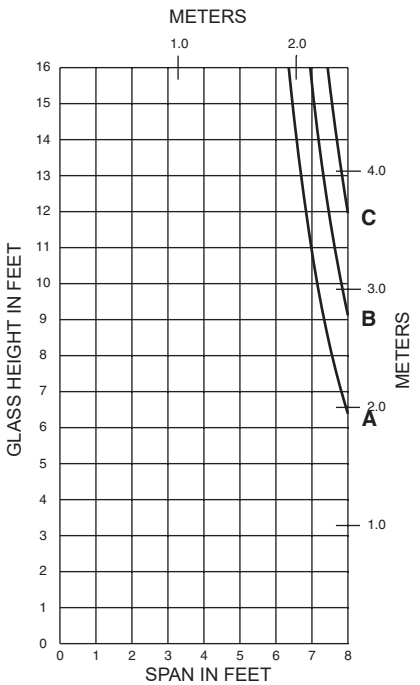
1" GLASS
168011





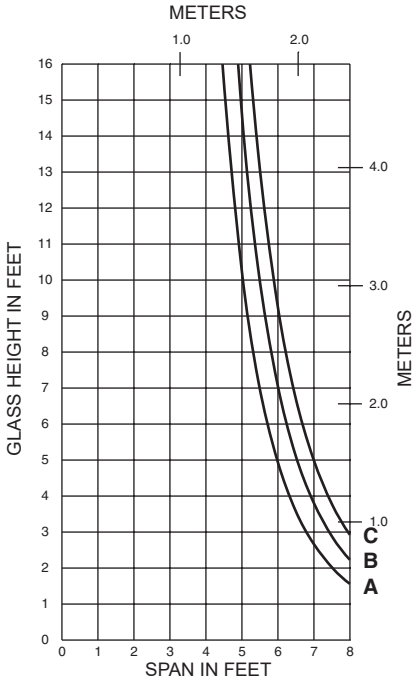
168011
I = 1.683 (70.05 x 10^4)
S = 1.346 (22.06 x 10^3)

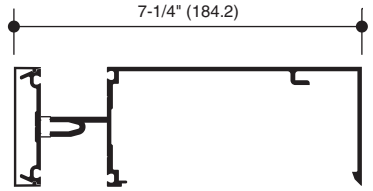
1/4" GLASS
168011



A = 1/4 POINT LOADING
B = 1/6 POINT LOADING
C = 1/8 POINT LOADING

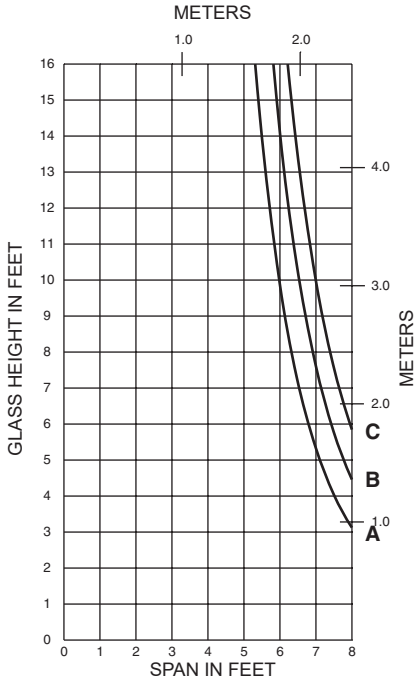
1" GLASS
168013



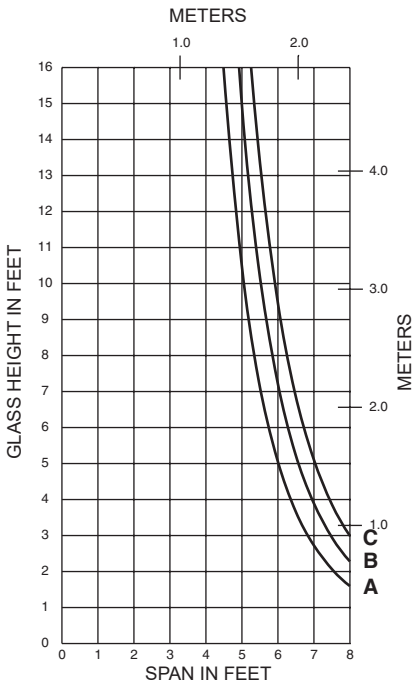


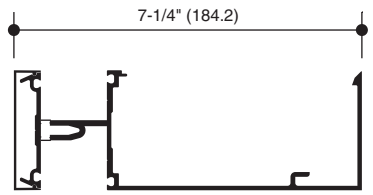
168013
I = 0.823 (34.26 x 10^4)
S = 0.487 (7.98 x 10^3)

1/4" GLASS
168013



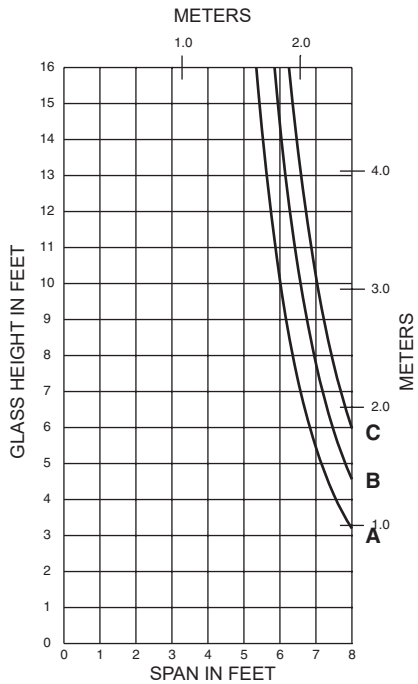
1" GLASS
168016



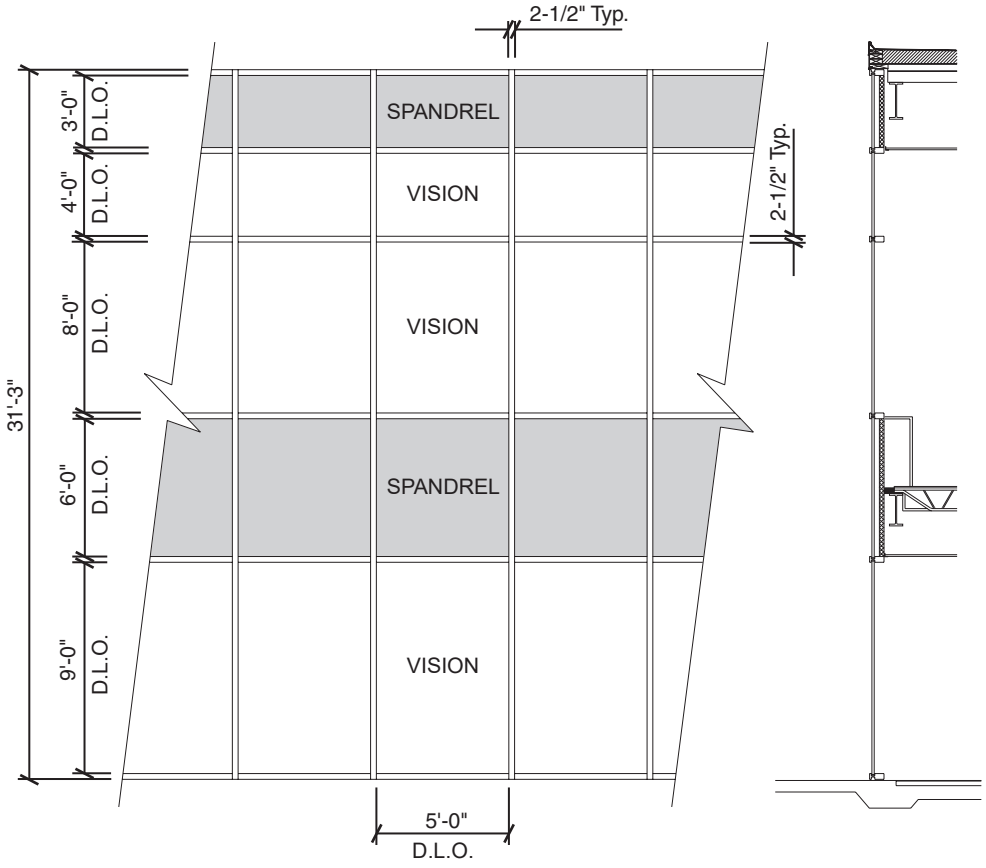


168016
I = 0.842 (35.05 x 10^4)
S = 0.503 (8.24 x 10^3)

1/4" GLASS
168016



Project Specific U-factor
Example Calculation
(Based on single bay of Curtain Wall/Window Wall)



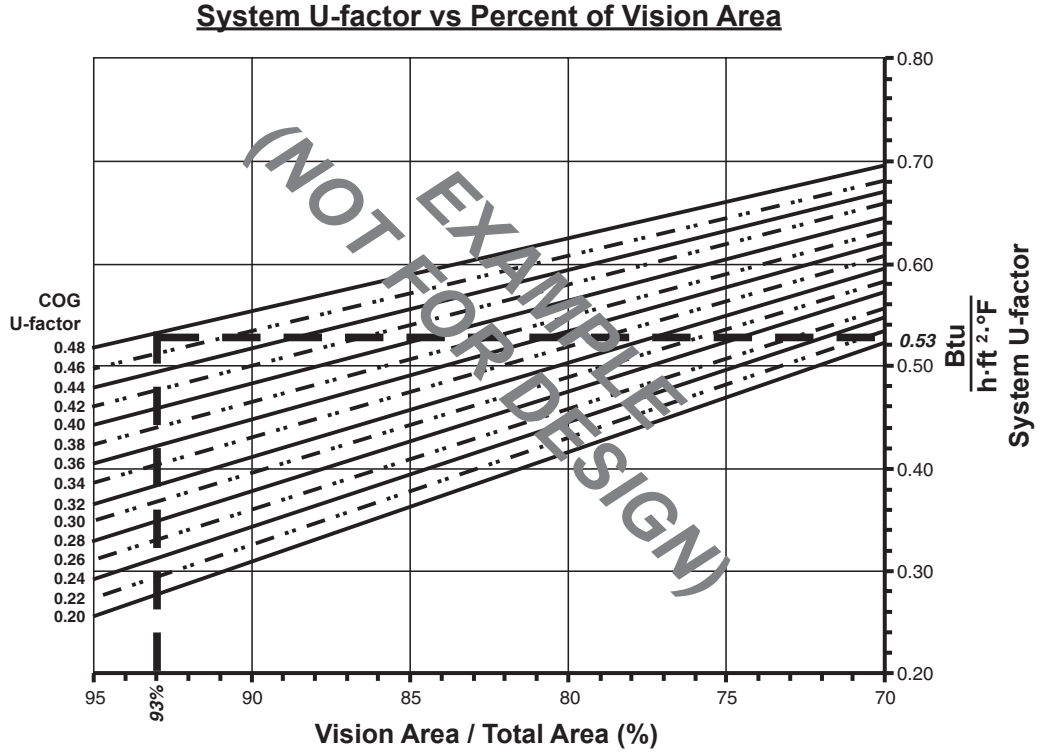
Vision Area

Example Glass U-factor	= 0.48 Btu/(ft² · h · °F)
Vision Area	= 5(9 + 8 + 4) = 105.0 ft²
Total Area (Vision)	= 5' 2-1/2" (9' 3-3/4" + 8' 2-1/2" + 4' 2-1/2") = 113.2 ft²
Percentage of Vision Glass	= (Vision Area ÷ Total Area)100 = (105.0 ÷ 113.2)100 = 93%

Spandrel Area

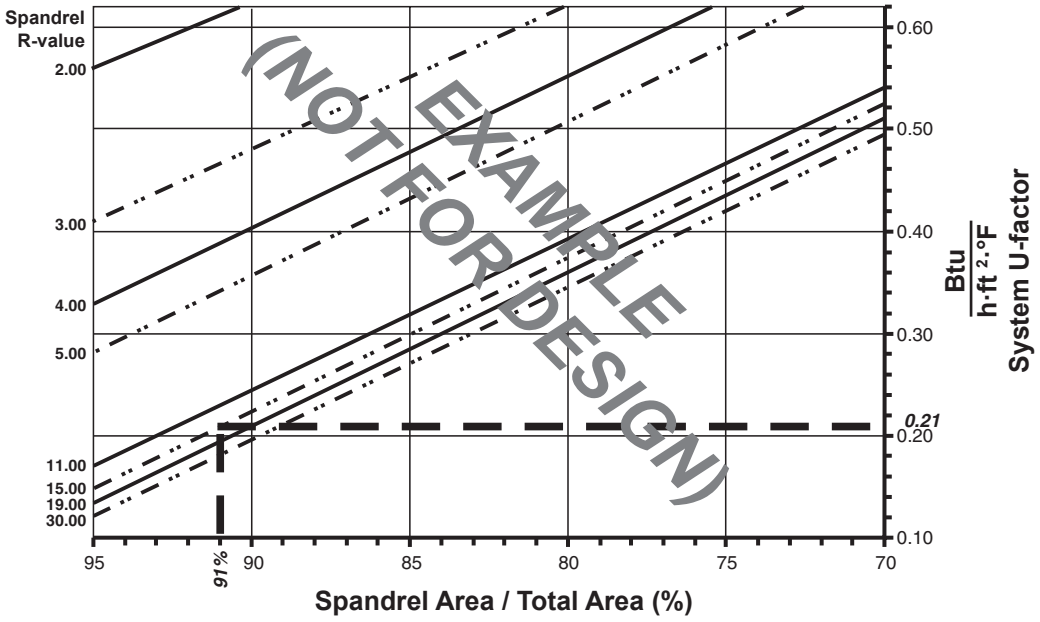
Example Spandrel R-value	= 15 (ft² · h · °F)/Btu
Spandrel Area	= 5(6 + 3) = 45.0 ft²
Total Area (Spandrel)	= 5' 2-1/2" (6' 2-1/2" + 3' 3-3/4") = 49.6 ft²
Percent of Spandrel	= (Spandrel Area ÷ Total Area)100 = (49.0 ÷ 49.6)100 = 91%

Vision Area Chart



Based on a single curtain wall bay of 93% vision glass and center of glass U-factor of 0.48, System U-factor is equal to 0.53 Btu/(h·ft ²·°F)

Spandrel Area Chart

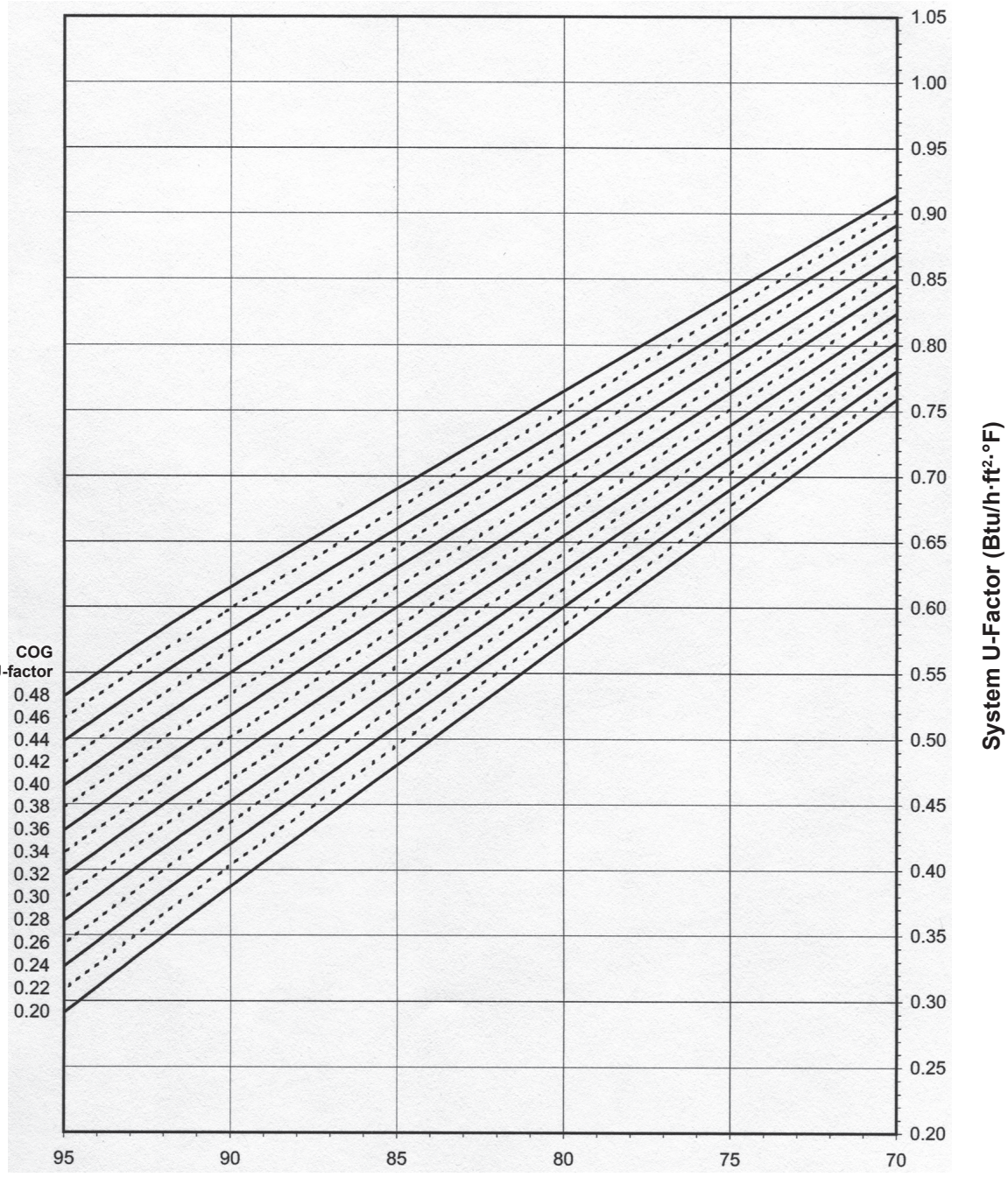


Based on a single curtain wall bay of 91% spandrel and center of spandrel R-value of 15, system U-factor is equal to 0.21 Btu/(h·ft ²·°F)

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

4 Side Captured - Aluminum Pressure Plate
1" Double Glazed - Aluminum Glazing Spacer

System U-factor vs Persent of Glass Area

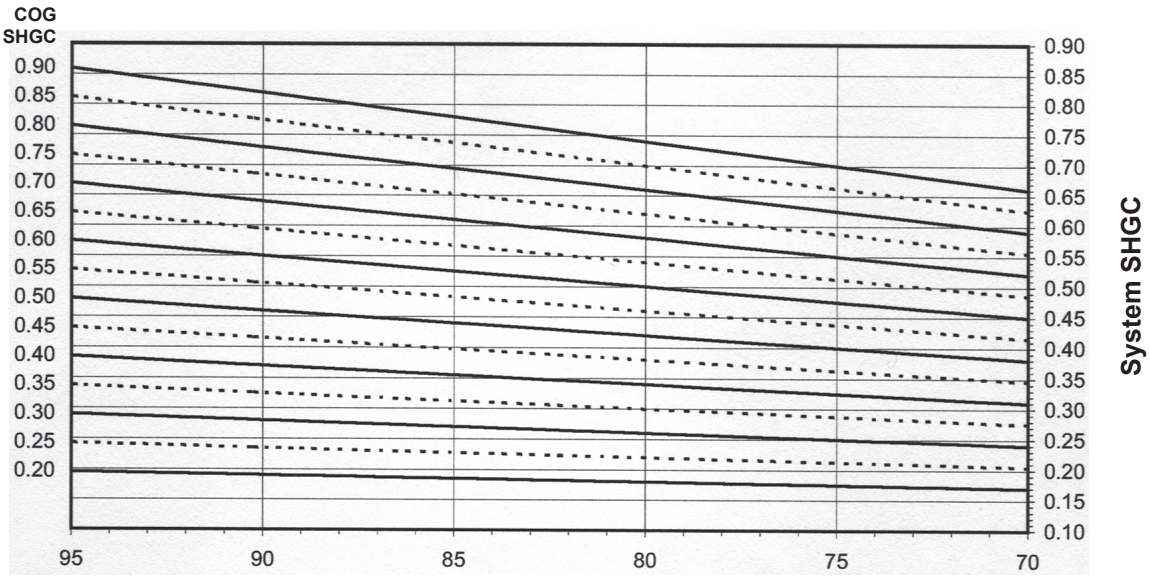


Percent of Glass = Vision Area/Total Area
(Total Daylight Opening/Projected Area)

Notes for Systen 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.

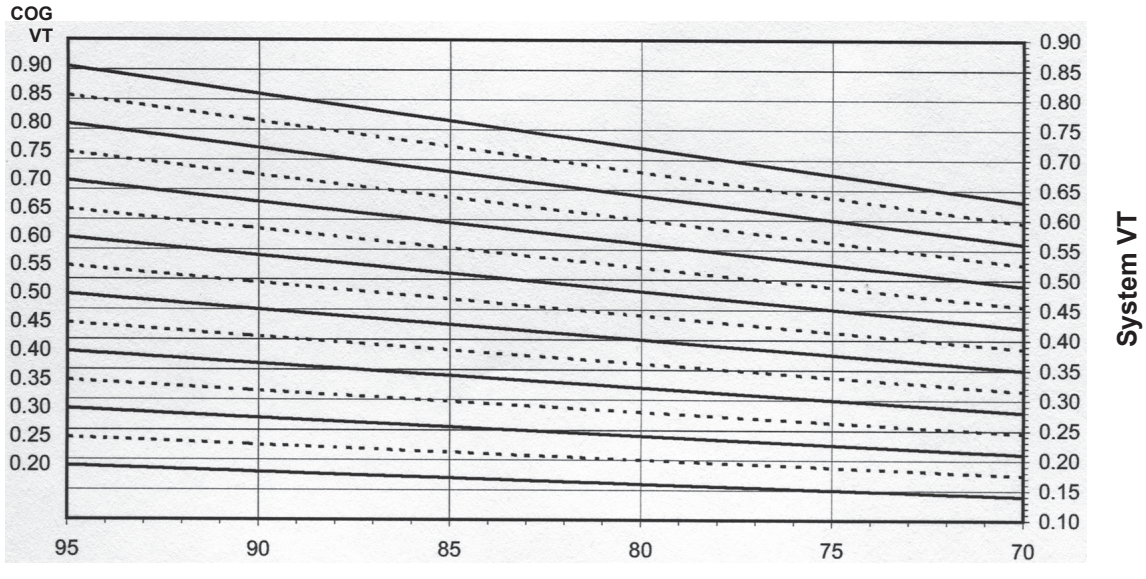
4 Side Captured - Aluminum Pressure Plate
1" Double Glazed - Aluminum Glazing Spacer

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.

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

Glass U-Factor [3]	Overall U-Factor [4]
0.48	0.61
0.46	0.59
0.44	0.58
0.42	0.56
0.40	0.55
0.38	0.53
0.36	0.51
0.34	0.50
0.32	0.48
0.30	0.46
0.28	0.45
0.26	0.43
0.24	0.41
0.22	0.40
0.20	0.38

4 Side Captured
Aluminum Pressure Plate
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.
2. 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] (CAPTURED)

Glass SHGC [3]	Overall SHGC [4]
0.90	0.82
0.85	0.78
0.80	0.73
0.75	0.69
0.70	0.64
0.65	0.60
0.60	0.55
0.55	0.51
0.50	0.46
0.45	0.42
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.19

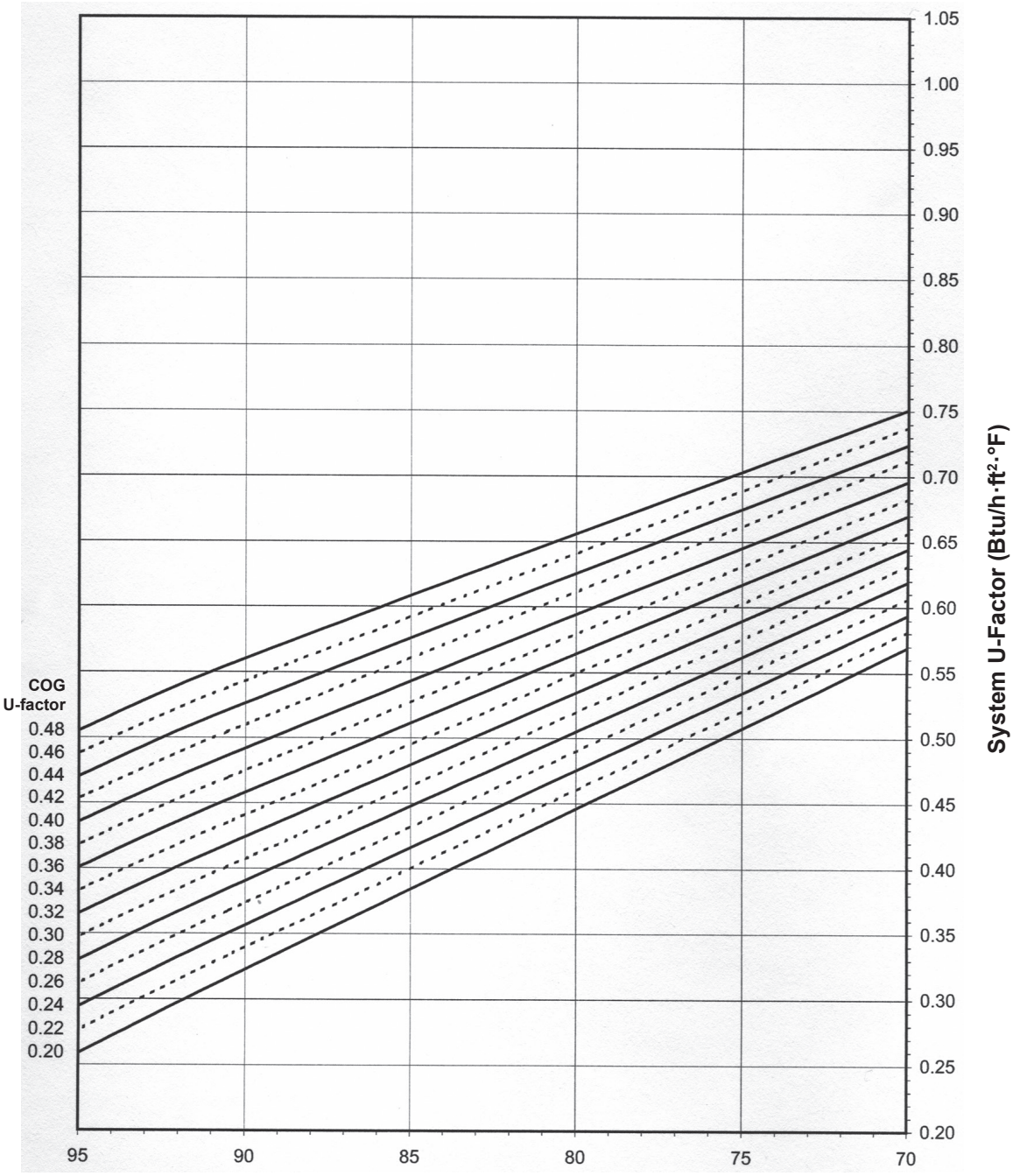
Visible Transmittance [2] (CAPTURED)

Glass VT [3]	Overall VT [4]
0.90	0.81
0.85	0.77
0.80	0.72
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

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

SSG - Aluminum Pressure Plate
1" Double Glazed - Aluminum Glazing Spacer

System U-factor vs Percentage of Glass Area

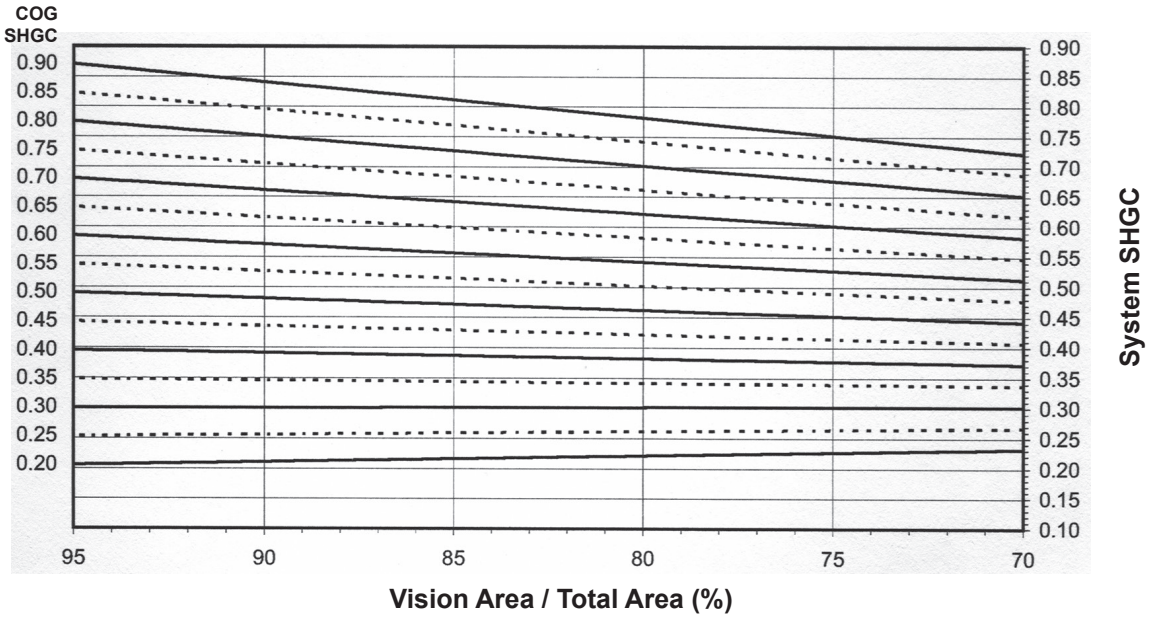


Percent of Glass = Vision Area/Total Area
(Total Daylight Opening/Projected Area)

Notes for Systen 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.

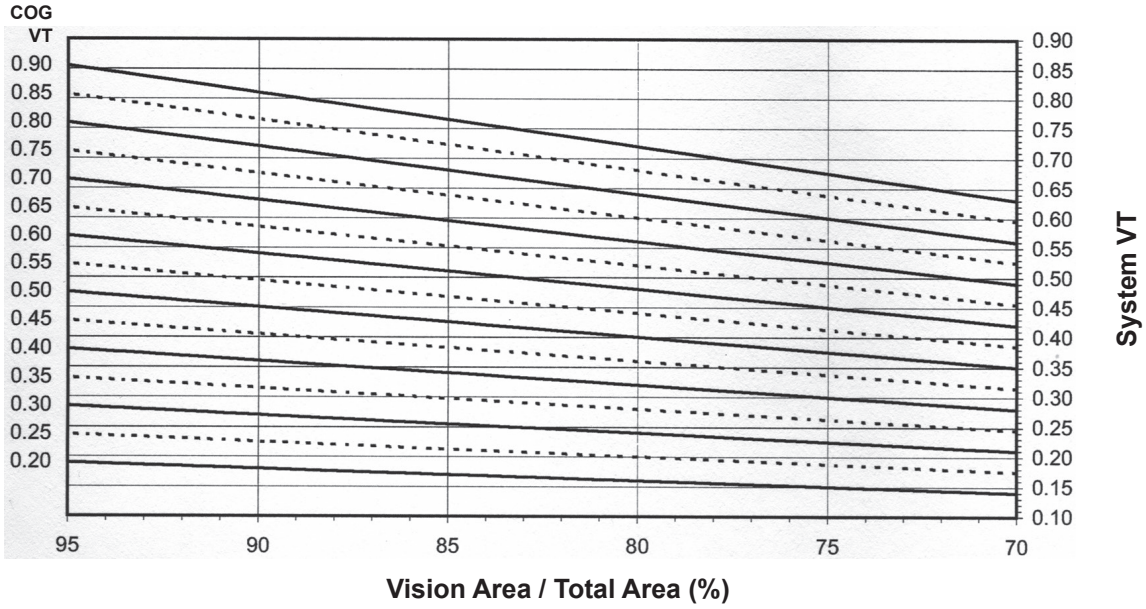
SSG - Aluminum Pressure Plate
1" Double Glazed - Aluminum Glazing Spacer

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.

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

Glass U-Factor [3]	Overall U-Factor [4]
0.48	0.55
0.46	0.54
0.44	0.52
0.42	0.50
0.40	0.49
0.38	0.47
0.36	0.45
0.34	0.43
0.32	0.42
0.30	0.40
0.28	0.38
0.26	0.37
0.24	0.35
0.22	0.33
0.20	0.32

SSG
Aluminum Pressure Plate
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.
2. 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] (SSG)

Glass SHGC [3]	Overall SHGC [4]
0.90	0.84
0.85	0.80
0.80	0.75
0.75	0.71
0.70	0.66
0.65	0.62
0.60	0.57
0.55	0.53
0.50	0.48
0.45	0.44
0.40	0.39
0.35	0.35
0.30	0.30
0.25	0.26
0.20	0.21

Visible Transmittance [2] (SSG)

Glass VT [3]	Overall VT [4]
0.90	0.81
0.85	0.77
0.80	0.72
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

CONDENSATION RESISTANCE

Glazing Infill	Pressure Plate Type	Condensation Resistance Factor (CRF) AAMA 1503		Temperature Index (TI) CSA A440-0	
		Frame	Glass	Frame	Glass
1" Double Captured	Aluminum	69	57	---	---
1" Double 2-Sided SSG	Aluminum	73	60	---	---