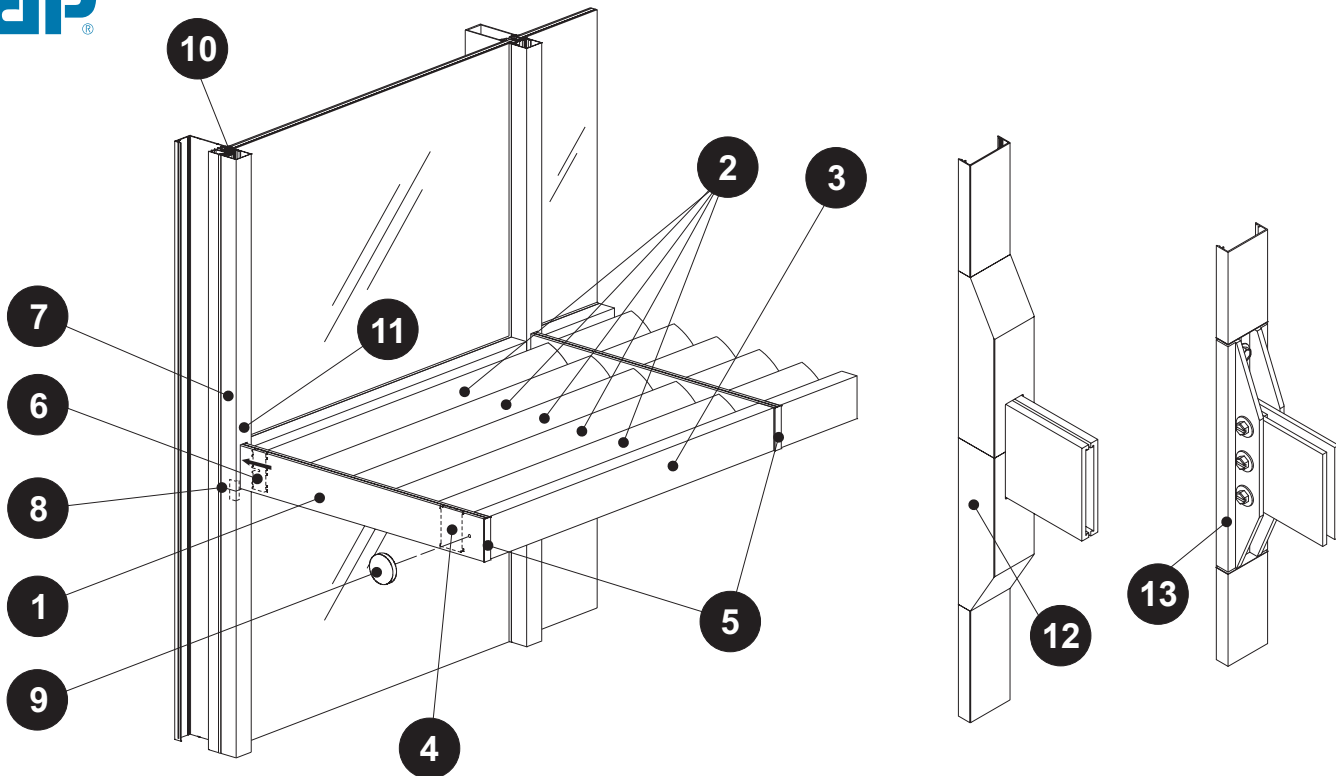


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THERMASHADE® SUNSHADE SYSTEM

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*The latest installation instructions for this product are available at www.ykkap.com.



1. Outrigger

A member projecting from a curtain wall product to hold and support louvers and fascia elements.

2. Louver

Horizontal extruded member that acts as a canopy and controls the radiation of light through glazing elements.

3. Fascia

Outermost louver element that trims the face of the ThermaShade assembly.

4. Outrigger Connector

"I" shaped extrusion used to align adjacent outriggers and prevent separation under loading conditions.

5. Flat Outrigger Cap

Finished part used to cap the external gap created by two square extruded outriggers.

6. Spacer

Unfinished part used at anchor clip to ensure proper spacing between ThermaShade assemblies.

7. Face Cover

Extrusions that cover the pressure plate and anchoring components.

8. Face Cover Splice

Formed angles used as a backer for the sealing of the joint between two face covers.

9. Medallion

Circular attachment component used to prevent separation between the end outrigger and the first ThermaShade unit.

10. Pressure Plate Assembly

Aluminum extrusion combined with gaskets and thermal isolator used to seal and retain the glass in a curtain wall system.

11. Anchor Clip

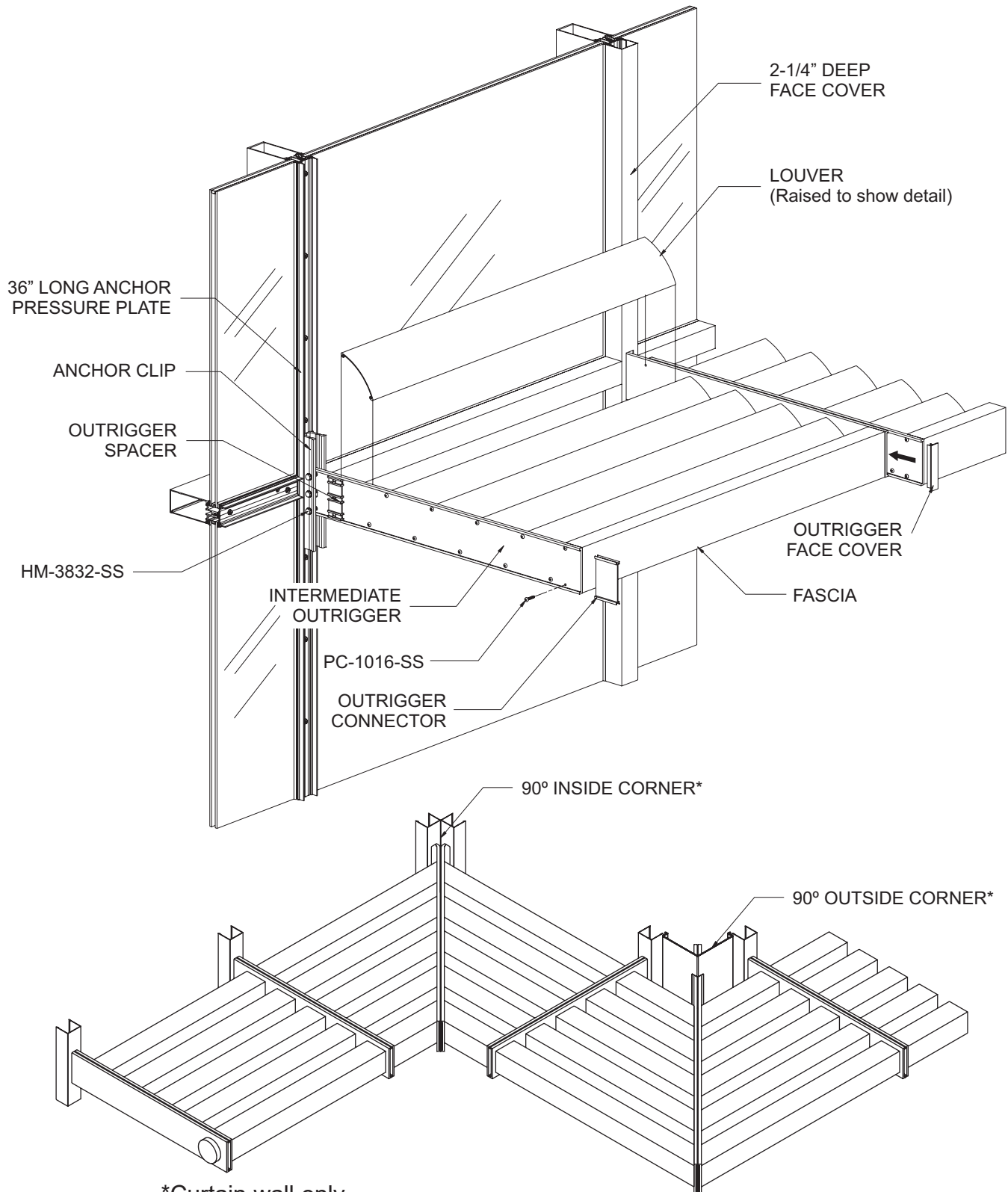
Prefabricated part to attach ThermaShade units to curtain wall system.

12. Concealed Anchor Assembly

Anchor with covers.

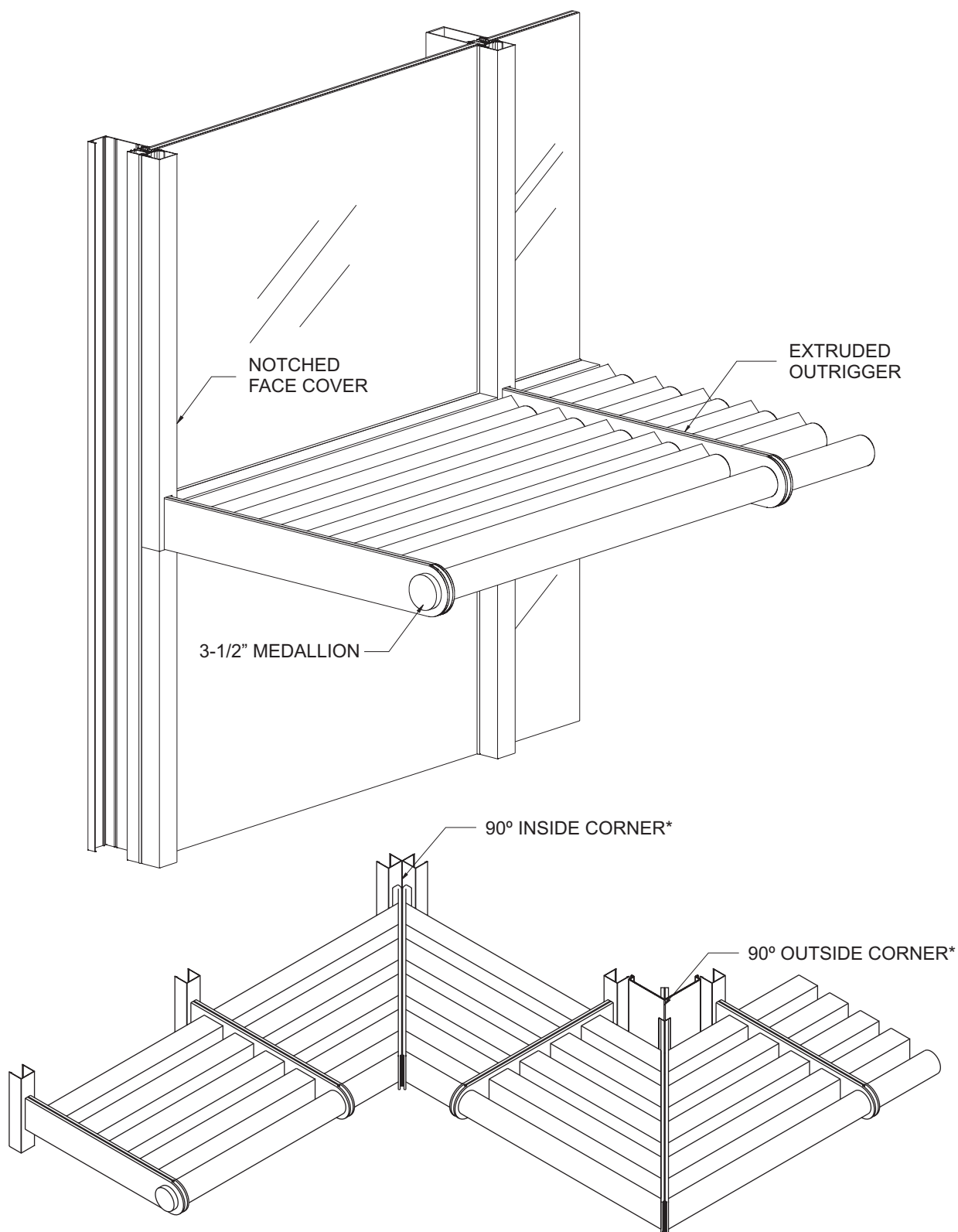
13. Exposed Anchor Assembly

CONCEALED ANCHOR SQUARE OUTRIGGER



*Curtain wall only
 See page 11 for all available configurations for the square outrigger

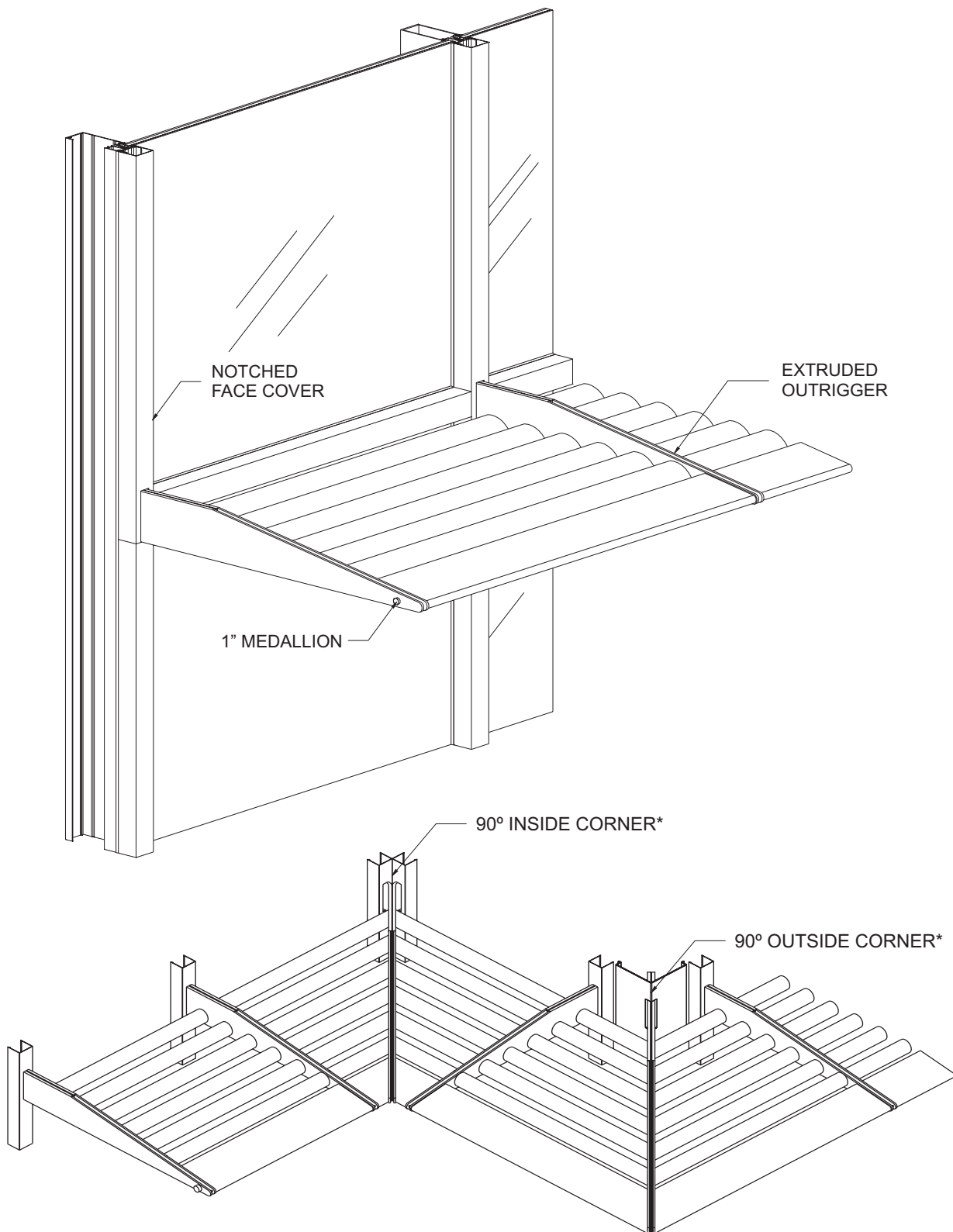
CONCEALED ANCHOR ROUNDED OUTRIGGER



*Curtain wall only

See page 11 for all available configurations for the rounded outrigger

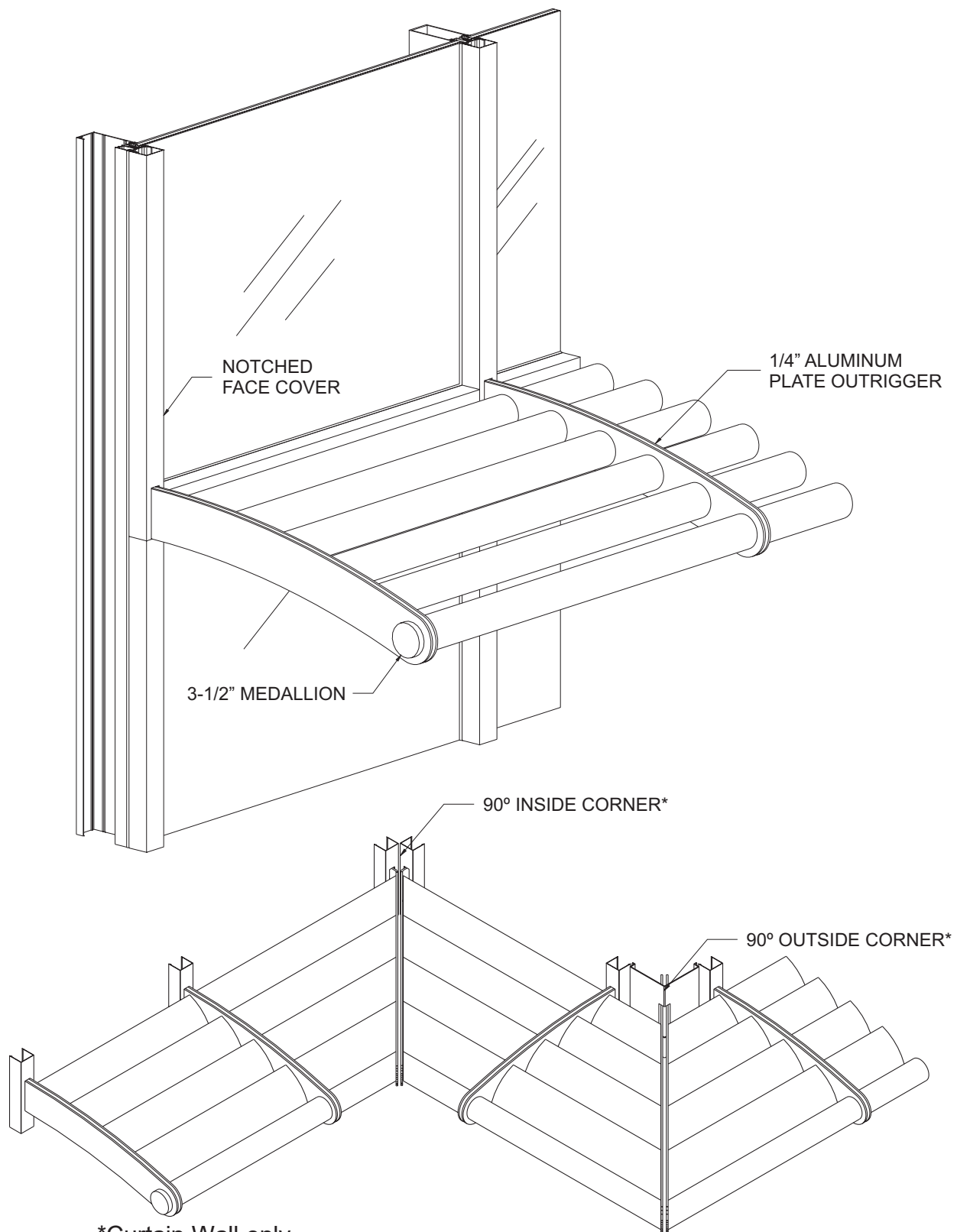
CONCEALED ANCHOR WEDGE OUTRIGGER



*Curtain Wall only

See page 11 for all available configurations for the wedge outrigger

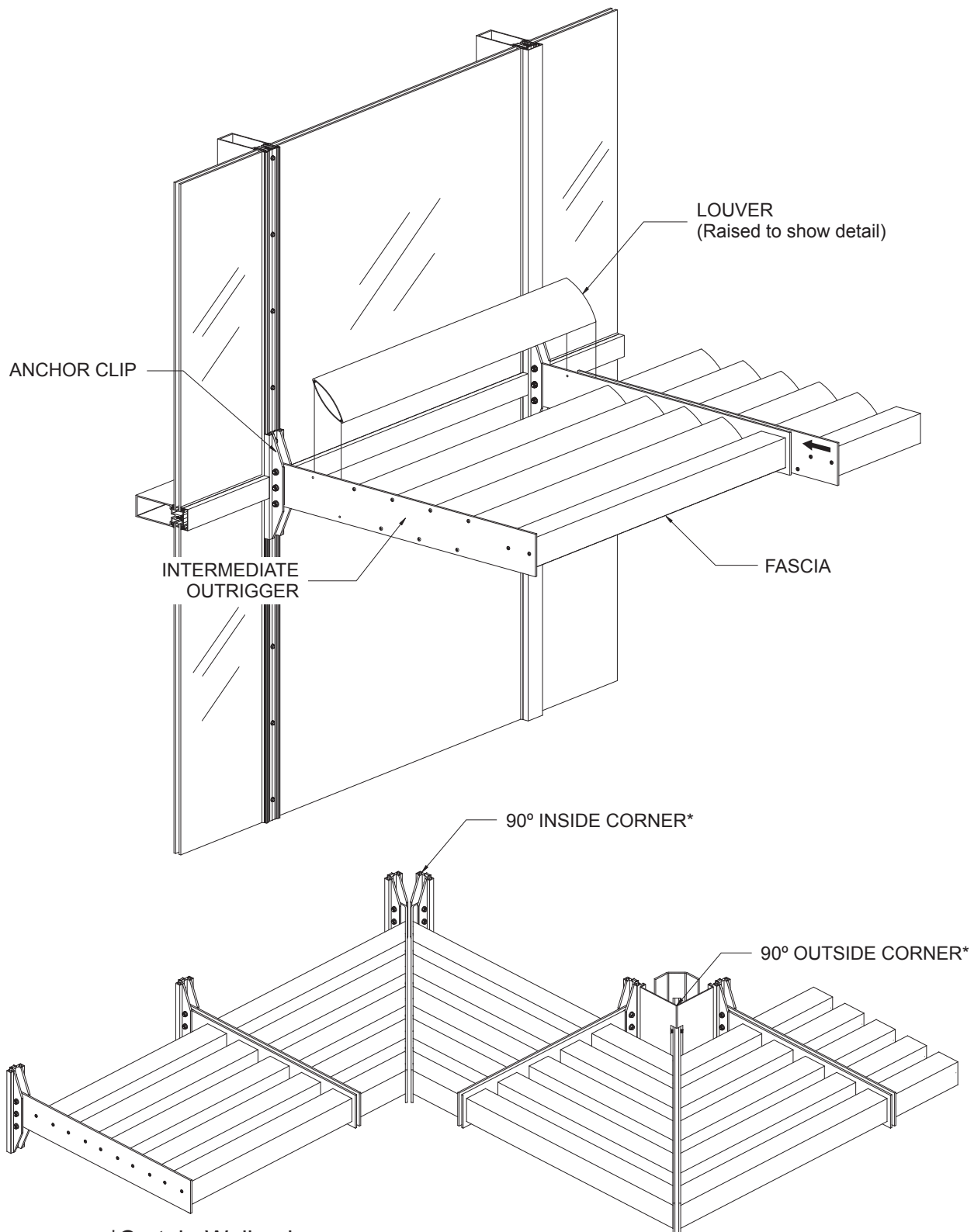
CONCEALED ANCHOR CURVED OUTRIGGER



*Curtain Wall only

See page 11 for all available configurations for the curved outrigger

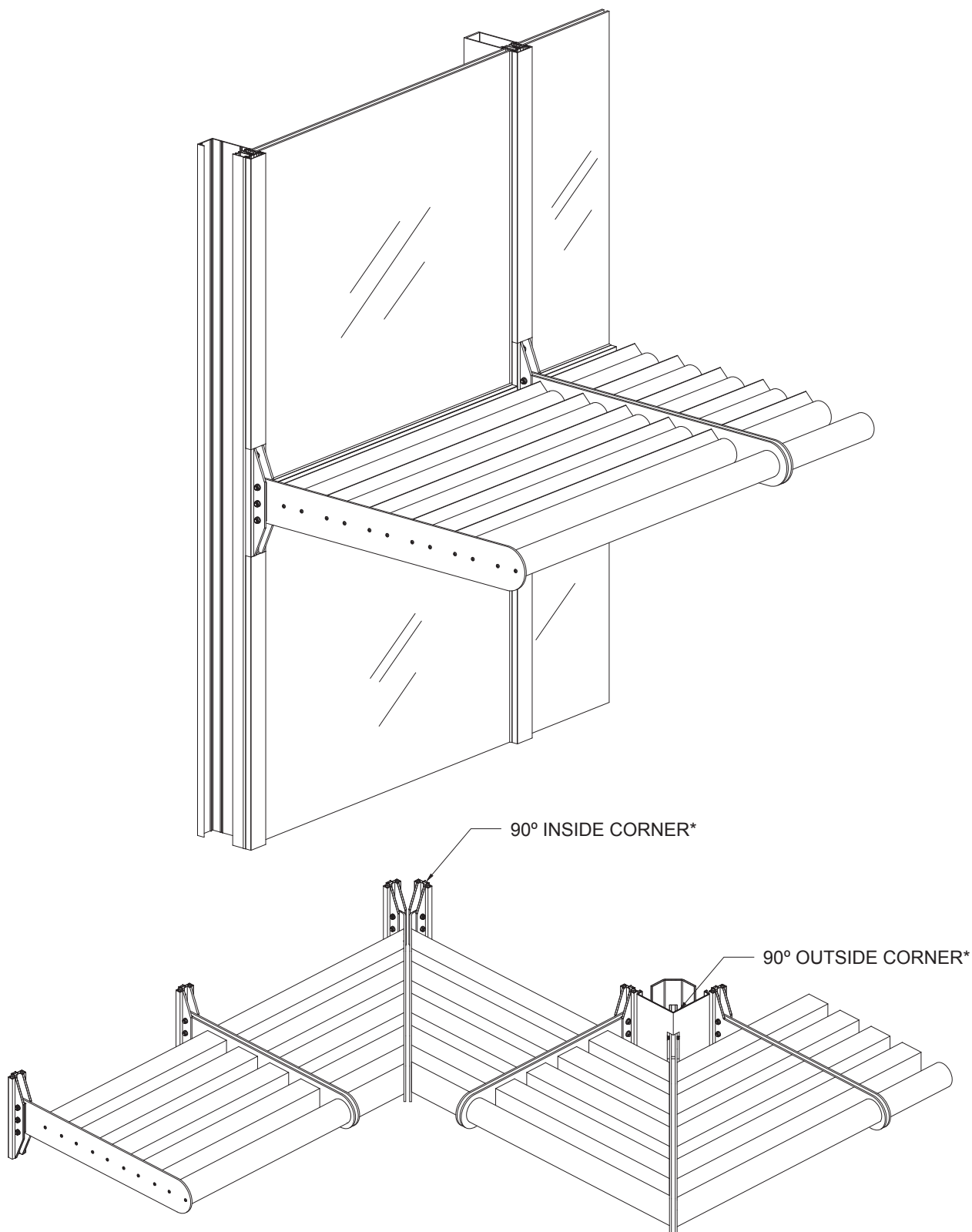
EXPOSED ANCHOR SQUARE OUTRIGGER



*Curtain Wall only

See page 11 for all available configurations for the square outrigger

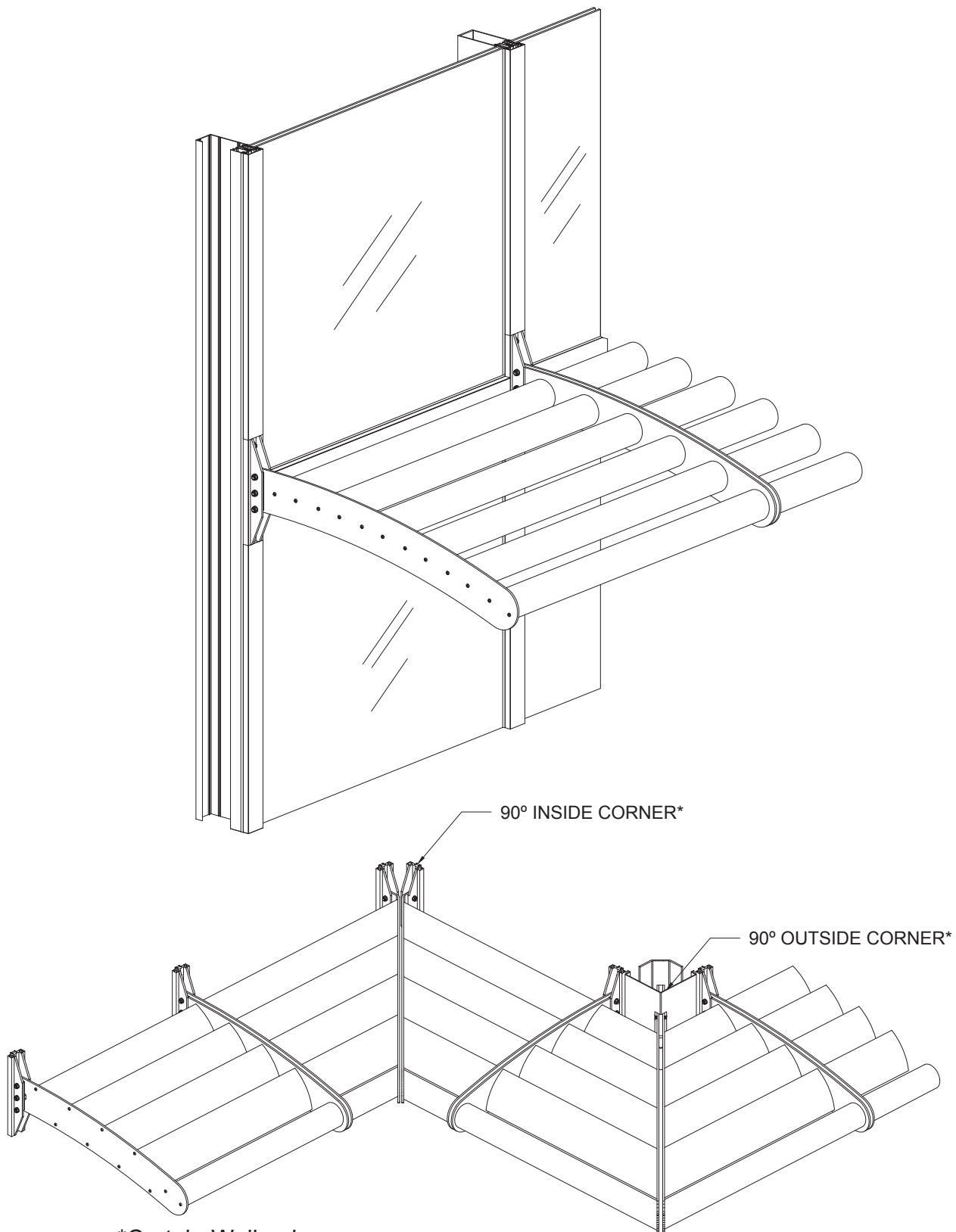
EXPOSED ANCHOR ROUNDED OUTRIGGER



*Curtain Wall only

See page 11 for all available configurations for the rounded outrigger

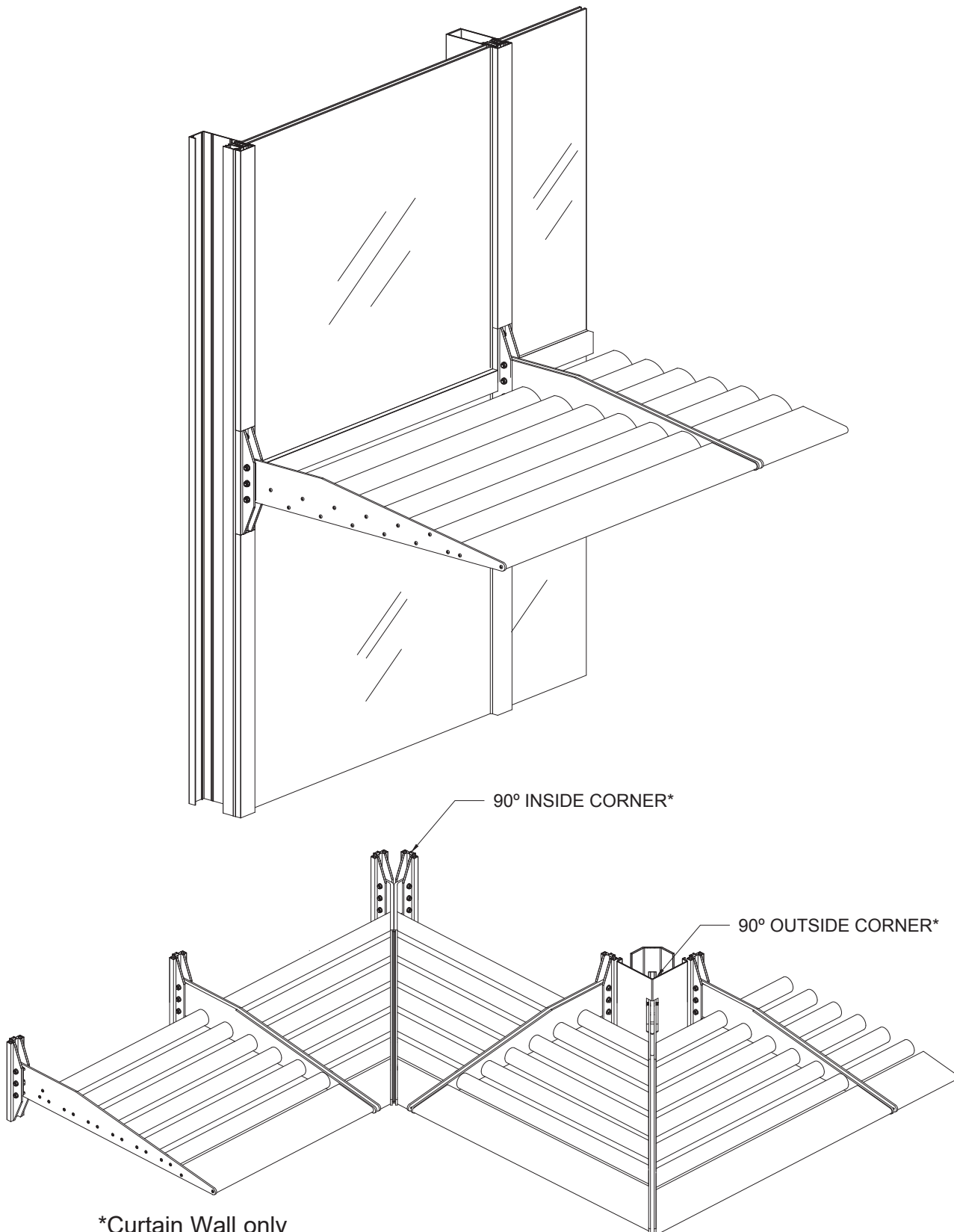
EXPOSED ANCHOR CURVED OUTRIGGER



*Curtain Wall only

See page 11 for all available configurations for the curved outrigger

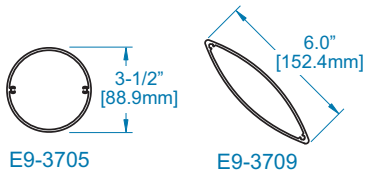
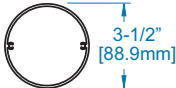
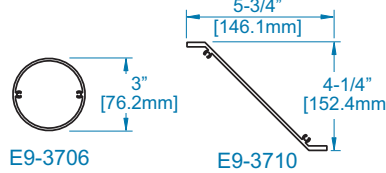
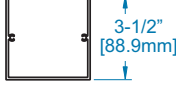
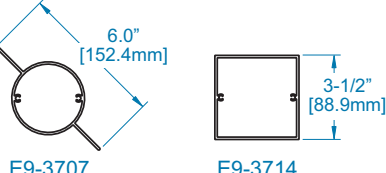
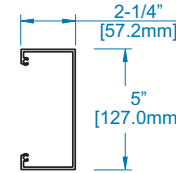
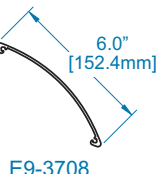
EXPOSED ANCHOR WEDGE OUTRIGGER



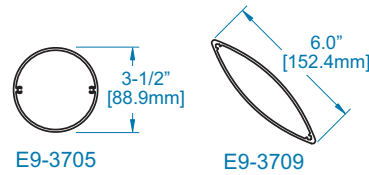
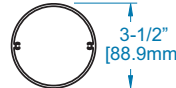
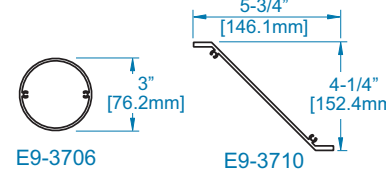
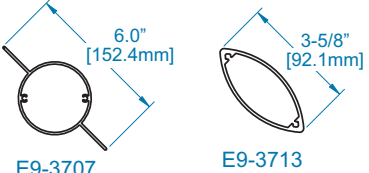
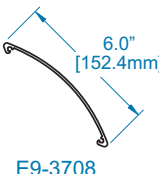
*Curtain Wall only
See page 11 for all available configurations for the wedge outrigger

AVAILABLE LOUVERS AND FASCIA

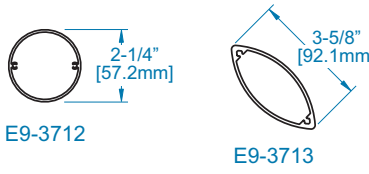
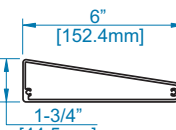
SQUARE OUTRIGGER

LOUVERS	FASCIA
 E9-3705 E9-3709	 E9-3705
 E9-3706 E9-3710	 E9-3714
 E9-3707 E9-3714	 E9-3715
 E9-3708	

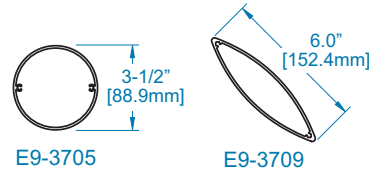
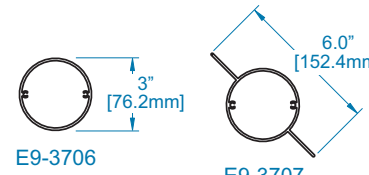
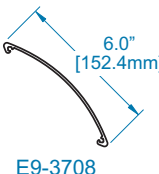
ROUNDED OUTRIGGER

LOUVERS	FASCIA
 E9-3705 E9-3709	 E9-3705
 E9-3706 E9-3710	 E9-3706
 E9-3707 E9-3713	
 E9-3708	 E9-3714

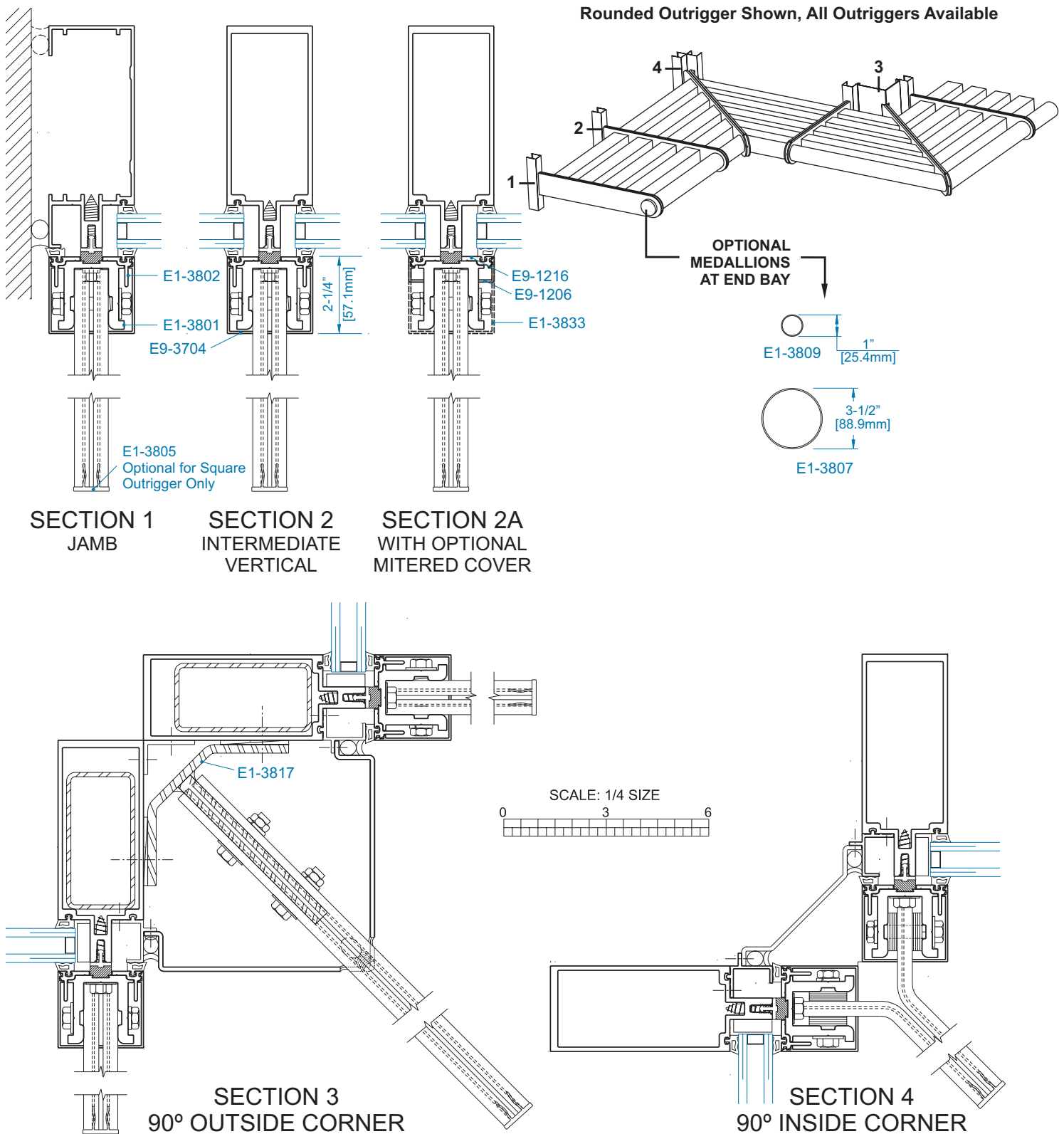
WEDGE OUTRIGGER

LOUVERS	FASCIA
 E9-3712 E9-3713	 E9-3711

CURVED OUTRIGGER

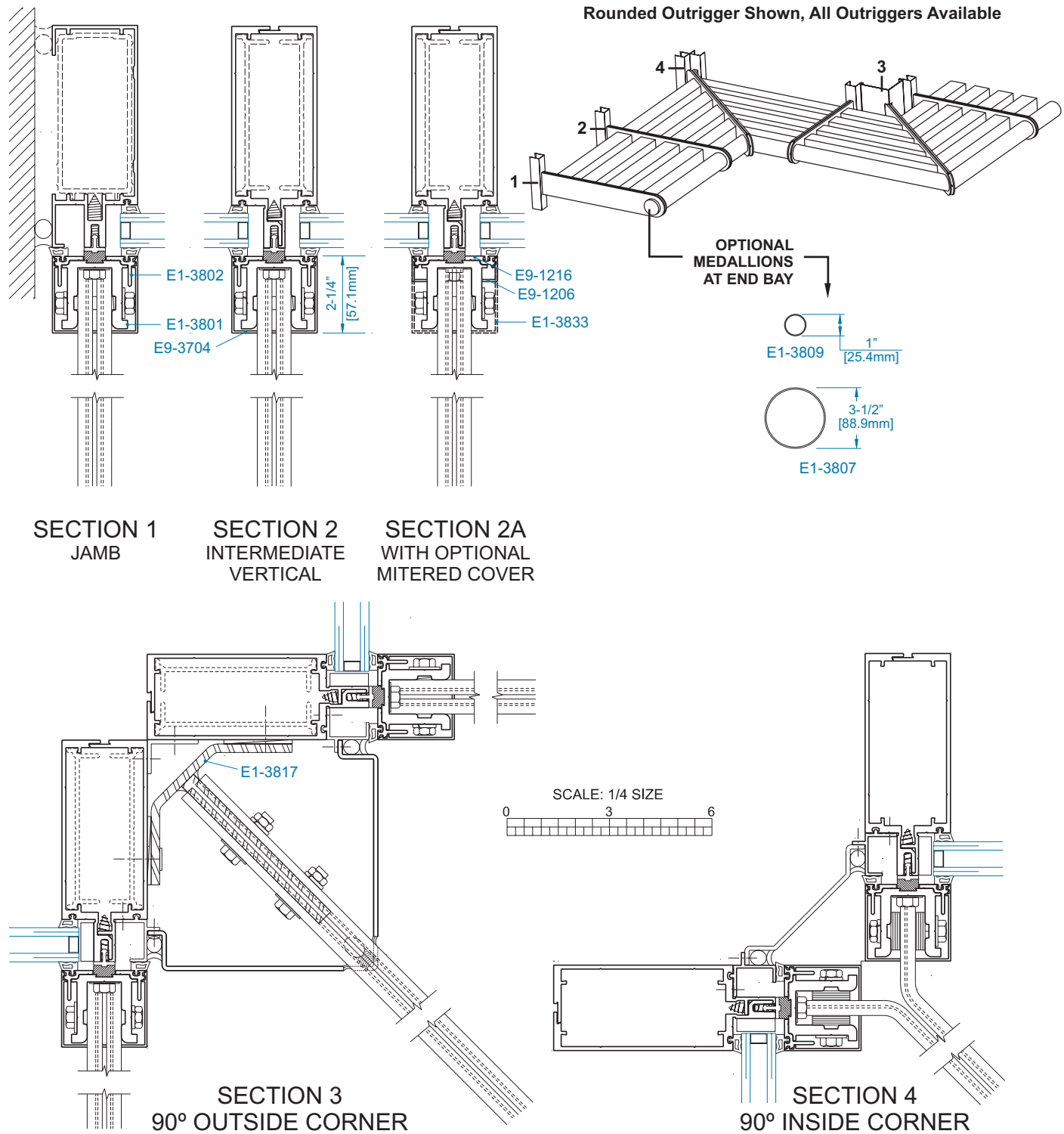
LOUVERS	FASCIA
 E9-3705 E9-3709	 E9-3705
 E9-3706 E9-3707	 E9-3706
 E9-3708	

CONCEALED ANCHOR ATTACHMENT TO YCW 750 OG



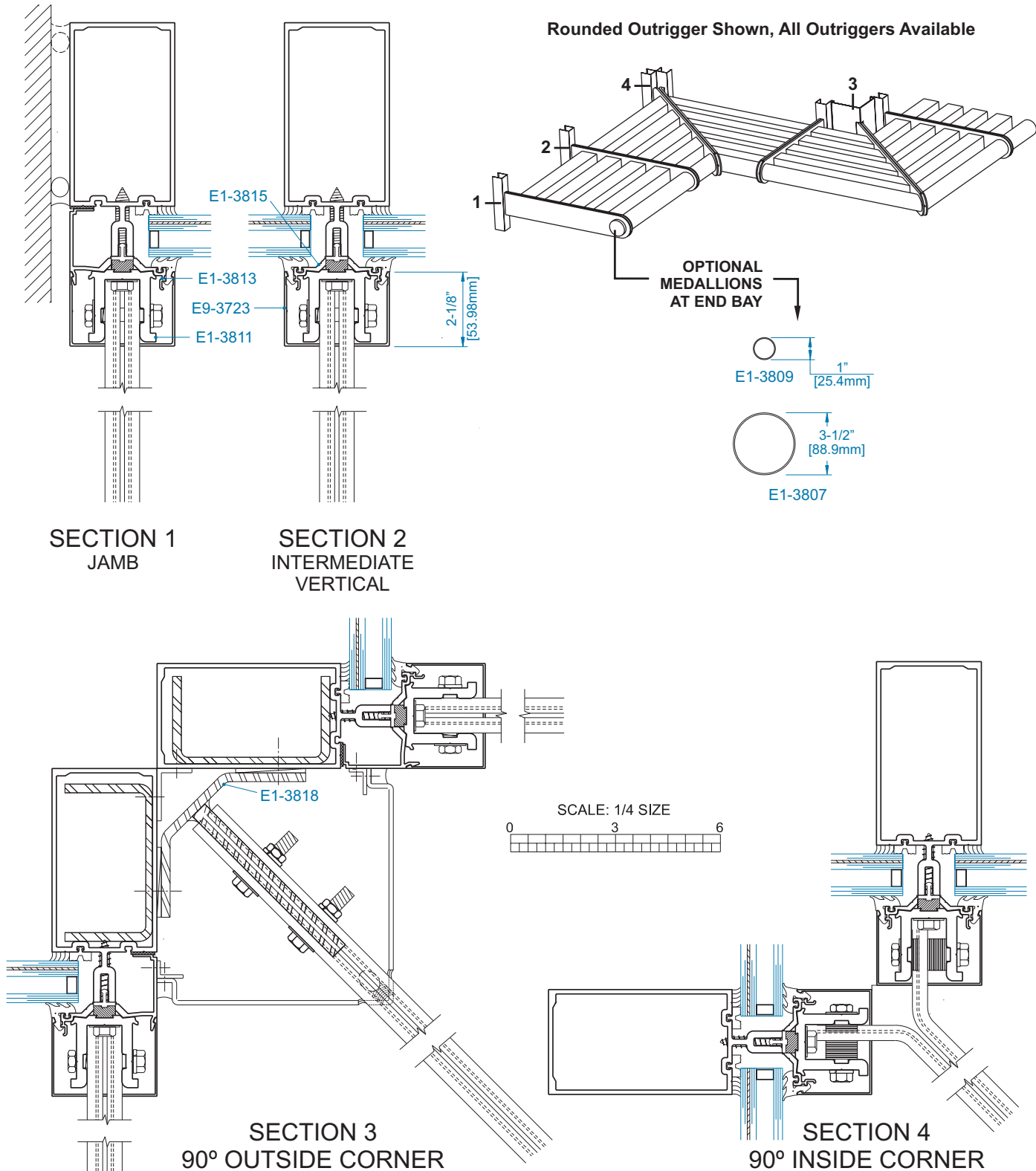
90° Outside Corners Available in 5-1/4" Mullions Only

CONCEALED ANCHOR ATTACHMENT TO YCW 750 SPLINETECH®



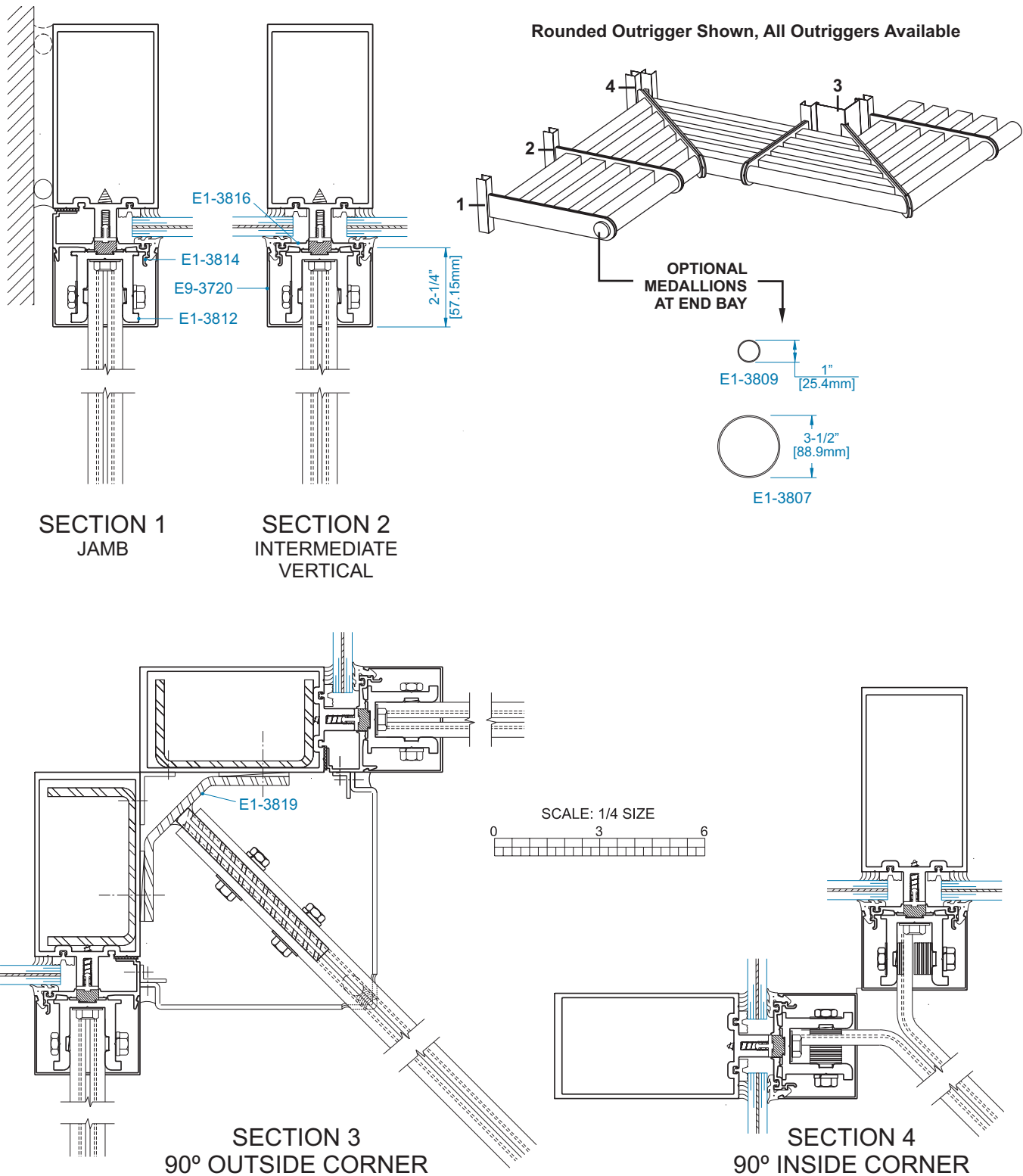
90° Outside Corners Available in 5-1/4" Mullions Only

CONCEALED ANCHOR ATTACHMENT TO YHC 300 OG (INSULATING GLASS)



90° Outside Corners Available in 5-1/4" Mullions Only

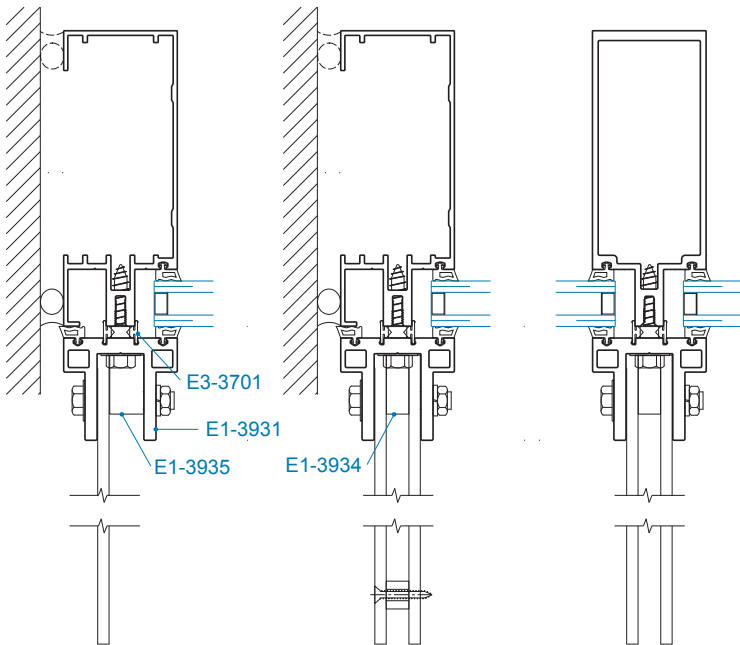
CONCEALED ANCHOR ATTACHMENT TO YHC 300 OG (MONOLITHIC GLASS)



90° Outside Corners Available in 5-1/4" Mullions Only

EXPOSED ANCHOR ATTACHMENT TO YCW 750 OG

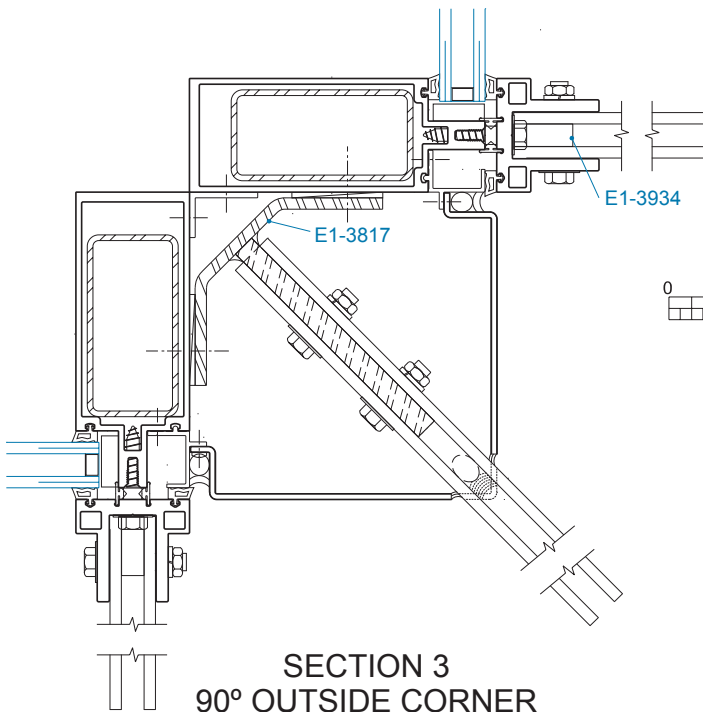
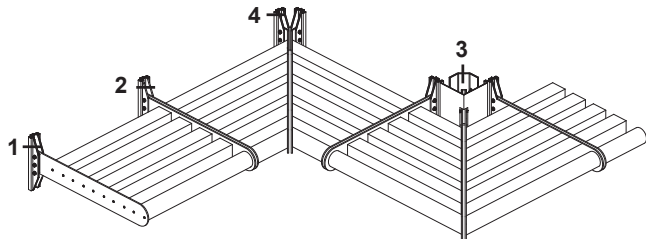
Rounded Outrigger Shown, All Outriggers Available



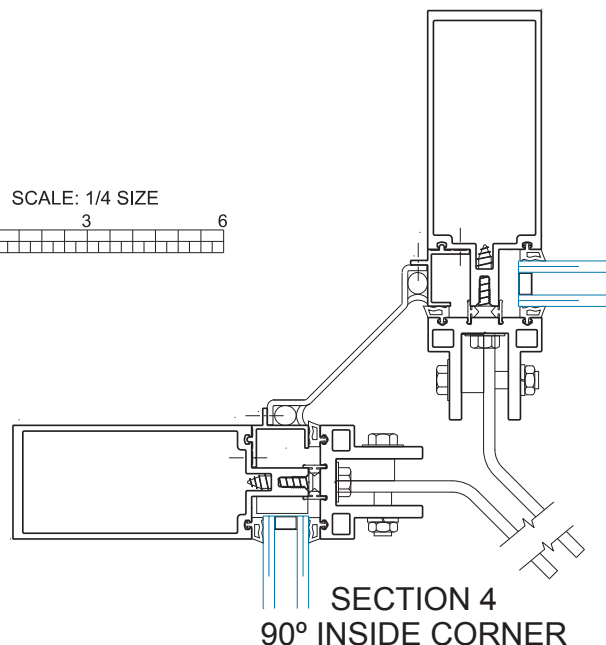
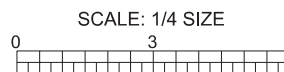
SECTION 1
JAMB

SECTION 1A
WITH OPTIONAL
END BAY

SECTION 2
INTERMEDIATE



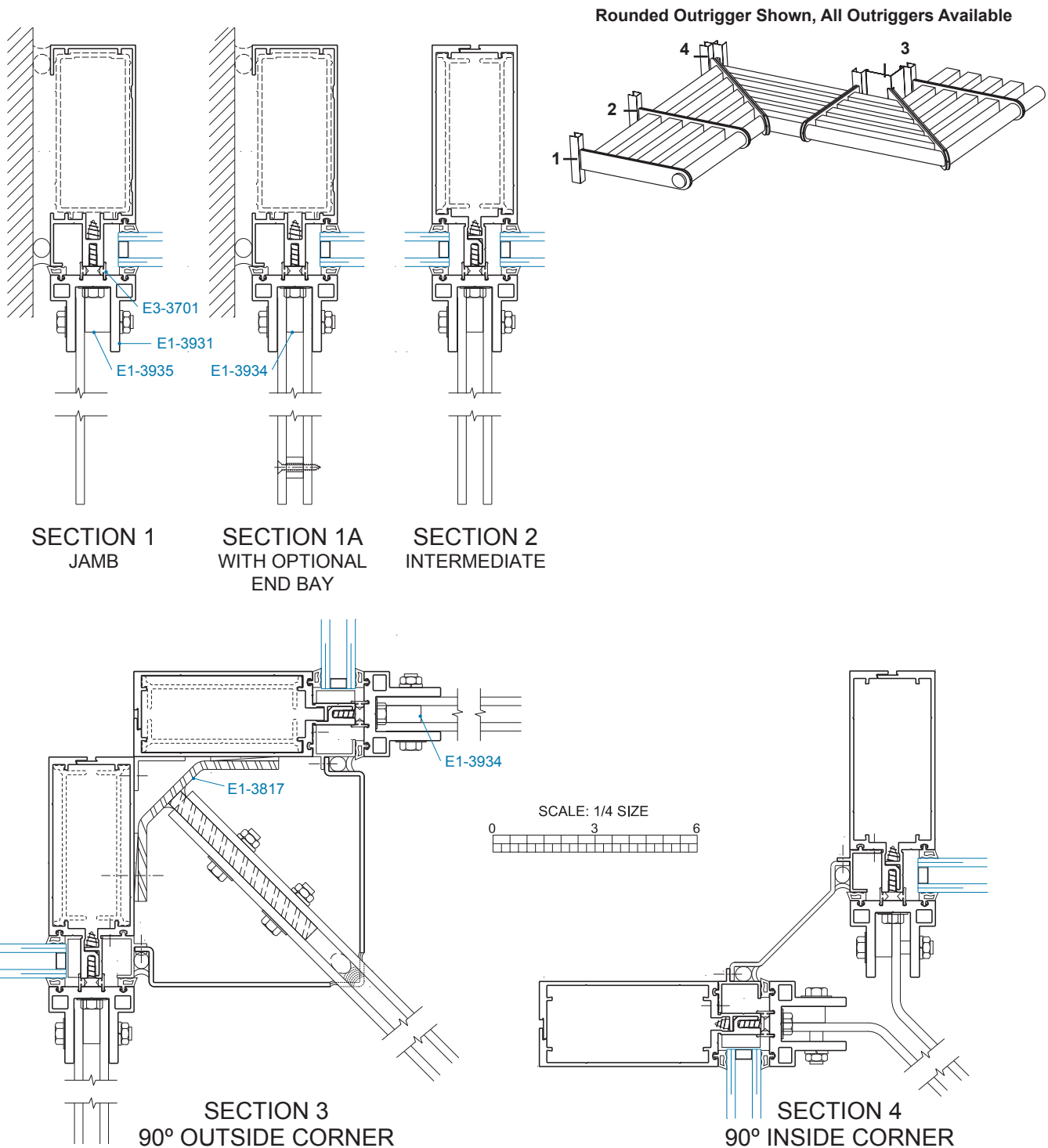
SECTION 3
90° OUTSIDE CORNER



SECTION 4
90° INSIDE CORNER

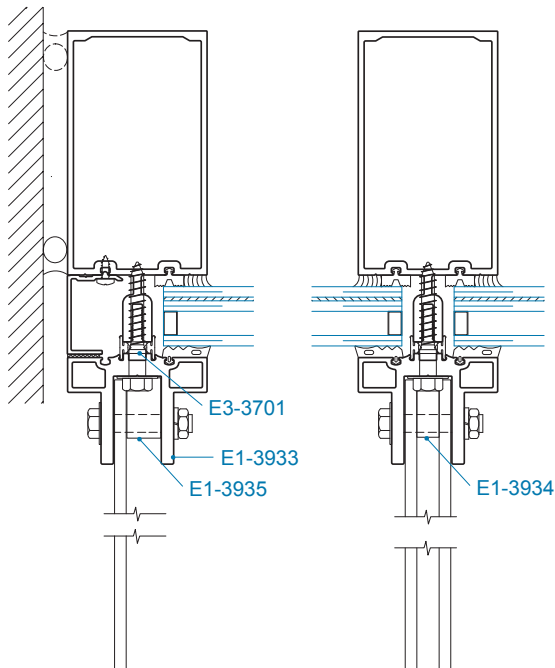
90° Outside Corners Available in 5-1/4" Mullions Only

EXPOSED ANCHOR ATTACHMENT TO YCW 750 SPLINETECH®



90° Outside Corners Available in 5-1/4" Mullions Only

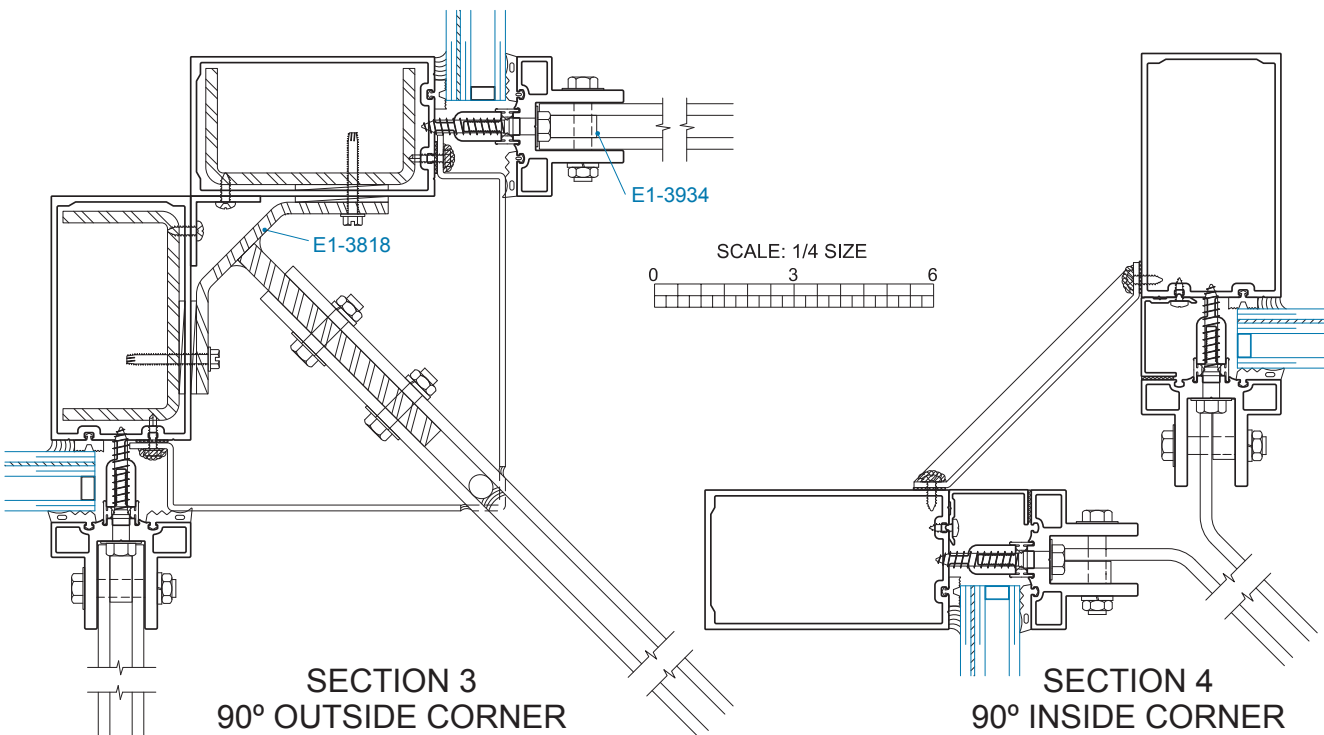
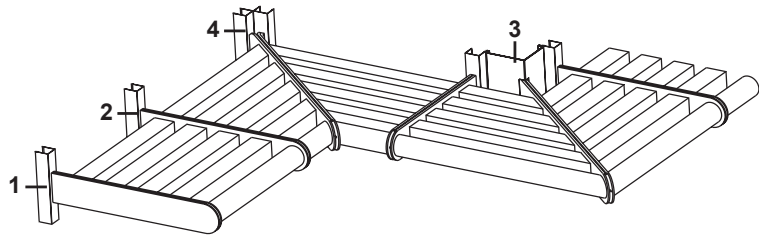
EXPOSED ANCHOR ATTACHMENT TO YHC 300 OG (INSULATING GLASS)



SECTION 1
JAMB

SECTION 2
INTERMEDIATE
VERTICAL

Rounded Outrigger Shown, All Outriggers Available

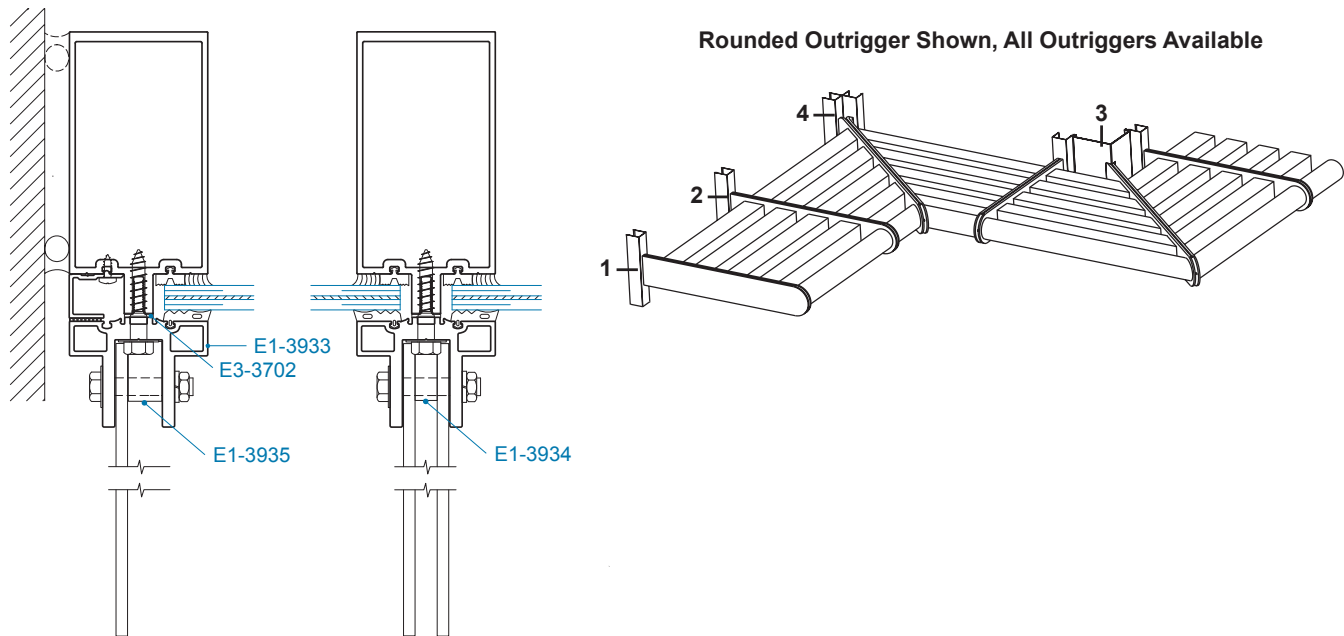


SECTION 3
90° OUTSIDE CORNER

SECTION 4
90° INSIDE CORNER

90° Outside Corners Available in 5-1/4" Mullions Only

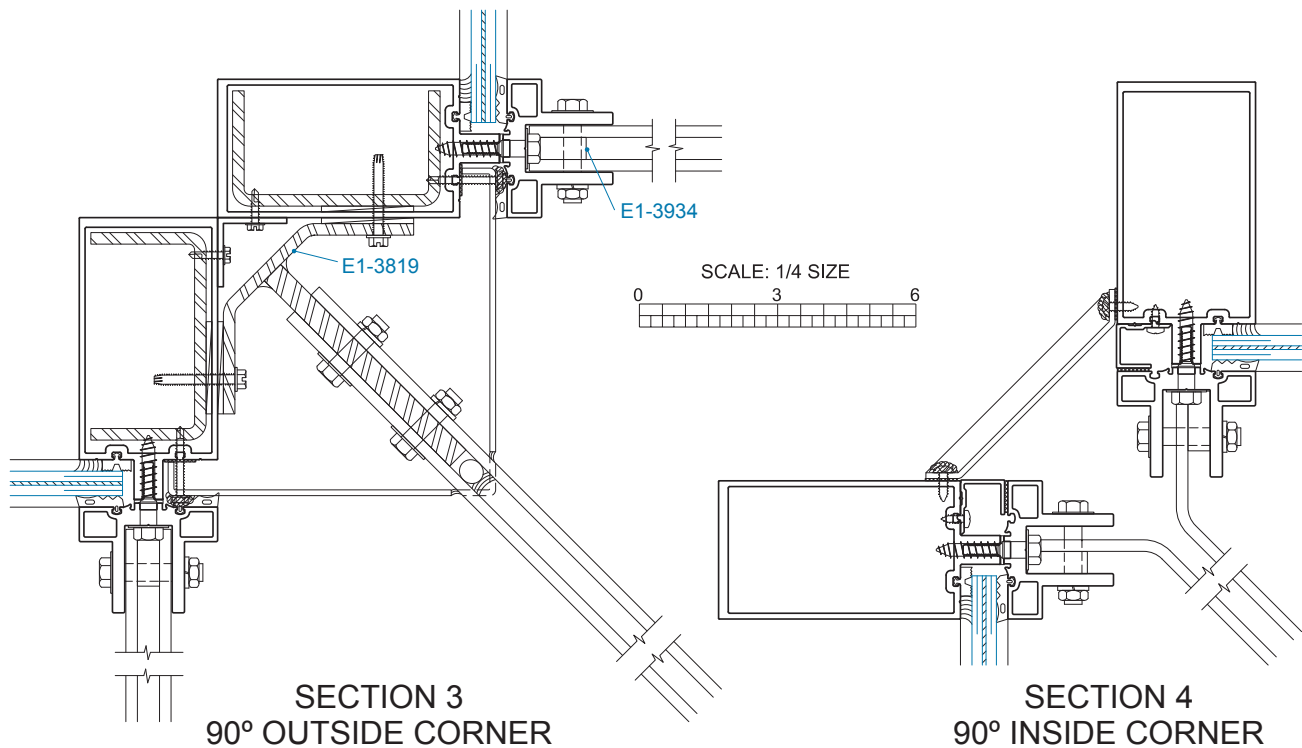
EXPOSED ANCHOR ATTACHMENT TO YHC 300 OG (MONOLITHIC GLASS)



Rounded Outrigger Shown, All Outriggers Available

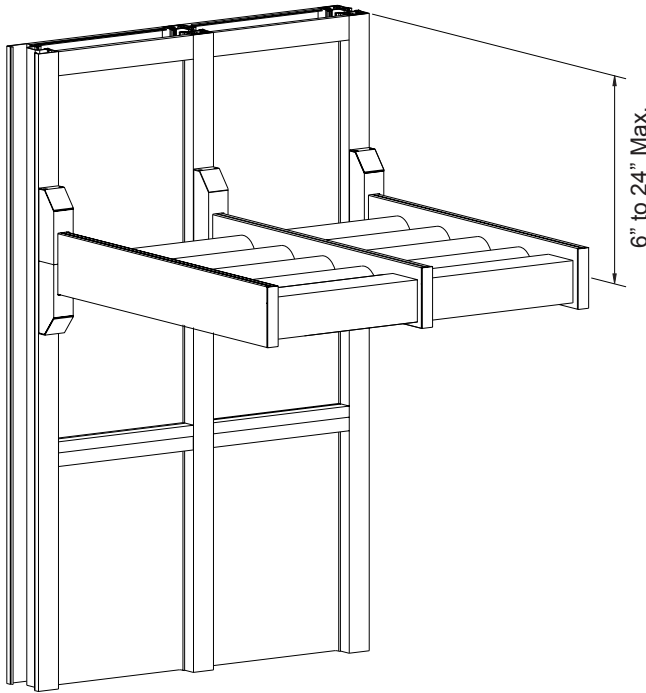
SECTION 1
JAMB

SECTION 2
INTERMEDIATE
VERTICAL



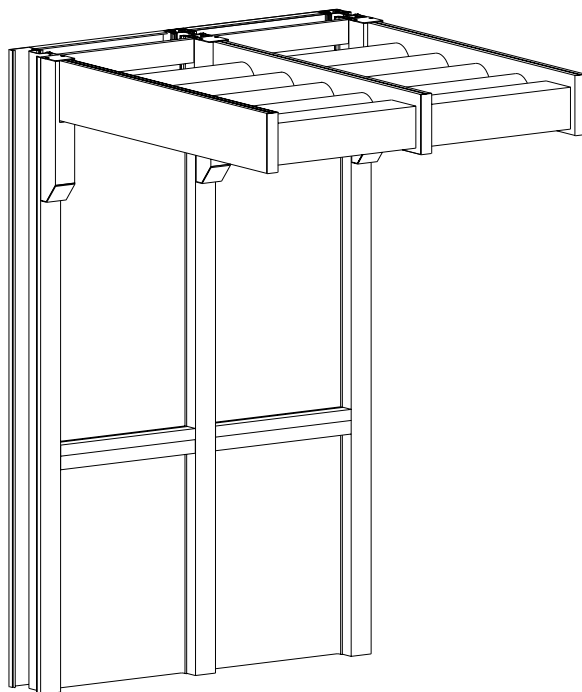
90° Outside Corners Available in 5-1/4" Mullions Only

THERMASHADE FOR STOREFRONT LOCATION OPTIONS



CONCEALED ANCHOR TYPE A

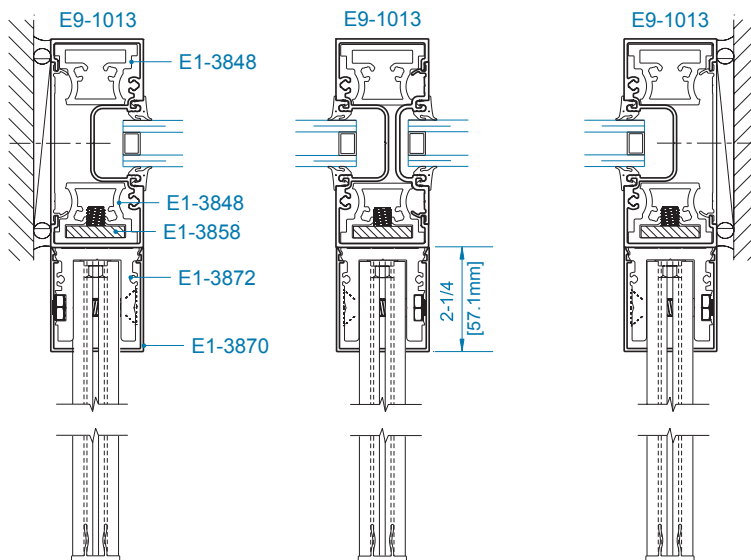
- Outrigger and mullion anchor are located below the head.
- Requires standard “Type A” mullion anchors and covers.
- Can utilize Luminance® light shelf system.



CONCEALED ANCHOR TYPE B

- Outrigger and mullion anchor are located at the extreme head location, requiring “Type B” anchor and covers.

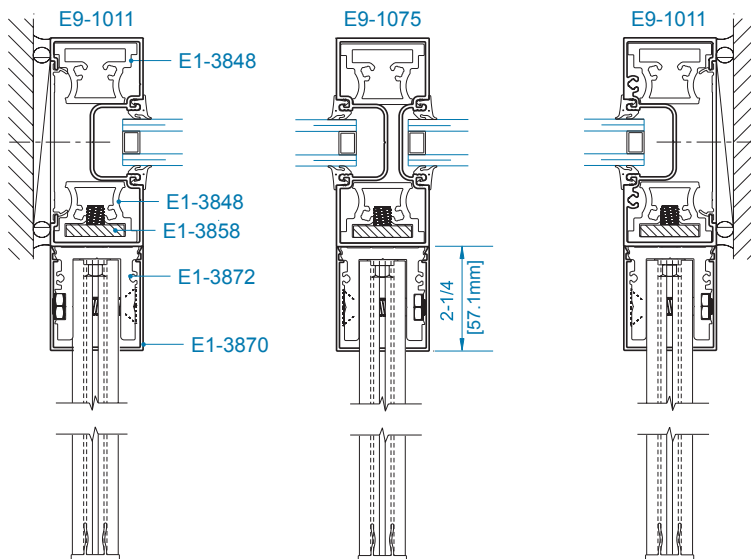
CONCEALED ANCHOR ATTACHMENT TO YES 45 FI



SECTION 1
JAMB
(Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB
(Screw Spline)



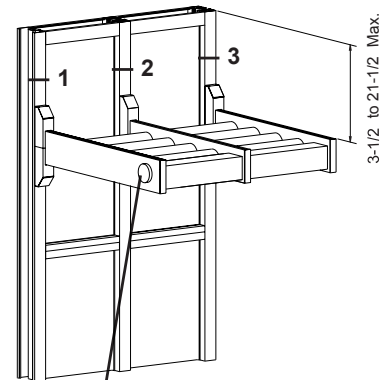
SECTION 1
JAMB
(Shear Block)

SECTION 2
VERTICAL
(Shear Block)

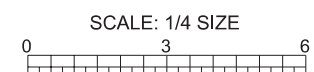
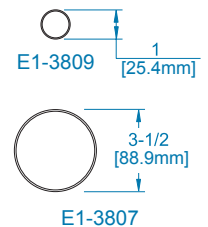
SECTION 3
JAMB
(Shear Block)

Square Outrigger Shown,
All Outriggers Available

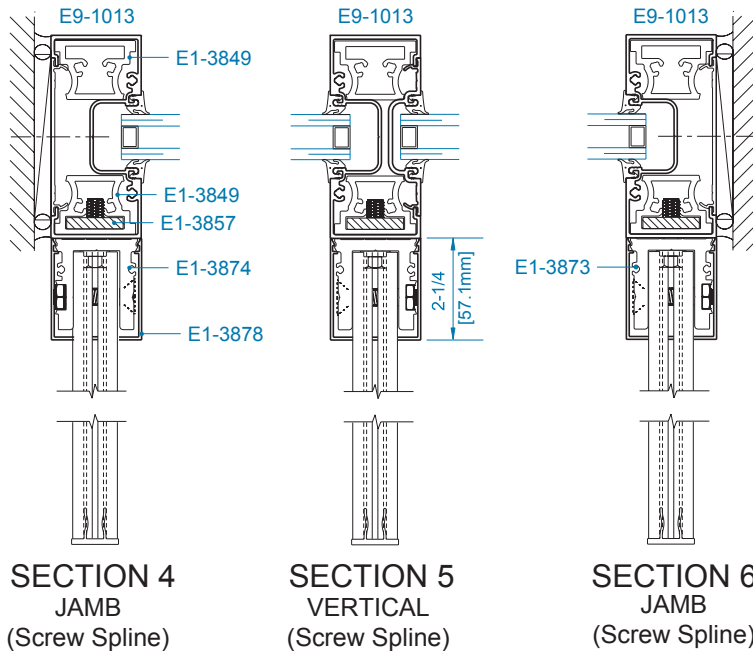
TYPE A



OPTIONAL
MEDALLIONS
AT END BAY

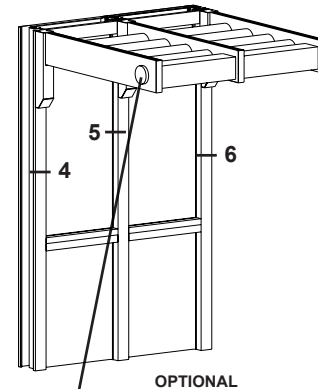


CONCEALED ANCHOR ATTACHMENT TO YES 45 FI



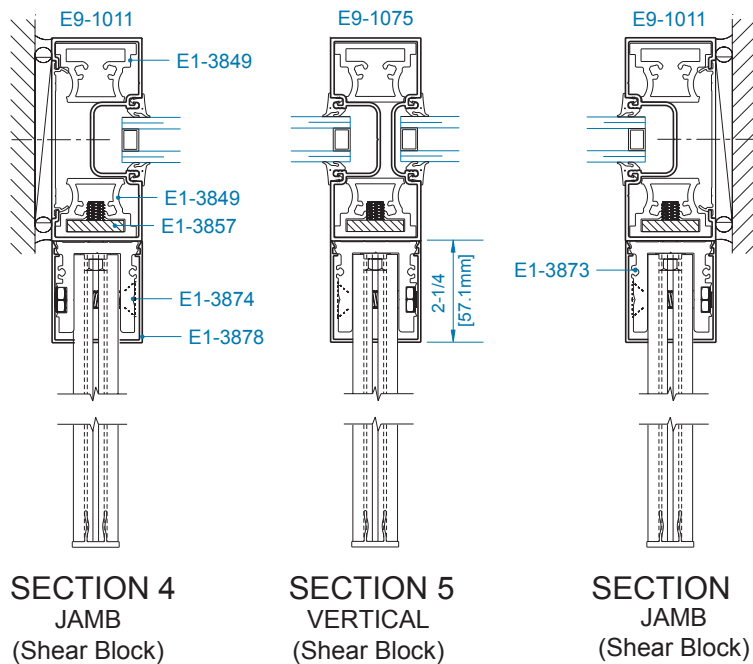
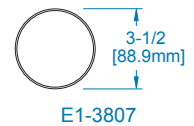
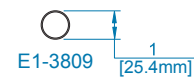
Square Outrigger Shown,
All Outriggers Available

TYPE B

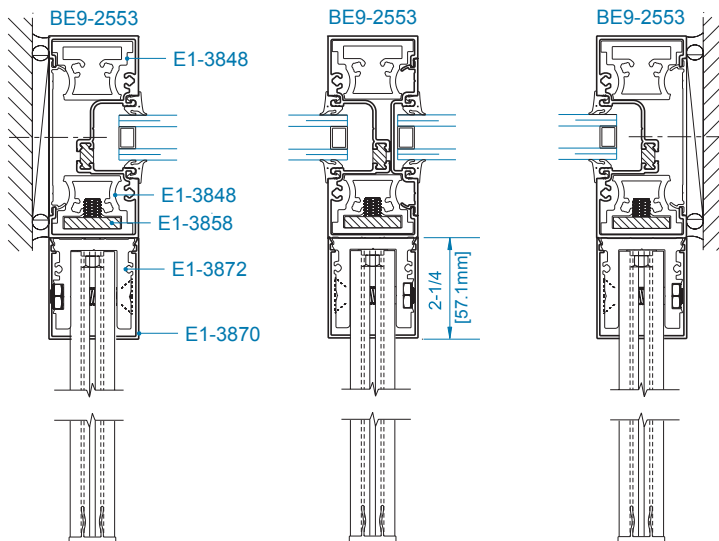


OPTIONAL

MEDALLIONS
AT END BAY



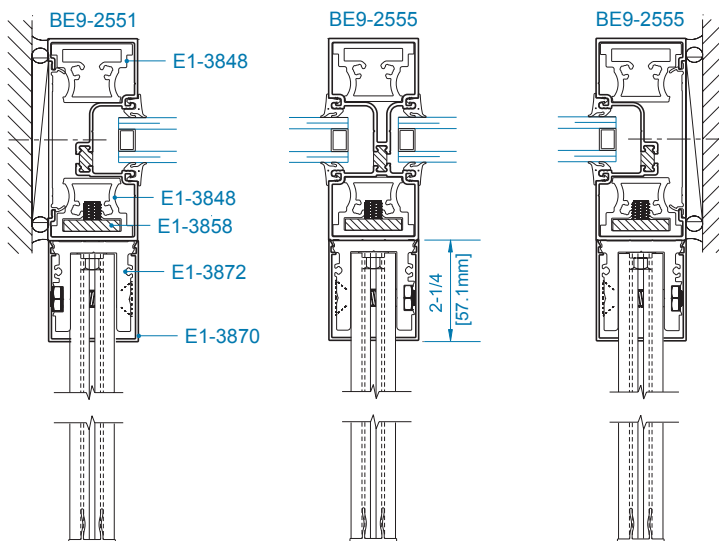
CONCEALED ANCHOR ATTACHMENT TO YES 45 TU - SCREW SPLINE



SECTION 1
JAMB
(Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB
(Screw Spline)



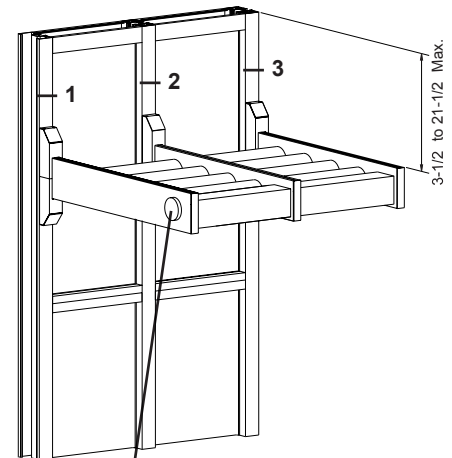
SECTION 1
JAMB
(Shear Block)

SECTION 2
VERTICAL
(Shear Block)

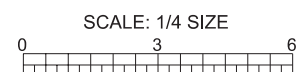
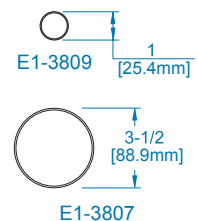
SECTION 3
JAMB
(Shear Block)

Square Outrigger Shown,
All Outriggers Available

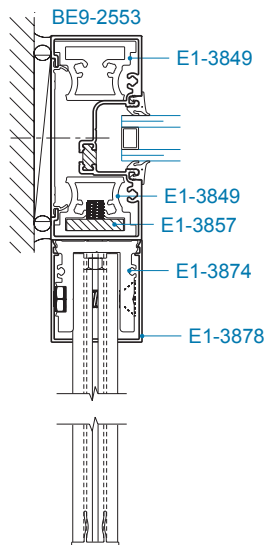
TYPE A



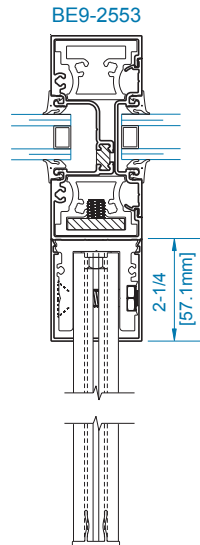
OPTIONAL
MEDALLIONS
AT END BAY



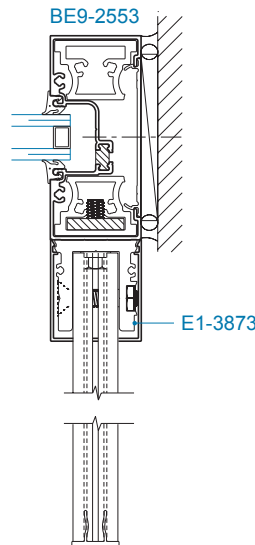
CONCEALED ANCHOR ATTACHMENT TO YES 45 TU - SCREW SPLINE



SECTION 4
JAMB
(Screw Spline)



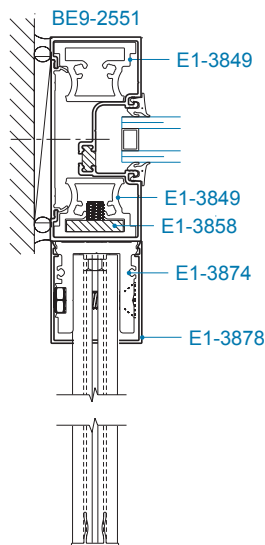
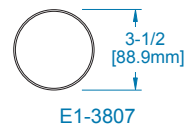
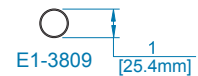
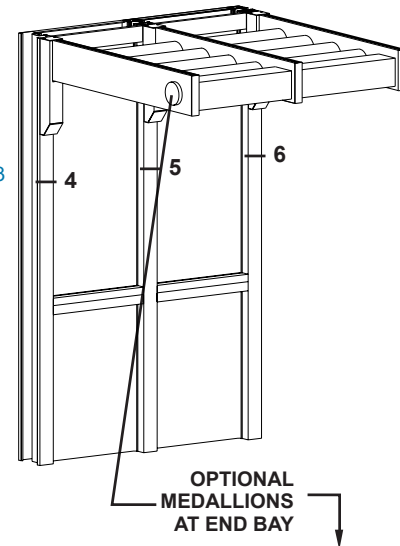
SECTION 5
VERTICAL
(Screw Spline)



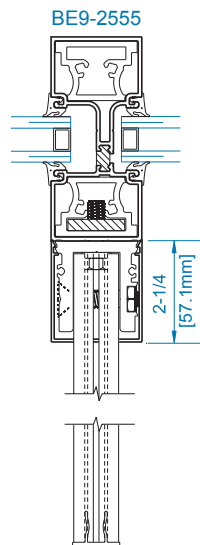
SECTION 6
JAMB
(Screw Spline)

Square Outrigger Shown,
All Outriggers Available

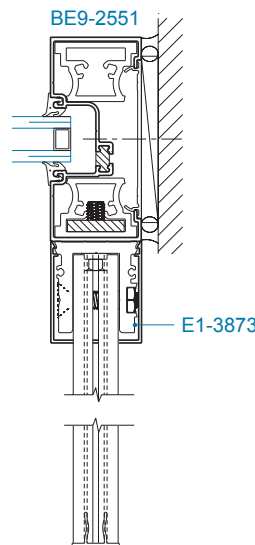
TYPE B



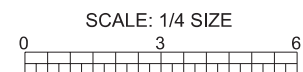
SECTION 4
JAMB
(Shear Block)



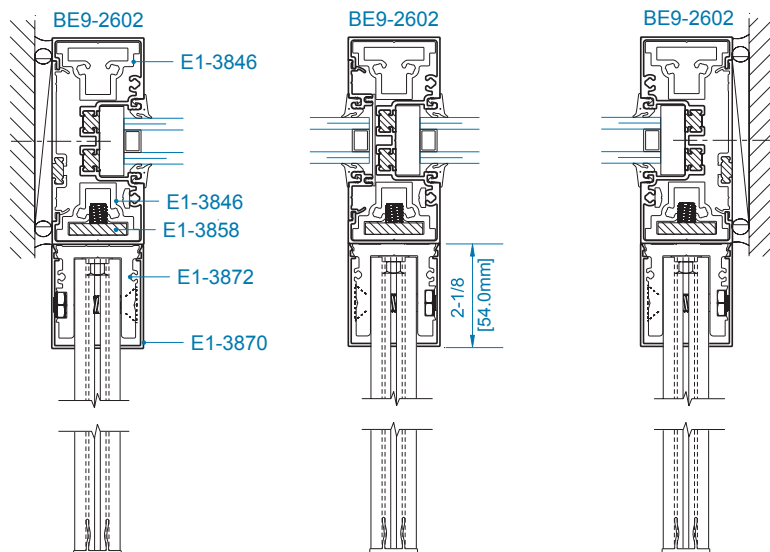
SECTION 5
VERTICAL
(Shear Block)



SECTION 6
JAMB
(Shear Block)



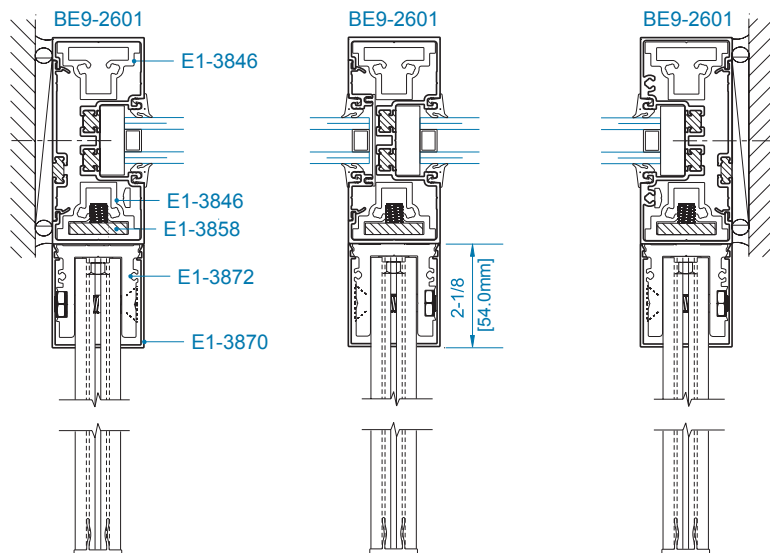
CONCEALED ANCHOR ATTACHMENT TO YES 45 XT - SCREW SPLINE



SECTION 1
JAMB
(Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB
(Screw Spline)



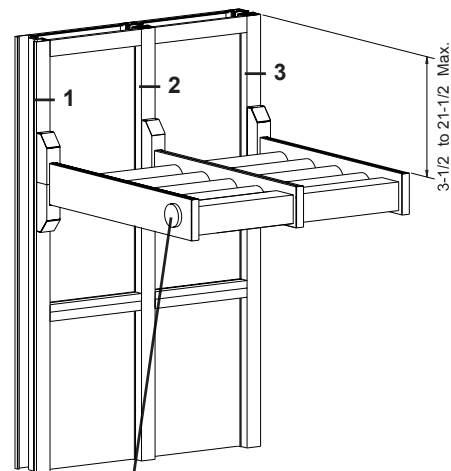
SECTION 1
JAMB
(Shear Block)

SECTION 2
VERTICAL
(Shear Block)

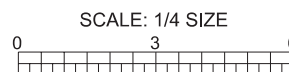
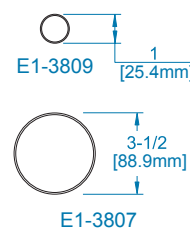
SECTION 3
JAMB
(Shear Block)

Square Outrigger Shown,
All Outriggers Available

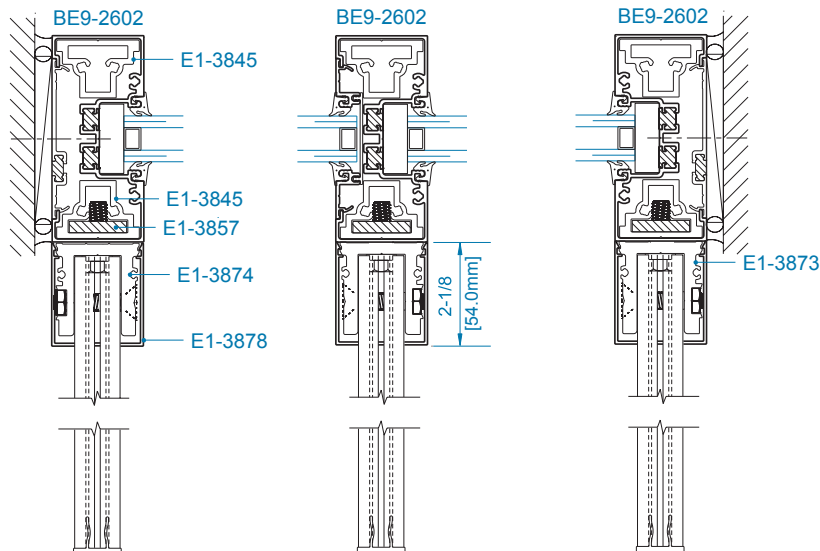
TYPE A



OPTIONAL
MEDALLIONS
AT END BAY



CONCEALED ANCHOR ATTACHMENT TO YES 45 XT - SCREW SPLINE



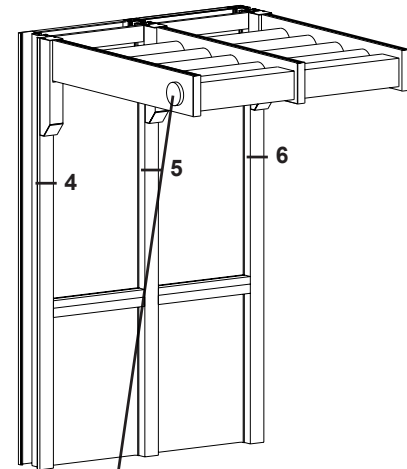
SECTION 4
JAMB
(Screw Spline)

SECTION 5
VERTICAL
(Screw Spline)

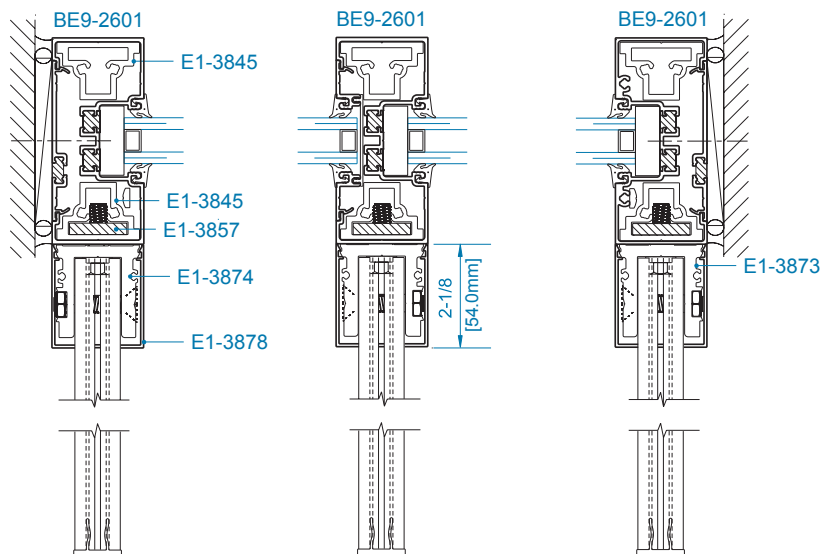
SECTION 6
JAMB
(Screw Spline)

Square Outrigger Shown,
All Outriggers Available

TYPE B



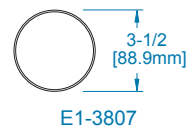
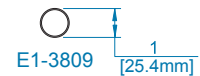
OPTIONAL
MEDALLIONS
AT END BAY



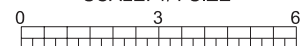
SECTION 4
JAMB
(Shear Block)

SECTION 5
VERTICAL
(Shear Block)

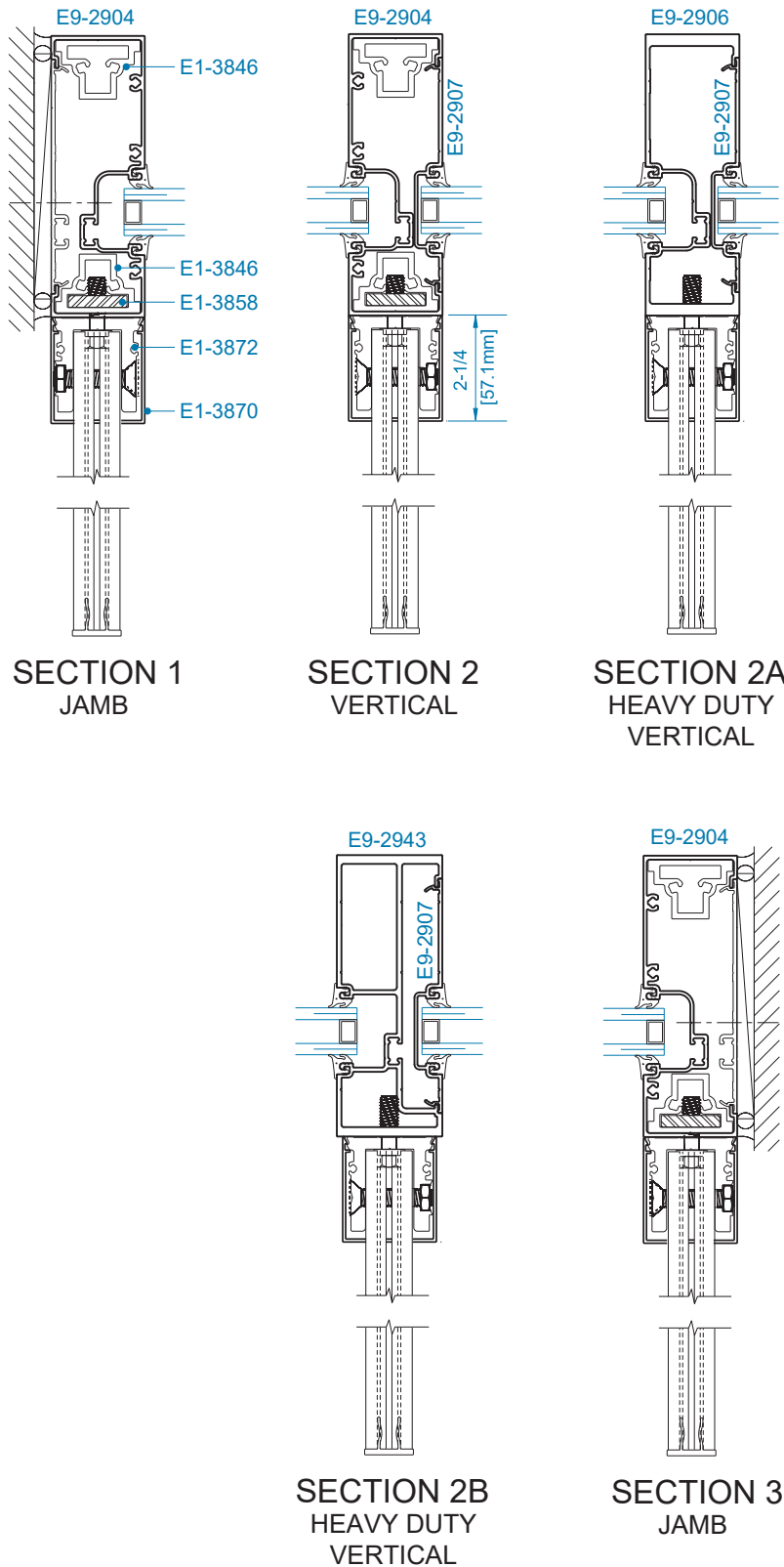
SECTION 6
JAMB
(Shear Block)



SCALE: 1/4 SIZE

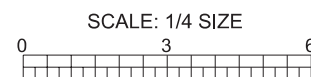
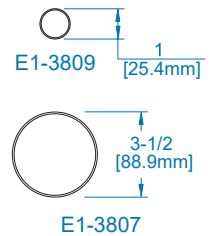
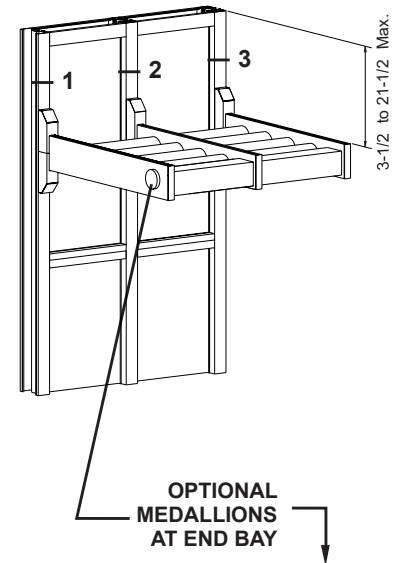


CONCEALED ANCHOR ATTACHMENT TO YES 60 FI

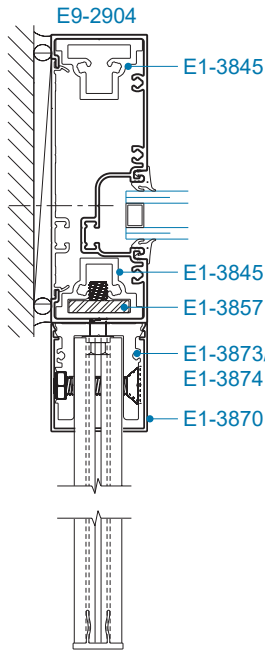


Square Outrigger Shown,
All Outriggers Available

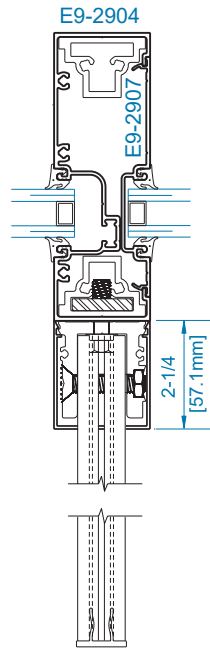
TYPE A



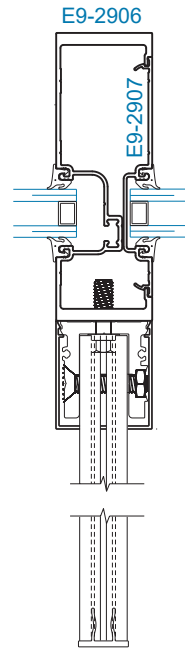
CONCEALED ANCHOR ATTACHMENT TO YES 60 FI



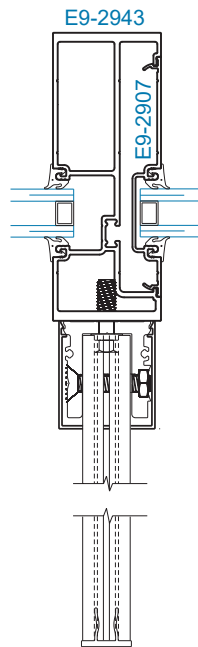
**SECTION 4
JAMB**



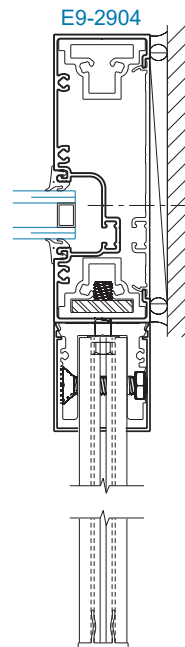
**SECTION 5
VERTICAL**



**SECTION 5A
HEAVY DUTY
VERTICAL**



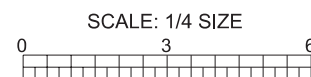
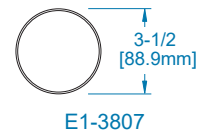
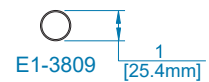
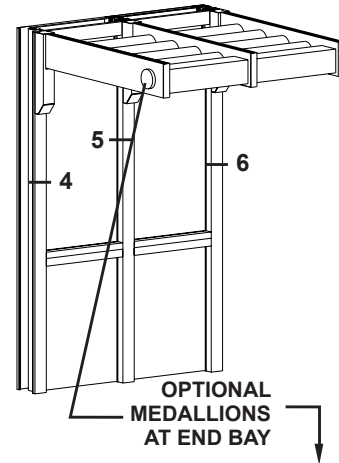
**SECTION 5B
HEAVY DUTY
VERTICAL**



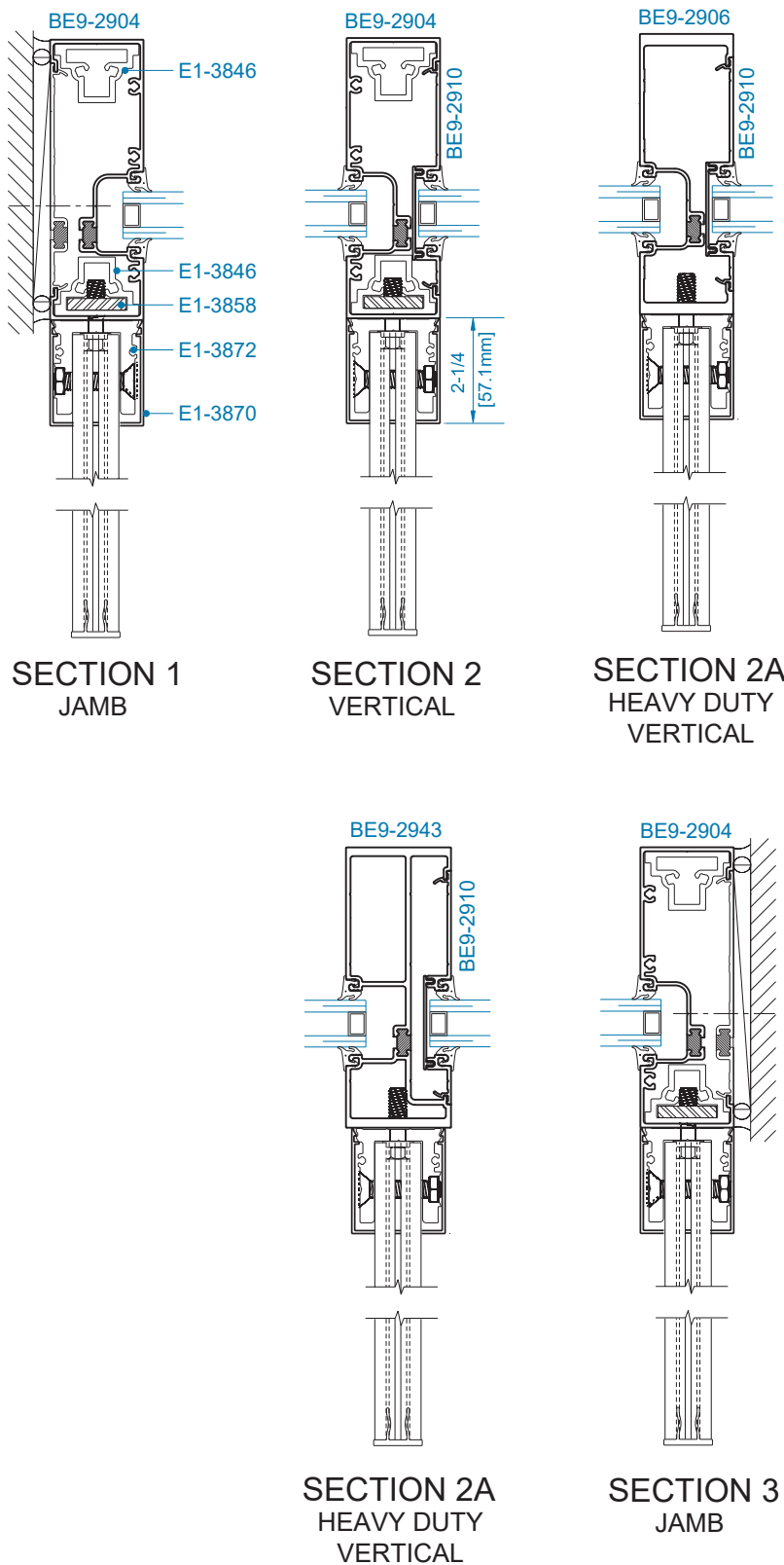
**SECTION 6
JAMB**

Square Outrigger Shown,
All Outriggers Available

TYPE B

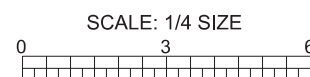
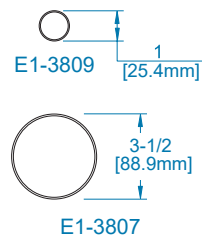
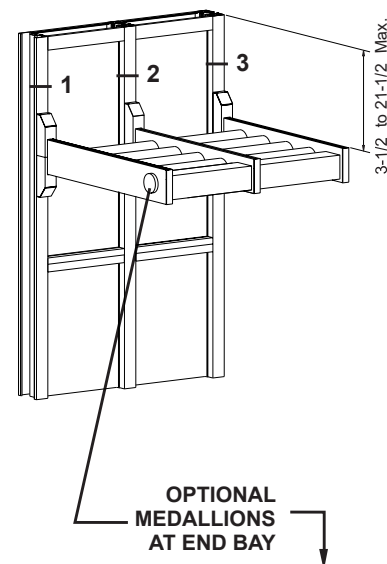


CONCEALED ANCHOR ATTACHMENT TO YES 60TU

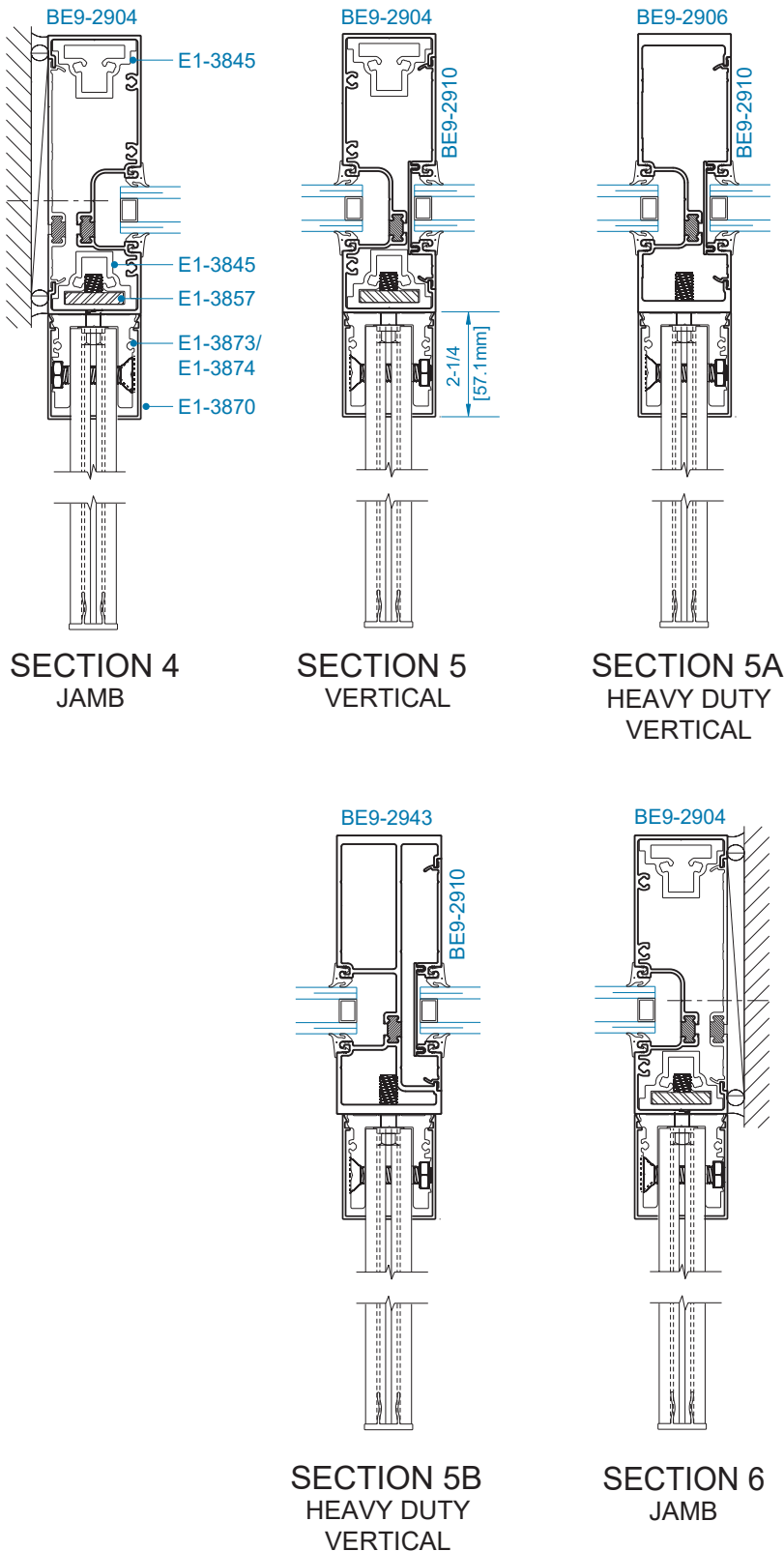


Square Outrigger Shown,
All Outriggers Available

TYPE A

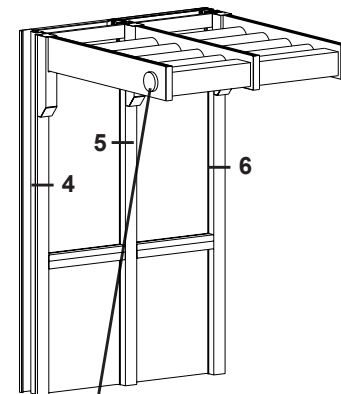


CONCEALED ANCHOR ATTACHMENT TO YES 60TU

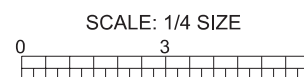
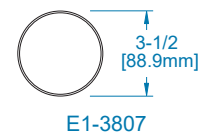
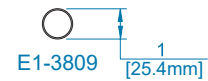


Square Outrigger Shown,
All Outriggers Available

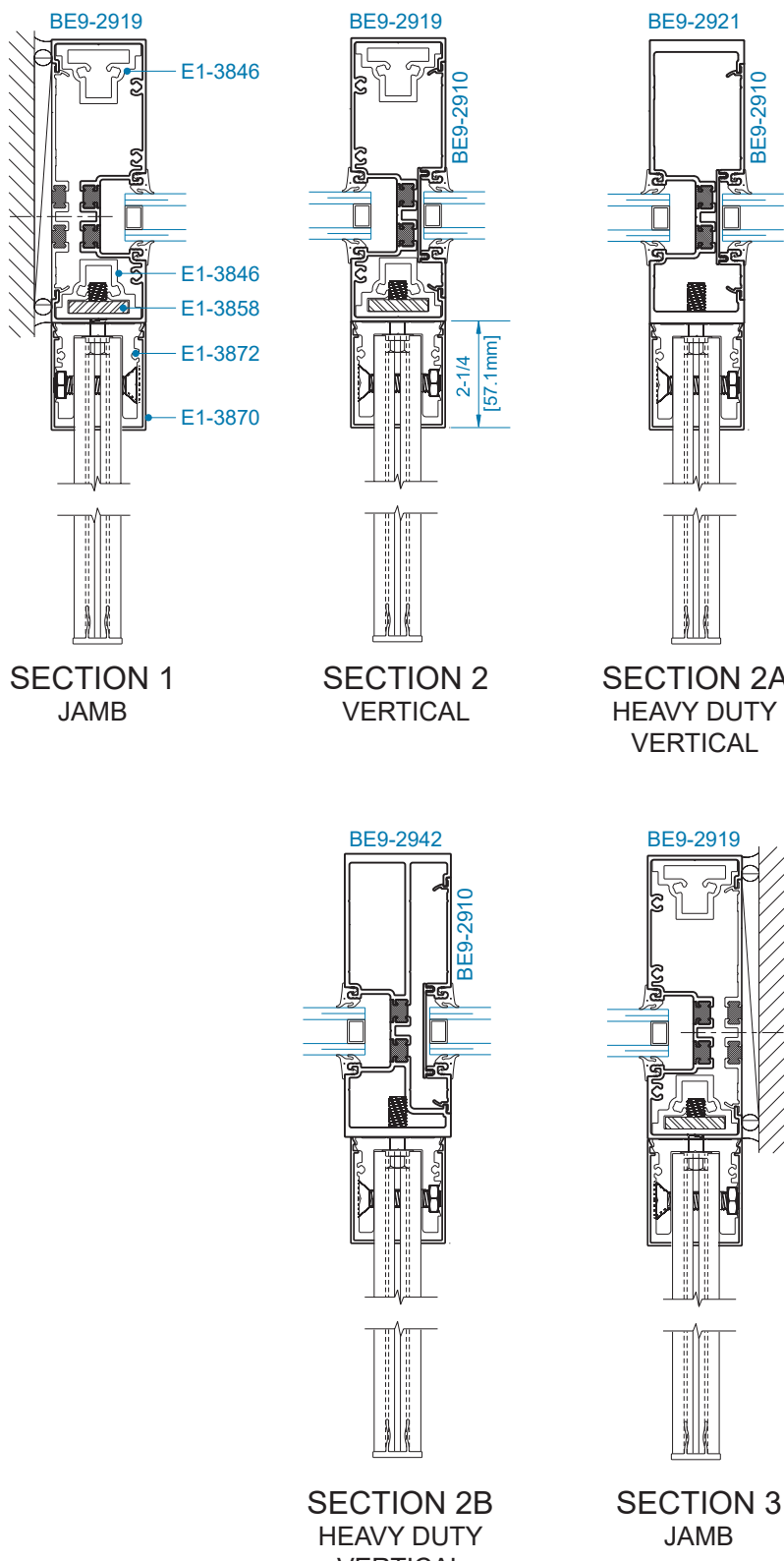
TYPE B



OPTIONAL
MEDALLIONS
AT END BAY

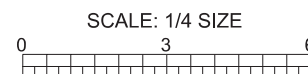
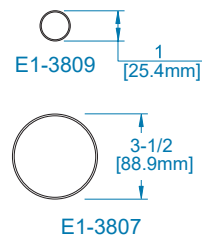
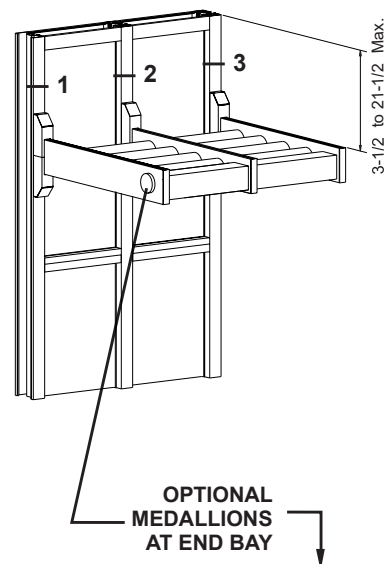


CONCEALED ANCHOR ATTACHMENT TO YES 60 XT

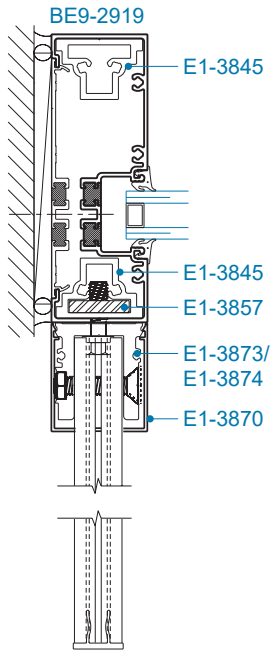


Square Outrigger Shown,
All Outriggers Available

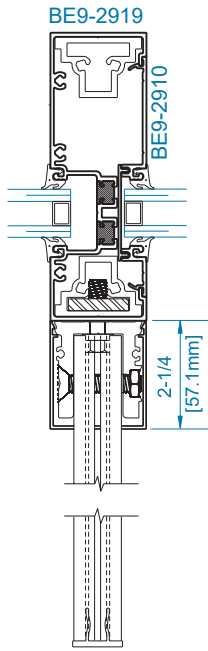
TYPE A



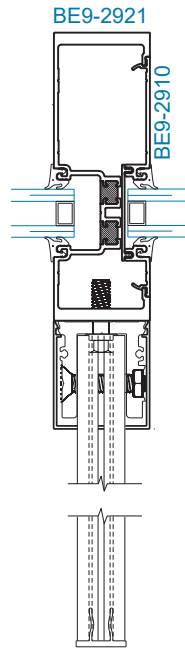
CONCEALED ANCHOR ATTACHMENT TO YES 60 XT



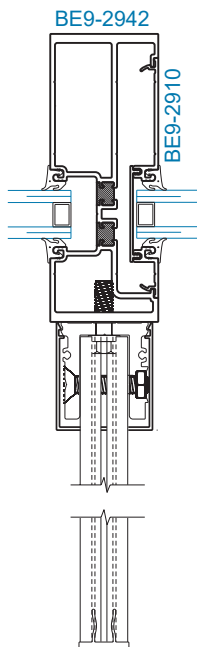
SECTION 4
JAMB



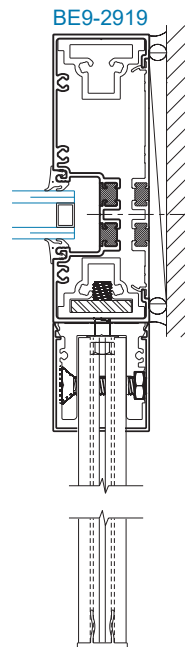
SECTION 5
VERTICAL



SECTION 5A
HEAVY DUTY
VERTICAL

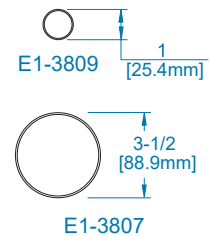
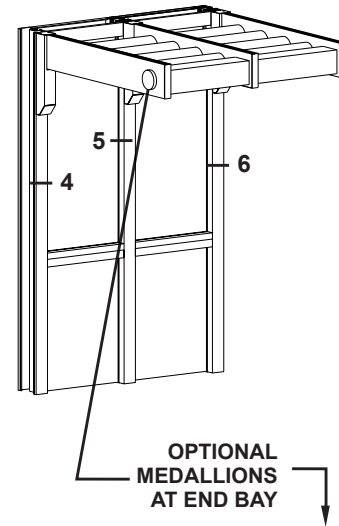


SECTION 5B
HEAVY DUTY
VERTICAL

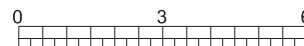


SECTION 6
JAMB

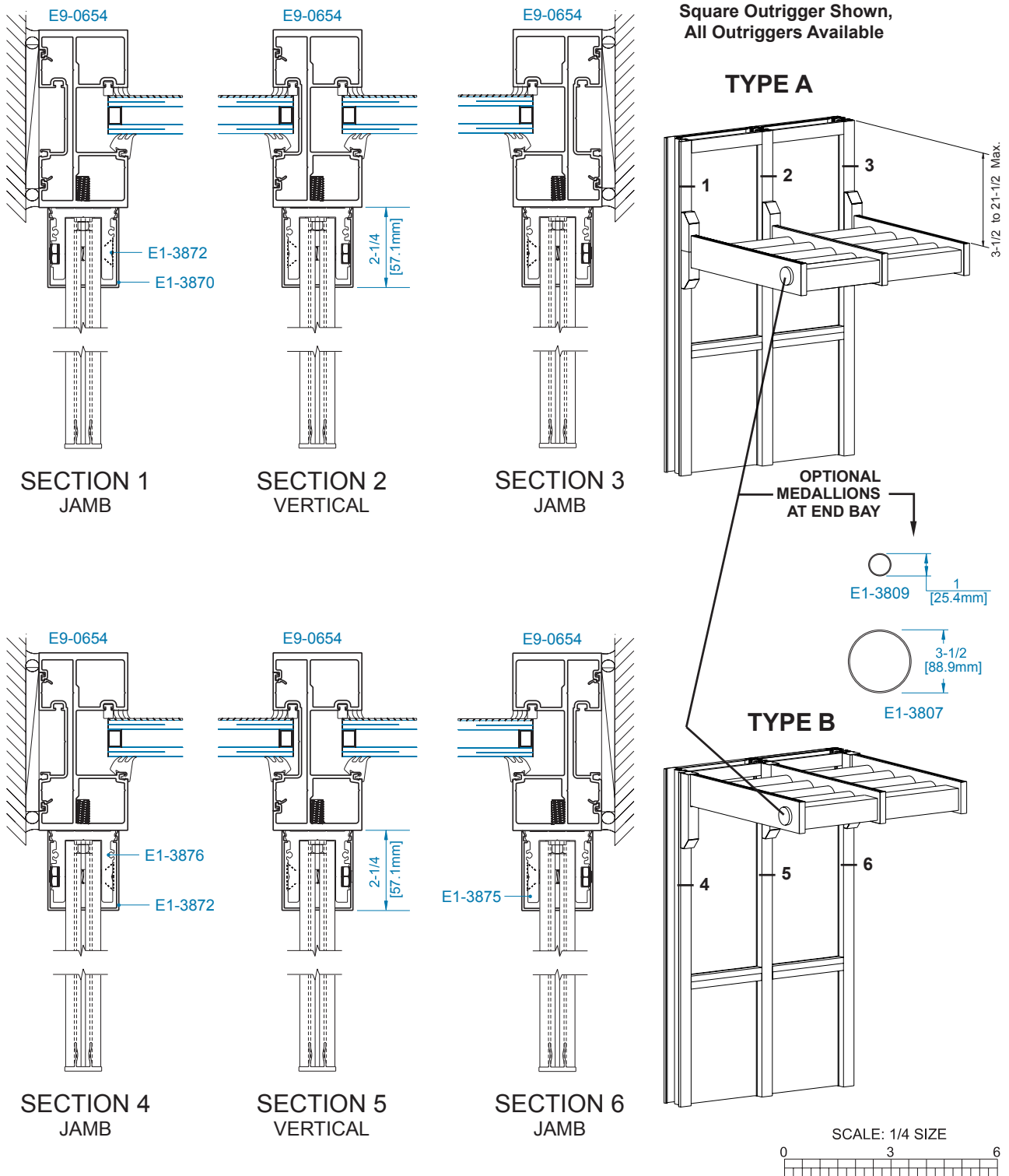
Square Outrigger Shown,
All Outriggers Available



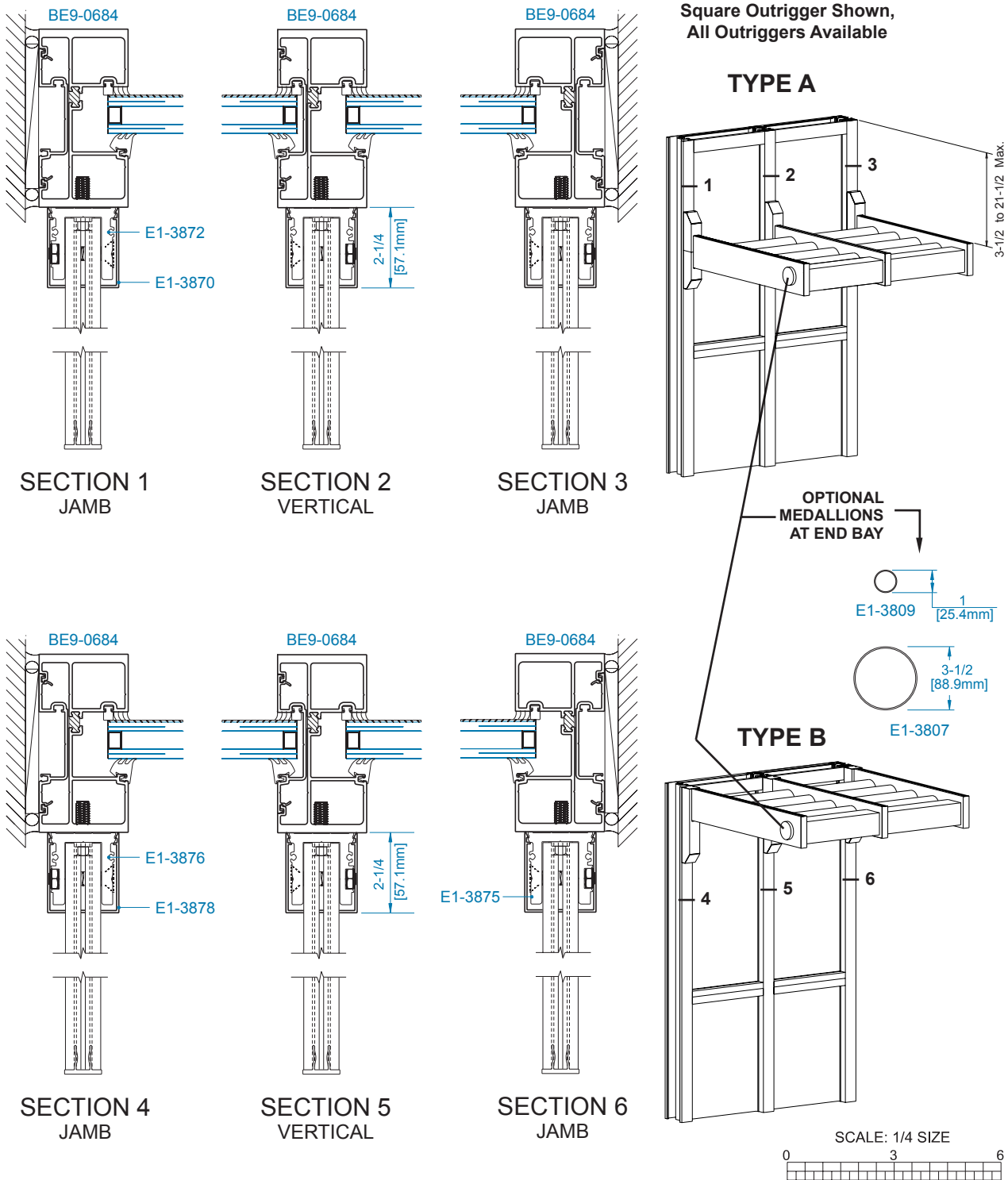
SCALE: 1/4 SIZE



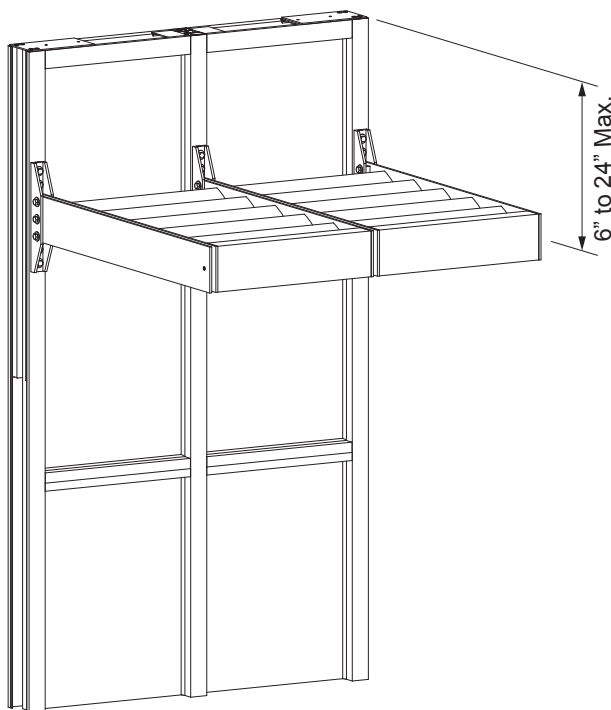
CONCEALED ANCHOR ATTACHMENT TO YHS 50 FI



CONCEALED ANCHOR ATTACHMENT TO YHS 50 TU

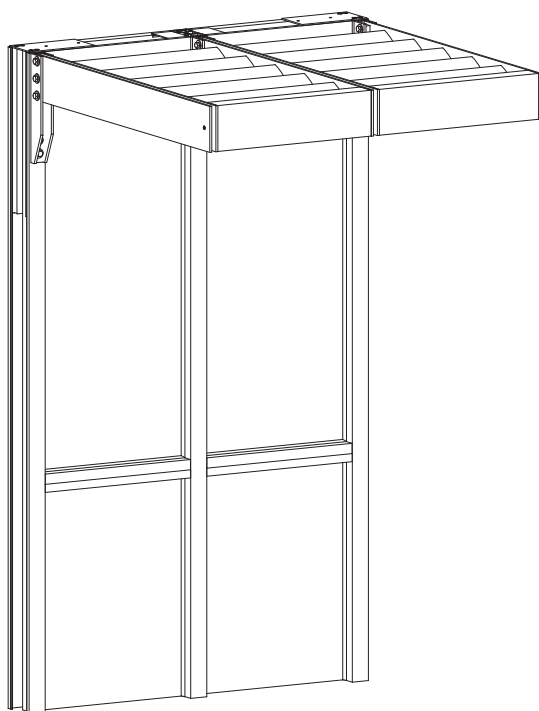


THERMASHADE FOR STOREFRONT LOCATION OPTIONS



EXPOSED ANCHOR TYPE A

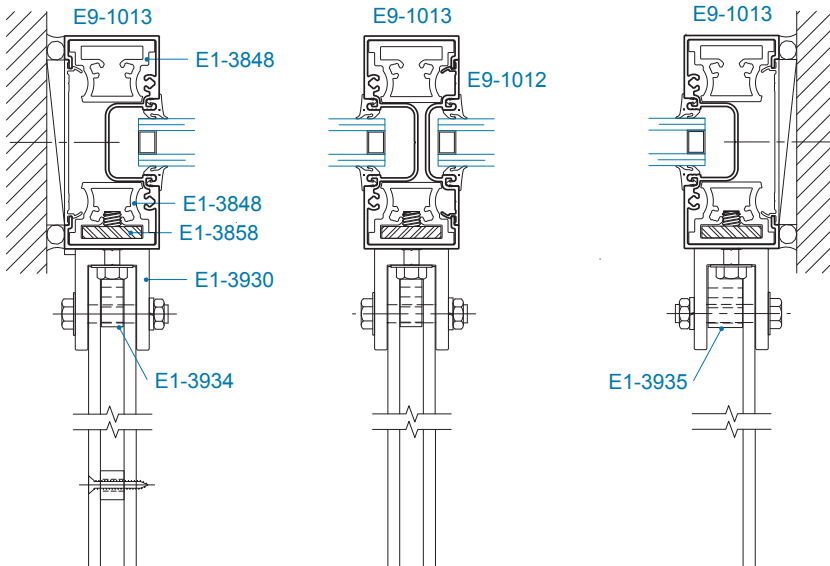
- Outrigger and mullion anchor are located below the head.
- Requires standard "Type A" mullion anchors and covers.
- Can utilize Luminance® light shelf system.



EXPOSED ANCHOR TYPE B

- Outrigger and mullion anchor are located at the extreme head location, requiring "Type B" anchor and covers.

EXPOSED ANCHOR ATTACHMENT TO YES 45 FI - SCREW SPLINE



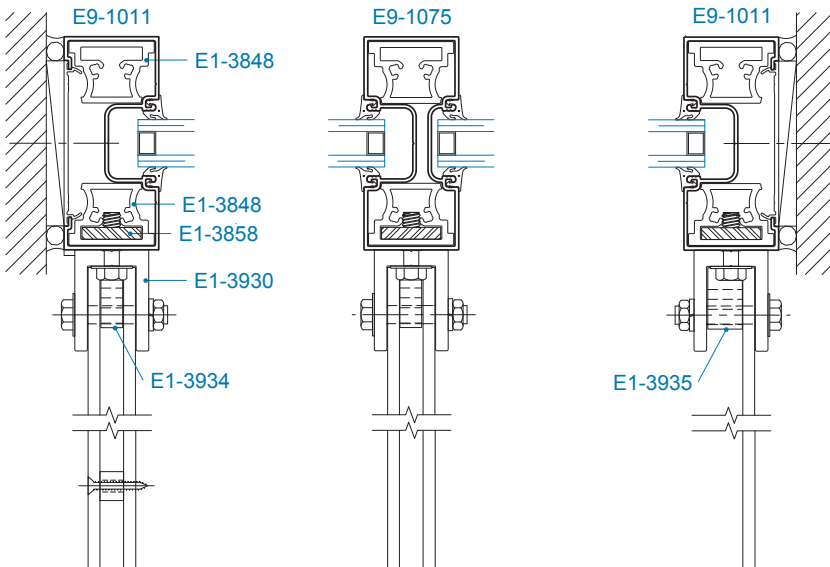
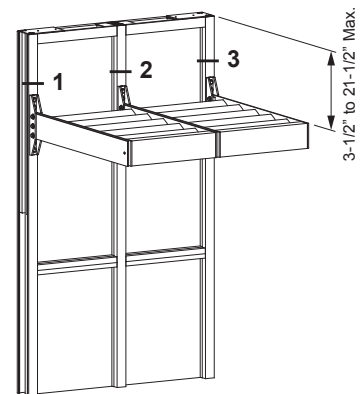
SECTION 1
JAMB (Double
Outrigger,
Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

TYPE A

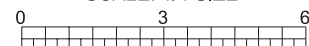


SECTION 1
JAMB (Double
Outrigger,
Shear Block)

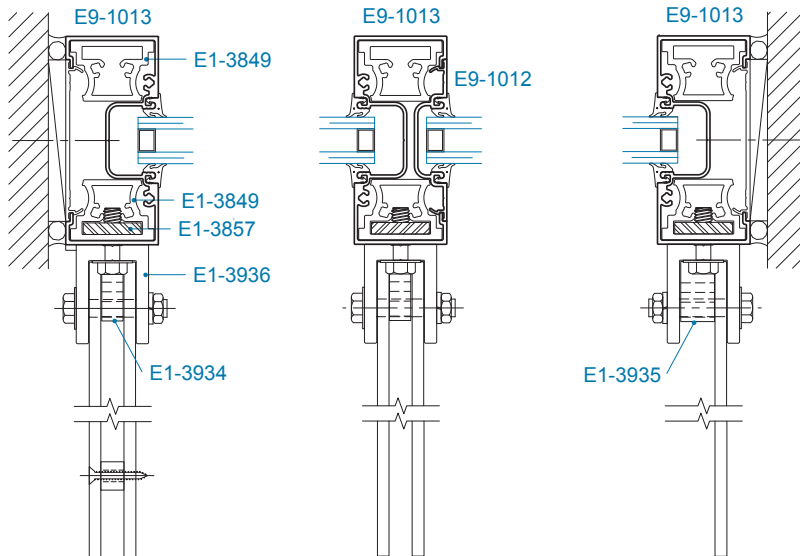
SECTION 2
VERTICAL
(Shear Block)

SECTION 3
JAMB (Single
Outrigger,
Shear Block)

SCALE: 1/4 SIZE



EXPOSED ANCHOR ATTACHMENT TO YES 45 FI



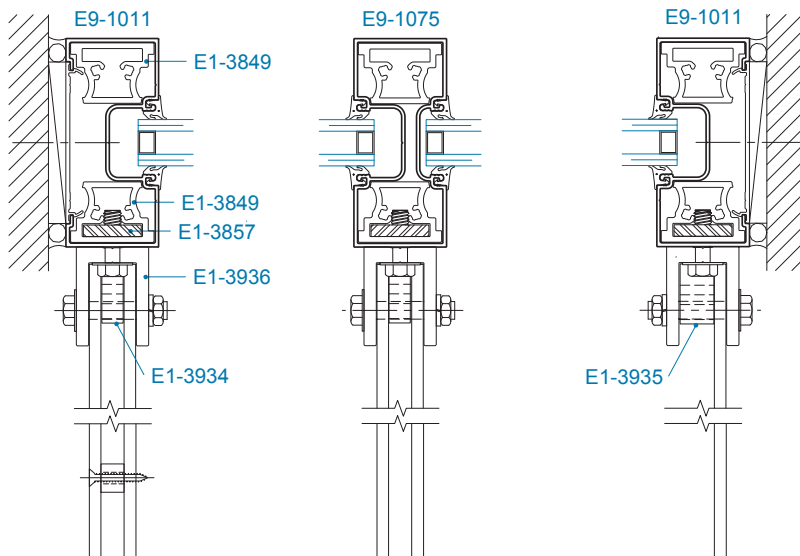
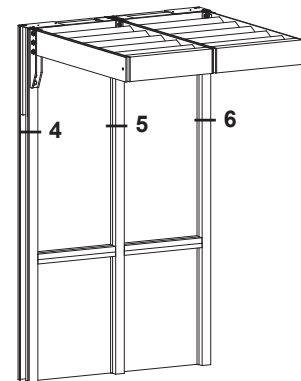
SECTION 4
JAMB (Double
Outrigger,
Screw Spline)

SECTION 5
VERTICAL
(Screw Spline)

SECTION 6
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

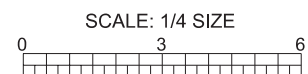
TYPE B



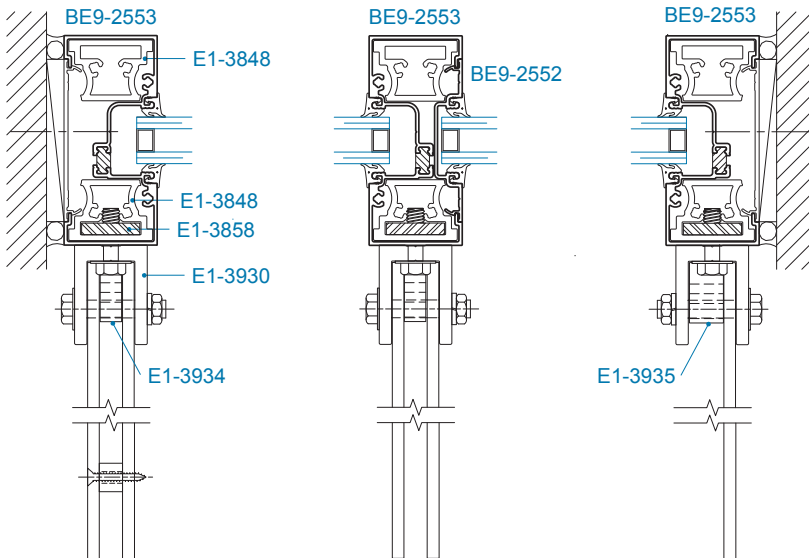
SECTION 4
JAMB (Double
Outrigger,
Shear Block)

SECTION 5
VERTICAL
(Shear Block)

SECTION 6
JAMB (Single
Outrigger,
Shear Block)



EXPOSED ANCHOR ATTACHMENT TO YES 45 TU



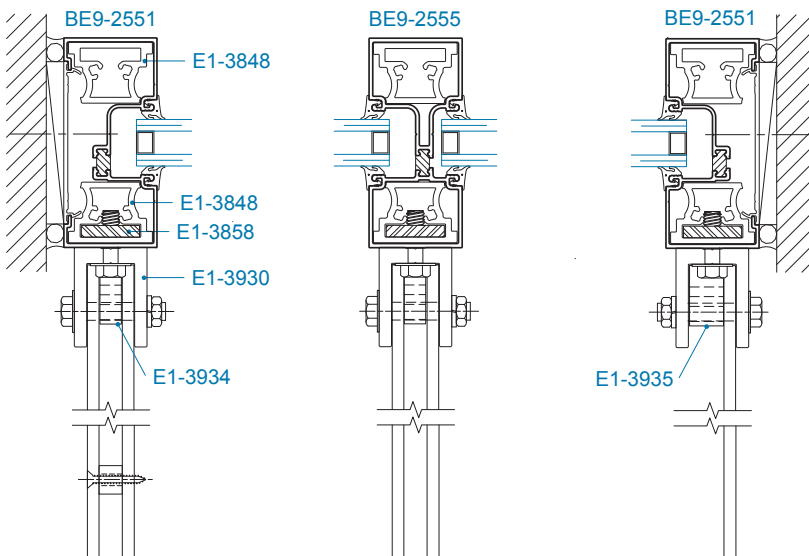
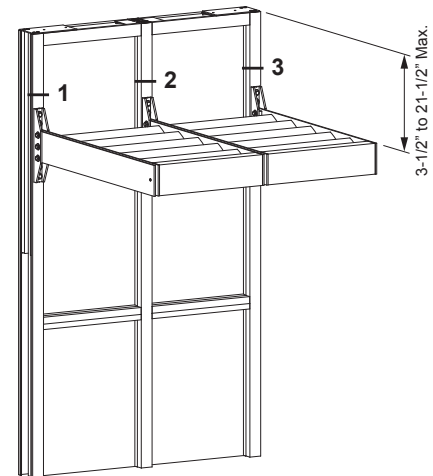
SECTION 1
JAMB (Double
Outrigger,
Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

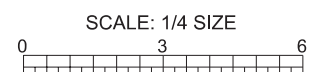
TYPE A



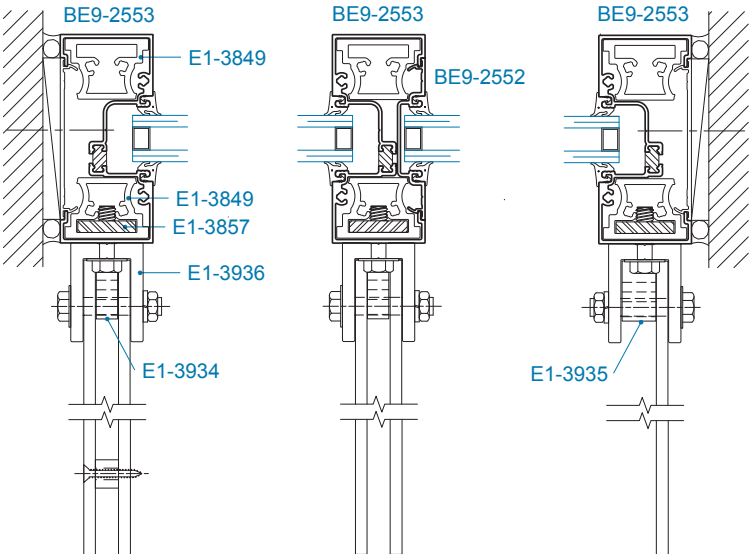
SECTION 1
JAMB (Double
Outrigger,
Shear Block)

SECTION 2
VERTICAL
(Shear Block)

SECTION 3
JAMB (Single
Outrigger,
Shear Block)



EXPOSED ANCHOR ATTACHMENT TO YES 45 TU



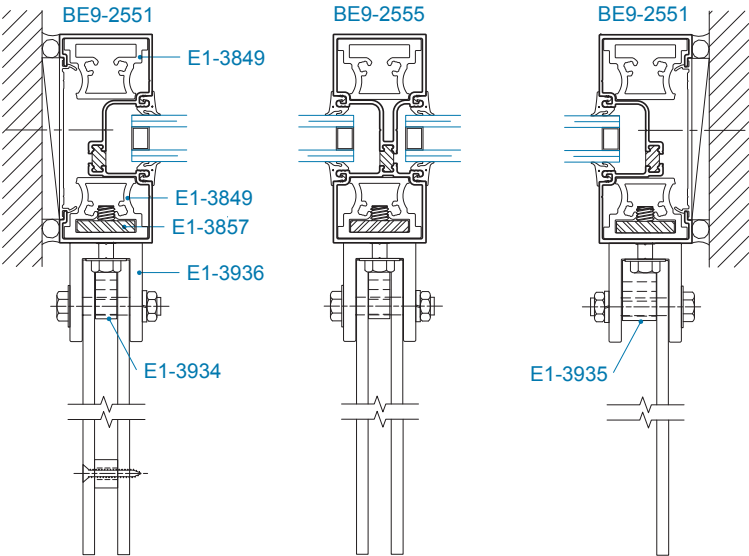
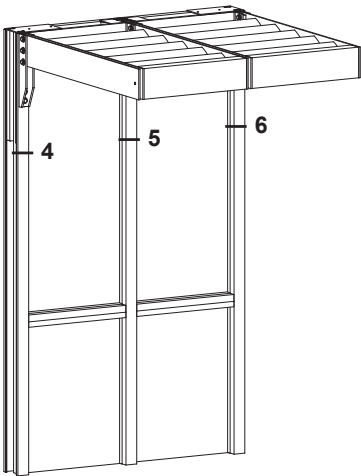
SECTION 4
JAMB (Double
Outrigger,
Screw Spline)

SECTION 5
VERTICAL
(Screw Spline)

SECTION 6
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

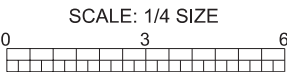
TYPE B



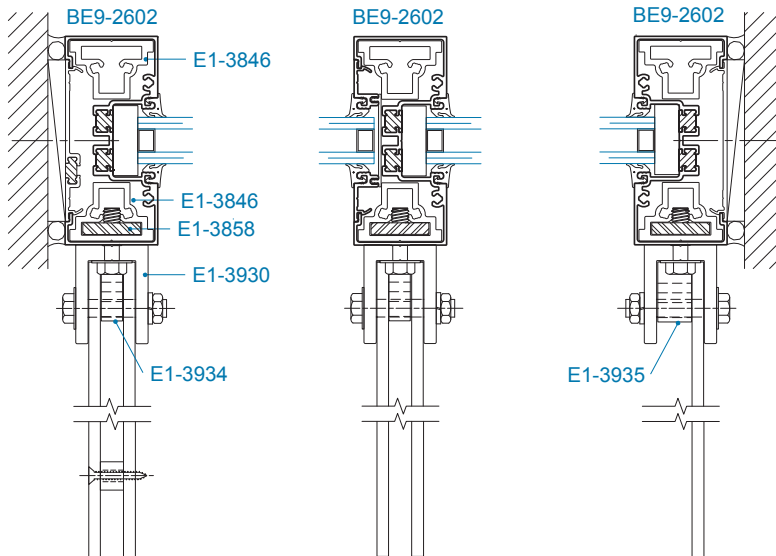
SECTION 4
JAMB (Double
Outrigger,
Shear Block)

SECTION 5
VERTICAL
(Shear Block)

SECTION 6
JAMB (Single
Outrigger,
Shear Block)



EXPOSED ANCHOR ATTACHMENT TO YES 45 XT



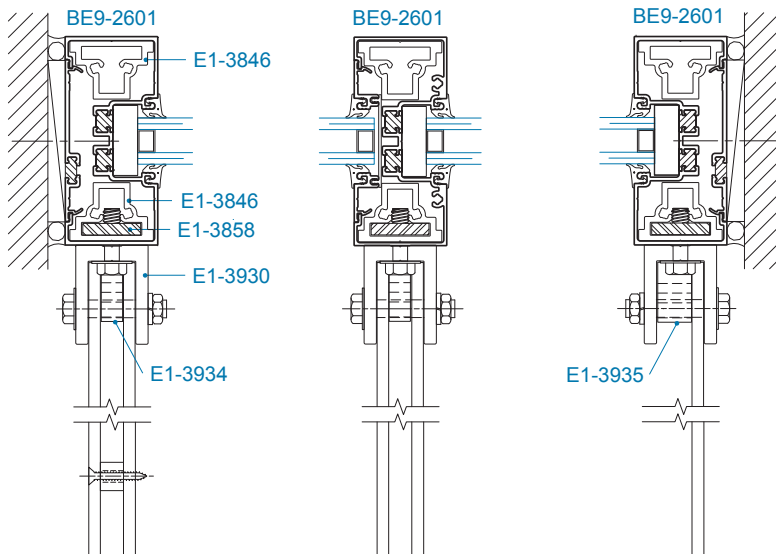
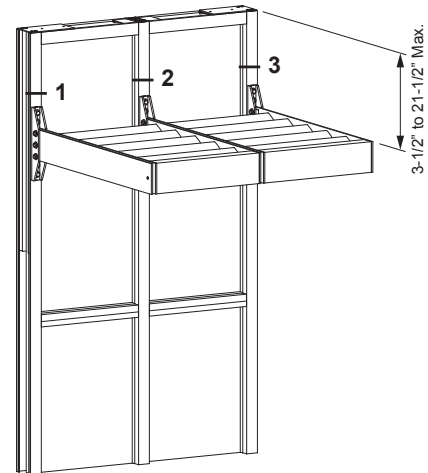
SECTION 1
JAMB (Double
Outrigger,
Screw Spline)

SECTION 2
VERTICAL
(Screw Spline)

SECTION 3
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

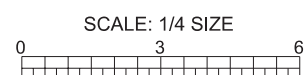
TYPE A



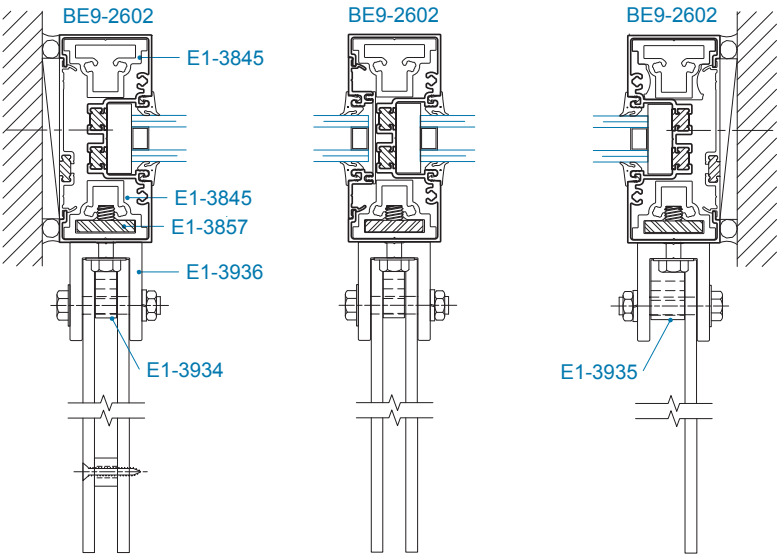
SECTION 1
JAMB (Double
Outrigger,
Shear Block)

SECTION 2
VERTICAL
(Shear Block)

SECTION 3
JAMB (Single
Outrigger,
Shear Block)



EXPOSED ANCHOR ATTACHMENT TO YES 45 XT



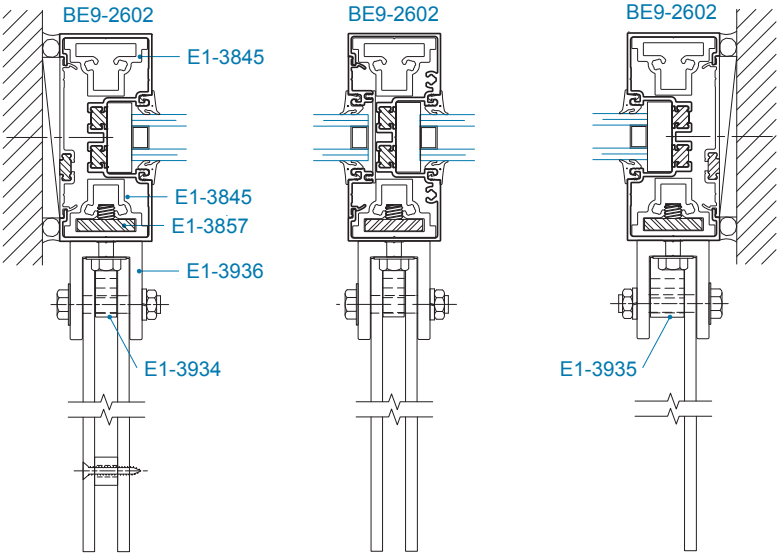
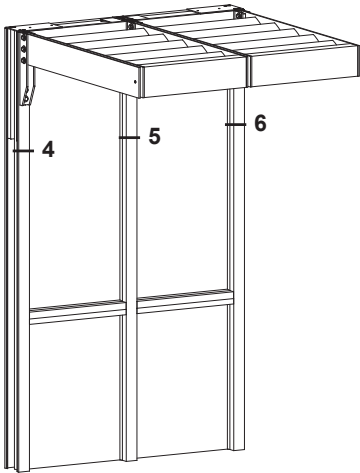
SECTION 4
JAMB (Double
Outrigger,
Screw Spline)

SECTION 5
VERTICAL
(Screw Spline)

SECTION 6
JAMB (Single
Outrigger,
Screw Spline)

Square Outrigger Shown,
All Outriggers Available

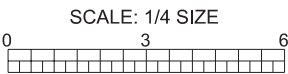
TYPE B



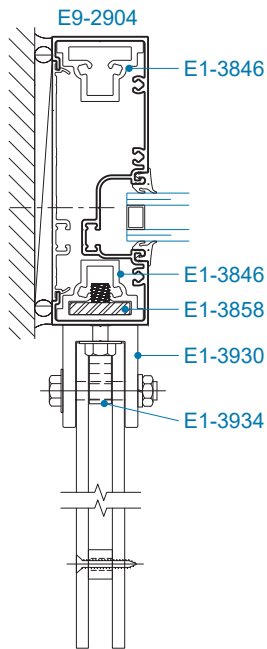
SECTION 4
JAMB (Double
Outrigger,
Shear Block)

SECTION 5
VERTICAL
(Shear Block)

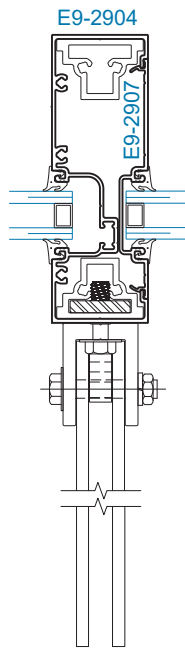
SECTION 6
JAMB (Single
Outrigger,
Shear Block)



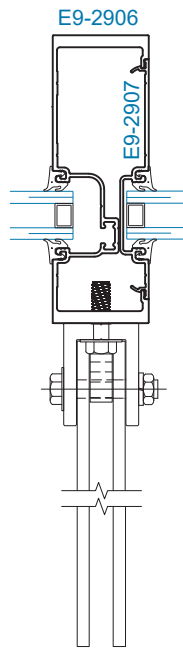
EXPOSED ANCHOR ATTACHMENT TO YES 60 FI



SECTION 1
JAMB (Double
Outrigger)



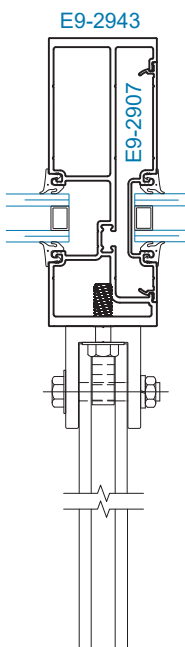
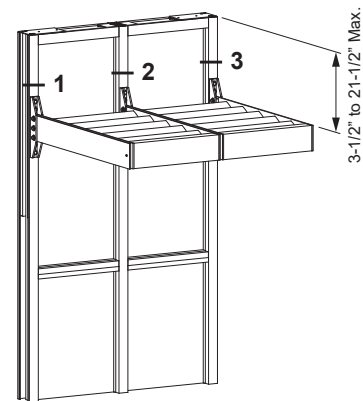
SECTION 2
VERTICAL



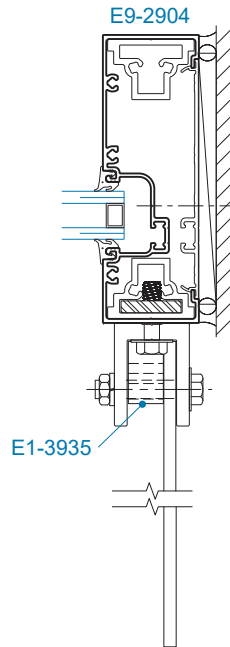
SECTION 2A
HEAVY DUTY
VERTICAL

Square Outrigger Shown,
All Outriggers Available

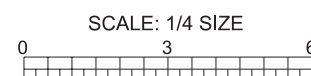
TYPE A



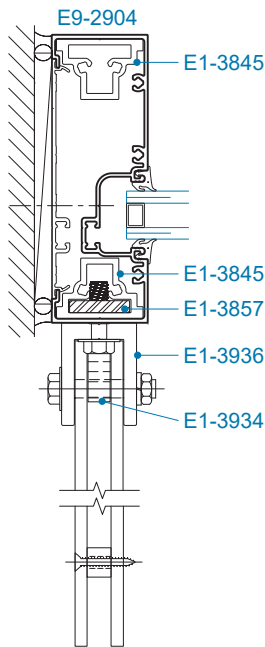
SECTION 2B
HEAVY DUTY
VERTICAL



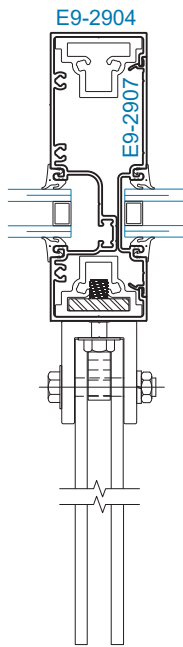
SECTION 3
JAMB (Single
Outrigger)



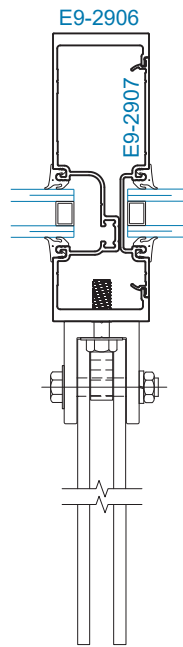
EXPOSED ANCHOR ATTACHMENT TO YES 60 FI



SECTION 4
JAMB (Double
Outrigger)



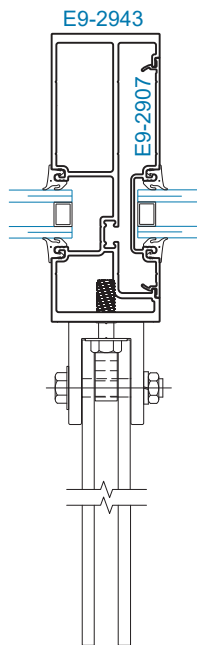
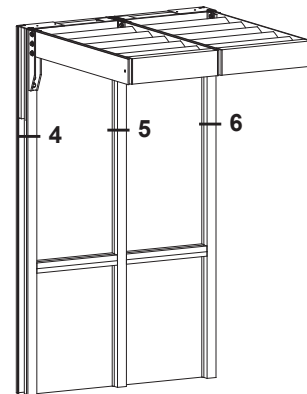
SECTION 5
VERTICAL



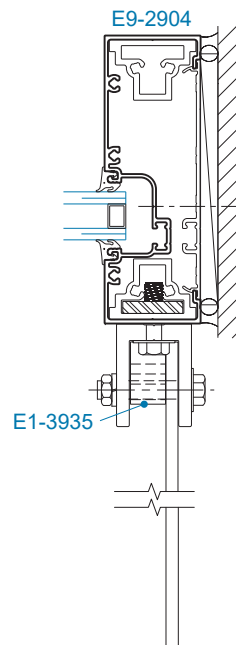
SECTION 5A
HEAVY DUTY
VERTICAL

Square Outrigger Shown,
All Outriggers Available

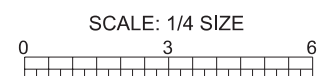
TYPE B



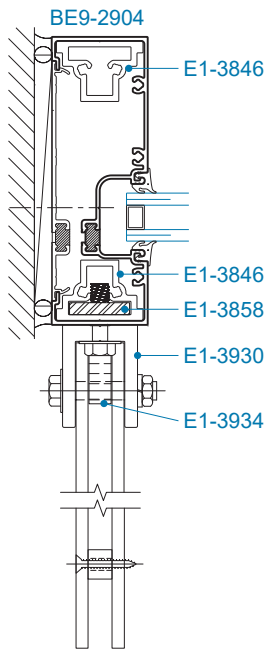
SECTION 5
VERTICAL



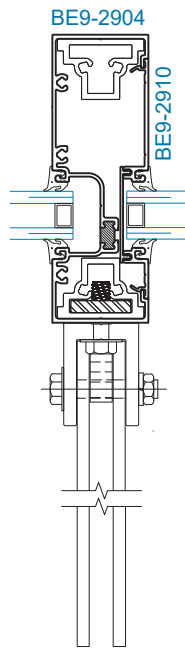
SECTION 6
JAMB (Single
Outrigger)



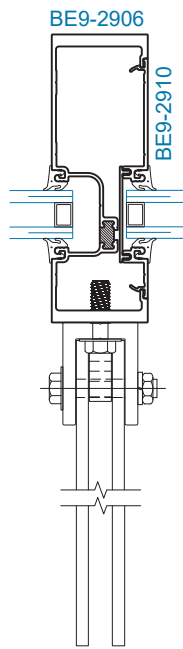
EXPOSED ANCHOR ATTACHMENT TO YES 60 TU



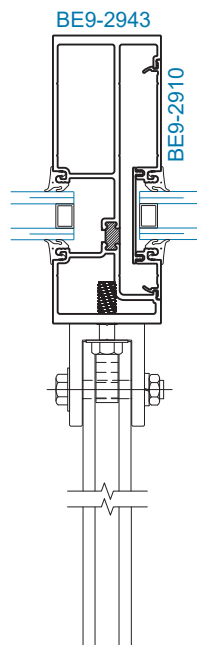
SECTION 1
JAMB (Double
Outrigger)



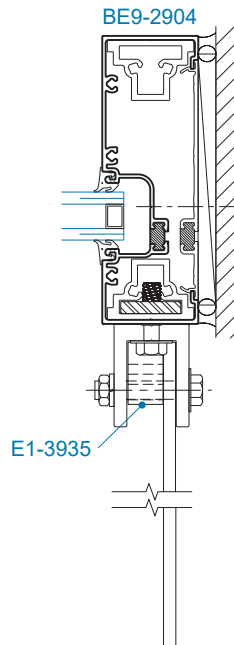
SECTION 2
VERTICAL



SECTION 2A
HEAVY DUTY
VERTICAL



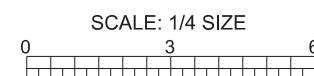
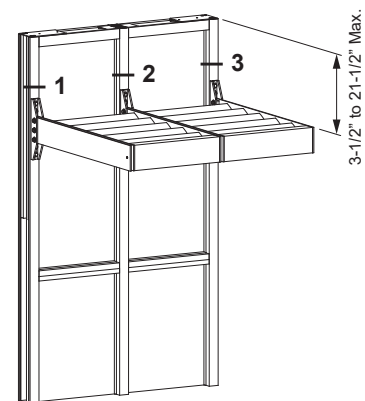
SECTION 2A
HEAVY DUTY
VERTICAL



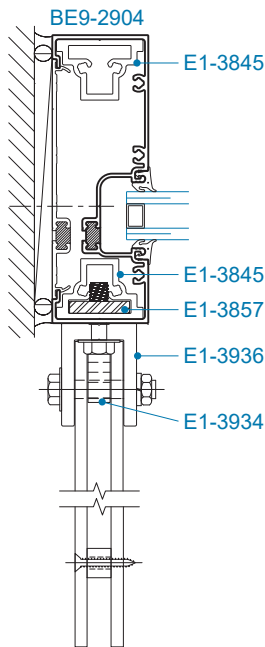
SECTION 3
JAMB (Single
Outrigger)

Square Outrigger Shown,
All Outriggers Available

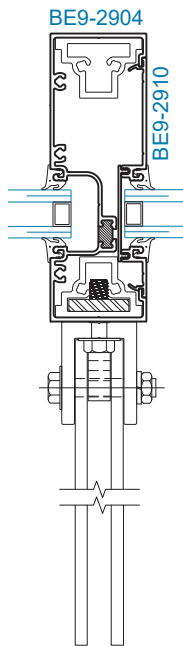
TYPE A



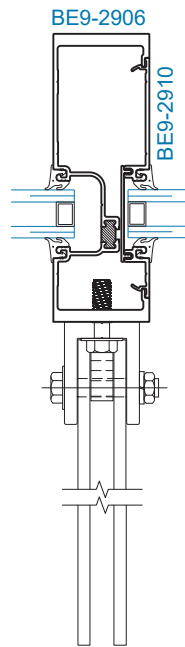
EXPOSED ANCHOR ATTACHMENT TO YES 60 TU



SECTION 4
JAMB (Double
Outrigger)



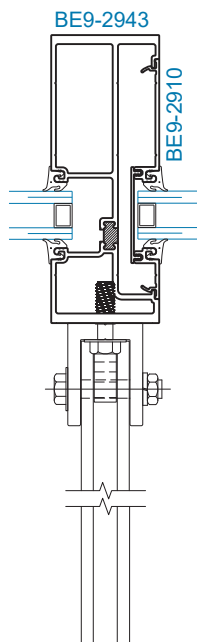
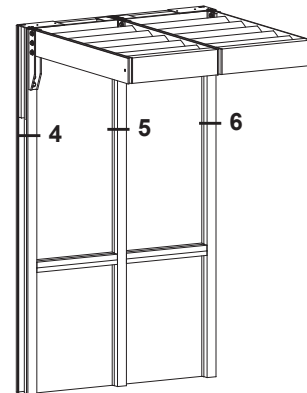
SECTION 5
VERTICAL



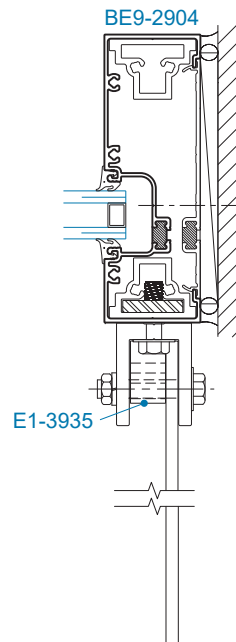
SECTION 5A
HEAVY DUTY
VERTICAL

Square Outrigger Shown,
All Outriggers Available

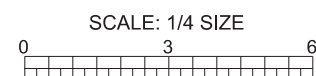
TYPE B



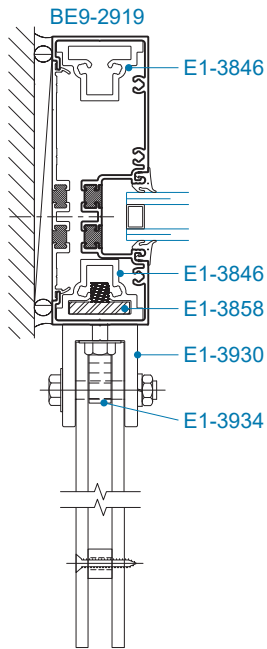
SECTION 5A
HEAVY DUTY
VERTICAL



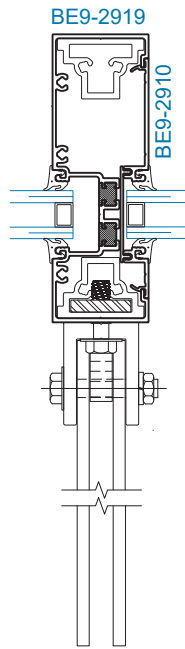
SECTION 6
JAMB (Single
Outrigger)



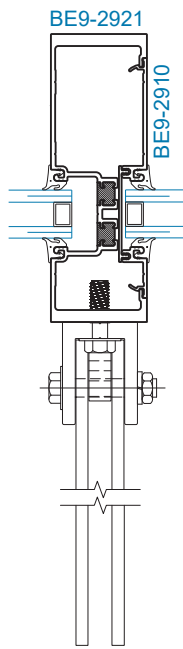
EXPOSED ANCHOR ATTACHMENT TO YES 60 XT



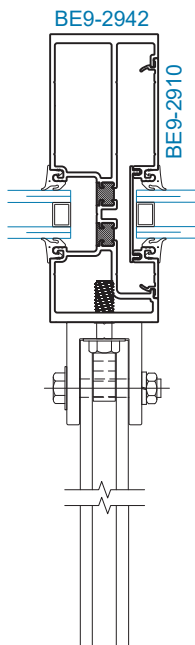
SECTION 1
JAMB (Double
Outrigger)



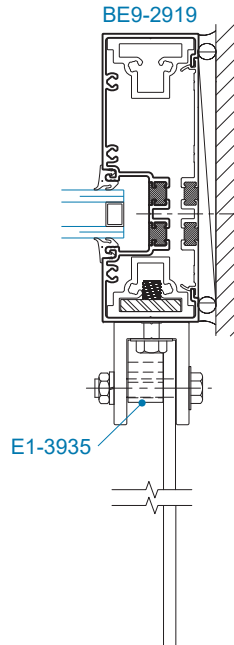
SECTION 2
VERTICAL



SECTION 2A
HEAVY DUTY
VERTICAL



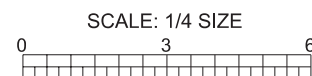
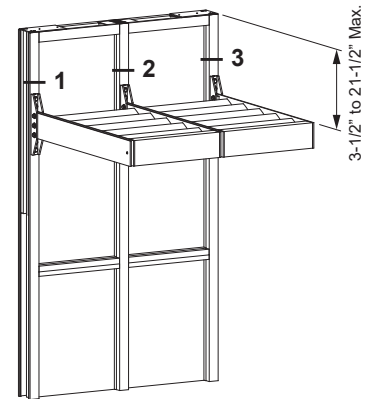
SECTION 2B
HEAVY DUTY
VERTICAL



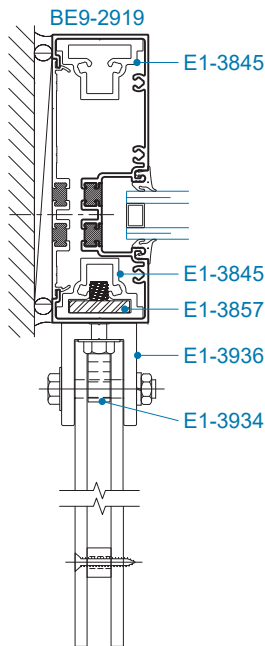
SECTION 3
JAMB (Single
Outrigger)

**Square Outrigger Shown,
All Outriggers Available**

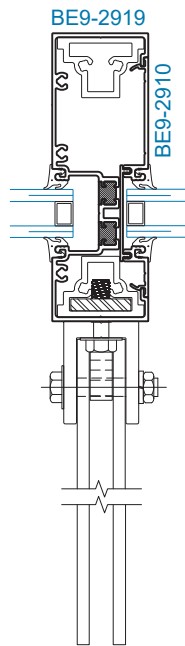
TYPE A



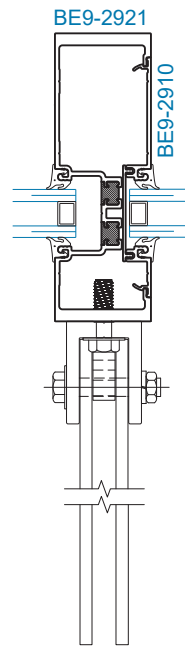
EXPOSED ANCHOR ATTACHMENT TO YES 60 XT



SECTION 4
JAMB (Double
Outrigger)



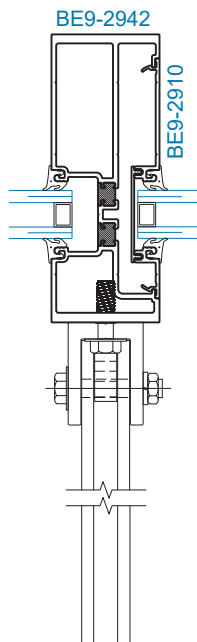
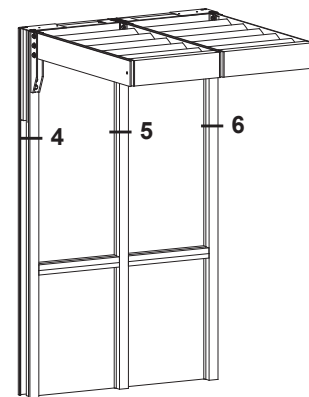
SECTION 5
VERTICAL



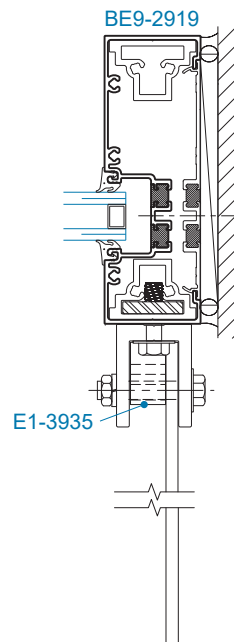
SECTION 5A
HEAVY DUTY
VERTICAL

Square Outrigger Shown,
All Outriggers Available

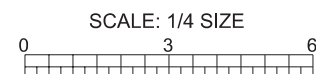
TYPE B



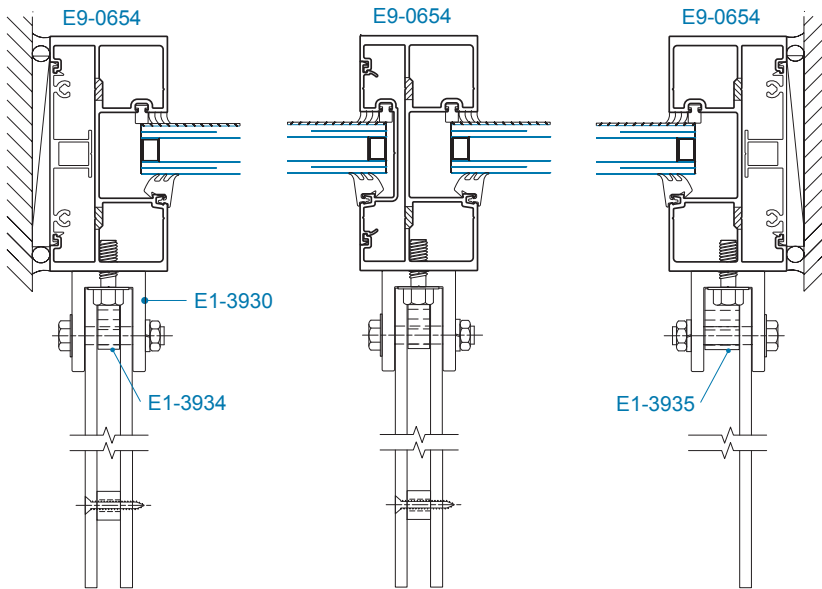
SECTION 5B
HEAVY DUTY
VERTICAL



SECTION 6
JAMB (Single
Outrigger)



EXPOSED ANCHOR ATTACHMENT TO YHS 50 FI



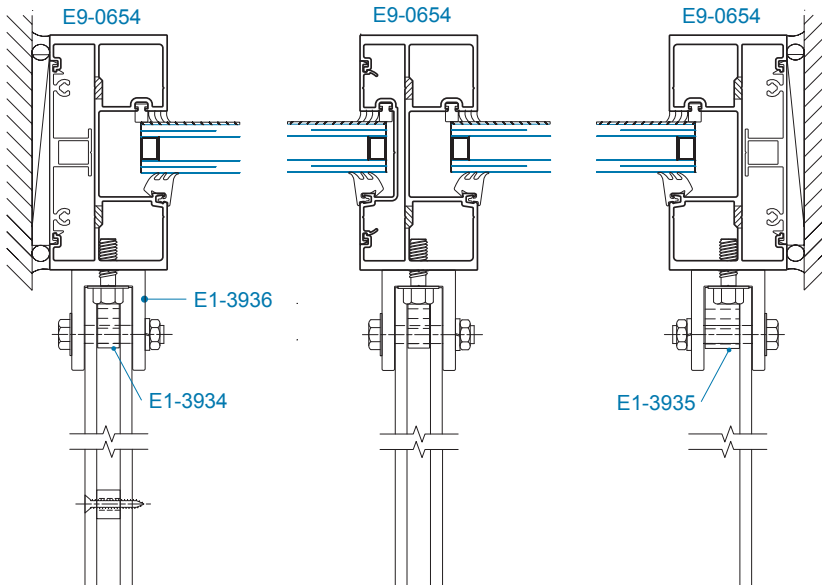
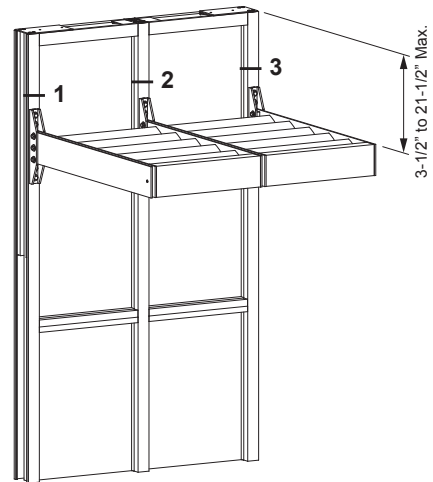
SECTION 1
JAMB (Double
Outrigger)

SECTION 2
VERTICAL

SECTION 3
JAMB (Single
Outrigger)

Square Outrigger Shown,
All Outriggers Available

TYPE A

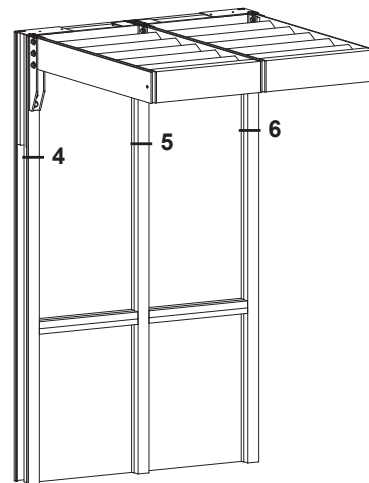


SECTION 4
JAMB (Double
Outrigger)

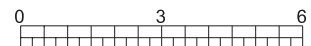
SECTION 5
VERTICAL

SECTION 6
JAMB (Single
Outrigger)

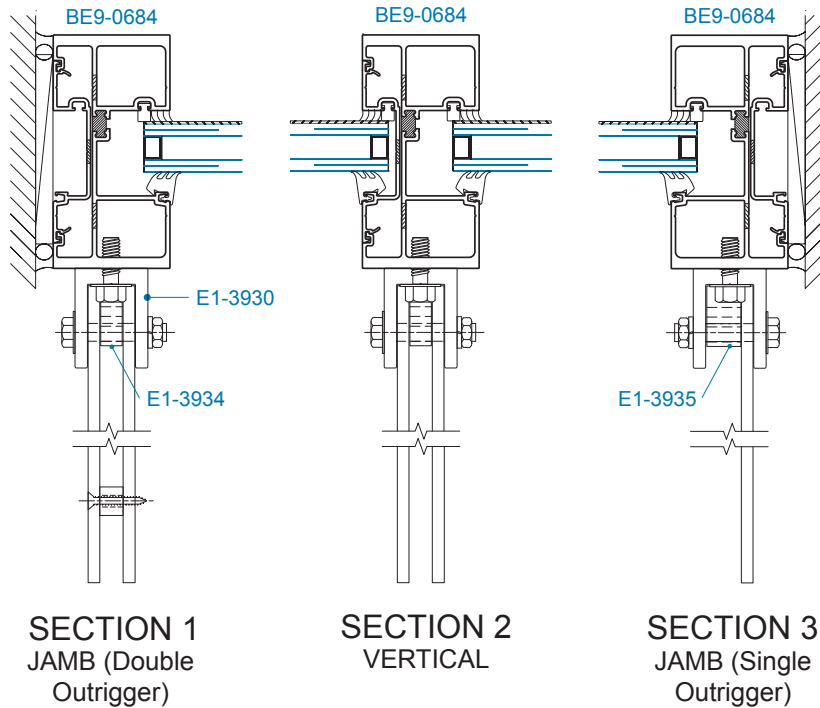
TYPE B



SCALE: 1/4 SIZE

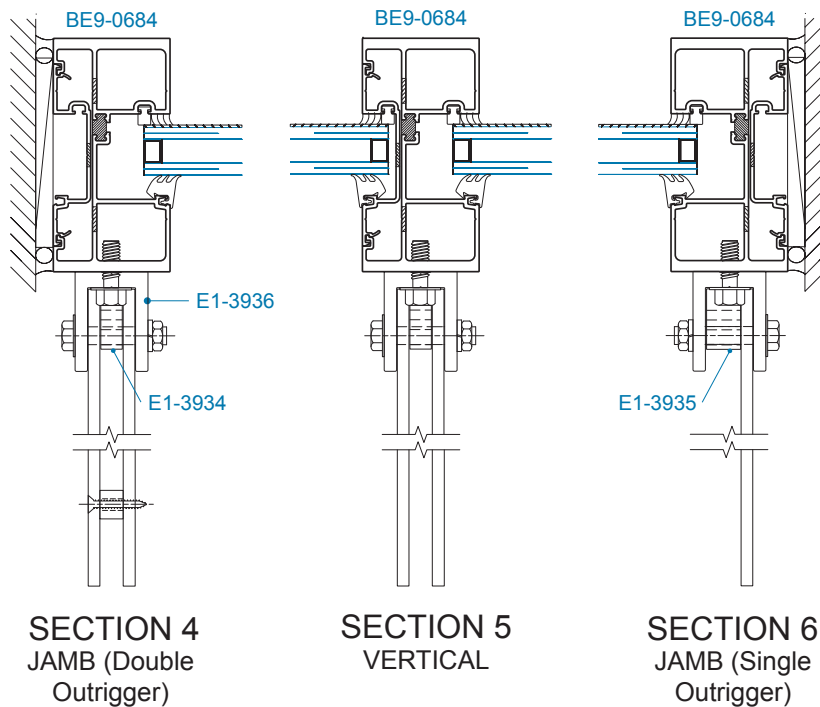
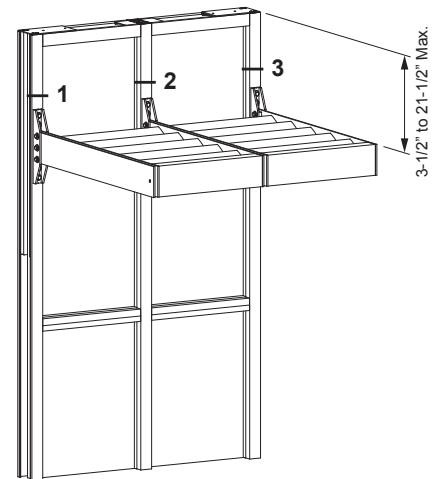


EXPOSED ANCHOR ATTACHMENT TO YHS 50 TU

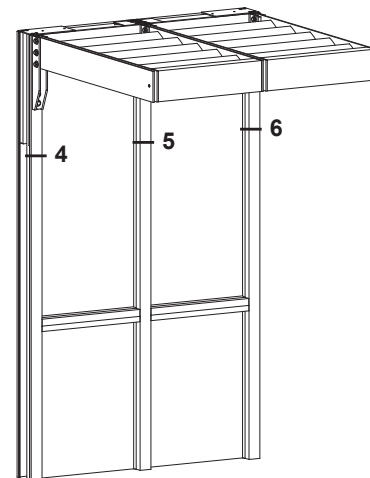


Square Outrigger Shown,
All Outriggers Available

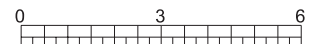
TYPE A

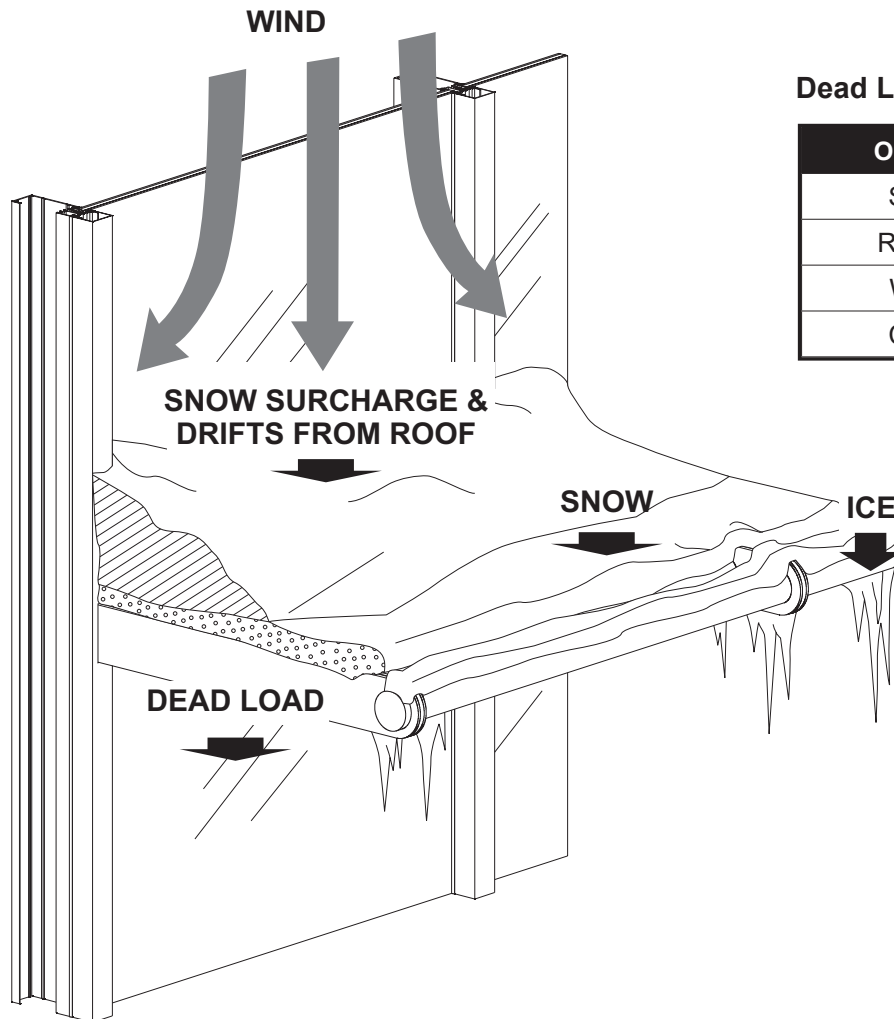


TYPE B



SCALE: 1/4 SIZE





Dead Load Weight per Square Foot

Outrigger	Weight
Square	3.65 lbs./FT ²
Rounded	3.09 lbs./FT ²
Wedge	4.63 lbs./FT ²
Curved	3.08 lbs./FT ²

After certified combined load data indicated below has been obtained, it should be used to determine if project qualifies for use of pre-engineered ThermaShade®. It is recommended that a copy of this document be maintained in the project's files.

NOTE: Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced in ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead – see chart above – load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

PROJECT: _____

LOCATION: _____

COMBINED LOAD: _____

ENGINEER OF RECORD: _____

SIGNATURE _____

DATE: _____

Chart A
ALLOWABLE UNIFORM COMBINED LOAD FOR THERMASHADE ATTACHED TO E9-1215 MULLION

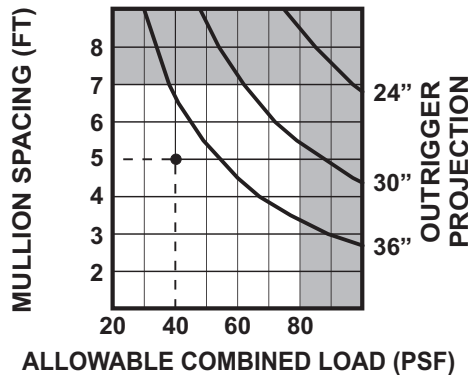
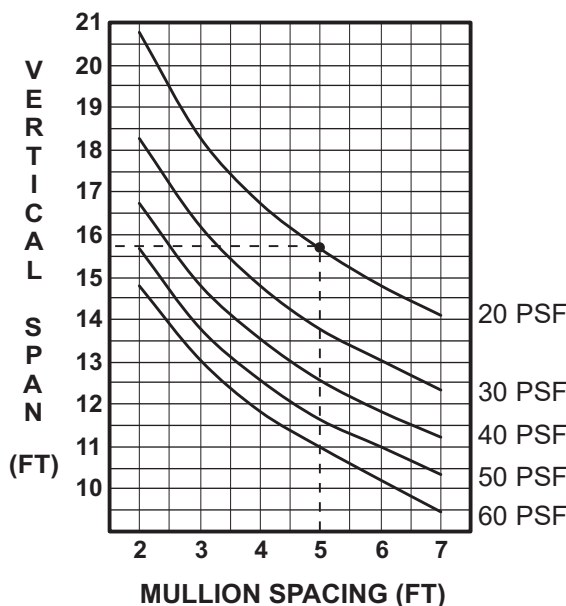


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.81
24 Inch	60 PSF	0.86
24 Inch	40 PSF	0.90
24 Inch	20 PSF	0.95
30 Inch	80 PSF	0.73
30 Inch	60 PSF	0.82
30 Inch	40 PSF	0.85
30 Inch	20 PSF	0.92
36 Inch	80 PSF	0.64
36 Inch	60 PSF	0.71
36 Inch	40 PSF	0.80
36 Inch	20 PSF	0.89

E9-1215 WITH HORIZONTALS WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 15.75'

Wind Load = 20 psf

STEP 1

OBTAIN COMBINED LOAD

***COMBINED LOAD:** _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

***COMBINED LOAD:** _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.85)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/20psf)

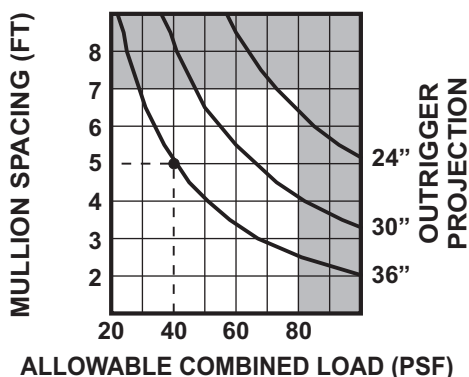
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 15.75')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
 $15.75' \text{ (Vertical Span)} \times 0.85 \text{ (Reduction Factor)} = 13.39'$. Since 15.75' is greater than 13.39', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-1225 MULLION



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 14.4'

Wind Load = 20 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.83)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

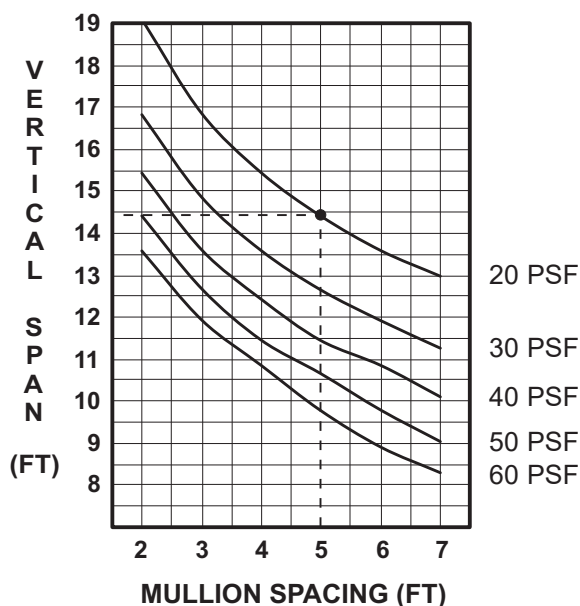
-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/20psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 14.4')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
14.4' (Vertical Span) X 0.83 (Reduction Factor) = 11.95'. Since 14.4' is greater than 11.95', the desired Vertical Span has been validated.

E9-1225

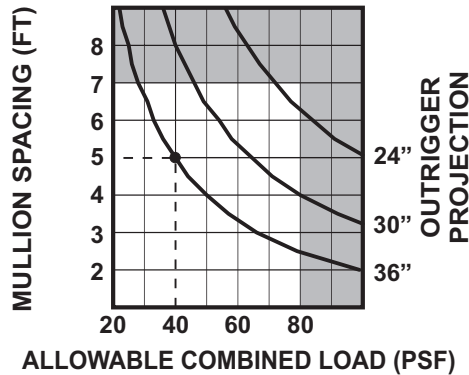
WITH HORIZONTALS
WITHOUT THERMASHADES



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

**ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-1246 MULLION**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 13.6'

Wind Load = 20 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.81)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/20psf)

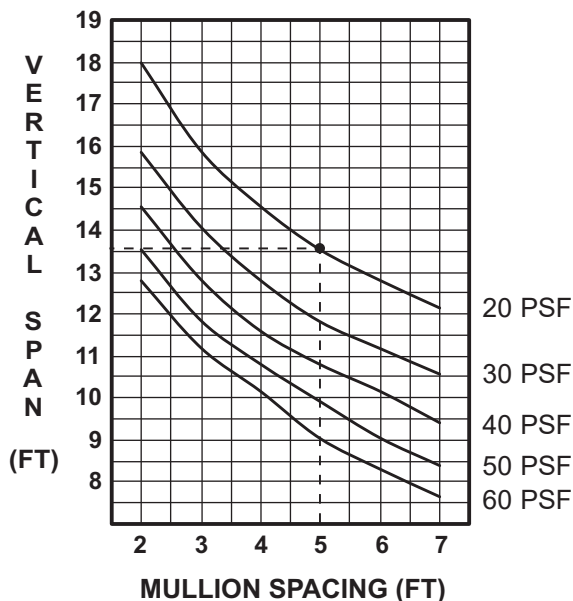
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 13.6')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
 $13.6' \text{ (Vertical Span)} \times 0.81 \text{ (Reduction Factor)} = 11.02'$. Since 13.6' is greater than 11.02', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.76
24 Inch	60 PSF	0.82
24 Inch	40 PSF	0.87
24 Inch	20 PSF	0.94
30 Inch	80 PSF	0.65
30 Inch	60 PSF	0.72
30 Inch	40 PSF	0.81
30 Inch	20 PSF	0.90
36 Inch	80 PSF	0.54
36 Inch	60 PSF	0.62
36 Inch	40 PSF	0.73
36 Inch	20 PSF	0.86

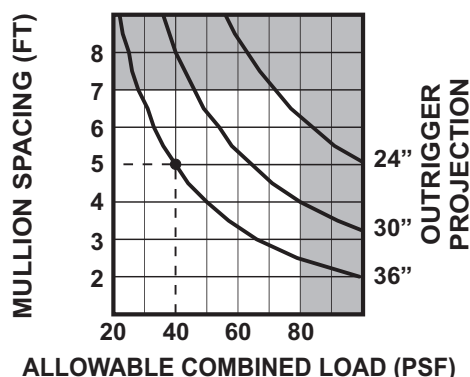
**E9-1246
WITH HORIZONTALS
WITHOUT THERMASHADES**



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-3601 & 3602 MULLION



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 13'

Wind Load = 20 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger

Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.84)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/20psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 15.6")

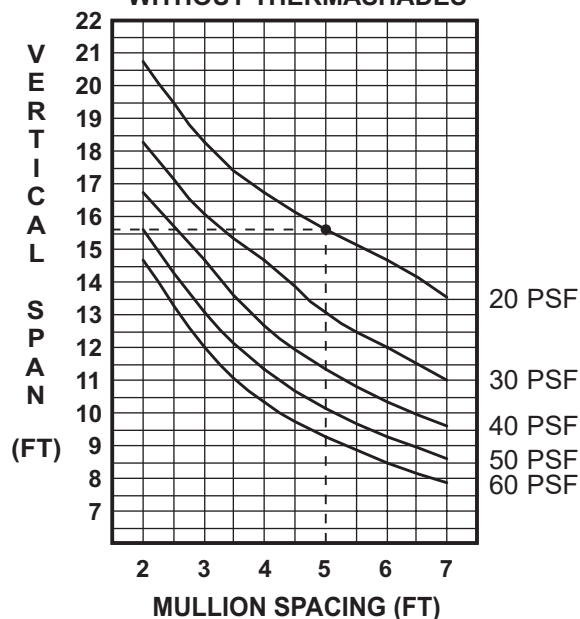
-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:

15.6' (Vertical Span) X 0.84 (Reduction Factor) = 13.10'. Since 13.10' is greater than 13', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.80
24 Inch	60 PSF	0.85
24 Inch	40 PSF	0.90
24 Inch	20 PSF	0.95
30 Inch	80 PSF	0.69
30 Inch	60 PSF	0.77
30 Inch	40 PSF	0.84
30 Inch	20 PSF	0.92
36 Inch	80 PSF	0.57
36 Inch	60 PSF	0.67
36 Inch	40 PSF	0.78
36 Inch	20 PSF	0.89

E9-3601/E9-3602
(Mullion Clips or Horizontals
Placed Every 36")
WITHOUT THERMASHADES



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

**ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-3101 MULLION**

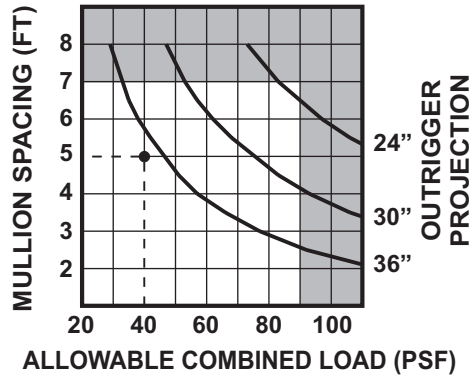
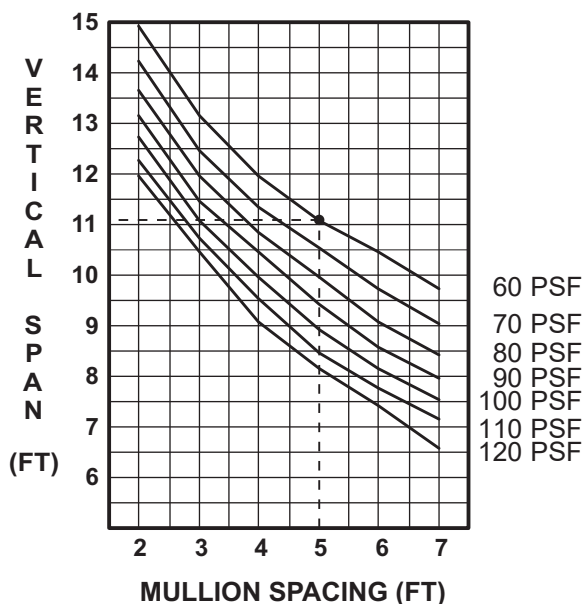


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.82
24 Inch	60 PSF	0.86
24 Inch	40 PSF	0.91
24 Inch	20 PSF	0.95
30 Inch	80 PSF	0.73
30 Inch	60 PSF	0.79
30 Inch	40 PSF	0.86
30 Inch	20 PSF	0.93
36 Inch	80 PSF	0.63
36 Inch	60 PSF	0.71
36 Inch	40 PSF	0.80
36 Inch	20 PSF	0.90

**E9-3101
WITH HORIZONTALS
WITHOUT THERMASHADES**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 24"

Vertical Span = 11.1'

Wind Load = 60 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.91)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/60psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.1')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11.1' (Vertical Span) X 0.91 (Reduction Factor) = 10.10'. Since 11.1' is greater than 10.10', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-3103 MULLION

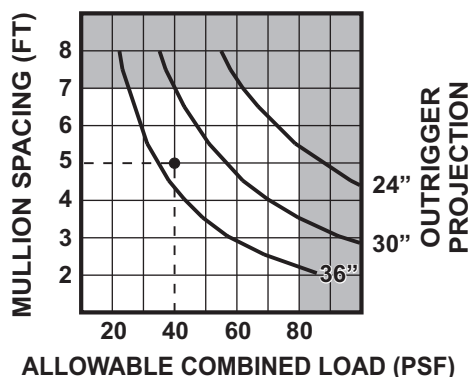
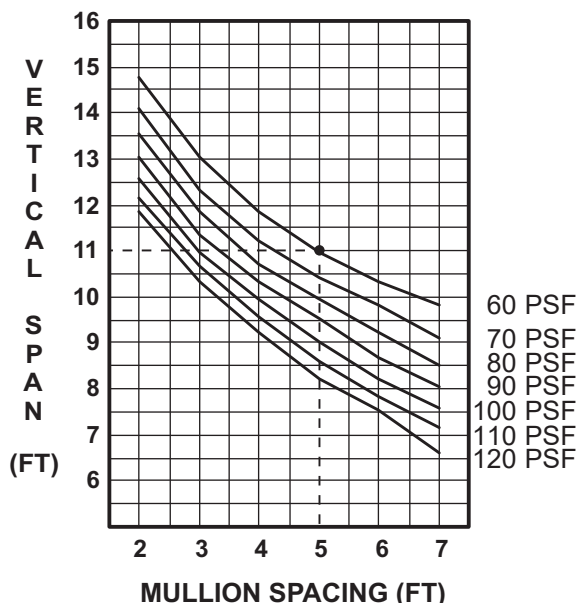


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.82
24 Inch	60 PSF	0.86
24 Inch	40 PSF	0.91
24 Inch	20 PSF	0.95
30 Inch	80 PSF	0.73
30 Inch	60 PSF	0.79
30 Inch	40 PSF	0.85
30 Inch	20 PSF	0.93
36 Inch	80 PSF	0.63
36 Inch	60 PSF	0.71
36 Inch	40 PSF	0.80
36 Inch	20 PSF	0.89

E9-3103
WITH HORIZONTALS
WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 24"

Vertical Span = 11'

Wind Load = 60 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.91)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/60psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11' (Vertical Span) X 0.91 (Reduction Factor) = 10.01'. Since 11' is greater than 10.01', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A
ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-3107 MULLION

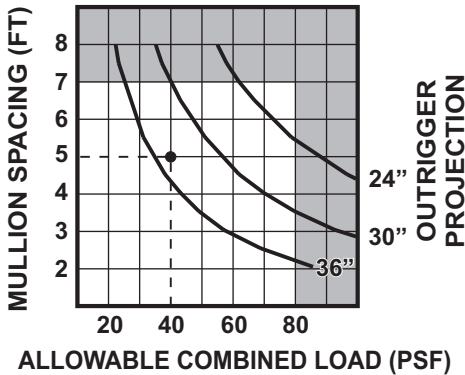
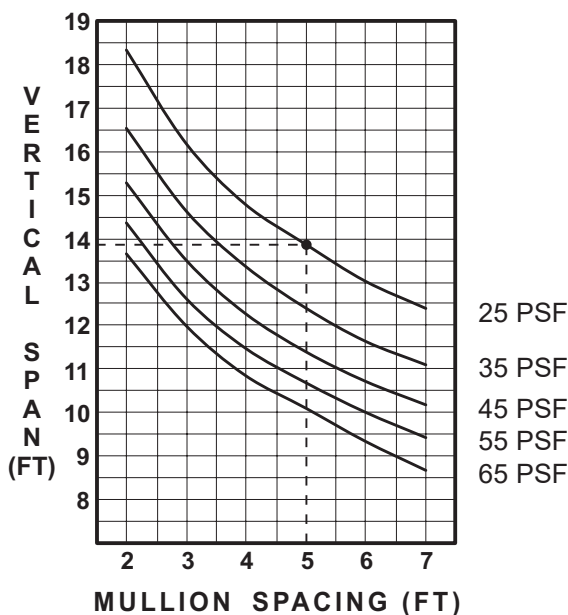


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.84
24 Inch	60 PSF	0.87
24 Inch	40 PSF	0.91
24 Inch	30 PSF	0.93
30 Inch	80 PSF	0.77
30 Inch	60 PSF	0.81
30 Inch	40 PSF	0.87
30 Inch	30 PSF	0.90
36 Inch	80 PSF	0.70
36 Inch	60 PSF	0.75
36 Inch	40 PSF	0.82
36 Inch	30 PSF	0.86

**E9-3107
WITH HORIZONTALS
WITHOUT THERMASHADES**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 24"

Vertical Span = 13.9'

Wind Load = 25 psf

STEP 1

OBTAIN COMBINED LOAD

***COMBINED LOAD:** _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

***COMBINED LOAD:** _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: .91)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/25psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 13.9')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:

13.9' (Vertical Span) X .91 (Reduction Factor) = 12.6'. Since 13.9' is greater than 12.6', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

ALLOWABLE UNIFORM COMBINED LOAD FOR THERMASHADE ATTACHED TO E9-3111 MULLION

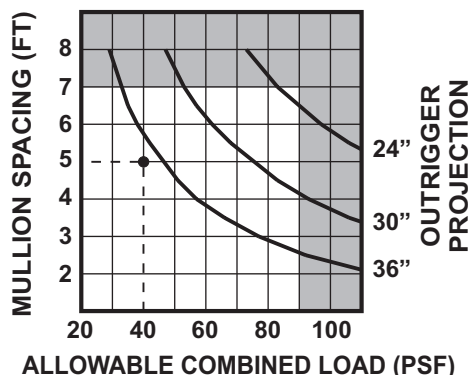
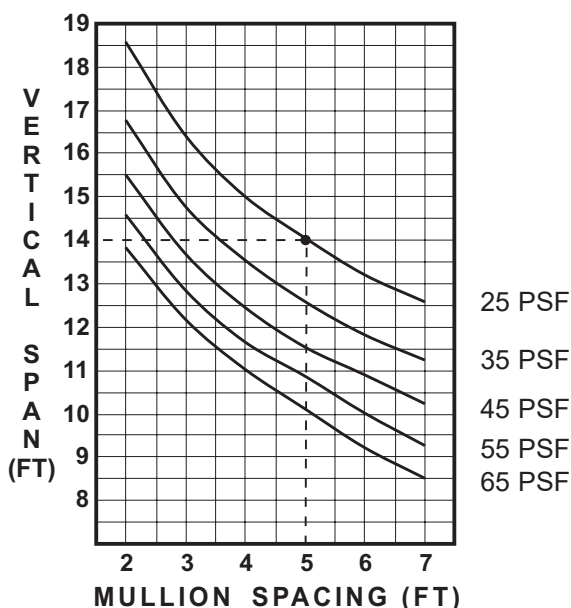


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.84
24 Inch	60 PSF	0.87
24 Inch	40 PSF	0.91
24 Inch	30 PSF	0.93
30 Inch	80 PSF	0.77
30 Inch	60 PSF	0.81
30 Inch	40 PSF	0.87
30 Inch	30 PSF	0.90
36 Inch	80 PSF	0.70
36 Inch	60 PSF	0.75
36 Inch	40 PSF	0.82
36 Inch	30 PSF	0.86

E9-3111 WITH HORIZONTALS WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 24"

Vertical Span = 14'

Wind Load = 25 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: .91)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/25psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 14')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
14' (Vertical Span) X .91 (Reduction Factor) = 12.7'. Since 14' is greater than 12.7', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

ALLOWABLE UNIFORM COMBINED LOAD FOR THERMASHADE ATTACHED TO E9-3182 MULLION

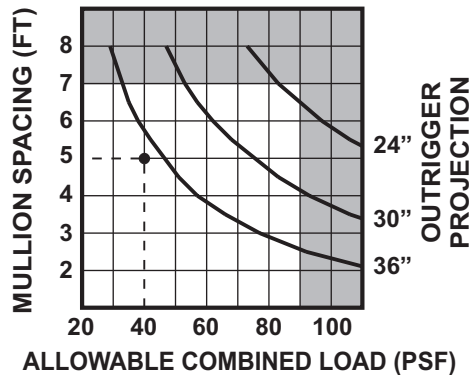
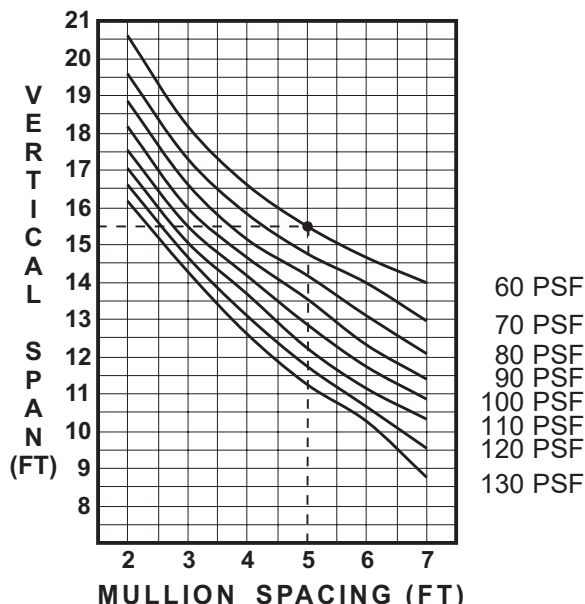


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.89
24 Inch	60 PSF	0.92
24 Inch	40 PSF	0.94
24 Inch	30 PSF	0.96
30 Inch	80 PSF	0.84
30 Inch	60 PSF	0.88
30 Inch	40 PSF	0.91
30 Inch	30 PSF	0.93
36 Inch	80 PSF	0.79
36 Inch	60 PSF	0.83
36 Inch	40 PSF	0.88
36 Inch	30 PSF	0.91

E9-3182 WITH HORIZONTALS WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 24"

Vertical Span = 15.5'

Wind Load = 60 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: .94)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/60psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11')

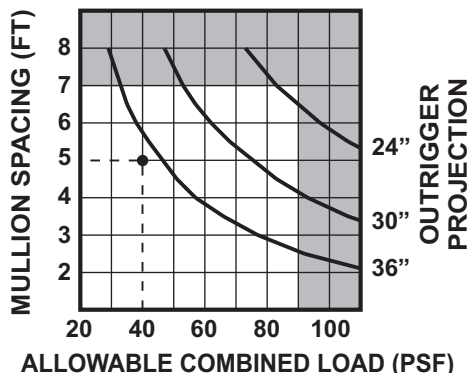
-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:

15.5' (Vertical Span) X .94 (Reduction Factor) = 14.6'. Since 15.5' is greater than 14.6', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-3183 MULLION



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf
Mullion Spacing = 5'
Desired Outrigger Projection = 24"
Vertical Span = 15.6'
Wind Load = 60 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 24")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 24" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: .94)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/60psf)

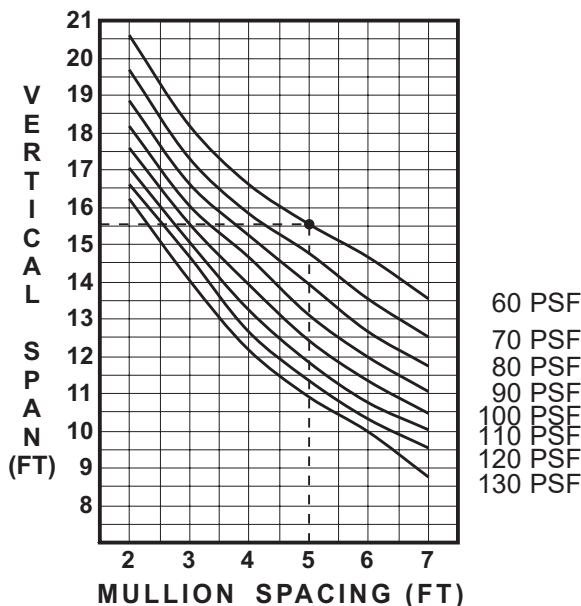
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
15.6' (Vertical Span) X .94 (Reduction Factor) = 14.7'. Since 15.6' is greater than 14.7', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.89
24 Inch	60 PSF	0.92
24 Inch	40 PSF	0.94
24 Inch	30 PSF	0.96
30 Inch	80 PSF	0.84
30 Inch	60 PSF	0.88
30 Inch	40 PSF	0.91
30 Inch	30 PSF	0.93
36 Inch	80 PSF	0.79
36 Inch	60 PSF	0.83
36 Inch	40 PSF	0.88
36 Inch	30 PSF	0.91

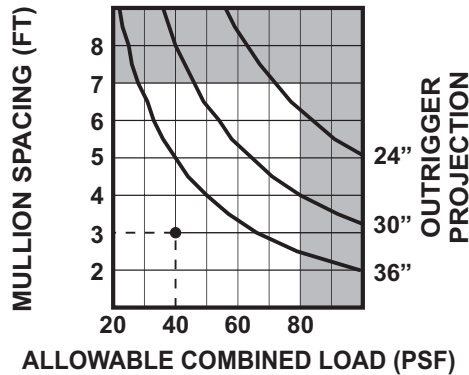
E9-3183
WITH HORIZONTALS
WITHOUT THERMASHADES



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

**ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-1013/E9-1012**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 12.2'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.69)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 12.2')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
12.2' (Vertical Span) X 0.69 (Reduction Factor) = 8.42'. Since 12.2' is greater than 8.42', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.64
24 Inch	60 PSF	0.70
24 Inch	40 PSF	0.78
24 Inch	30 PSF	0.82
30 Inch	80 PSF	0.53
30 Inch	60 PSF	0.60
30 Inch	40 PSF	0.69
30 Inch	30 PSF	0.75
36 Inch	80 PSF	0.38
36 Inch	60 PSF	0.44
36 Inch	40 PSF	0.61
36 Inch	30 PSF	0.67

**E9-1013 / E9-1012
WITH HORIZONTALS
WITHOUT THERMASHADES**

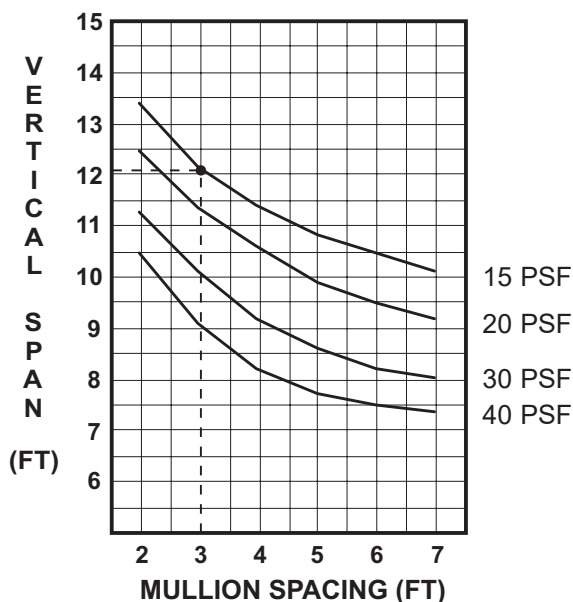
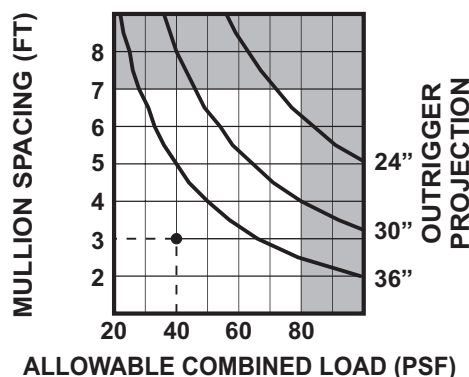


Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-1011/E9-1012



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 11.8'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.69)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.8')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11.8' (Vertical Span) X 0.69 (Reduction Factor) = 7.9'. Since 11.8' is greater than 7.9', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.63
24 Inch	60 PSF	0.69
24 Inch	40 PSF	0.77
24 Inch	30 PSF	0.82
30 Inch	80 PSF	0.52
30 Inch	60 PSF	0.59
30 Inch	40 PSF	0.69
30 Inch	30 PSF	0.74
36 Inch	80 PSF	0.37
36 Inch	60 PSF	0.44
36 Inch	40 PSF	0.60
36 Inch	30 PSF	0.67

E9-1011 / E9-1012
WITH HORIZONTALS
WITHOUT THERMASHADES

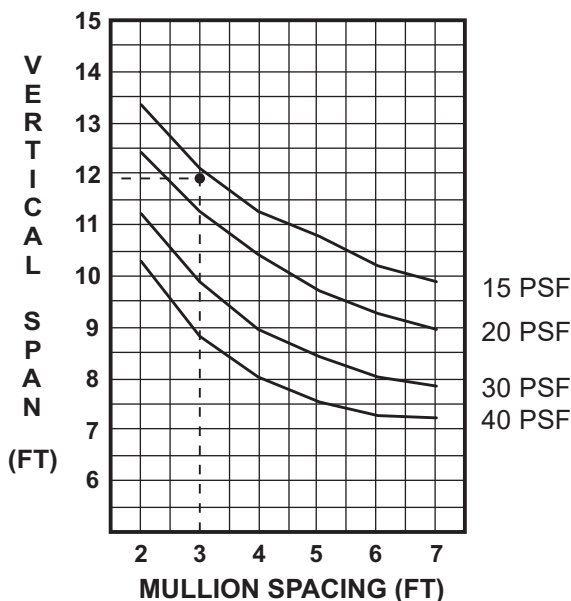
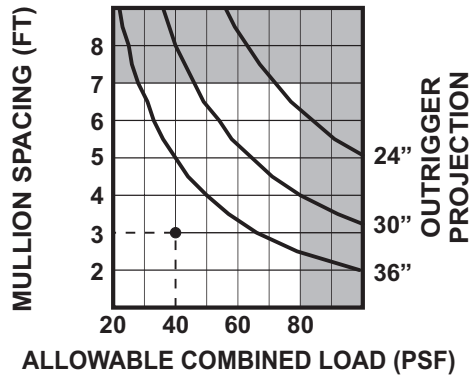


Chart A
ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-1075



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 12.5'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.69)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 12.5')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
12.5' (Vertical Span) X 0.69 (Reduction Factor) = 8.63'. Since 12.5' is greater than 8.63', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.64
24 Inch	60 PSF	0.70
24 Inch	40 PSF	0.78
24 Inch	30 PSF	0.82
30 Inch	80 PSF	0.53
30 Inch	60 PSF	0.60
30 Inch	40 PSF	0.69
30 Inch	30 PSF	0.75
36 Inch	80 PSF	0.38
36 Inch	60 PSF	0.44
36 Inch	40 PSF	0.60
36 Inch	30 PSF	0.67

**E9-1075
WITH HORIZONTALS
WITHOUT THERMASHADES**

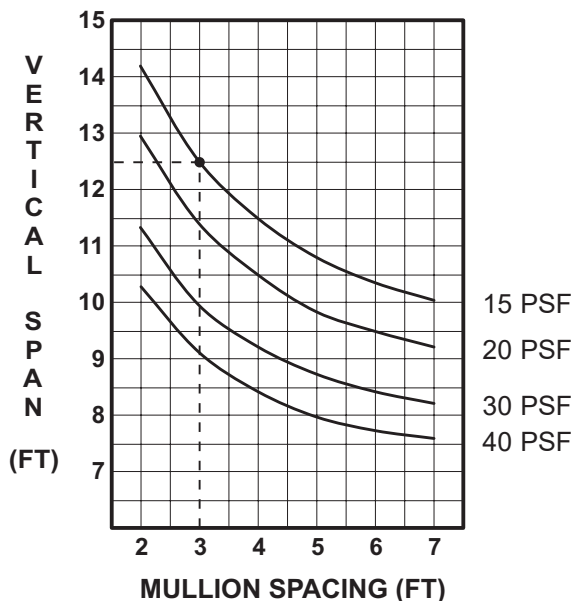
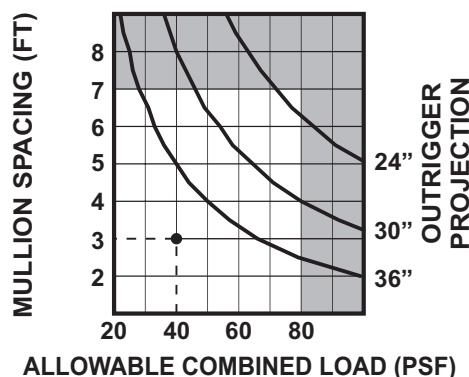


Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO BE9-2553/BE9-2552



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 11.3'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.66)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

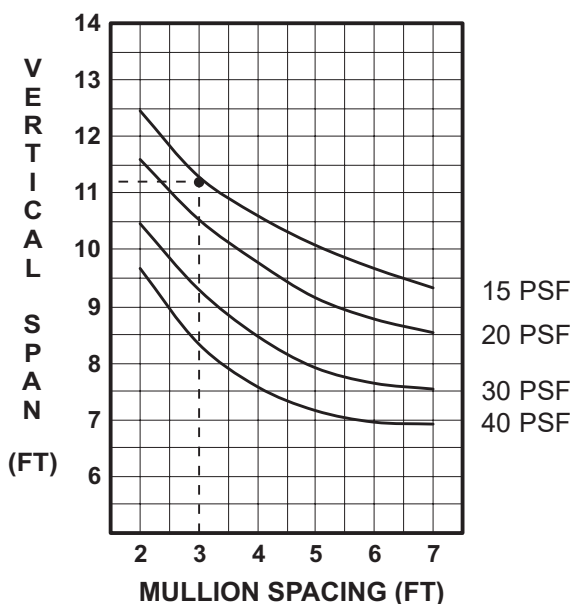
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.3')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11.3' (Vertical Span) X 0.66 (Reduction Factor) = 7.46'. Since 11.3' is greater than 7.46', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.60
24 Inch	60 PSF	0.66
24 Inch	40 PSF	0.75
24 Inch	30 PSF	0.80
30 Inch	80 PSF	0.49
30 Inch	60 PSF	0.56
30 Inch	40 PSF	0.66
30 Inch	30 PSF	0.72
36 Inch	80 PSF	0.40
36 Inch	60 PSF	0.47
36 Inch	40 PSF	0.57
36 Inch	30 PSF	0.64

BE9-2553 / BE9-2552
WITH HORIZONTALS
WITHOUT THERMASHADES



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A
ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO BE9-2551/BE9-2552

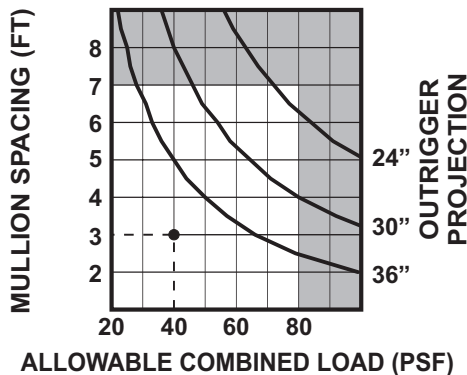
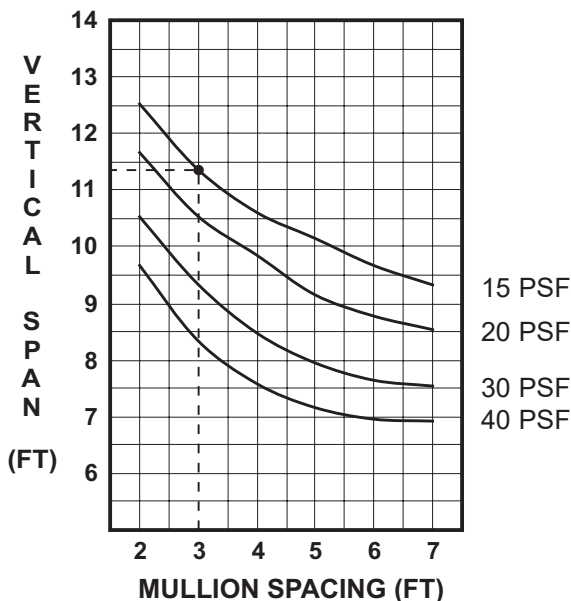


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.60
24 Inch	60 PSF	0.66
24 Inch	40 PSF	0.75
24 Inch	30 PSF	0.80
30 Inch	80 PSF	0.49
30 Inch	60 PSF	0.56
30 Inch	40 PSF	0.66
30 Inch	30 PSF	0.72
36 Inch	80 PSF	0.35
36 Inch	60 PSF	0.41
36 Inch	40 PSF	0.57
36 Inch	30 PSF	0.64

**BE9-2551 / BE9-2552
WITH HORIZONTALS
WITHOUT THERMASHADES**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 11.4'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.66)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.4')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:

11.4' (Vertical Span) X 0.66 (Reduction Factor) = 7.5'. Since 11.4' is greater than 7.5', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED LOAD FOR THERMASHADE ATTACHED TO BE9-2555

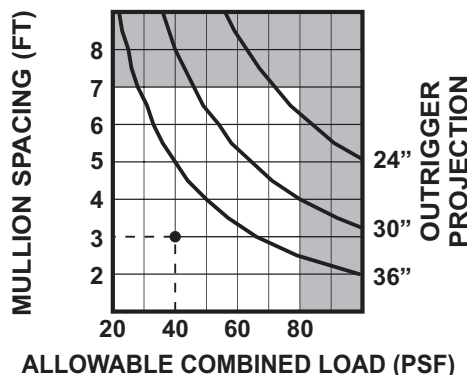
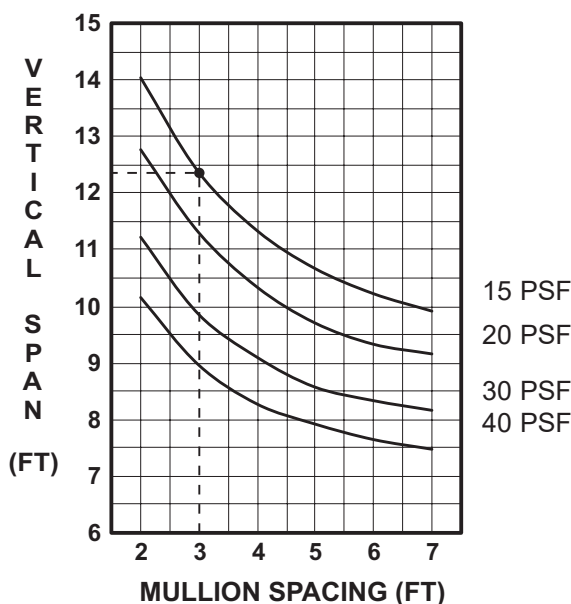


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.61
24 Inch	60 PSF	0.68
24 Inch	40 PSF	0.76
24 Inch	30 PSF	0.81
30 Inch	80 PSF	0.50
30 Inch	60 PSF	0.57
30 Inch	40 PSF	0.71
30 Inch	30 PSF	0.73
36 Inch	80 PSF	0.36
36 Inch	60 PSF	0.42
36 Inch	40 PSF	0.58
36 Inch	30 PSF	0.65

BE9-2555 WITH HORIZONTALS WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 3'

Desired Outrigger Projection = 30"

Vertical Span = 12.3'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 3')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.71)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 3'/15psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 12.3')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
12.3' (Vertical Span) X 0.71 (Reduction Factor) = 8.7'. Since 12.3' is greater than 8.7', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A
ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO BE9-2601/BE9-2605

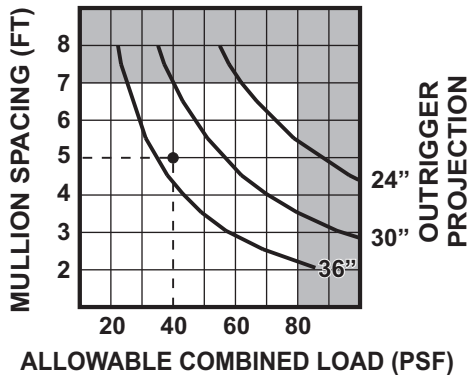
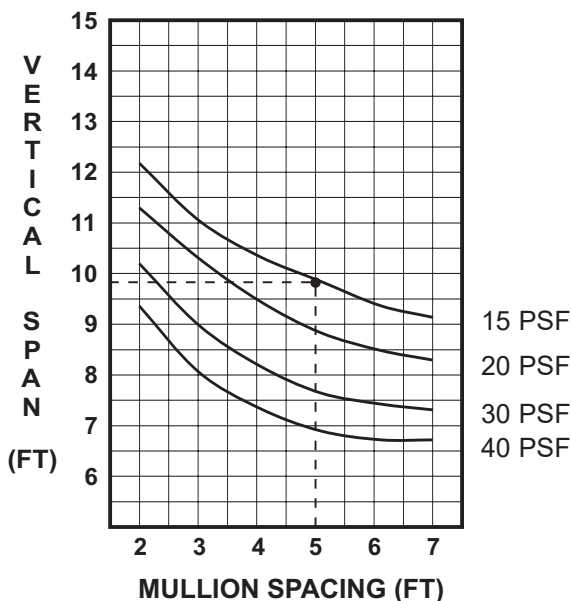


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.59
24 Inch	60 PSF	0.65
24 Inch	40 PSF	0.74
24 Inch	30 PSF	0.79
30 Inch	80 PSF	0.48
30 Inch	60 PSF	0.55
30 Inch	40 PSF	0.65
30 Inch	30 PSF	0.71
36 Inch	80 PSF	0.39
36 Inch	60 PSF	0.46
36 Inch	40 PSF	0.56
36 Inch	30 PSF	0.63

**BE9-2601 / BE9-2605
WITH HORIZONTALS
WITHOUT THERMASHADES**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 9.833'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.65)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/15psf)

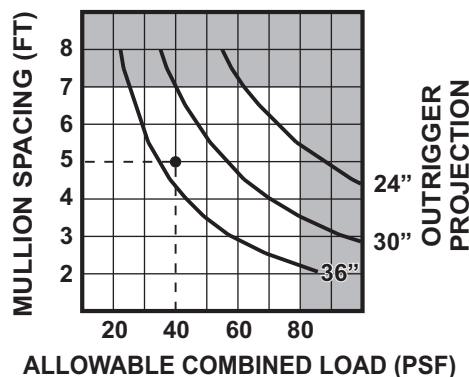
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 9.833')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
 $9.833' \text{ (Vertical Span)} \times 0.65 \text{ (Reduction Factor)} = 6.39'$. Since 9.833' is greater than 6.39', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

**ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO BE9-2606/BE9-2605**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 11.25'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

***COMBINED LOAD:** _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

***COMBINED LOAD:** _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.70)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/15psf)

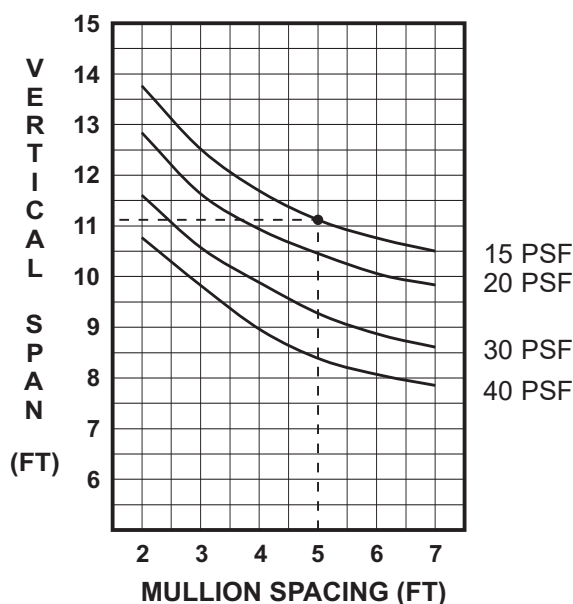
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.25')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11.25' (Vertical Span) X 0.70 (Reduction Factor) = 7.88'. Since 11.25' is greater than 7.88', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.65
24 Inch	60 PSF	0.71
24 Inch	40 PSF	0.79
24 Inch	30 PSF	0.83
30 Inch	80 PSF	0.54
30 Inch	60 PSF	0.61
30 Inch	40 PSF	0.70
30 Inch	30 PSF	0.76
36 Inch	80 PSF	0.45
36 Inch	60 PSF	0.52
36 Inch	40 PSF	0.62
36 Inch	30 PSF	0.69

**BE9-2606 / BE9-2605
WITH HORIZONTALS
WITHOUT THERMASHADES**



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A
ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO BE9-2602/BE9-2605

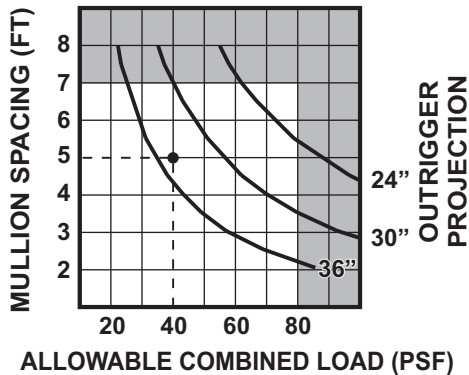
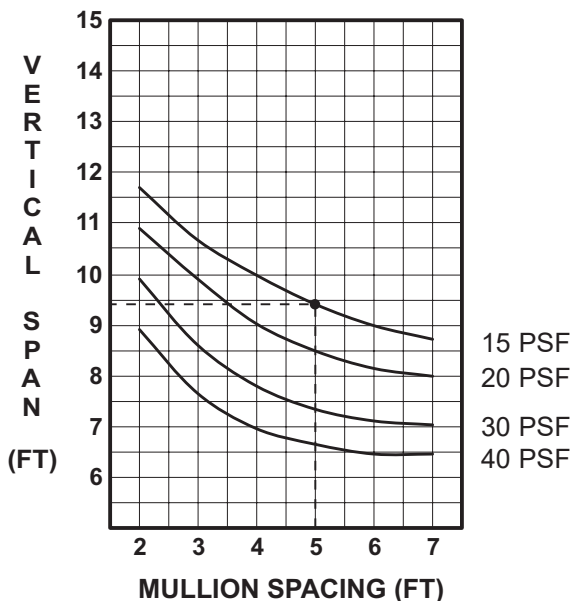


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.58
24 Inch	60 PSF	0.64
24 Inch	40 PSF	0.73
24 Inch	30 PSF	0.78
30 Inch	80 PSF	0.46
30 Inch	60 PSF	0.54
30 Inch	40 PSF	0.63
30 Inch	30 PSF	0.70
36 Inch	80 PSF	0.38
36 Inch	60 PSF	0.45
36 Inch	40 PSF	0.55
36 Inch	30 PSF	0.62

**BE9-2602 / BE9-2605
WITH HORIZONTALS
WITHOUT THERMASHADES**



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 9.40'

Wind Load = 15 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection. In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.63)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/15psf)

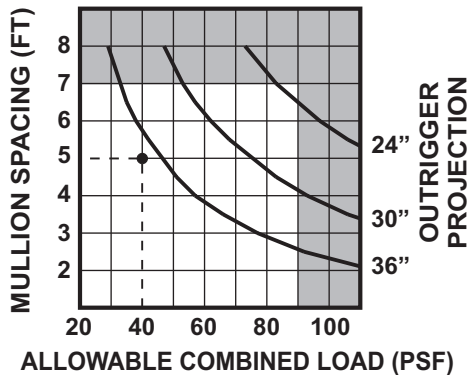
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 9.40')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
9.40' (Vertical Span) X 0.63 (Reduction Factor) = 5.92'. Since 9.40' is greater than 5.92', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED
LOAD FOR THERMASHADE
ATTACHED TO E9-0654/E9-0655



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 11.25'

Wind Load = 40 psf

STEP 1

OBTAIN COMBINED LOAD

*COMBINED LOAD: _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

*COMBINED LOAD: _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.85)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/40psf)

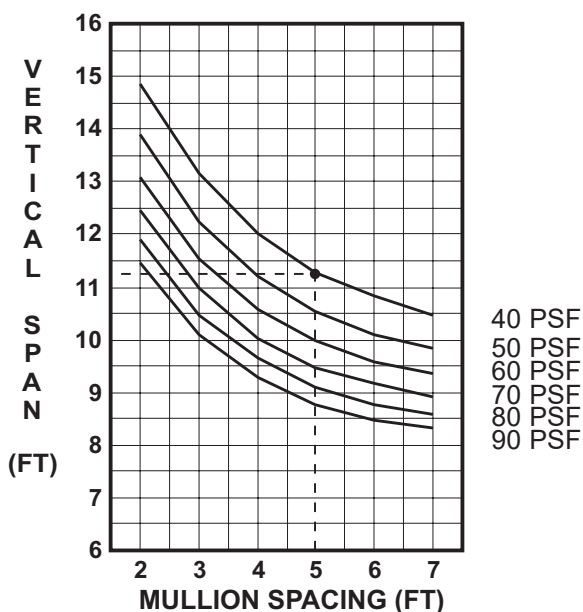
-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.25')

-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:
11.25' (Vertical Span) X 0.85 (Reduction Factor) = 9.56'. Since 11.25' is greater than 9.56', the desired Vertical Span has been validated.

Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.81
24 Inch	60 PSF	0.85
24 Inch	40 PSF	0.90
24 Inch	30 PSF	0.92
30 Inch	80 PSF	0.73
30 Inch	60 PSF	0.78
30 Inch	40 PSF	0.85
30 Inch	30 PSF	0.88
36 Inch	80 PSF	0.57
36 Inch	60 PSF	0.63
36 Inch	40 PSF	0.79
36 Inch	30 PSF	0.84

E9-0654 / E9-0655
WITH HORIZONTALS
WITHOUT THERMASHADES



If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

Chart A

ALLOWABLE UNIFORM COMBINED LOAD FOR THERMASHADE ATTACHED TO BE9-0684/BE9-0655

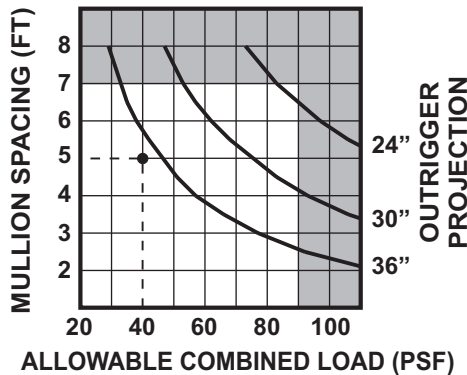
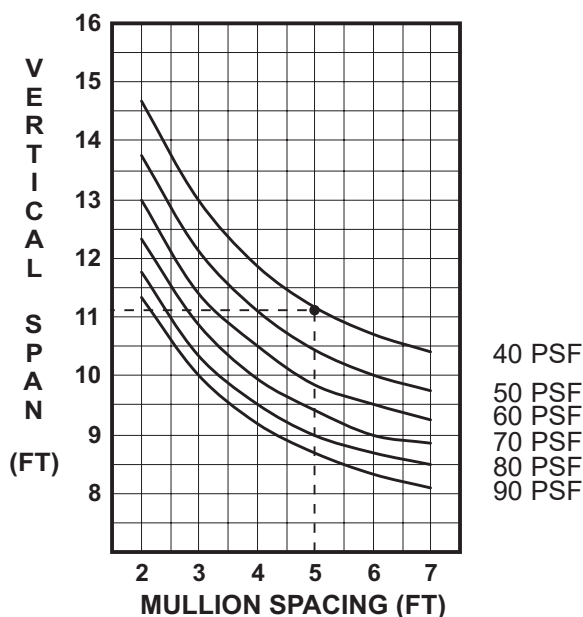


Chart B

ThermaShade Length	Combined Load	Reduction Factor
24 Inch	80 PSF	0.81
24 Inch	60 PSF	0.85
24 Inch	40 PSF	0.90
24 Inch	30 PSF	0.92
30 Inch	80 PSF	0.73
30 Inch	60 PSF	0.78
30 Inch	40 PSF	0.85
30 Inch	30 PSF	0.88
36 Inch	80 PSF	0.57
36 Inch	60 PSF	0.63
36 Inch	40 PSF	0.79
36 Inch	30 PSF	0.84

BE9-0684 / E9-0655 WITH HORIZONTALS WITHOUT THERMASHADES



Use the following charts to validate outrigger projection, mullion spacing, and vertical span. The following worksheet is for one standard ThermaShade per mullion.

Use the following job requirements as an example:

Combined Load = 40 psf

Mullion Spacing = 5'

Desired Outrigger Projection = 30"

Vertical Span = 11.1'

Wind Load = 40 psf

STEP 1

OBTAIN COMBINED LOAD

***COMBINED LOAD:** _____ (example: 40 psf)

*Allowable combined load (in PSF) as required by the code of jurisdiction and/or code referenced ASCE standard (Minimum Design Loads for Buildings and Other Structures) and determined by the building engineer of record (reference signed document) consisting of dead load plus other load effects such as snow, snow surcharges and drifts, ice, wind, live load roof, or others.

STEP 2

VALIDATE OUTRIGGER PROJECTION

Using **Chart A**, validate the desired sunshade depth (outrigger projection).

***COMBINED LOAD:** _____

(Draw a vertical line at the Combined Load. Example: 40 psf)

VERTICAL MULLION SPACING: _____

(Draw horizontal line at Mullion Spacing. Example: 5')

DESIRED OUTRIGGER PROJECTION: _____

(Example: 30")

Intersecting point must be below the curve of the Outrigger Projection.

In the example shown, the intersecting point is below the 30" Outrigger Projection curve, therefore it is validated.

STEP 3

DETERMINE REDUCTION FACTOR

Determine Wind Load reduction factor from **Chart B**.

REDUCTION FACTOR: _____ (example: 0.85)

Note: Interpolate the reduction factor for combined loads not shown.

STEP 4

APPLY REDUCTION FACTOR AND VALIDATE THE DESIRED VERTICAL SPAN

Using the standard Wind Load Chart to the left, apply the Reduction Factor to the Vertical Span.

-Draw a vertical line at the Mullion Spacing until it intersects the desired Wind Load curve. (Example: 5'/40psf)

-Draw a horizontal line at the intersecting point and determine the Vertical Span (before applying the Reduction Factor). (Example: 11.1')

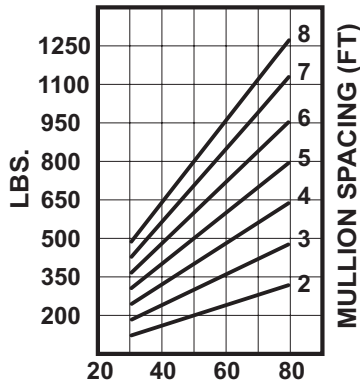
-Multiply the Vertical Span by the Reduction Factor to determine if the reduced span is acceptable. For example:

11.1' (Vertical Span) X 0.85 (Reduction Factor) = 9.44'. Since 11.1' is greater than 9.44', the desired Vertical Span has been validated.

If any of the data calculated above does not validate the desired job requirements, consider reducing the outrigger projection, mullion spacing or vertical span. Solutions may also be available to meet your specific needs by contacting our engineering group at 1-866-955-2732.

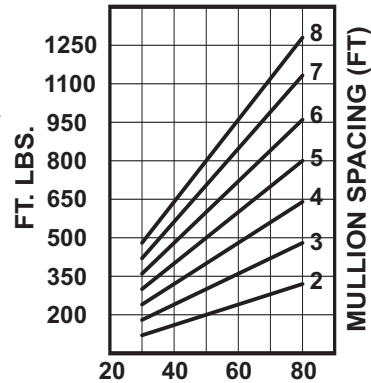
SHEAR AND MOMENT COMBINED LOAD CHARTS FOR WALL MOUNT ATTACHMENT*

**24" THERMASHADE
MAX. END REACTIONS-SHEAR
AT THE ATTACHMENT POINT**



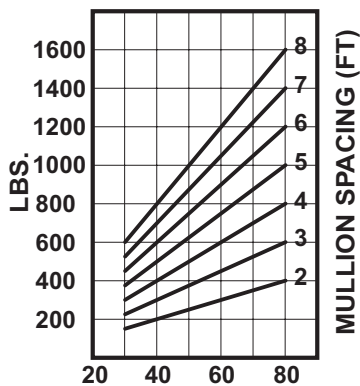
ALLOWABLE COMBINED LOAD (PSF)

**24" THERMASHADE
MAX. END REACTIONS-MOMENT
AT THE ATTACHMENT POINT**



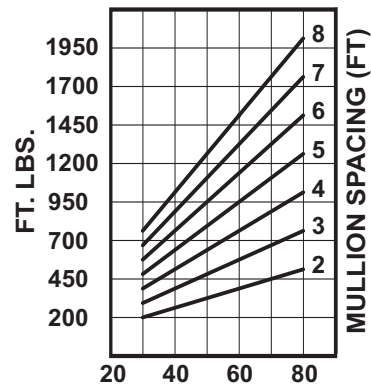
ALLOWABLE COMBINED LOAD (PSF)

**30" THERMASHADE
MAX. END REACTIONS-SHEAR
AT THE ATTACHMENT POINT**



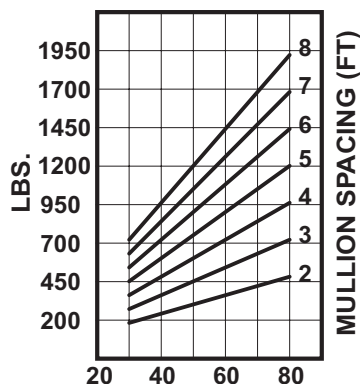
ALLOWABLE COMBINED LOAD (PSF)

**30" THERMASHADE
MAX. END REACTIONS-MOMENT
AT THE ATTACHMENT POINT**



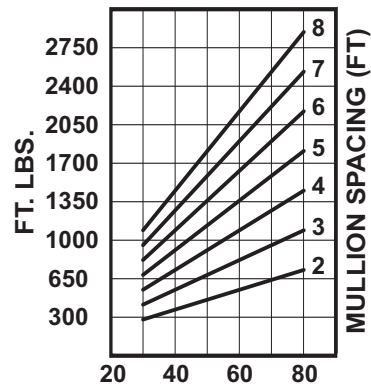
ALLOWABLE COMBINED LOAD (PSF)

**36" THERMASHADE
MAX. END REACTIONS-SHEAR
AT THE ATTACHMENT POINT**



ALLOWABLE COMBINED LOAD (PSF)

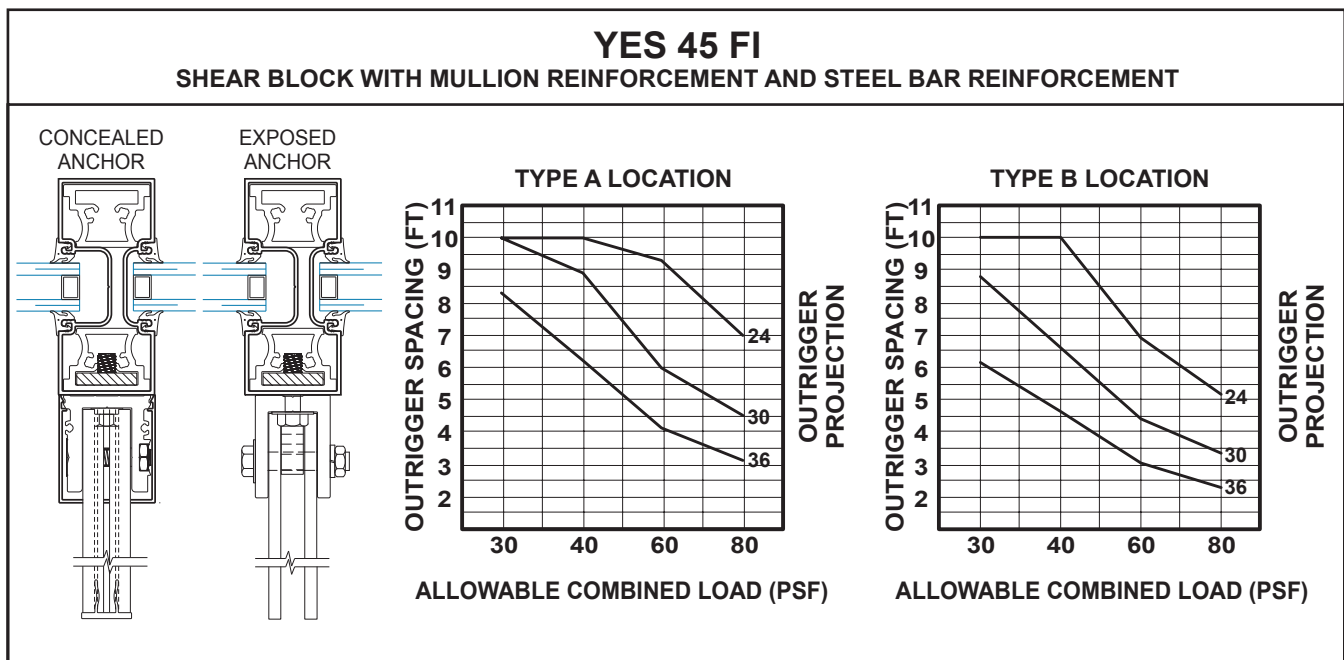
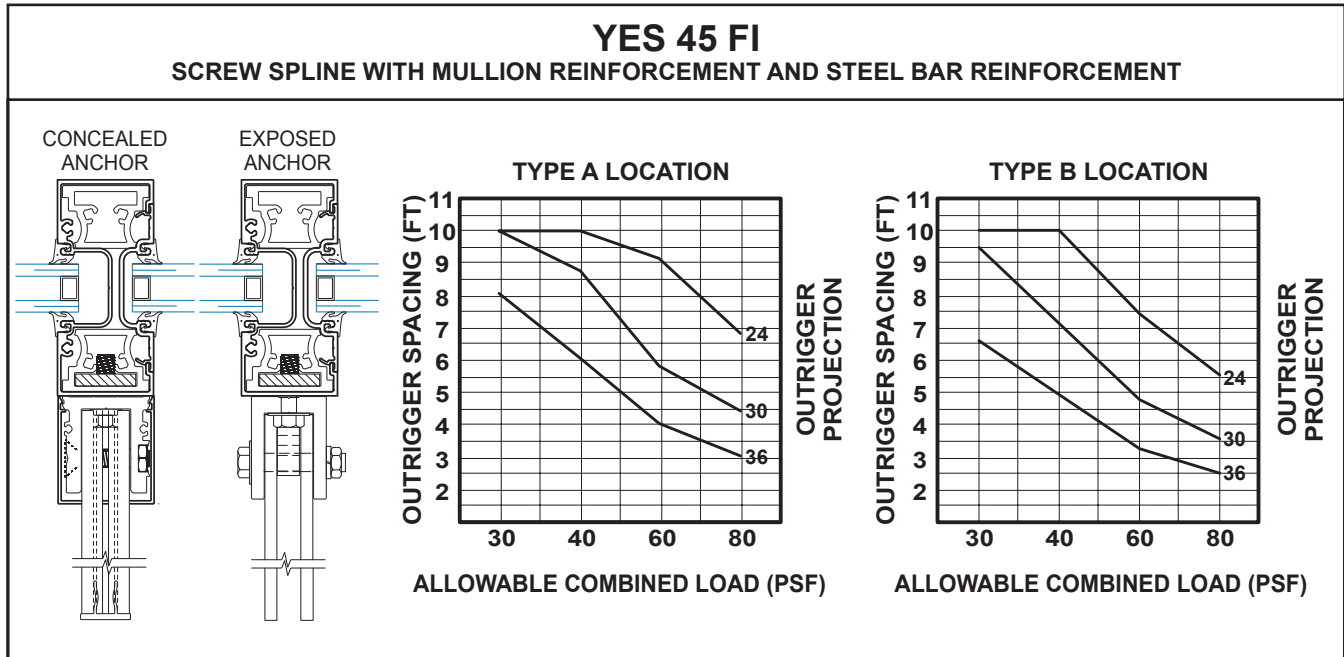
**36" THERMASHADE
MAX. END REACTIONS-MOMENT
AT THE ATTACHMENT POINT**



ALLOWABLE COMBINED LOAD (PSF)

*Wall Mount attachment refers to anchoring ThermaShades to various building facade conditions other than aluminum framing systems. It is the responsibility of others (not YKK AP) to ensure the facade condition and anchor attachments are capable of withstanding the reactions applied as shown on these charts.

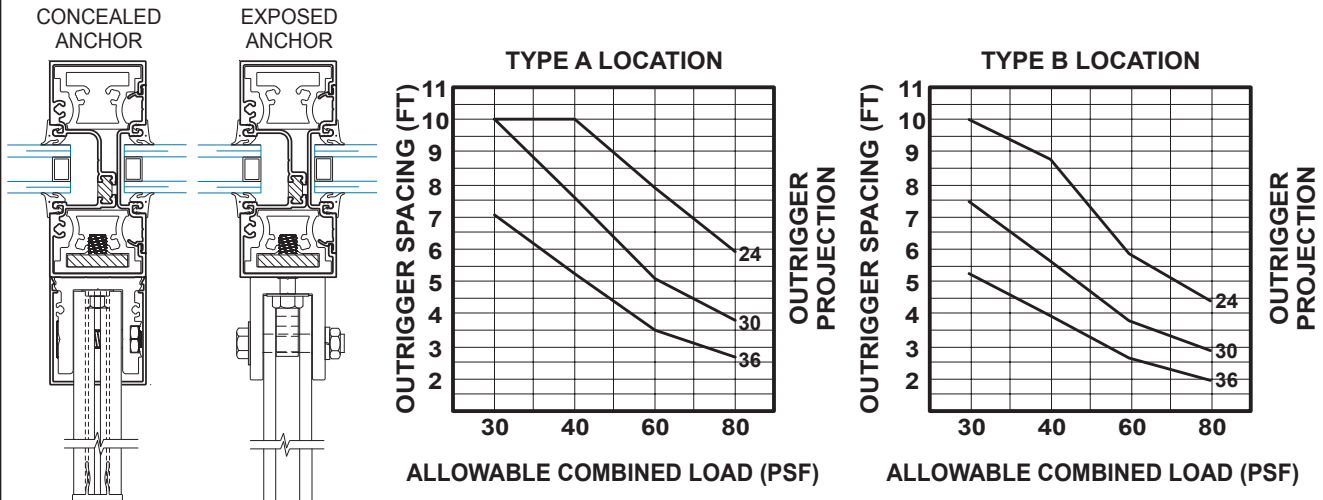
COMBINED LOAD CHARTS THERMASHADE FOR STOREFRONT



COMBINED LOAD CHARTS THERMASHADE FOR STOREFRONT

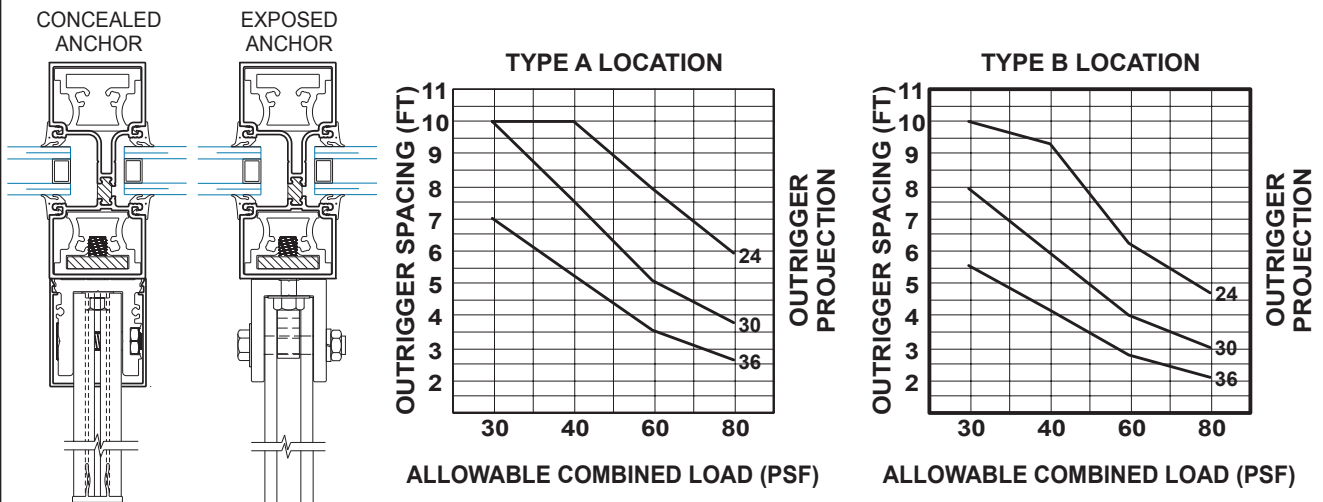
YES 45 TU

SCREW SPLINE WITH MULLION REINFORCEMENT AND STEEL BAR REINFORCEMENT

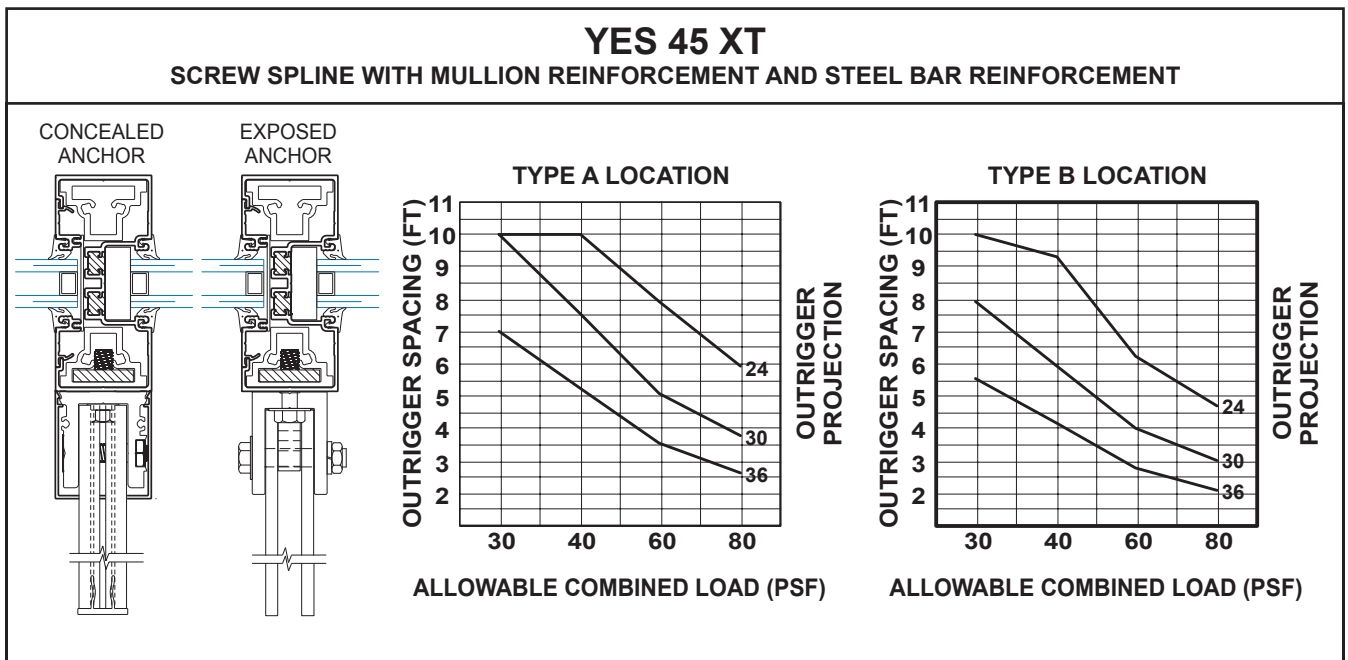
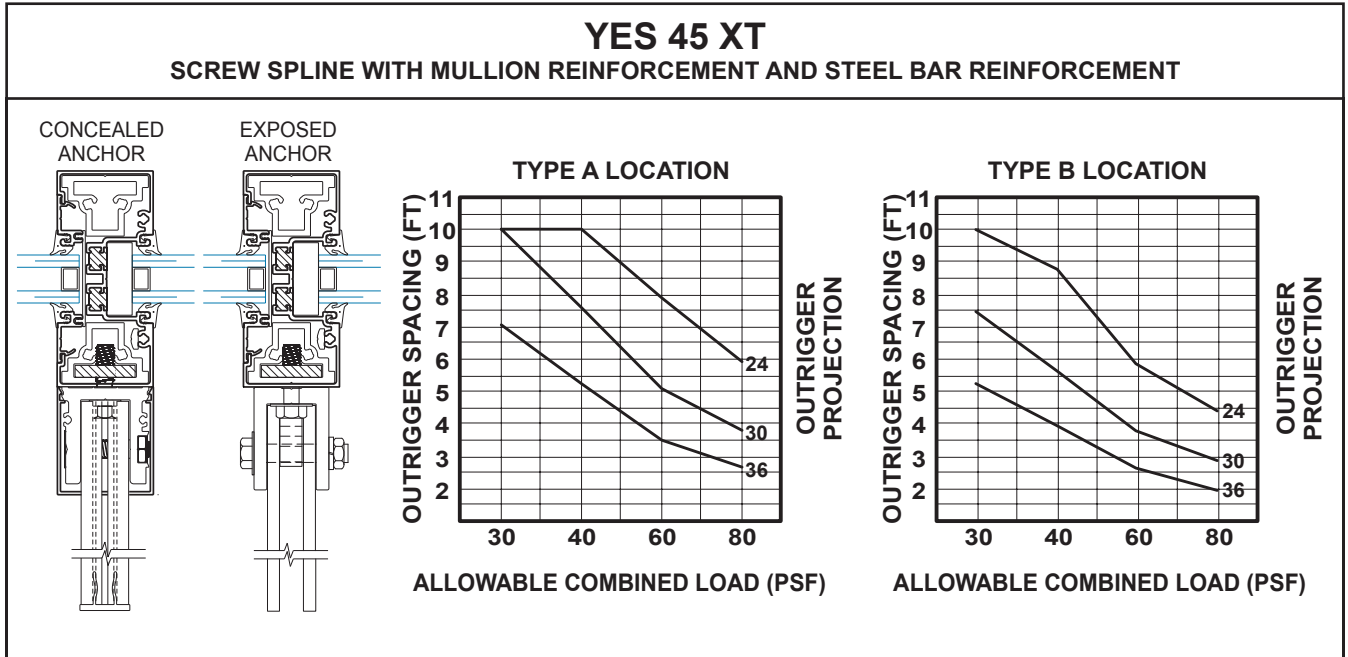


YES 45 TU

SHEAR BLOCK WITH MULLION REINFORCEMENT AND STEEL BAR REINFORCEMENT

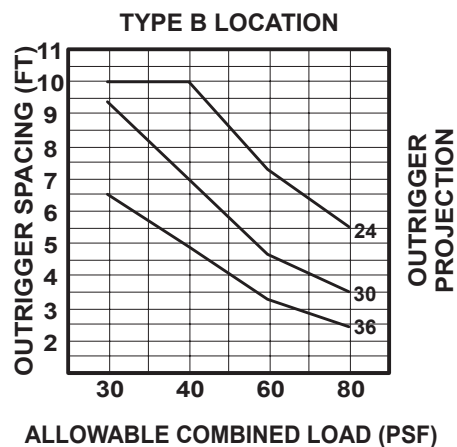
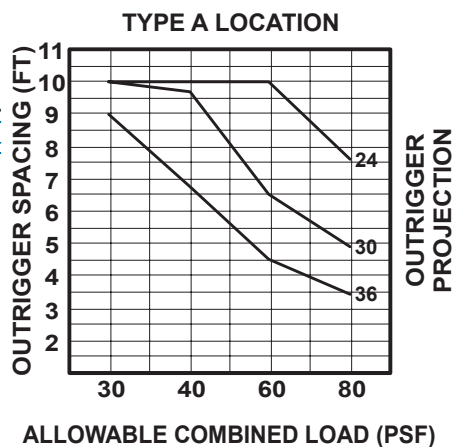
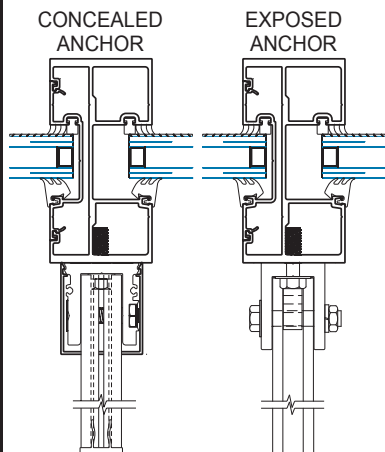


COMBINED LOAD CHARTS THERMASHADE FOR STOREFRONT



COMBINED LOAD CHARTS THERMASHADE FOR STOREFRONT

YHS 50 FI



YHS 50 TU

