



INVISIRAIL™

GLASS RAIL SYSTEM™

INSTALLATION MANUAL

www.invisirail.com

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PLEASE NOTE:
Concrete or masonry
surface mounting will
require alternate post
positioning. Call
InvisiRail for details.

PRE-INSTALLATION

TOOLS / SUPPLIES REQUIRED:

- Two (2) people are necessary to handle and install glass
- Tape measure
- Drill with assorted bits including a T-40 bit for deck fasteners and a 10mm hex socket if connecting to aluminum or wood posts
- Shims for fine height adjustment to help in pin alignment during glass installation
- Washers for flange base adjustment to ensure posts are plumb during installation
- Two (2) short pieces of 2"x4" or 4"x4" to support glass during installation
- Pipe cutter or saw with carbide-tipped metal cutting blade if installing stainless steel handrail or top rail



NOTE: There must be proper blocking in joists to secure posts!

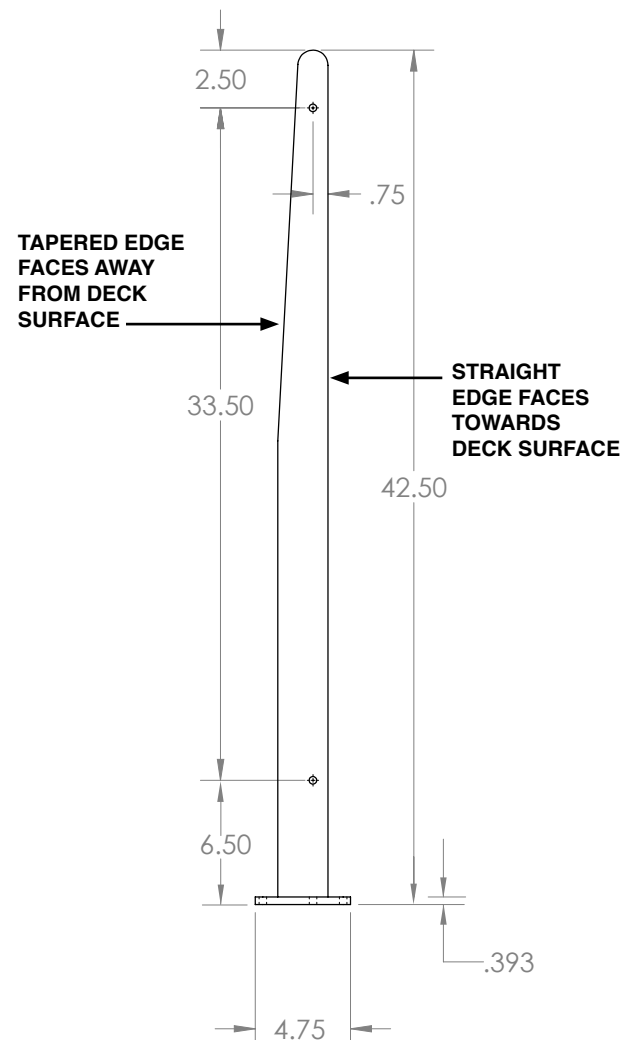
POST INSTALLATION

Start with the post indicated on your layout diagram and only install one panel section at a time. Refer to the positioning diagrams in the back of this manual that apply to your layout.

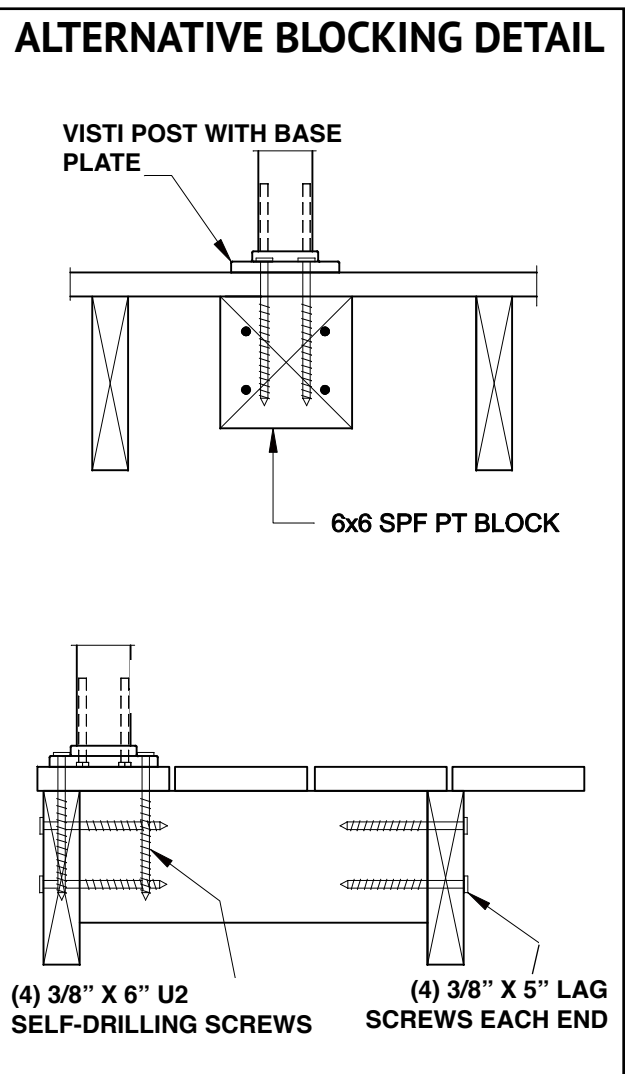
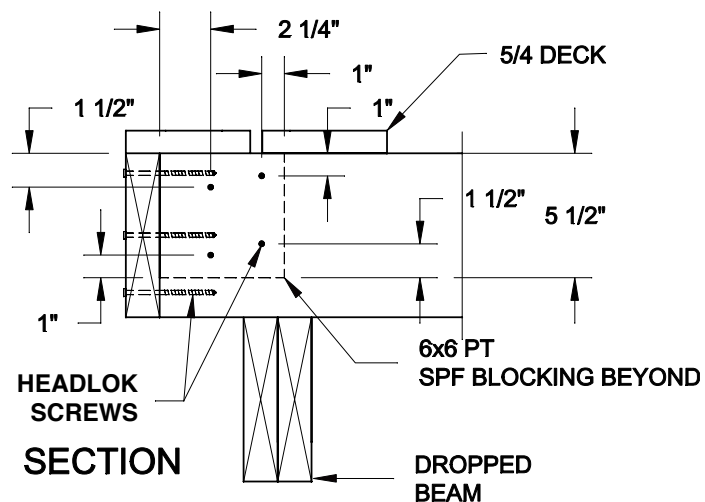
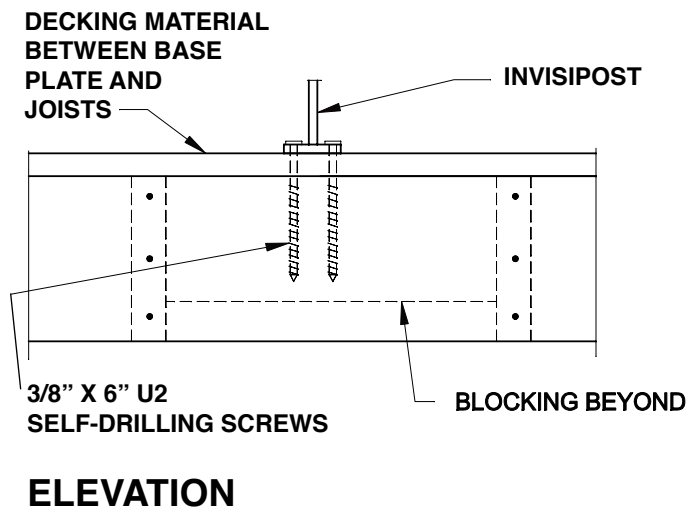
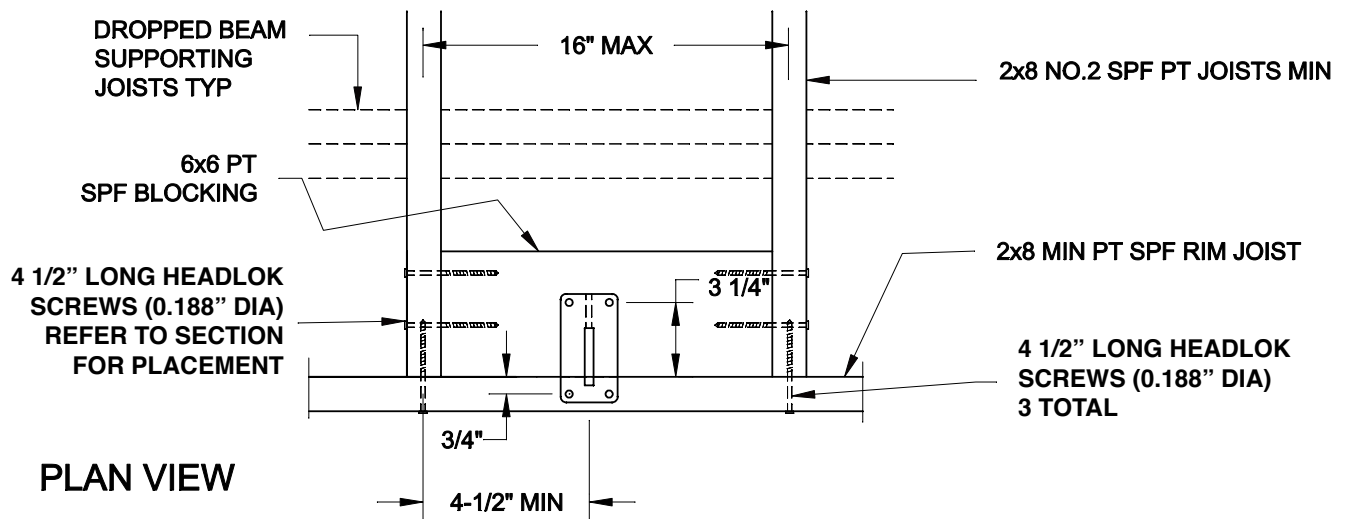
Set the next post according to the on-centre chart (on page 7) and the glass panel indicated on your layout diagram. Remember to add any spacer measurements if/where indicated.

With InvisiPosts you must slide the base cover onto post before attaching glass connectors so be certain of your measurement before securing post to deck.

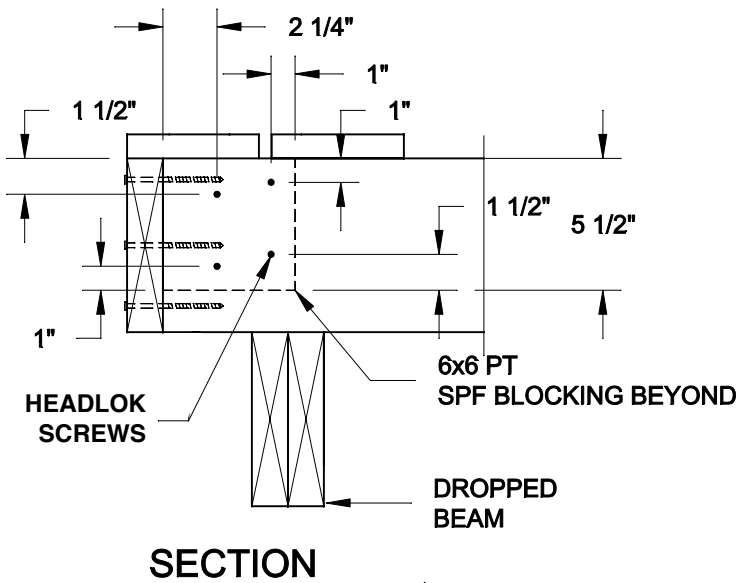
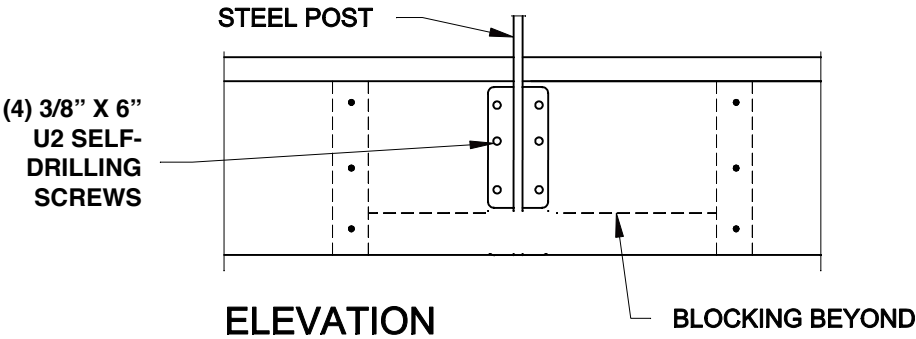
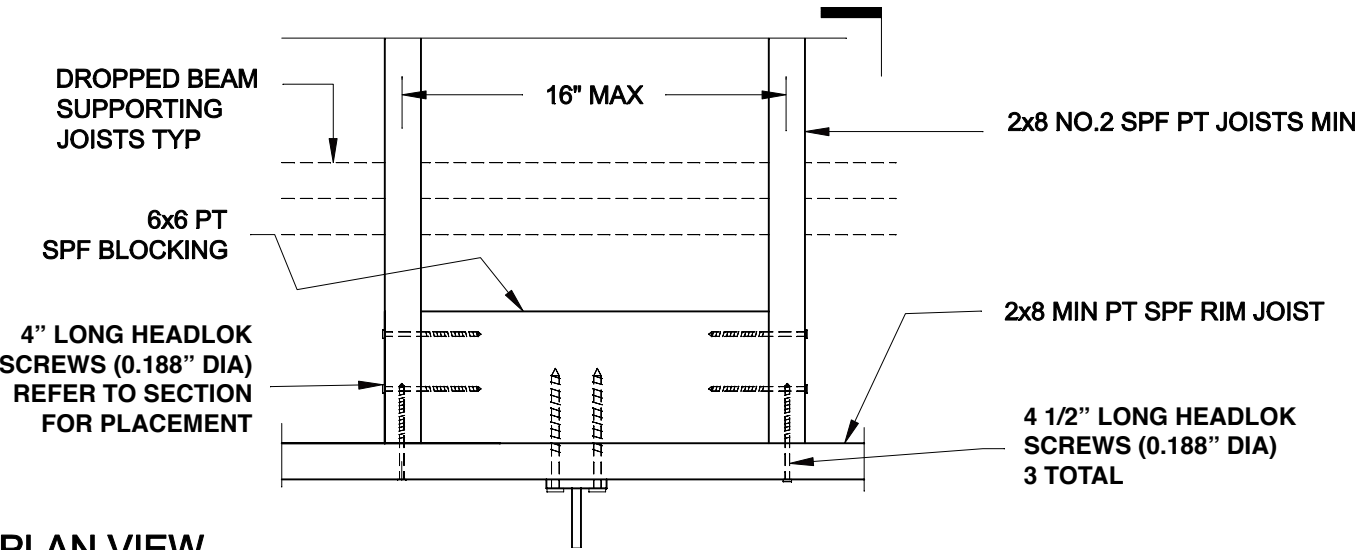
If necessary, use washer/s beneath the flange base to ensure your post is completely plumb.



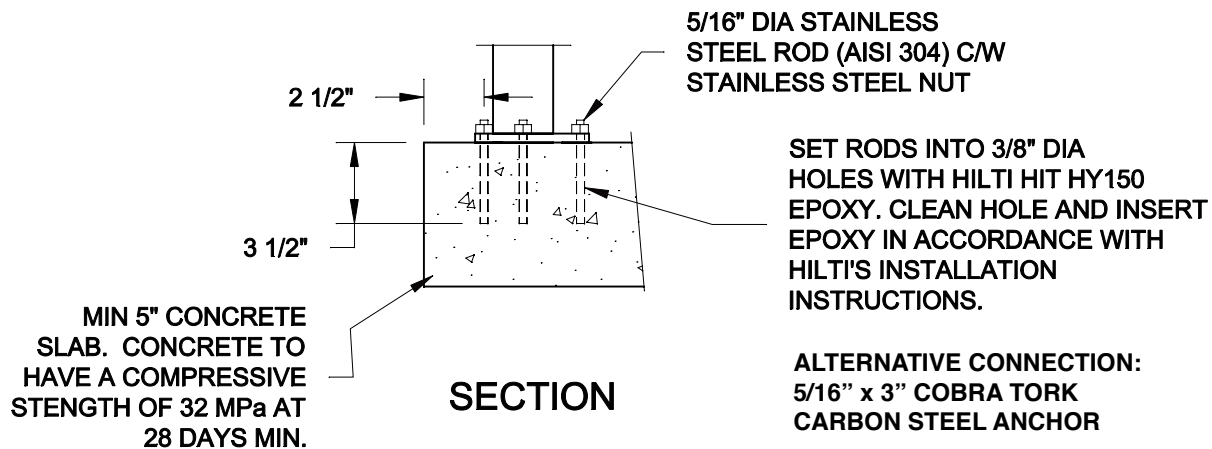
BLOCKING DETAIL



FASCIA MOUNT CONNECTION



CONCRETE CONNECTION



SPACERS

Your post/panel layout diagram may indicate the requirement of spacers at certain locations.

Spacers are used to make up small distances in the overall rail length in order for the railing to fit properly on the deck.

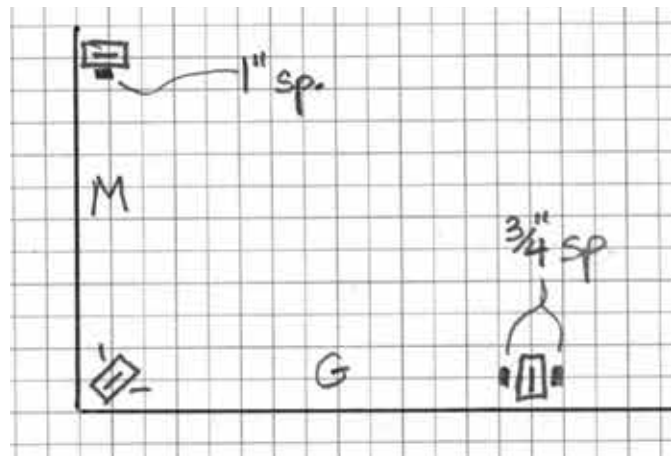
Shown at right is an example of how spacers may be identified on a layout. Below it is a picture of how the spacer looks after installation.

InvisiRail spacers for stainless steel connectors come in 3/8" (10mm), 1/2" (13mm), 3/4" (19mm) and 1" (25mm) sizes.

Spacers for Lite 10 nylon connectors come in 1/4", 3/8", 1/2" and 3/4" sizes.

When referencing the on-centre chart to position your posts be sure to ADD the spacer dimension where indicated.

IMPORTANT NOTE: When installing spacers with angle brackets (45-degree wedges or UABs) you must attach the angle bracket to the post first. ie: The proper order is post, angle bracket, spacer, connector, glass.



Spacers must be installed behind the top and bottom glass connectors.



ON-CENTRE CHARTS

Standard glass panels are 38.82" tall to be used for a 42" rail height. Spans shown in the stainless steel (SS) connector chart assume that the 2mm backing plates are used with connectors.

The only location where the 2mm backing plates cannot be used is on the face of the angle brackets (45 degree wedge and UAB.)

When referencing these charts be sure to ADD the spacer value to the indicated measurement.

Unless otherwise indicated always start your installation at a corner and position that starting post as shown in the diagrams in the back of this manual.

LITE 10 (NYLON) CONNECTORS

Sheet Name	Glass Size	inside to inside Lite 10	o/c Visti 2-1/4" w/ Lite 10	o/c ALX 2-1/2" w/ Lite 10
A	69.812	70 1/2		
B	67.865	68 9/16	70 13/16	71 1/16
C	65.342	66	68 1/4	68 1/2
D	62.342	63	65 1/4	65 1/2
E	59.342	60	62 1/4	62 1/2
F	57.812	58 1/2	60 3/4	61
G	55.865	56 9/16	58 13/16	59 1/16
H	53.342	54	56 1/4	56 1/2
I	51.812	52 1/2	54 3/4	55
J	49.865	50 9/16	52 13/16	53 1/16
K	47.342	48	50 1/4	50 1/2
L	44.342	45	47 1/4	47 1/2
M	41.342	42	44 1/4	44 1/2
M2	38.342	39	41 1/4	41 1/2
N	35.342	36	38 1/4	38 1/2
N2	32.342	33	35 1/4	35 1/2
O	29.342	30	32 1/4	32 1/2
O2	26.342	27	29 1/4	29 1/2
P	23.342	24	26 1/4	26 1/2
P2	20.342	21	23 1/4	23 1/2
Q	17.342	18	20 1/4	20 1/2
Q2	14.342	15	17 1/4	17 1/2
R	11.342	12	14 1/4	14 1/2

STAINLESS STEEL (SS) CONNECTORS

Sheet Name	Glass Size	inside to inside w/ SS connectors	o/c SS Invisi w/ SS connectors	o/c Painted Invisi w/ SS connectors	o/c Visti 2-1/4" w/ SS connectors	o/c ALX 2-1/2" w/ SS connectors
A	69.812	71 3/4	72	72		
B	67.865	69 3/4	70 1/16	70 1/8	72	
C	65.342	67 1/4	67 9/16	67 5/8	69 1/2	69 3/4
D	62.342	64 1/4	64 9/16	64 5/8	66 1/2	66 3/4
E	59.342	61 1/4	61 9/16	61 5/8	63 1/2	63 3/4
F	57.812	59 3/4	60 1/16	60 1/8	62	62 1/4
G	55.865	57 3/4	58 1/16	58 1/8	60	60 1/4
H	53.342	55 1/4	55 9/16	55 5/8	57 1/2	57 3/4
I	51.812	53 3/4	54 1/16	54 1/8	56	56 1/4
J	49.865	51 3/4	52 1/16	52 1/8	54	54 1/4
K	47.342	49 1/4	49 9/16	49 5/8	51 1/2	51 3/4
L	44.342	46 1/4	46 9/16	46 5/8	48 1/2	48 3/4
M	41.342	43 1/4	43 9/16	43 5/8	45 1/2	45 3/4
M2	38.342	40 1/4	40 9/16	40 5/8	42 1/2	42 3/4
N	35.342	37 1/4	37 9/16	37 5/8	39 1/2	39 3/4
N2	32.342	34 1/4	34 9/16	34 5/8	36 1/2	36 3/4
O	29.342	31 1/4	31 9/16	31 5/8	33 1/2	33 3/4
O2	26.342	28 1/4	28 9/16	28 5/8	30 1/2	30 3/4
P	23.342	25 1/4	25 9/16	25 5/8	27 1/2	27 3/4
P2	20.342	22 1/4	22 9/16	22 5/8	24 1/2	24 3/4
Q	17.342	19 1/4	19 9/16	19 5/8	21 1/2	21 3/4
Q2	14.342	16 1/4	16 9/16	16 5/8	18 1/2	18 3/4
R	11.342	13 1/4	13 9/16	13 5/8	15 1/2	15 3/4

BOLT CHART

Invisipost With connector on each side										
Spacer size	No spacer	3/8" S	1/2"	3/4"	7/8"	1"	1 1/8"S	1 1/4"S	1 3/8"S	1 1/2"S
No spacer	1.5	1.75	2	2.25	2.5	2.5	2.75	2.75	3	3
3/8" S	1.75	2.25	2.5	2.75	2.75	3	3	3.25	3.25	3.25
1/2"	2	2.5	2.5	2.75	2.75	3	3	3.25	3.5	3.5
3/4"S	2.25	2.75	2.75	3	3	3.25	3.25	3.5	3.5	3.75
7/8"S	2.25	2.75	3	3	3.25	3.25	3.5	3.5	3.75	3.75
1"S	2.5	3	3	3.25	3.25	3.5	3.5	3.75	3.75	4
1 1/8"S	2.5	3	3	3.25	3.5	3.5	3.75	3.75	4	4
1 1/4" S	2.75	3.25	3.25	3.5	3.5	3.75	3.75	4	4	4.25
1 3/8"S	3	2.25	3.5	3.5	3.75	3.75	4	4	4.25	4.25
1 1/2"S	3	3.25	3.5	3.75	3.75	4	4	4.25	4.25	4.5

SS Connector to Angle Bracket	
Spacer Size	Bolt Size
No Spacer	0.5
3/8"	1
1/2"	1.25
3/4"	1.5
7/8"S	1.75
1"	1.75
1 1/8"	2
1 1/4"	2
1 3/8"	2.25
1 1/2"	2.25

InvisiPost - End Post		
Spacer Size	Bolt Size	
No spacer	1	
3/8"S	1.5	
1/2"S	1.5	
3/4"S	1.75	
7/8"S	2	
1"S	2	
1 1/8"S	2.25	
1 1/4"S	2.25	
1 3/8"S	2.5	
1 1/2"S	2.5	

Visti or ALX Post - SS Connector		
End post		1.5 ST
Through Post		1.5 ST
Angle Add		1.5 ST
1/2" S or less		1.5 ST
More than 1/2"S		2.5 ST

Wood Post - SS Connector		
End Post		2.5 WS
Through Post		2.5 WS
Angle Add		2.5 WS
1/2" S or less		2.5 WS
More than 1/2"S		3.5 WS

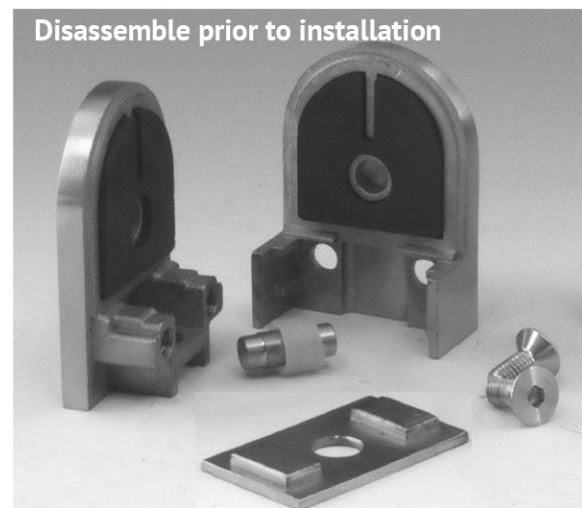
STAINLESS STEEL GLASS CONNECTOR INSTALLATION

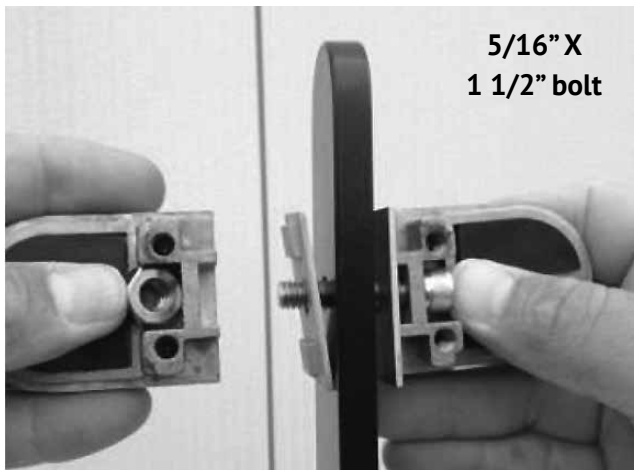
GENERAL INFORMATION

*Only install the outer half of connectors to posts.
The remaining half gets installed with glass panel.*

Glass panels come with two top holes and two bottom notches. Ideally, all 4 connector pins should be installed when securing glass to posts (minimum 1 per side must be used.)

Each connector uses a 2mm (1/16") backing plate.





InvisiPost: Connector to Connector

Top bracket to be installed 40 inches O/C above deck surface for 42 inch rail height (34 inches for 36 inch rail height.)

Put the 1 1/2" bolt through the connector, backing plate (provided in connector packs), post, backing plate and connector. Thread the bolt through the nut on the other side of the connector.

Tighten just enough to snug up against post so connector can still be turned by hand. *Do not over-tighten bolts, causing stripping.*

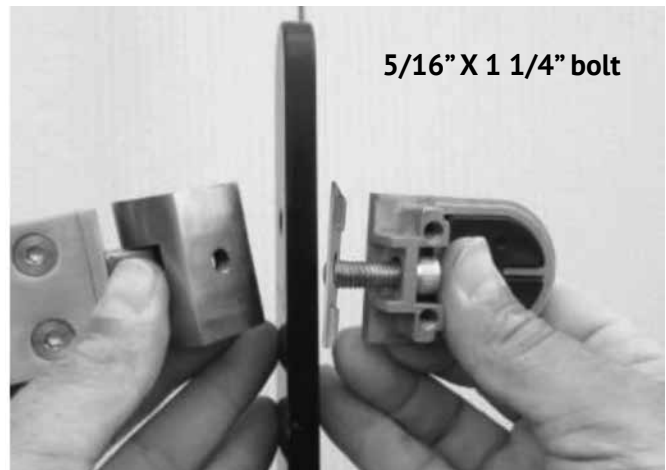
Make sure that connectors are perfectly vertical!



Universal Angle Bracket (UAB)

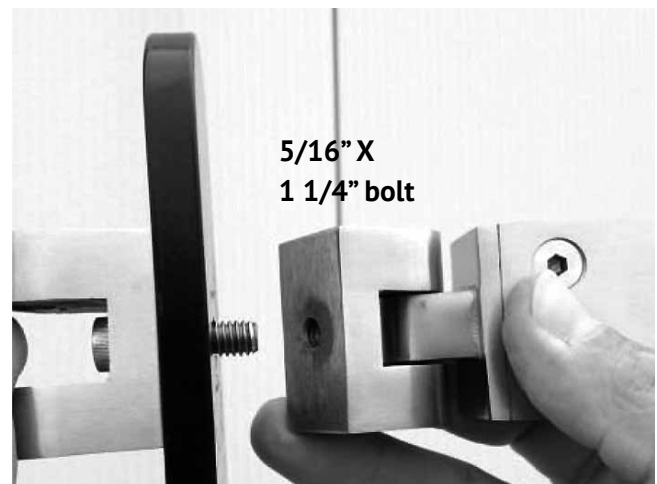
Disassemble the bracket by taking out the 1 1/4" bolt.

Use hardware provided to attach Universal Angle Bracket to post. Once the hinge is fastened to the post, reassemble bracket and attach glass connector.



InvisiPost: Connector to Universal Angle Bracket

Put the 1 1/4" bolt through the connector, backing plate (provided in connector packs) and post and thread into the nut in the Universal Angle Bracket.

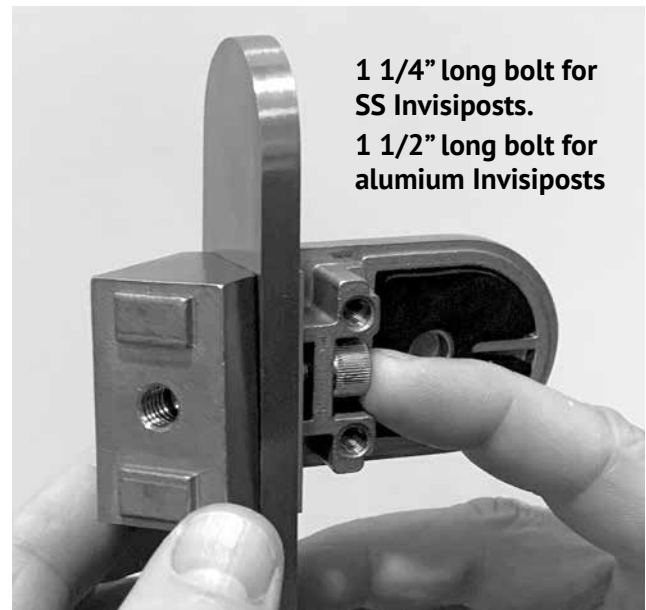
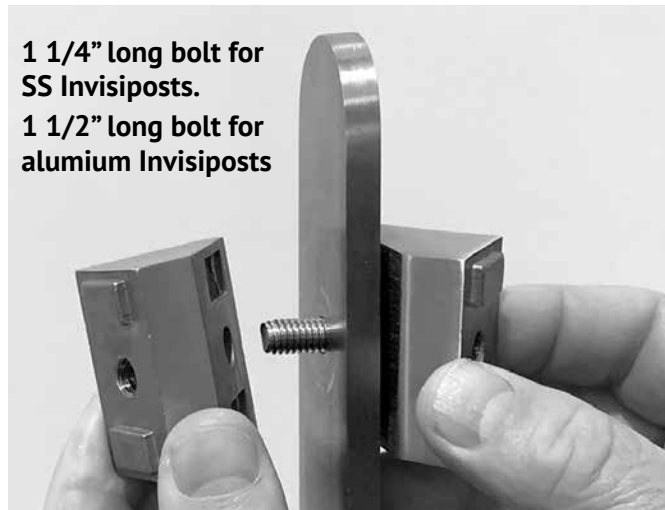


InvisiPost: Universal Angle Bracket to Universal Angle Bracket

Put the 1 1/4" bolt through the bracket, post and thread into UAB on the other side.

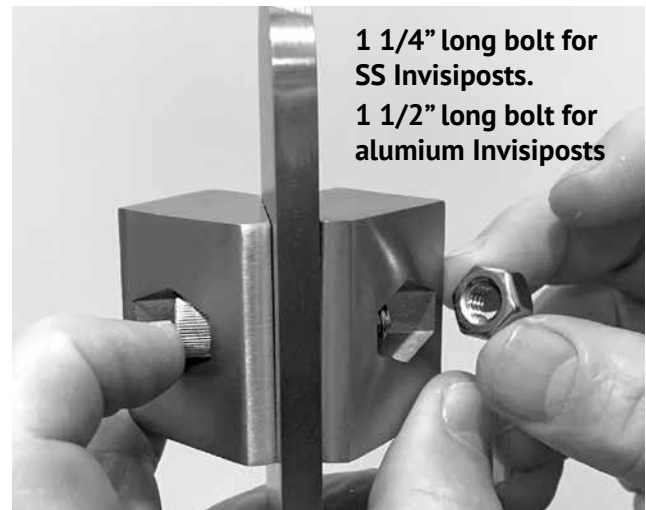
InvisiPost: Connector to 45 Degree Angle Bracket

Put the bolt through the connector, backing plate and post into the back of the 45-degree angle bracket. Thread the bolt onto the nut on the back side of the bracket.



InvisiPost: 45 Degree Angle Bracket to 45 Degree Angle Bracket

Put the bolt through the back of the bracket, post and bracket on other side. Thread the bolt onto the acorn nut on the back side of the bracket.



InvisiPost: End post with Universal Angle Bracket (UAB)

UAB to Post: Thread a 5/16" X 1" bolt through bracket, post and into the acorn nut provided.
Do not over-tighten lags, causing stripping.



VISTI OR ALX (ALUMINUM) POST AND WOOD POST CONNECTOR INSTALLATION

If using VISTI or ALX posts, 4" x 4" wood posts, or 6" x 6" wood posts, refer to the INVISIRAIL BOLT CHART. Check your post layout diagram to see if you must add spacers.

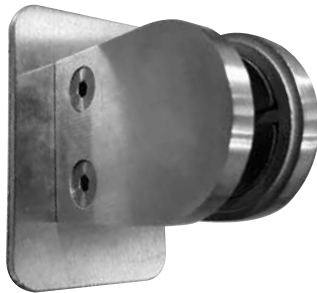
Straight-Run Connector

Top bracket to be installed 40 inches O/C above deck surface for 42 inch rail height (34 inches for 36 inch rail height.)

Use InvisiRail Template (shown on next page) to locate exactly where connectors should go.

Use hardware provided to attach connector to post (stainless self-tapping lags for aluminum posts or wood screws for wood posts.)

If connecting to wood posts it is recommended to use our 2X3" backing plate behind the glass connector (or spacer if required.)



Do not over-tighten lags, causing stripping.

2 X 3 X 1/8" backing plate for wood posts



LITE 10 NYLON GLASS CONNECTOR INSTALLATION

Lite 10 connectors are for use with Visti, ALX posts (aluminum), wood posts or any solid flat surface EXCEPT InvisiPosts. They are not designed for use with InvisiPosts.

Top bracket to be installed 40 inches O/C above deck surface for 42 inch rail height (34 inches for 36 inch rail height.) Use InvisiRail Template to locate exactly where connectors should go.

Disassemble the top connector by backing out the nylon retaining pin and sliding off the splined portion.

Use hardware provided to attach connector to post (stainless self-tapping screws for Visti / ALX / aluminum posts or wood screws for wood posts.) *Do not over-tighten tapping screws, causing stripping.*

Ensure connectors are as parallel as possible to the edge of the post.

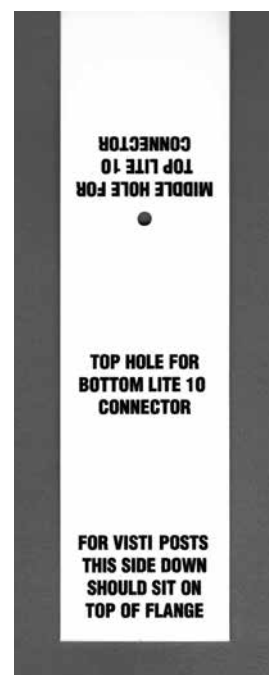
Install the open side of the top connector facing towards deck for easier glass installation.



Template for positioning connectors on VISTI or ALX posts, square aluminum or wood posts



For wood posts flip template upside down and place at base of post on deck surface.



GLASS PANEL INSTALLATION

Stainless Steel Connectors

Use two short pieces of 2X4's or 4X4's, sitting on edge of the deck between the posts, to support the glass panels while installing.

Door shims help with fine height adjustments. Connector pins need to be aligned with holes/notches in the glass.

Locate correct glass panel to be installed (all panels are labeled.)

Carefully pick up panel and set into position with notches in glass at the bottom.

Fasten top connectors first. Place pin through glass and slide remaining connector half into position. If required, shim panel until pin is positioned horizontally, aiding in alignment of connector halves.

Tighten screws enough to hold connectors together but not squeeze tightly on glass.

Once completed, check that all connectors are parallel to each other and tighten screws completely.



If the connector halves do not slide easily onto installed sections, confirm that the connector has not been over tightened - this would cause misalignment of the two halves.

The back half of connector must be completely flush with the front half to ensure the pin is in the holes in both halves of the connector.

Once the pin is perfectly aligned, completely tighten screws.

Lite 10 Nylon Connectors

Locate correct glass panel to be installed (all panels are labeled.)

Carefully pick up panel and set into position above bottom connectors (*notches in glass should be at the bottom*) and push glass down into connector until it bottoms.

Take top connector half and slide it into position, then screw pin back in.

IF pin does not screw in easily make sure there are no alignment issues. Possible sources of error are: out of plumb posts, posts not set at correct dimension, deck surface not level, connectors not located correctly.



TEMPLATING FOR CUSTOM STAIR GLASS

Stair glass for InvisiRail is always custom cut and may take up to 4 weeks for production. Each piece of stair glass will require a template. Please ensure accuracy as your glass will be made to the exact size/shape of your template.

Cardboard sheets are typically provided with orders for templating purposes. Alternatively, you can use hardboard (ie. Masonite or similar) or plywood for templating.

Helpful tools for templating:

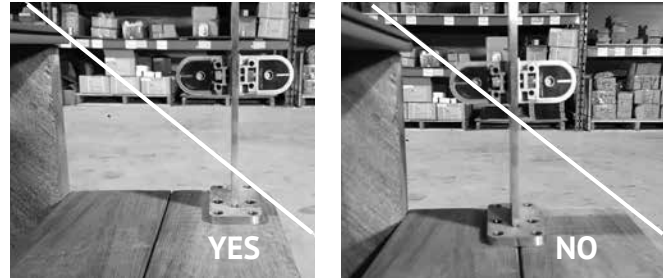
- Box cutter / knife to cut cardboard OR saw to cut hardboard or plywood
- Firm straight edge (i.e. drywall square) ... the longer the better
- Pen and/or sharpie
- Bubble level (to ensure posts are plumb)
- Clamps to hold template material onto posts/connectors
- ½" drill bit to drill out holes in template for connector pins (if using hardboard or plywood)
- String line to help align the top/bottom edge of multiple panels down a long staircase

STEP 1 - Install posts & connectors. Refer to layout drawing to confirm post configuration at top of stairs, ensuring posts are plumb and are no more than 60" O/C (horizontally) apart.

Posts should be installed to allow for (near) equal sections of glass, or whatever configuration is most aesthetically pleasing.

For square posts (without predrilled holes for connectors), install the connectors in similar positions to the posts used for the main deck. It is alright if small changes need to be made to these positions, as the holes & notches in the glass will be positioned where you indicate.

Do not install too close to risers, but go as close to step nosing as you can. As shown below, the connector at left is clear of the stair nosing (white line). Positioning the post too close to the riser will not allow the bottom edge of the glass to be parallel to stair nosing line.



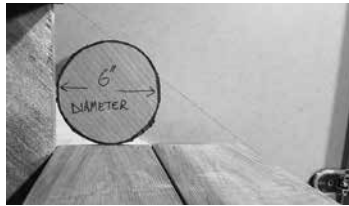
STEP 2 - Clamp or hold template material in behind connectors, posts. It may be helpful to rest the bottom edge of the template material on stair nosing. Trace a line indicating the inside post edge. Trim template to fit between posts.



STEP 3 - Using a straight edge draw a line connecting tops of posts. This will represent the top edge of the glass. Next, draw a line for the bottom edge of glass. If the bottom edge



of the template is resting on the nosing, draw a line parallel to nosing so that bottom edge of glass will sit above stair nosing. You should ensure that the bottom edge of the glass will meet code and not allow a 6" diameter ball to fit through the opening.



STEP 4 - Trace connector positions onto template then trim top and bottom. The back edge of the rubber pads is roughly



where the edge of the glass will be. If you wish, you can trim the sides of the template so that the material represents the exact shape & size of the glass panel. This way the template can be installed as if it were the panel.

Indicate on cardboard the top/bottom edges of glass if not done so already.

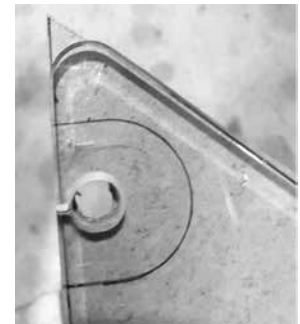
STEP 5 - If handrail will be installed with the glass mounted handrail brackets, please indicate where those holes for the brackets should be. Refer to handrail brackets if sent with initial shipment.



Typically, holes are located approx. 6" down from top edge of glass. Ensure location will allow for handrail to be installed at a height that passes local building code.

If there are multiple stair panels down the staircase, please indicate where the templates are located on the stairs (eg. upper panel, middle panel, lower panel, etc.)

Custom glass panels will be made to the exact specifications of the template(s), except that corners are made with a 1/2" radius to avoid sharp edges and some holes or notches may be omitted from panel. Every panel should have at least two details (hole or notch).



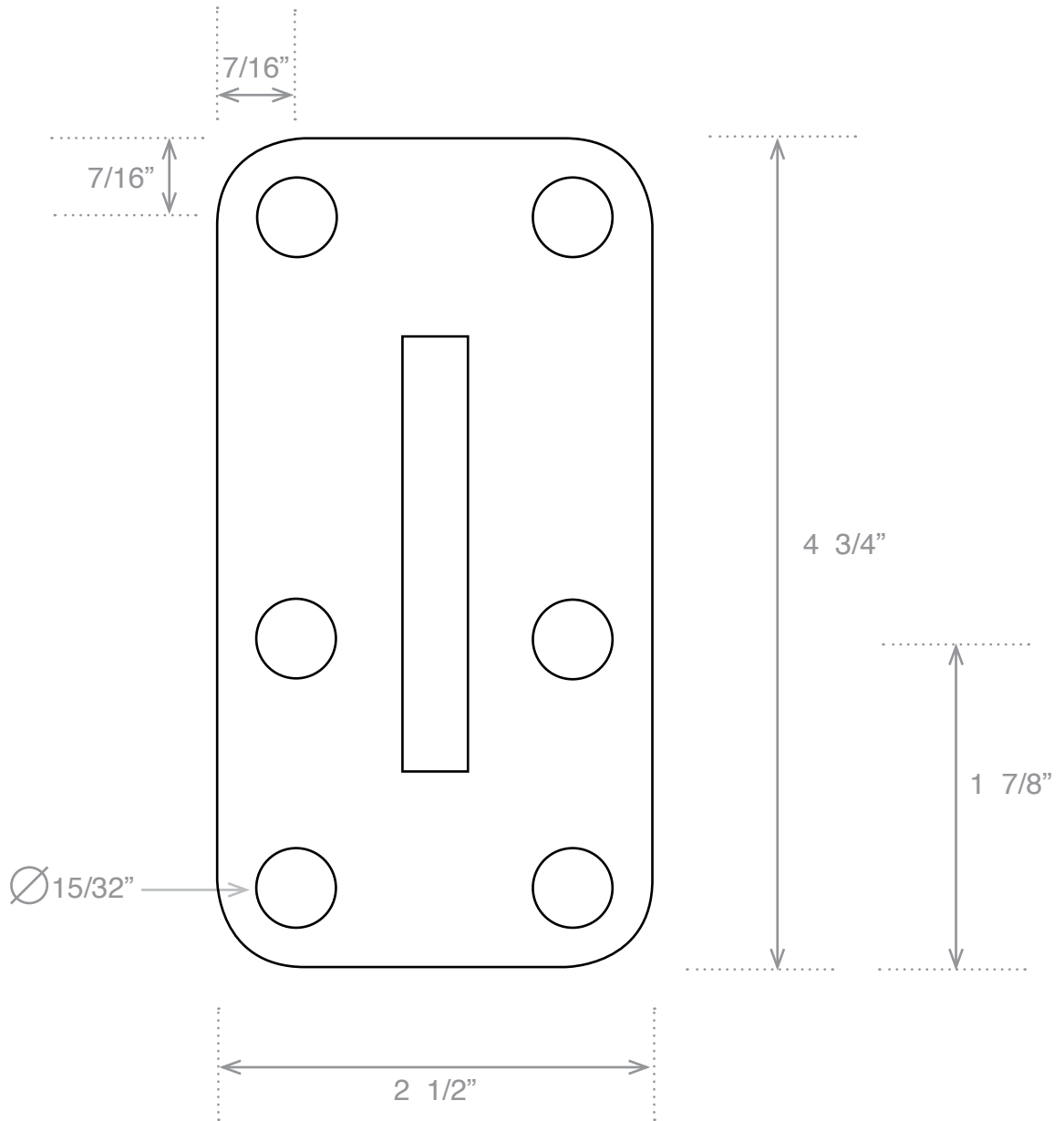
Please ensure that templates are not damaged, warped etc. before being sent to InvisiRail. Try to minimize the number of bends in the template if possible.

If, for whatever reason, there are errors or potential issues with the templates provided (i.e. severely warped, curved edges, lack of info., etc.) InvisiRail will notify you and may request new templates to be sent.

Please write the following information on your template/s:

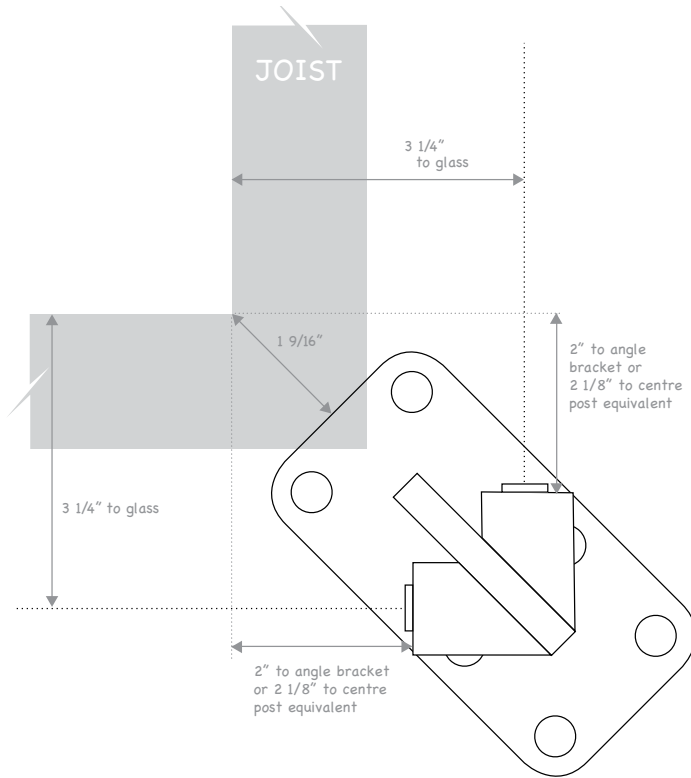
- Store name where initial InvisiRail order was purchased
- PO number/sales order number if applicable
- Date templates were made and/or sent out
- Contact info. for creator of templates (name, phone number, email if applicable)
- Panel identification (i.e. upper panel 1 of 2, lower panel 2 of 2, etc.)

From the time the templates are received by InvisiRail, it typically takes 3-4 weeks until the custom panels are completed and ready to ship. Templates will be double checked against the custom panel and sent with the glass.

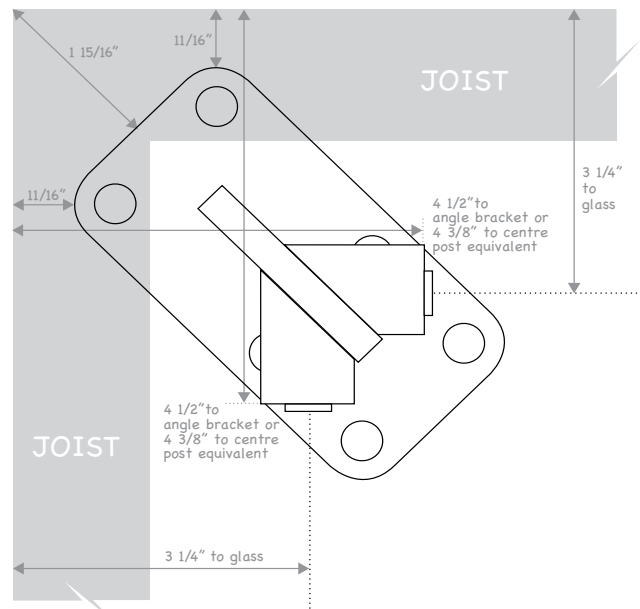


InvisiPost flange base scale 1:1

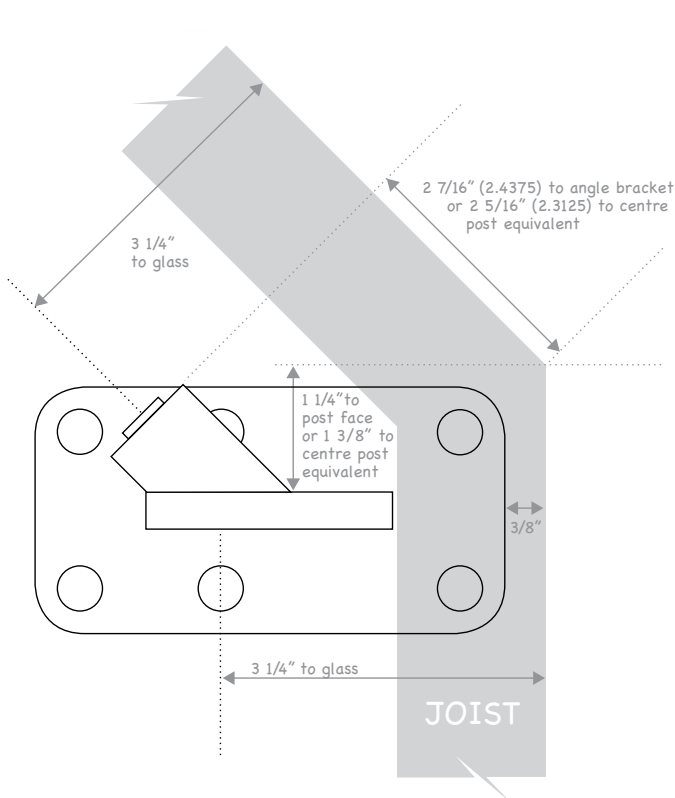
INVISIPOST POSITIONING DETAIL DIAGRAMS



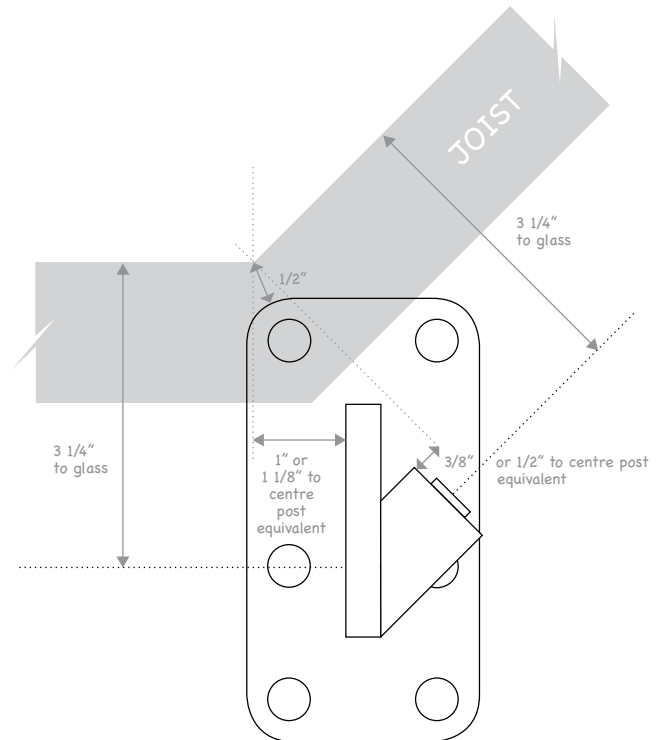
InvisiPost -- inside 90° split
w/ 45-degree brackets



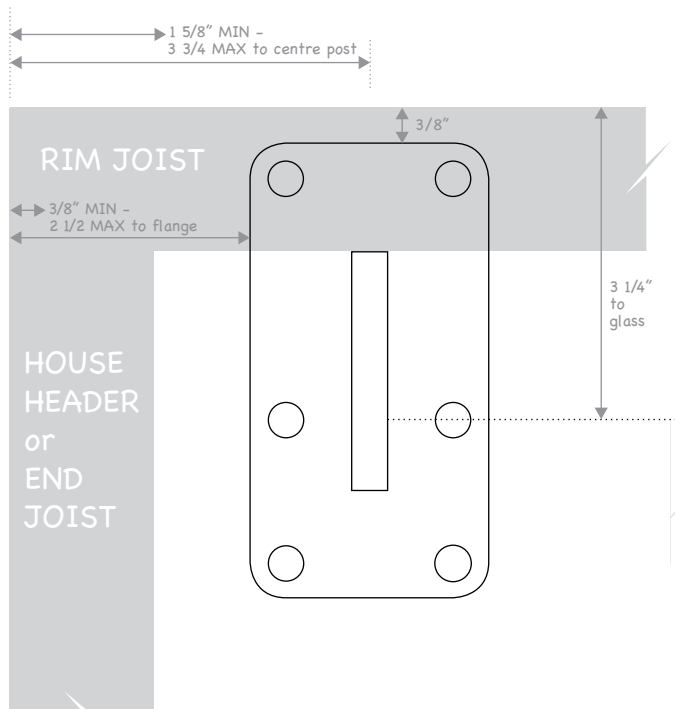
InvisiPost -- outside 90° split
w/ 45-degree brackets



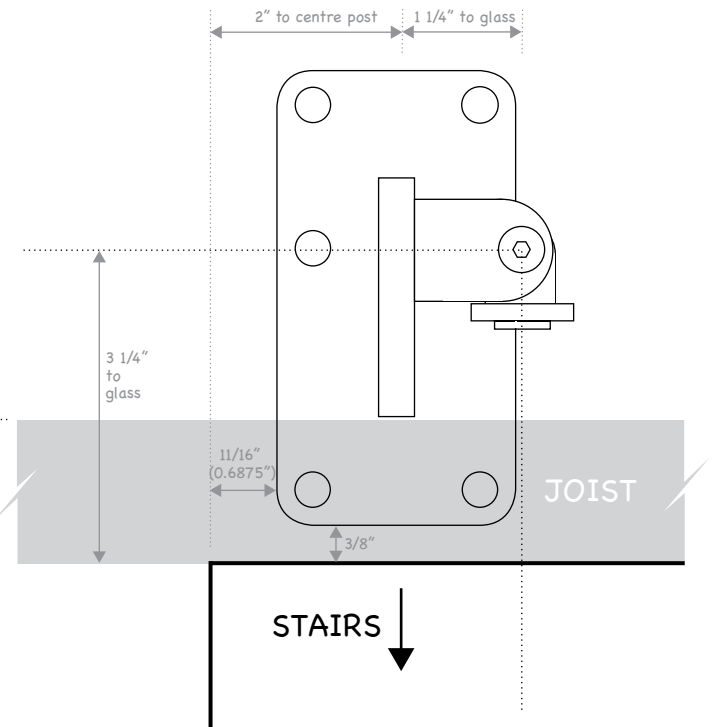
InvisiPost -- outside 45°
w/ 45-degree bracket



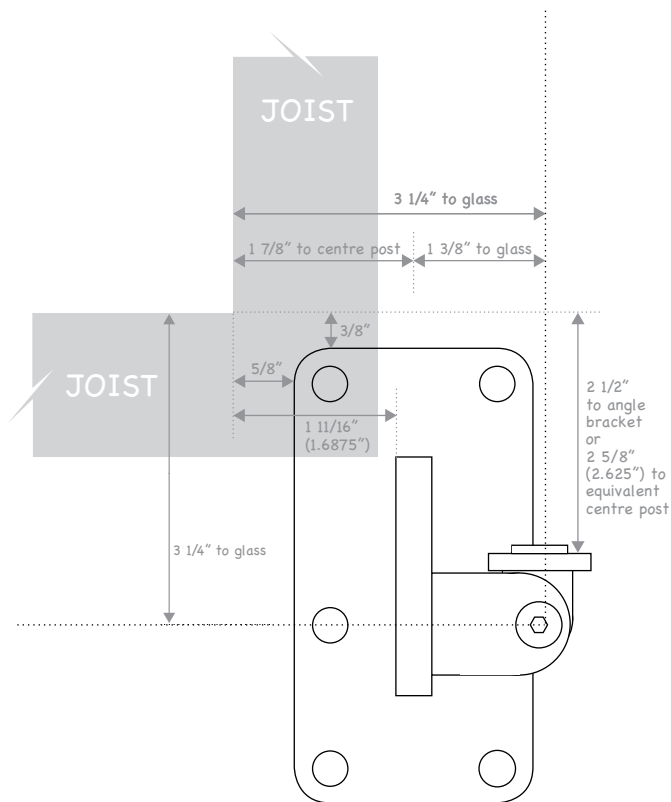
InvisiPost -- inside 45°
w/ 45-degree bracket



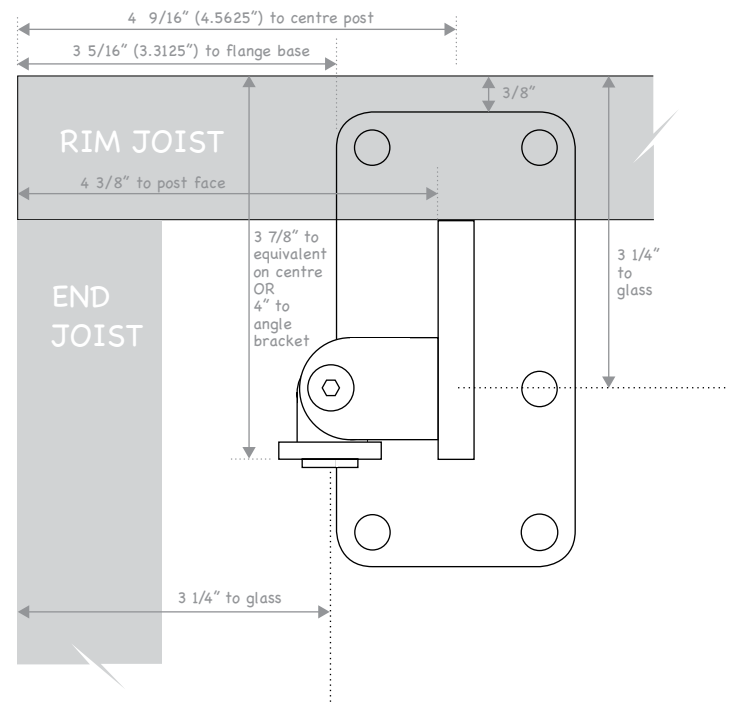
InvisiPost at house or end of run



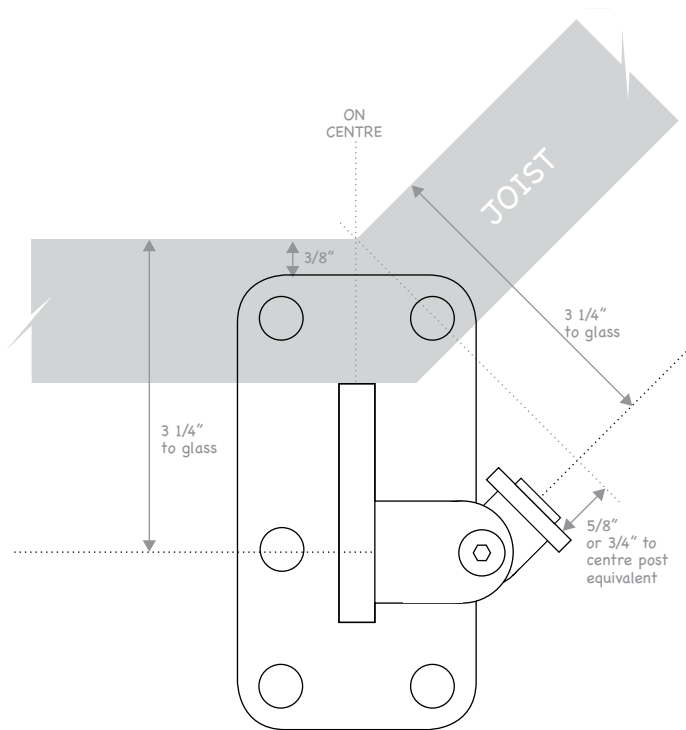
InvisiPost -- beside stairs



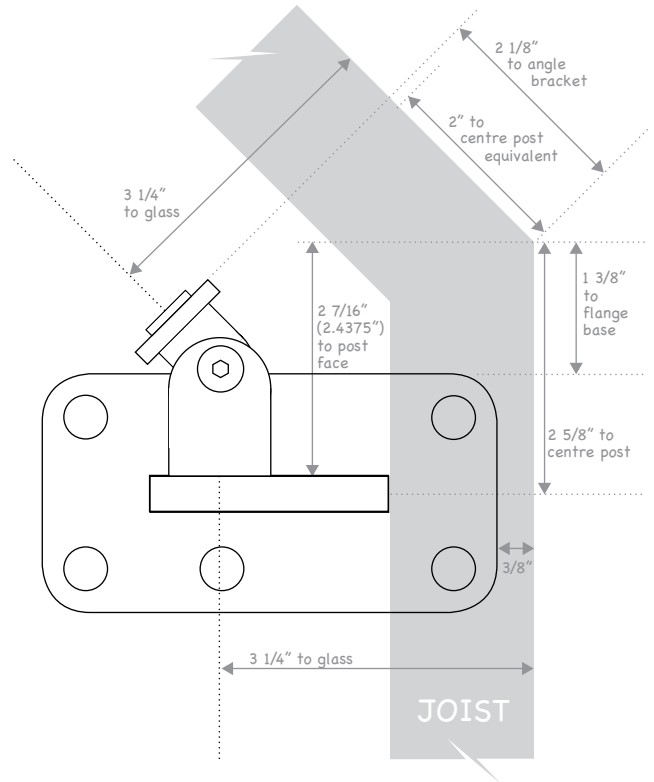
InvisiPost -- inside 90°
w/ Universal Angle bracket



InvisiPost -- outside 90°
w/ Universal Angle bracket

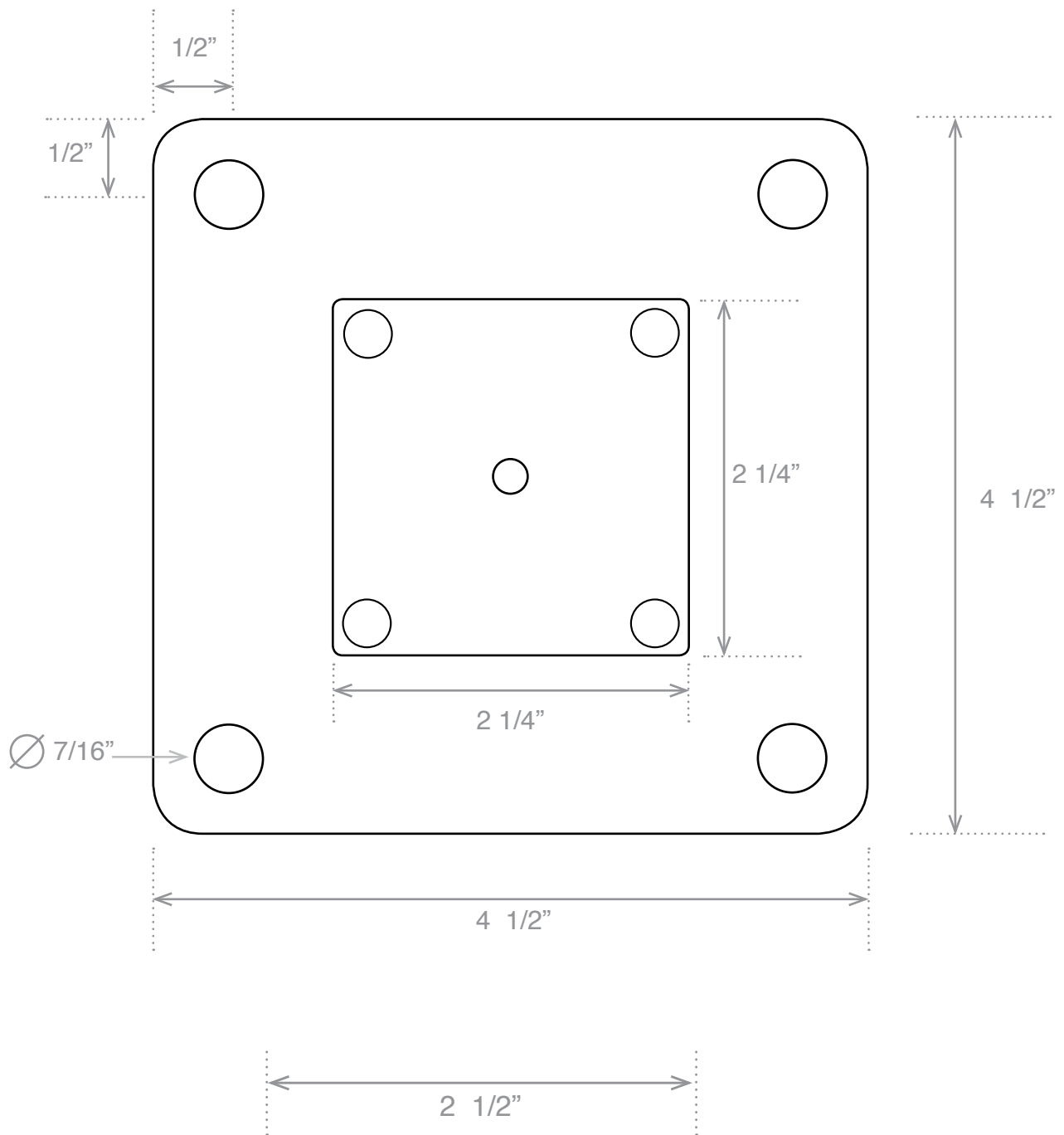


InvisiPost -- inside 45°
w/ Universal Angle bracket



InvisiPost -- outside 45°
w/ Universal Angle bracket

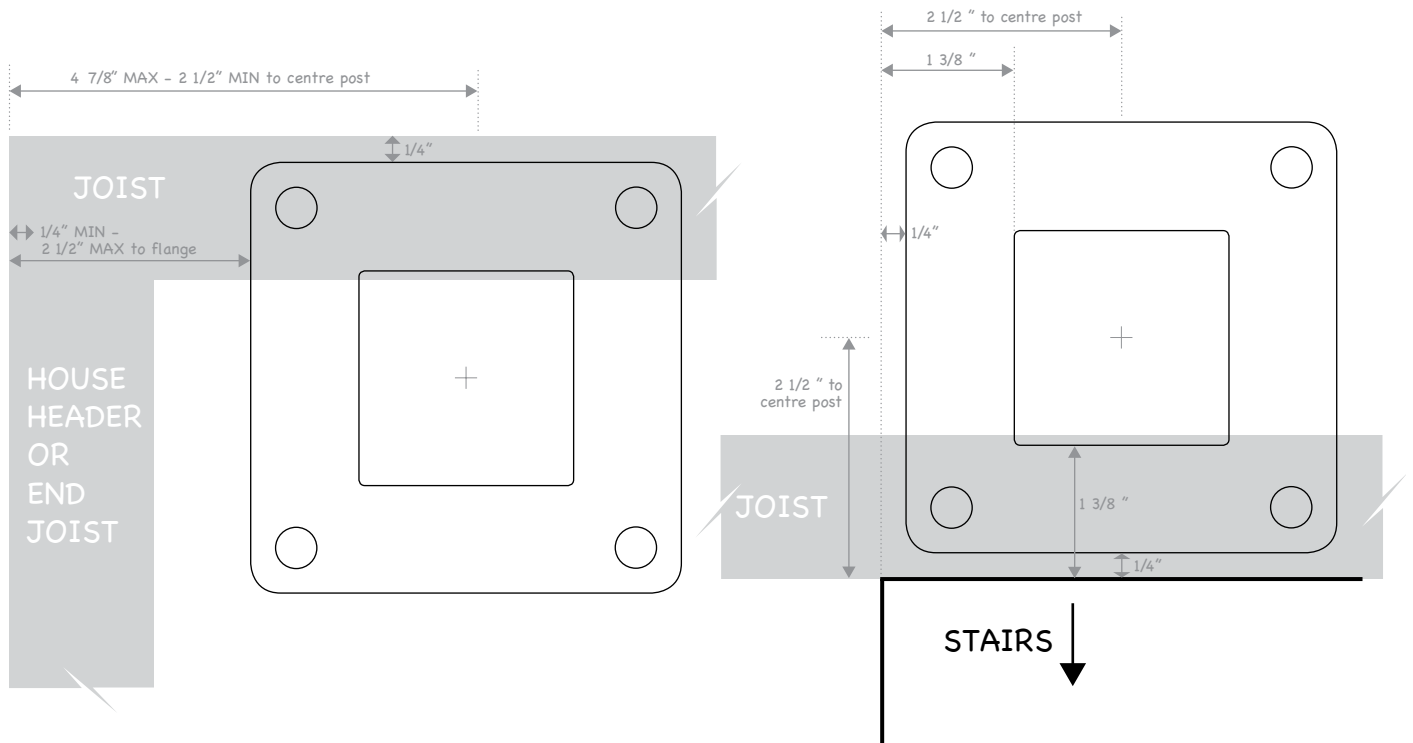




Visti Post flange base

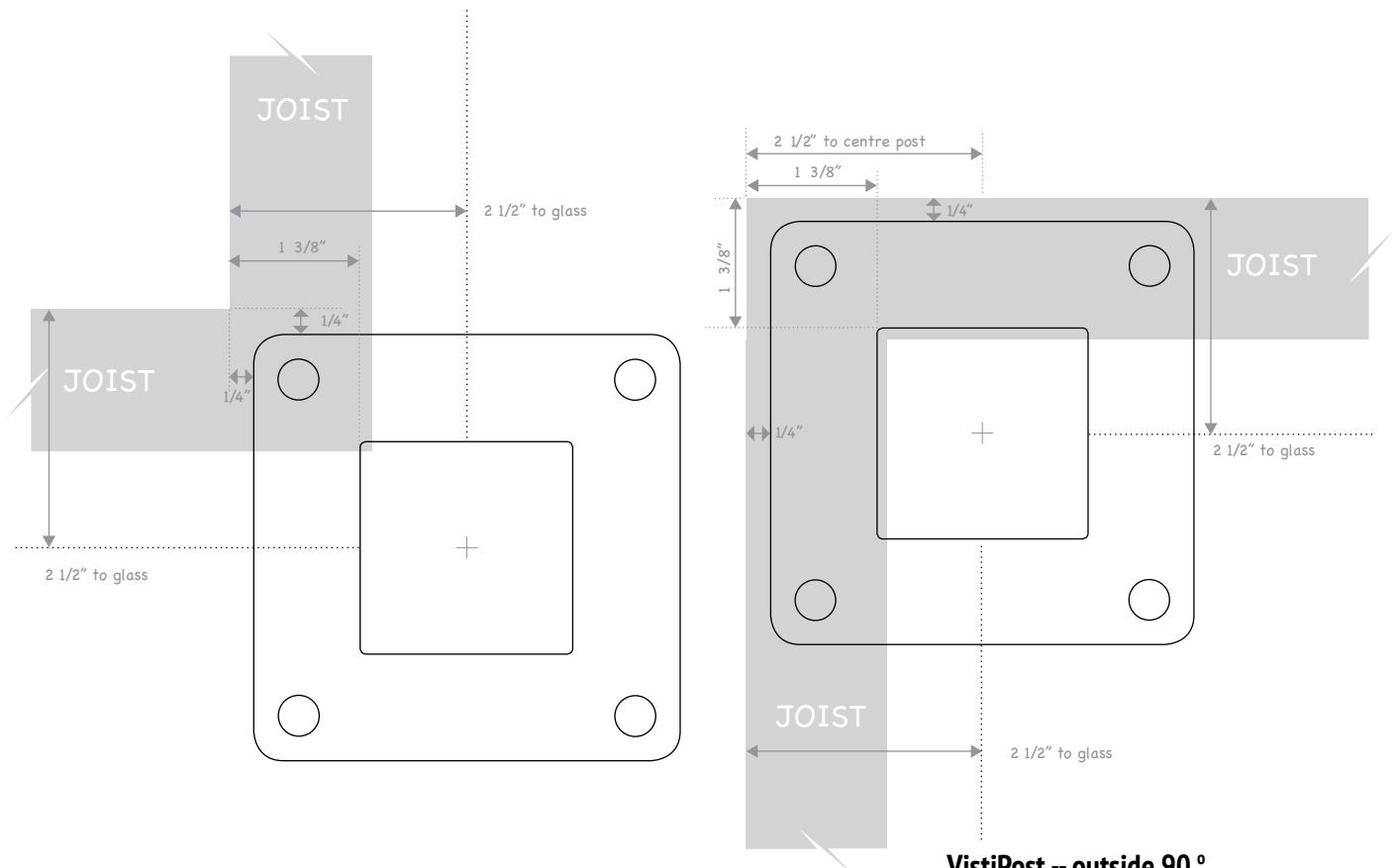
scale 1:1

VISTI POST POSITIONING DETAIL DIAGRAMS



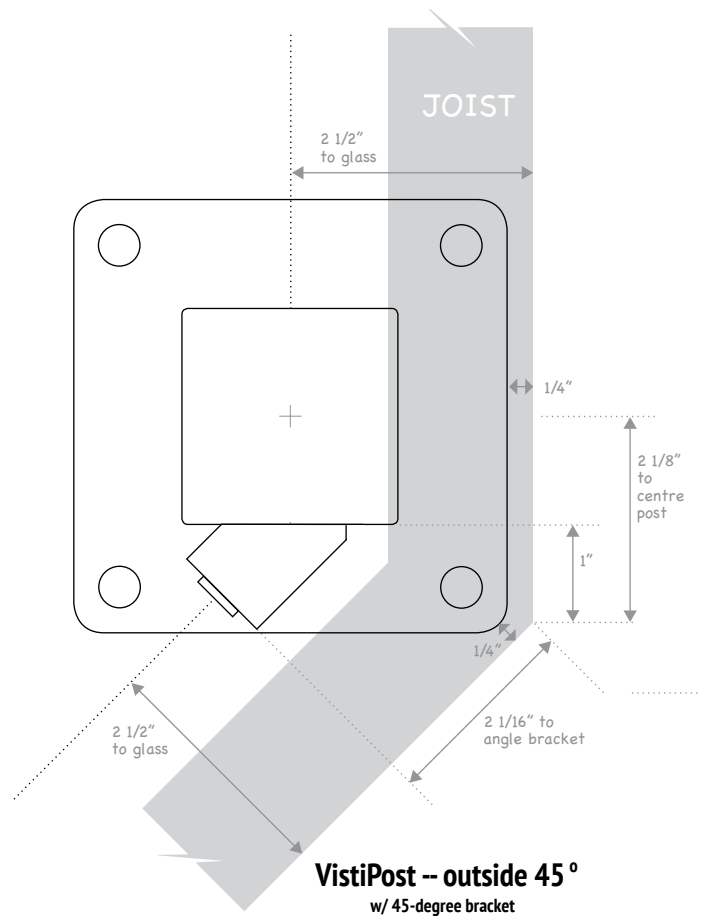
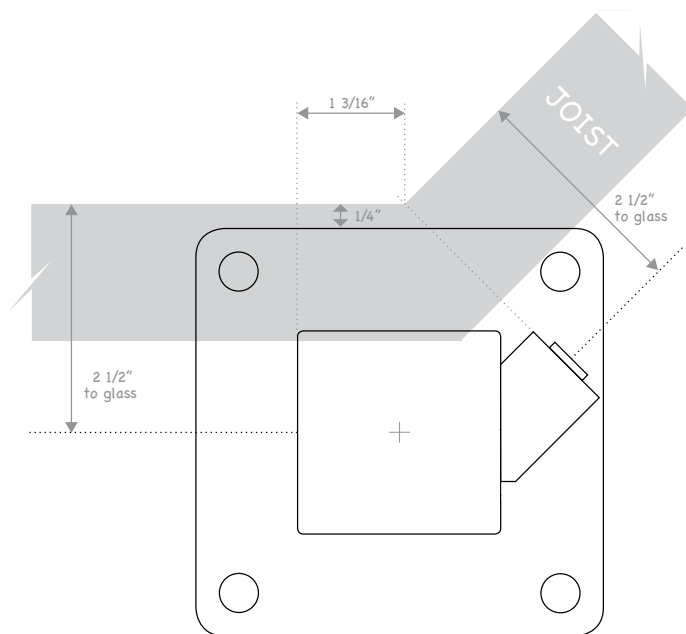
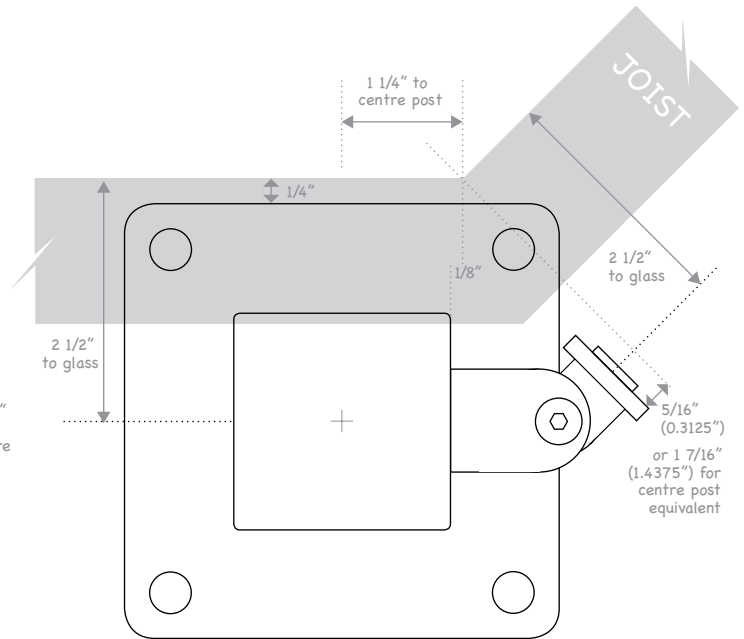
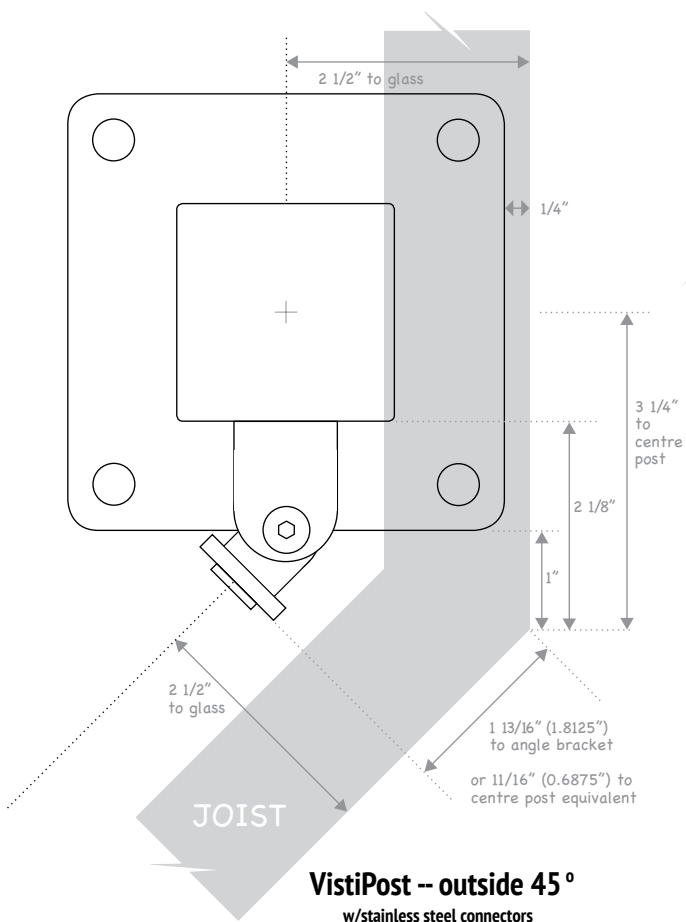
VistiPost at house or end of run

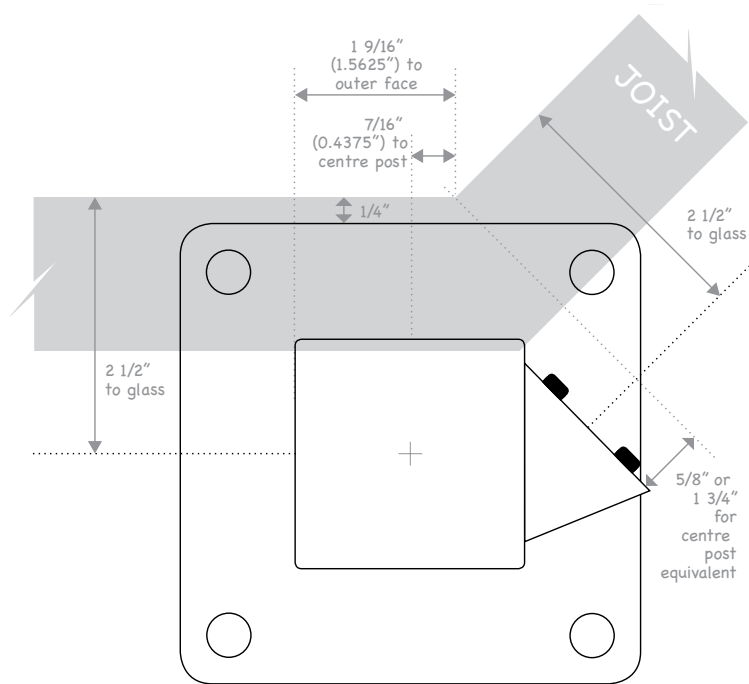
VistiPost -- beside stairs



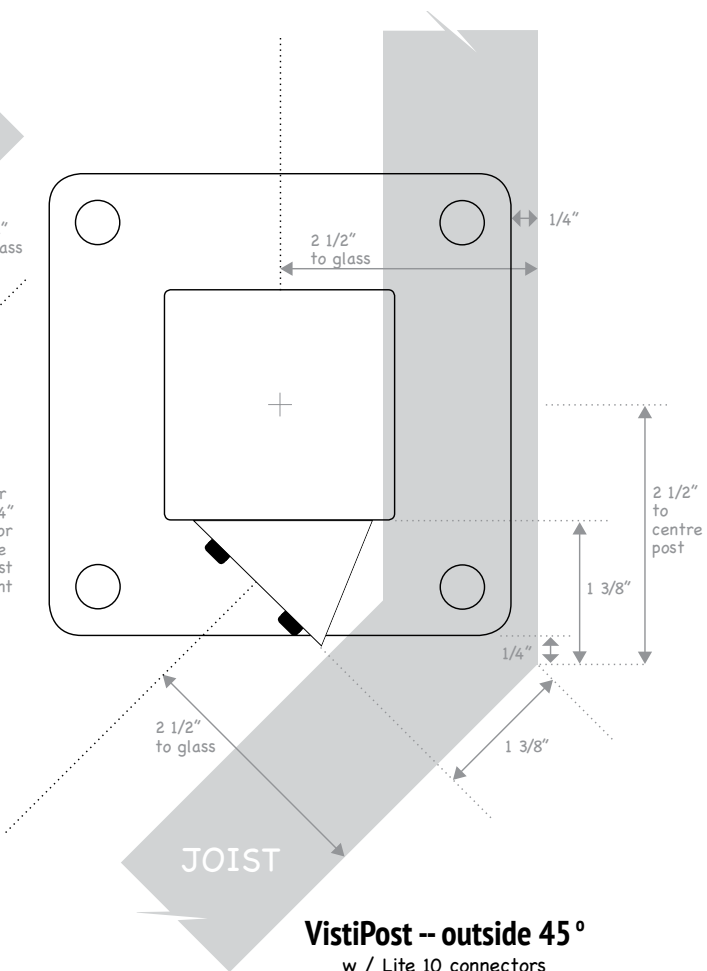
VistiPost -- inside 90°

VistiPost -- outside 90°



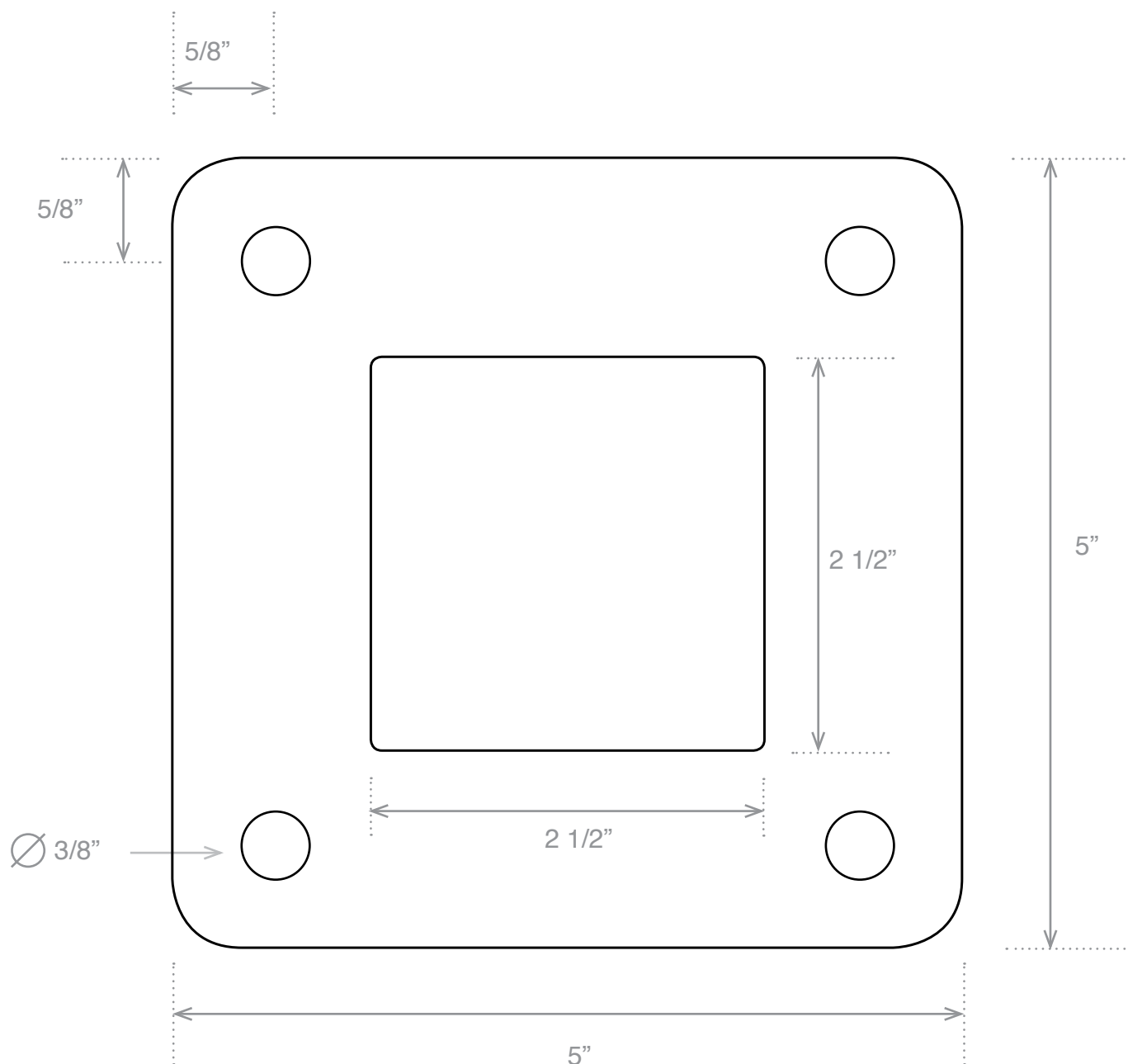


VistiPost -- inside 45°
w/ Lite 10 connectors



VistiPost -- outside 45°
w / Lite 10 connectors

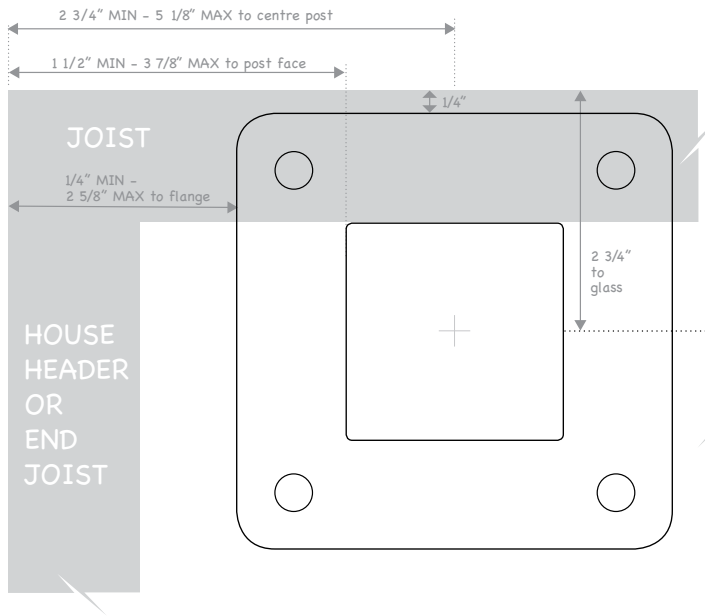




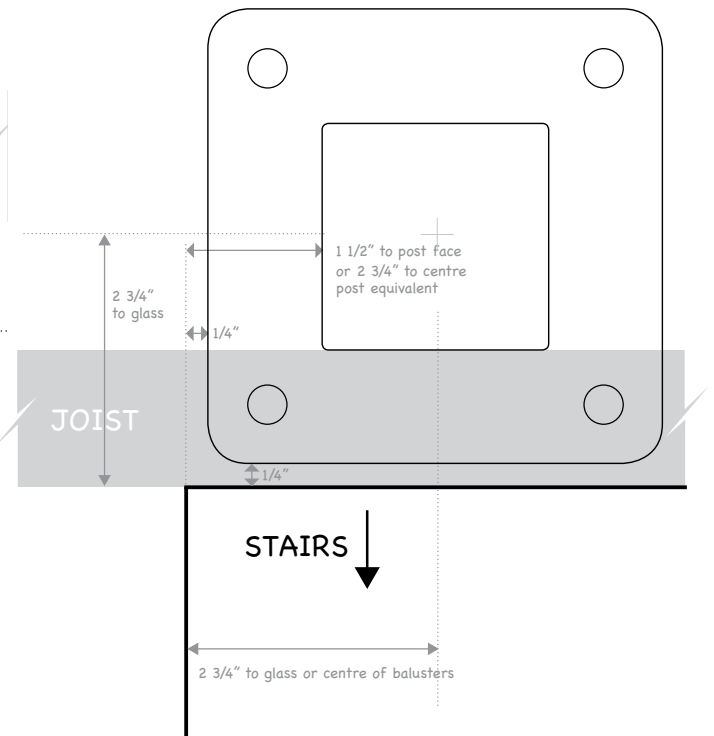
ALX post flange base

scale 1:1

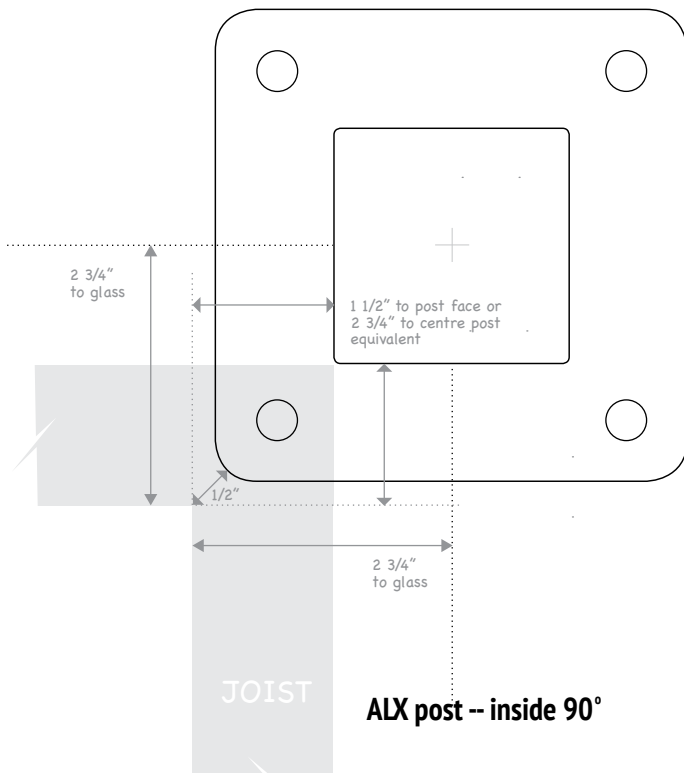
ALX POST POSITIONING DETAIL DIAGRAMS



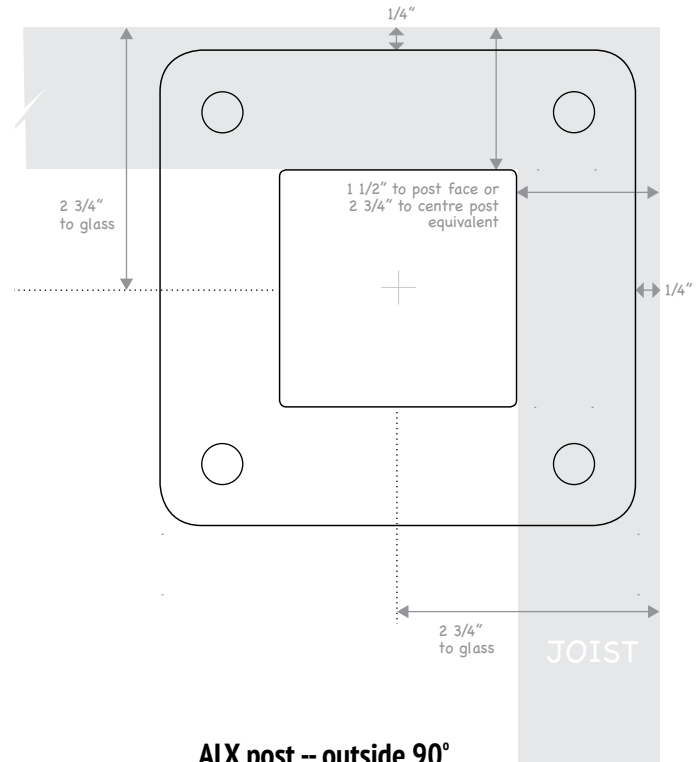
ALX post at house or end of run



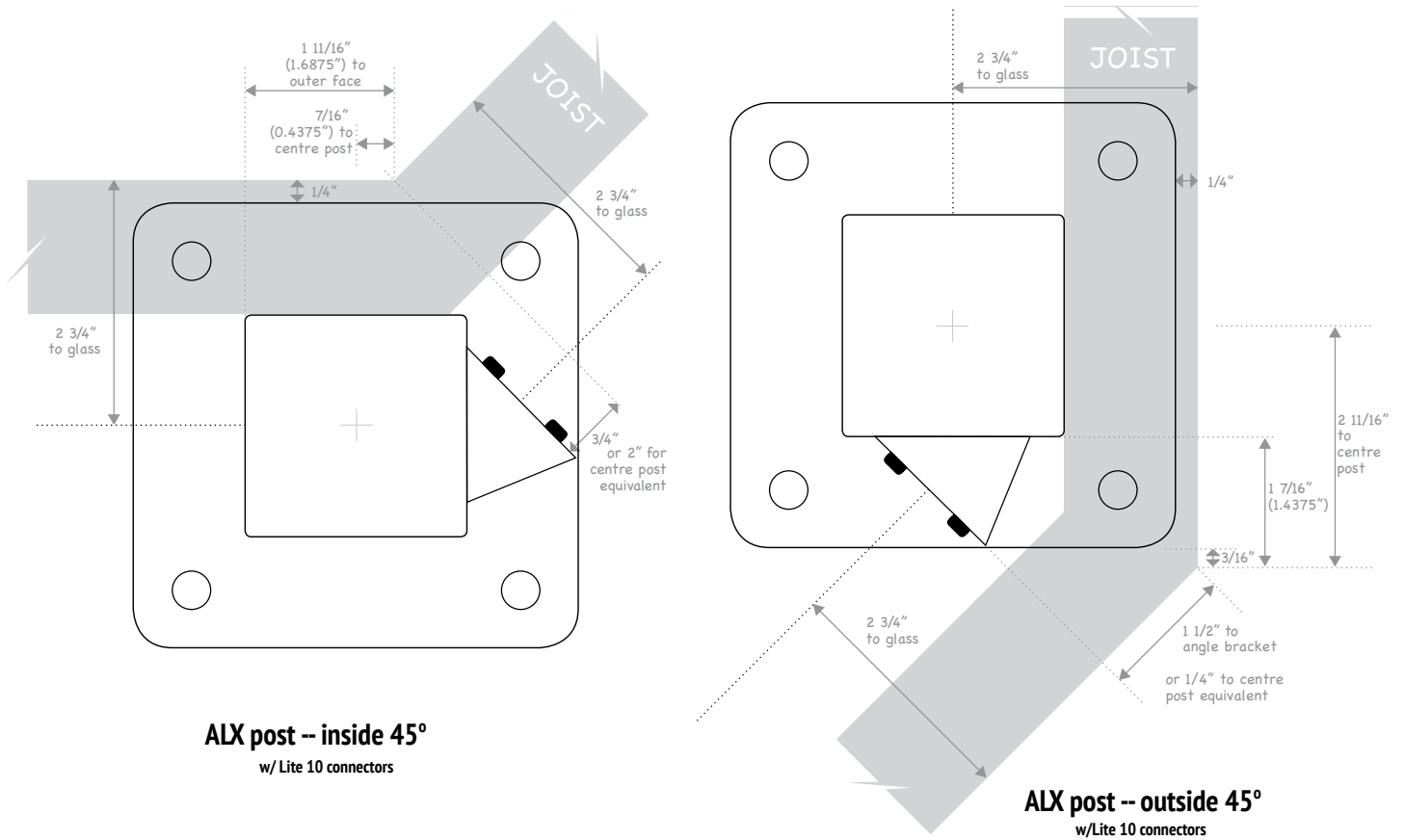
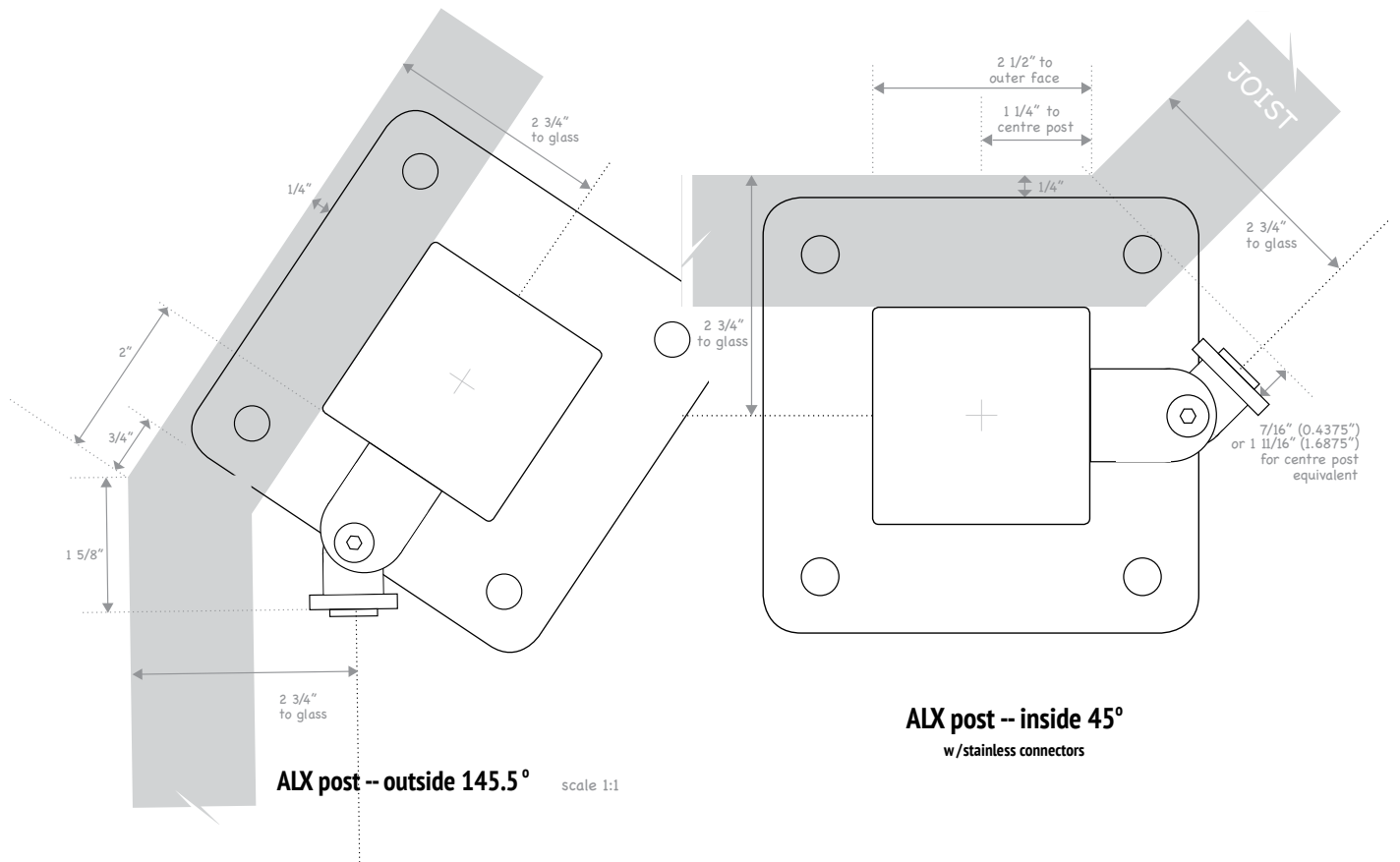
ALX post -- beside stairs

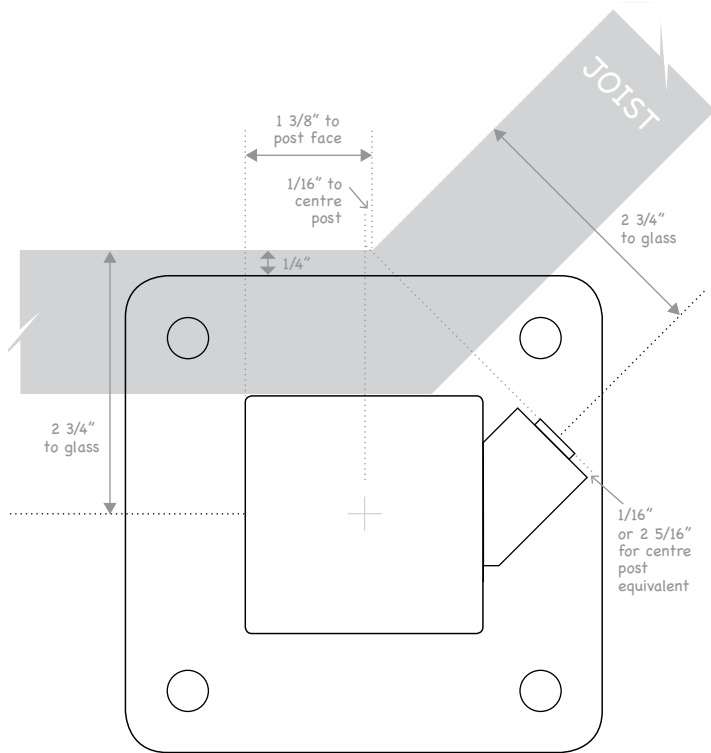


ALX post -- inside 90°

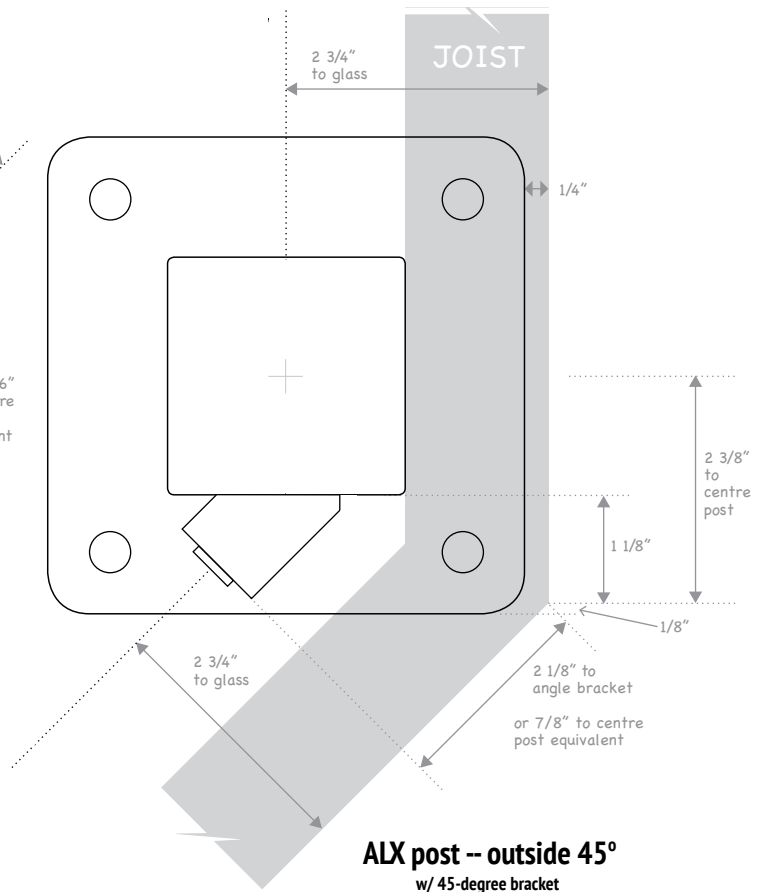


ALX post -- outside 90°





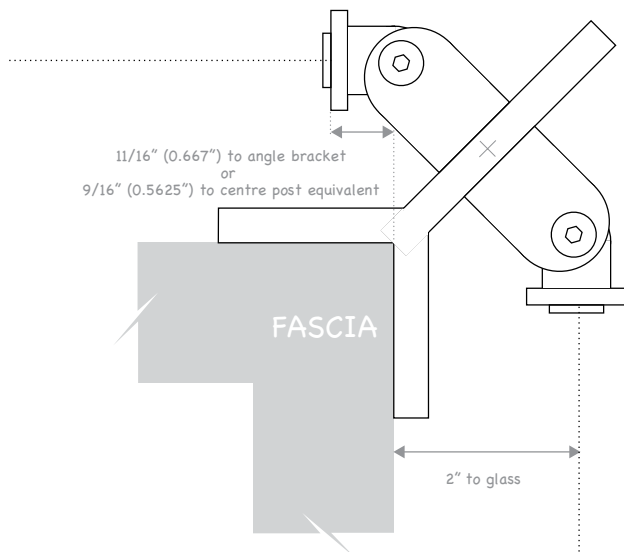
ALX post -- inside 45°
w/ 45-degree bracket



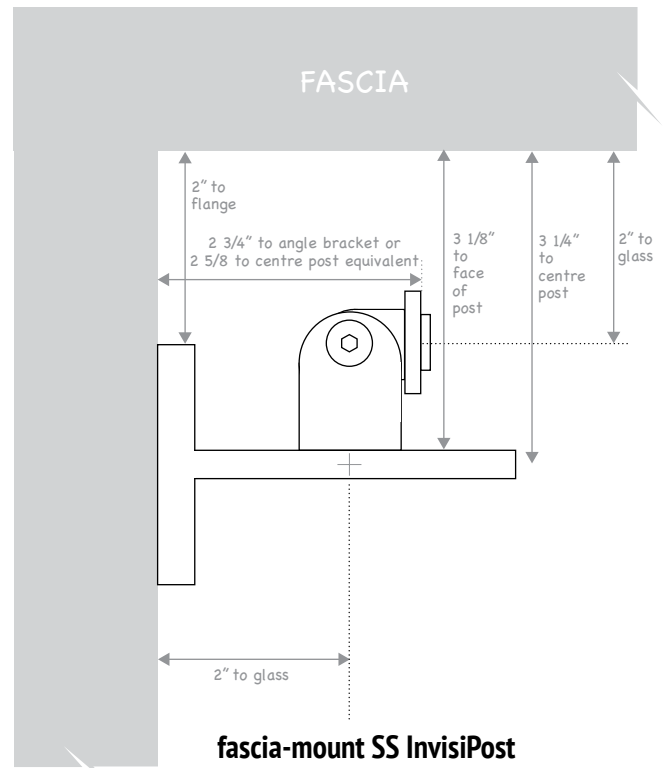
ALX post -- outside 45°
w/ 45-degree bracket



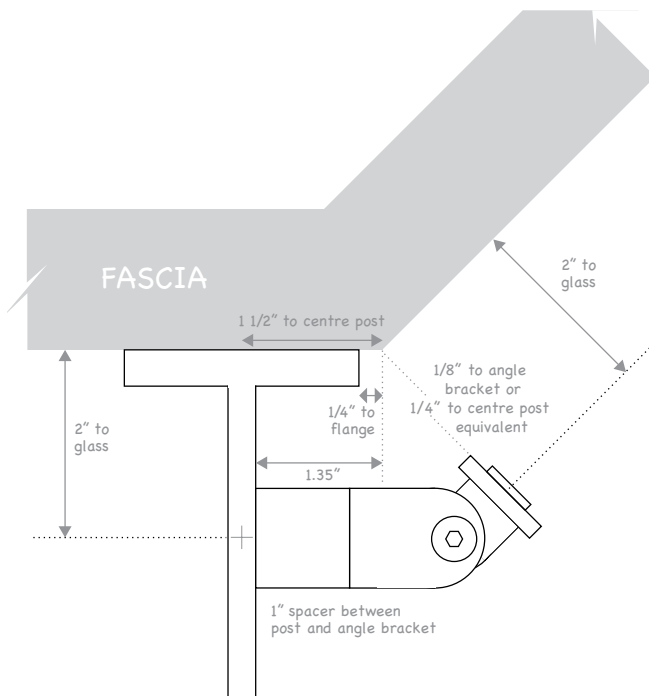
INVISIPOST FASCIA POSITIONING DETAIL DIAGRAMS



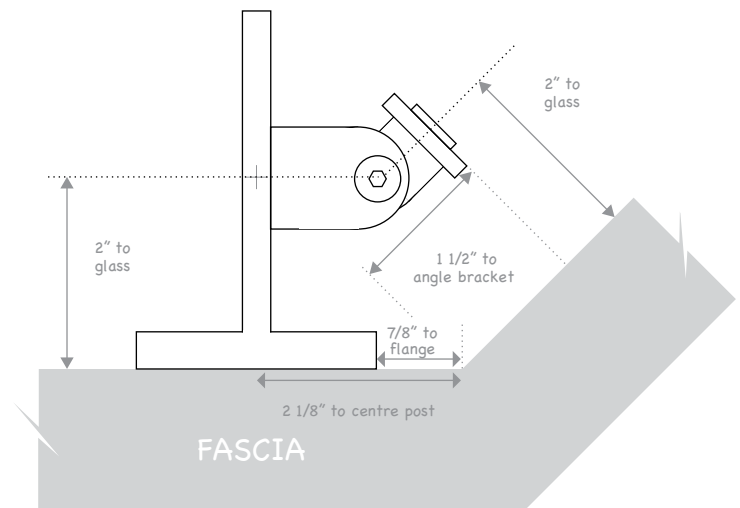
fascia-mount SS InvisiPost - corner



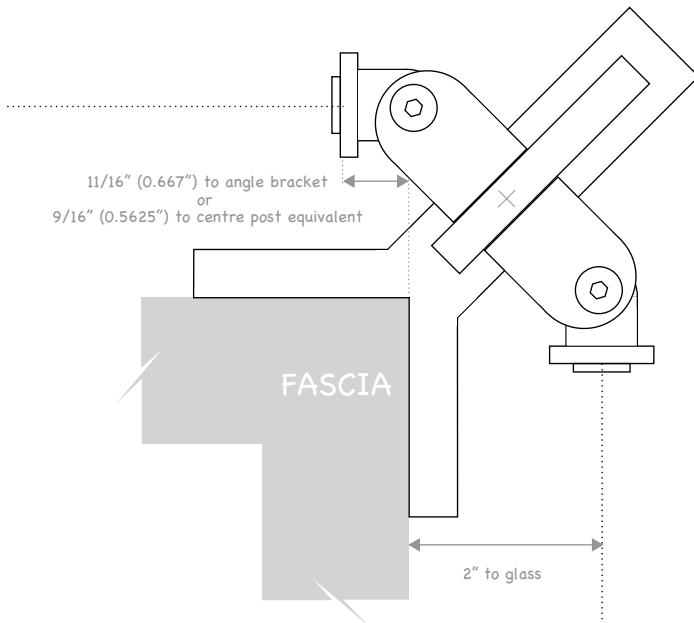
**fascia-mount SS InvisiPost
inside 90°**



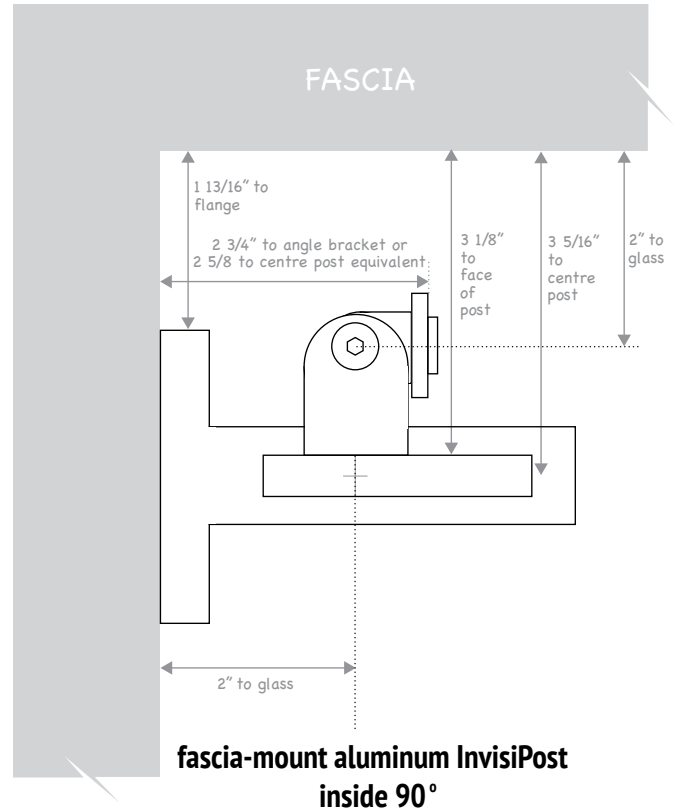
fascia-mount SS InvisiPost -- outside 45°



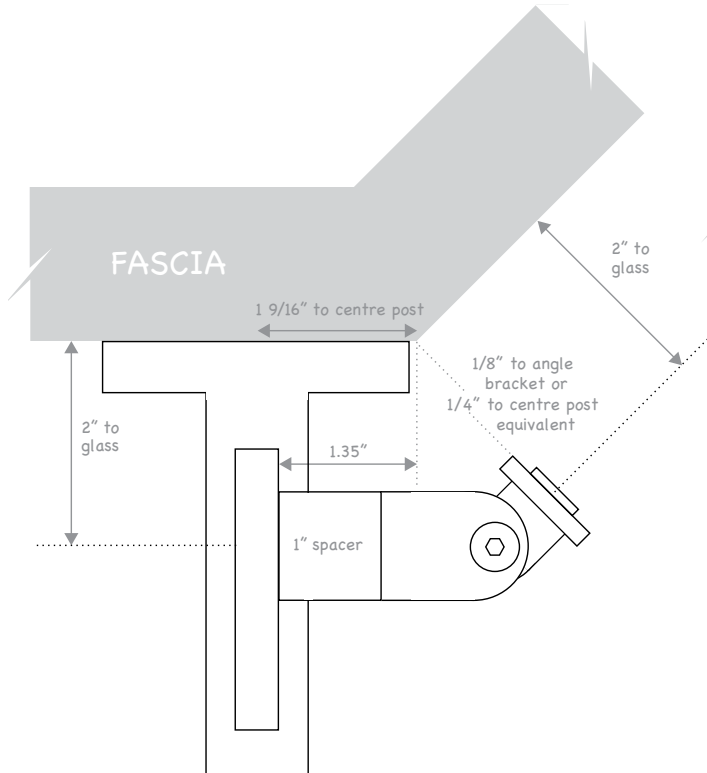
fascia-mount SS InvisiPost -- inside 45°



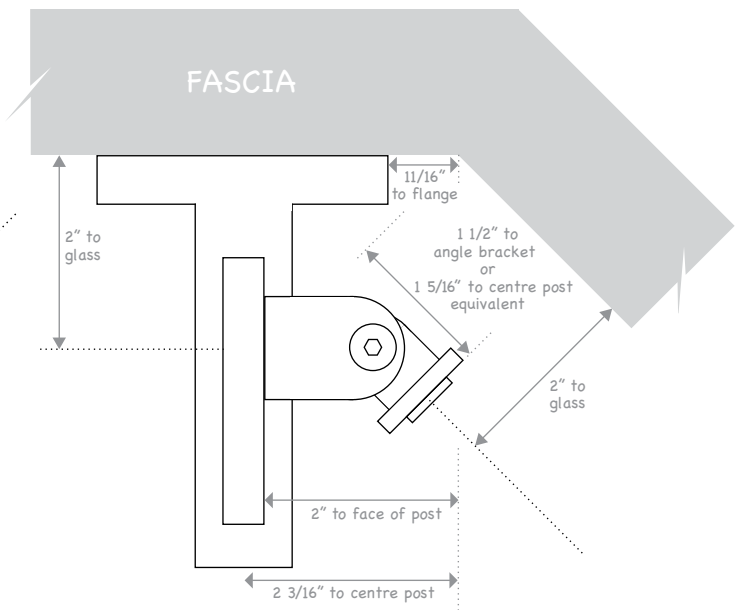
**fascia-mount aluminum
InvisiPost - corner**



**fascia-mount aluminum InvisiPost
inside 90°**

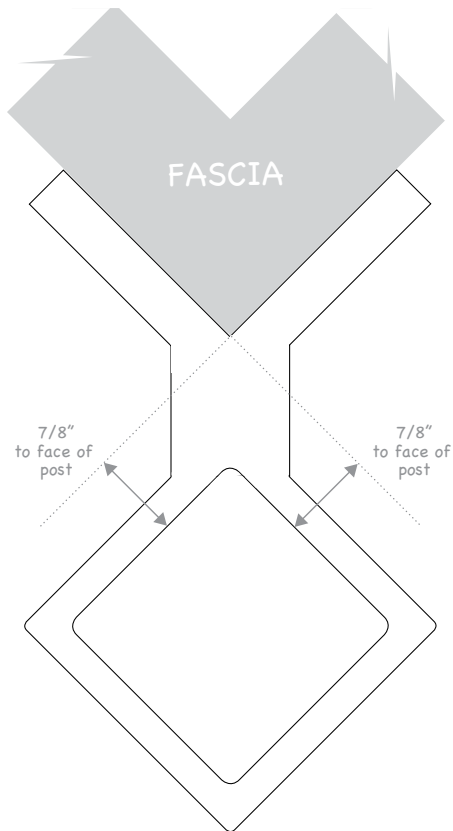


fascia-mount aluminum InvisiPost -- outside 45°

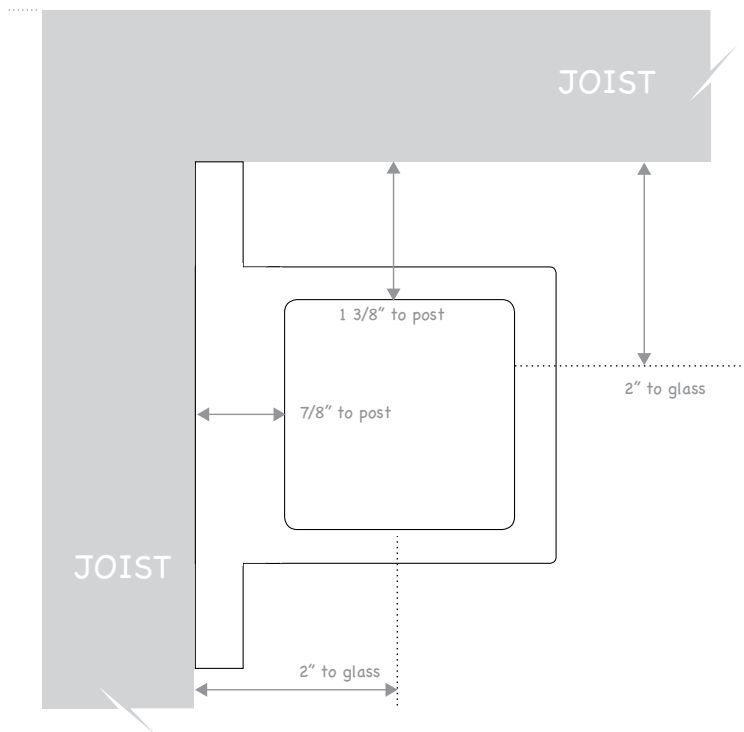


fascia-mount aluminum InvisiPost -- inside 45°

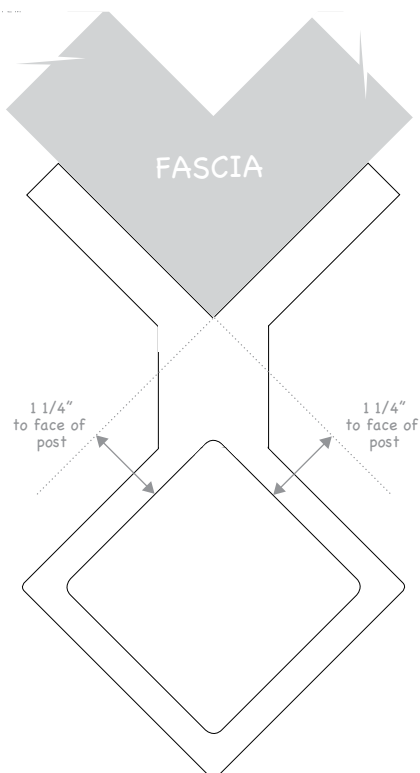
VISTI POST FASCIA POSITIONING DETAIL DIAGRAMS



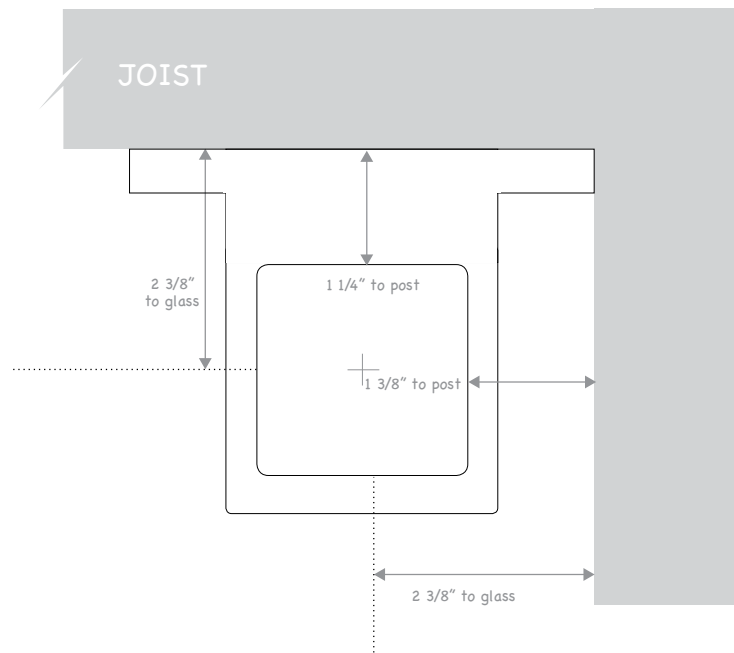
**Black VistiPost
fascia-mount corner**



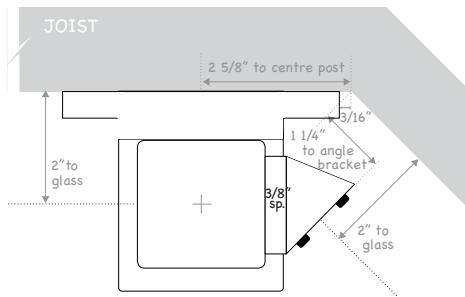
Black Visti Post fascia -- inside 90°



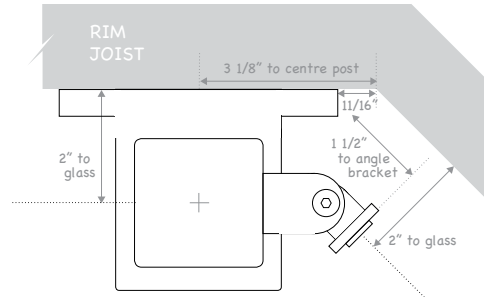
**White Visti Post
fascia-mount corner**



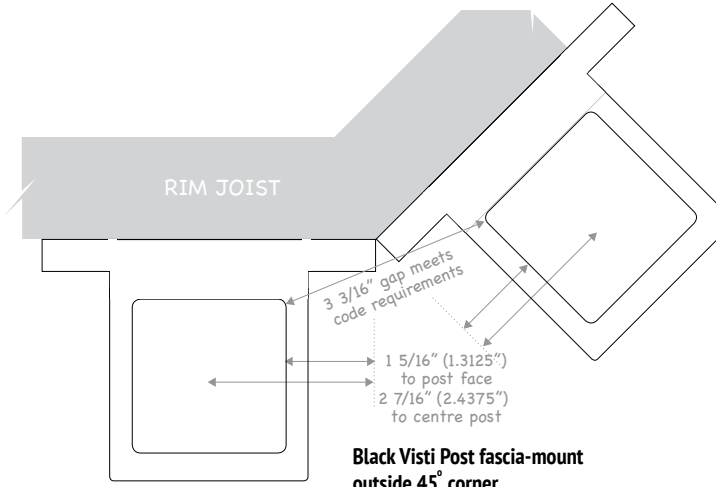
White Visti Post fascia-mount inside 90°



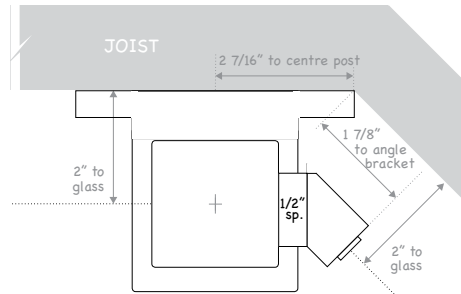
**Black Visti Post fascia-mount inside 45°
w / Lite10 connectors**



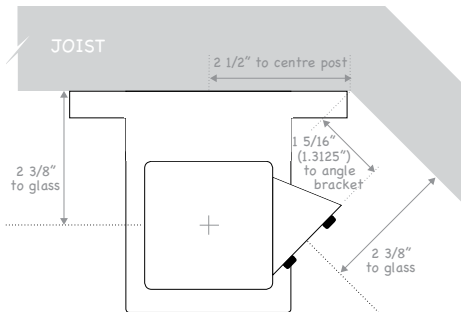
**Black Visti Post fascia-mount inside 45°
w / Universal Angle Brackets**



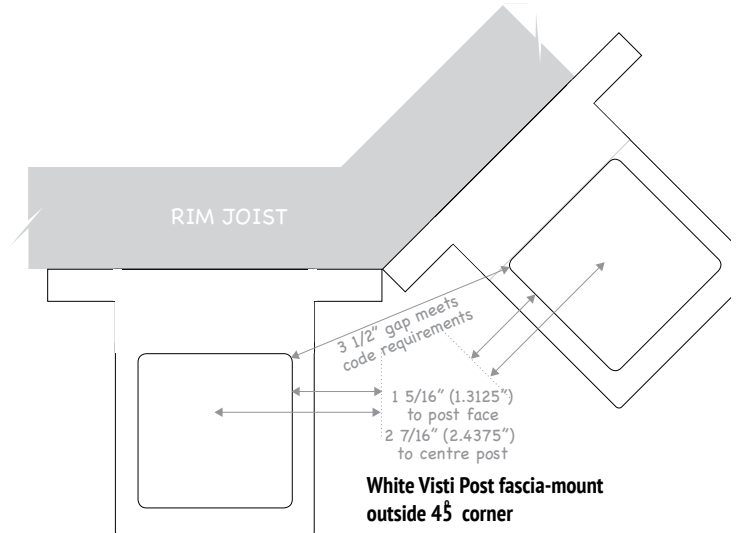
**Black Visti Post fascia-mount
outside 45° corner**



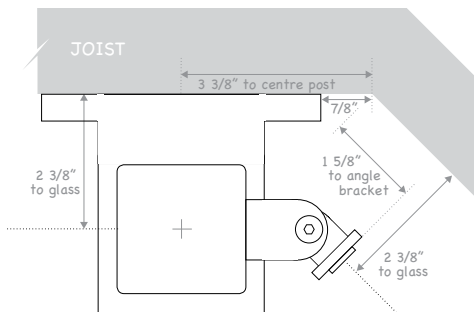
**Black Visti Post fascia-mount inside 45°
w / 45-degree wedges**



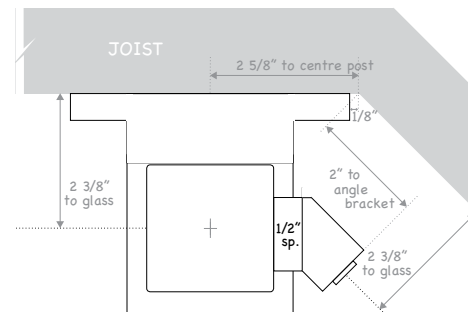
**White Visti Post fascia-mount inside 45°
w / Lite10 connectors**



**White Visti Post fascia-mount
outside 45° corner**



**White Visti Post fascia-mount inside 45°
w / Universal Angle Brackets**



**White Visti Post fascia-mount inside 45°
w / 45-degree wedges**



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