

INSTALLATION INSTRUCTIONS



PREMIUM ALUMINUM RAILING SYSTEMS



GLASS RAILINGS

PICKET RAILINGS

CABLE RAILINGS





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INTRODUCTION:

This manual provides comprehensive instructions for the installation of the FHC AR Premium Aluminum Railing Systems designed for elevated platforms providing fall protection. Our modular system offers versatility with over 50 components, including floor mounting plates, aluminum posts, fascia mounting plates, top rails, caps, and mid-rails for tempered glass or aluminum picket infills.

FHC AR Series Premium Aluminum Systems are designed to meet and exceed International Building Code (IBC) and International Residential Code (IRC) code requirements for Guardrail Applications. Codes and requirements are subject to local regulations, Please review installation with local Authority Having Jurisdiction (AHJ) before starting any project.

Key safety regulations to consider:

1. HEIGHT REQUIREMENTS:

Most local codes require a minimum railing height of 42 inches (1067 mm) for commercial applications. The height is typically measured vertically from the finished floor surface to top of rail.

2. OPENING LIMITATIONS:

To ensure child safety, openings in guards should not allow passage of a 4-inch (102 mm) diameter sphere, as per most building codes.

4. GRASPABILITY:

Handrails along stairs and ramps should have a circular cross-section with an outside diameter between 1.25 inches (32 mm) and 2 inches (51 mm), or a non-circular cross-section with a perimeter dimension between 4 inches (102 mm) and 6.25 inches (159 mm).

Always consult your local building department for specific requirements, as they may vary by jurisdiction. In addition, refer to the latest editions of relevant standards, including but not limited to:

This manual will guide you through the proper selection and installation of components to create a safe, compliant, and aesthetically pleasing railing system. Please read all instructions carefully before beginning installation.

COMPONENT PARTS



				
SP20xx ARS 2-3/8" SQUARE POST	SP520xx ARS 2-3/8" ALUM. 135 DEGREE POST	SL20xx ARS 1-1/8" x 2-3/8" ALUM. SLIM POST	PKT34xx ARS 3/4" SQUARE PICKET	BRF20xx ARS BOTTOM SNAP COVER
				
BRG20xx ARS BOTTOM RAIL FOR GLASS	BRP20xx ARS BOTTOM RAIL FOR PICKET	GLS20xx ARS TOP RAIL POCKET EXTRUSION	X4GLS20XX ARS X4 FIJI SERIES TOP RAIL POCKET EXTRUSION	PKT20xx ARS 3/4" SQUARE PICKET TOP SNAP FILLER
				
TV12 ARS TOP RAIL VINYL 1/2" & 9/16" GLASS	TV14 ARS TOP RAIL VINYL 1/4" & 5/16" GLASS	TV38 ARS TOP RAIL VINYL 3/8" & 7/16" GLASS	BV12 ARS BTM RAIL VINYL 1/2" & 9/16" GLASS	BV14 ARS BTM RAIL VINYL 1/4" & 5/16" GLASS
				
BV38 ARS BTM RAIL VINYL 3/8" & 7/16" GLASS	CV2xx CENTER POST FLANGE COVER	CV1Xxx RECTANGULAR FLANGE COVER	CV135xx ALUMINUM FLANGE COVER 135 DEGREE	CV02xx ALUMINUM OFFSET FLANGE COVER
				
FMB1xx SQUARE POST FASCIA BRACKET AND END CAP *	SPF1xx RECTANGULAR FASCIA POST BRACKET AND END CAP *	FMB90xx 90 DEG OUTSIDE FASCIA POST BRACKET AND END CAP *	FMB91XX 90 DEG INSIDE FASCIA POST BRACKET AND END CAP *	FMB5XX 135 DEG INSIDE FASCIA POST BRACKET AND END CAP *
				
FMB51XX 135 DEG OUTSIDE FASCIA POST BRACKET AND END CAP *	ARCB2 BOTTOM RAIL CONNECTOR BLOCK	ARCB1 X1 ARROWHEAD SERIES TOP & BOTTOM RAIL CONNECTING BLOCK	SM10xx 304 STAINLESS STEEL STANCHION & BASE PLATE	CM10xx CORE-MOUNT STAINLESS STEEL STANCHION

* KITS INCLUDE RUBBER GASKETS

Illustrations Not To Scale



EXPERIENCE AND INNOVATION

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PARTS



X1T20xx ARS X1 ARROWHEAD SERIES TOP RAIL	X2T20xx ARS X2 TAHOE SERIES TOP RAIL	X3T20xx ARS X3 SIERRA SERIES TOP RAIL	X35T20xx ARS X35 EVEREST SERIES TOP RAIL	X4T20xx ARS X4 FIJI SERIES TOP RAIL (FLAT SERIES FOR WOOD)
X1ECxx X1 ARROWHEAD SERIES TOP RAIL END CAP	X2ECxx X2 TAHOE SERIES TOP RAIL END CAP	X2WECxx X2 TAHOE SERIES TOP RAIL WALL MOUNT	X3ECxx X3 SIERRA SERIES TOP RAIL END CAP	X3WECxx X3 SIERRA SERIES TOP RAIL END CAP - WALL MOUNT
X35ECxx X35 EVEREST SERIES TOP RAIL END CAP	X35WECxx X35 EVEREST SERIES TOP RAIL END CAP - WALL MOUNT	TC5xx 135 DEGREE CENTER POST TOP CAP	TC2xx CENTER POST TOP CAP	TC1xx SLIM POST TOP CAP
TRB1xx SQUARE TOP RAIL MOUNTING PLATE	TRB2 SLIM POST TOP RAIL MOUNTING PLATE	CB90M 90 DEGREE TOP RAIL MOUNTING PLATE	TRB1LH / TRB1RH ALUMINUM ADJUSTABLE PLATES LEFT / RIGHT	CB135M 135 DEGREE TOP RAIL MOUNTING PLATE
SBP5XX 2-3/8" BASE PLATE WITH FHC LOGO	OBP5XX 2-3/8" OFFSET BASE PLATE WITH FHC LOGO	SBP2XX 1-1/8" X 2-3/8" BASE PLATE WITH FHC LOGO	OB2XX 1-1/8" X 2-3/8" OFFSET BASE PLATE	SP1N ARS SPLICE PIN
X2THXX X2 TAHOE 90 DEGREE WELDED CORNER	X2TH2XX X2 TAHOE 135 DEGREE WELDED CORNER	X3THXX X3 SIERRA 90 DEGREE WELDED CORNER	X3TH3XX SIERRA 135 DEGREE WELDED CORNER	X35TH3XX X35 EVEREST 90 DEGREE WELDED CORNER
	X35TH3XX X35 EVEREST 135 DEGREE WELDED CORNER	X4THXX X4 FIJI 90 DEGREE WELDED CORNER	X4TH3XX X4 FIJI 135 DEGREE WELDED CORNER	WELDED CORNER ATTACHMENT CLIPS (INCLUDED WITH CORNERS)

INSTALLATION



Site Preparation

Verify that the concrete platform is level and is strong enough to support the guardrail system.
Clean the installation area thoroughly to remove debris and dust.
Mark the locations of the posts according to the design specifications.

Post Mounting Options

Core-Mount

By far the strongest post mounting method. Requires the use of a 4" diamond core drilling machine with a 6" deep capacity. Caution must be taken when drilling pre-stressed concrete in order to avoid high-tension cables and fittings embedded in the slab. If core mounting is required, consult the building engineer or structural engineer before drilling. After the hole is drilled, and the core is removed, vacuum out any dust or debris while wearing PPE. Stand the CM10 Core-Mount Stanchion tube upright and centered in the hole. Verify that the tube is plumb and square-facing the adjacent posts. Fill the hole with a setting cement like FHC Kwixset Weatherproof Expansion Cement KS25 or KS50. Follow the products use instructions for mixing and setting times (Figure 1).

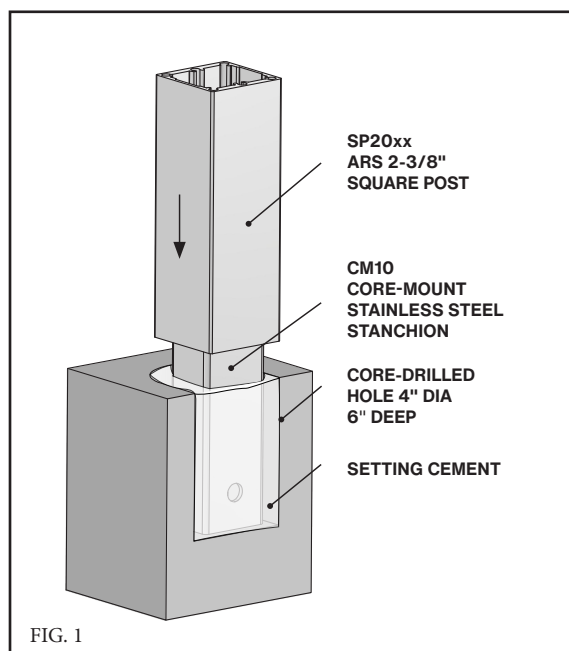


FIG. 1
CORE MOUNT FOR CONCRETE SLABS

Stanchion-Base Surface Mount

The SM10 Stanchion and Base Plate is a time saver for larger jobs and provides a strong surface mounting solution. The base plate is factory welded to the stanchion tube and both are plated with a corrosion resistant coating. A standard SP20 2-3/8" square post is placed over the stanchion for a secure mount with the added benefit of removal at a later time. As with most base plate configurations, the stanchion-base mount post may be mounted to wood, concrete, steel, tile, and most other finished floor surfaces. Use of BN1W plastic caps and WSH1 stainless washers as a decorative cover to the selected fasteners (Figure 2). Although the SM10 Stanchion is coated to resist corrosion, FHC recommends an isolating material between the base plate and unfinished concrete, especially in wet environments. Note: May be installed prior to waterproofing, or hot-mop, for added anchor corrosion protection.

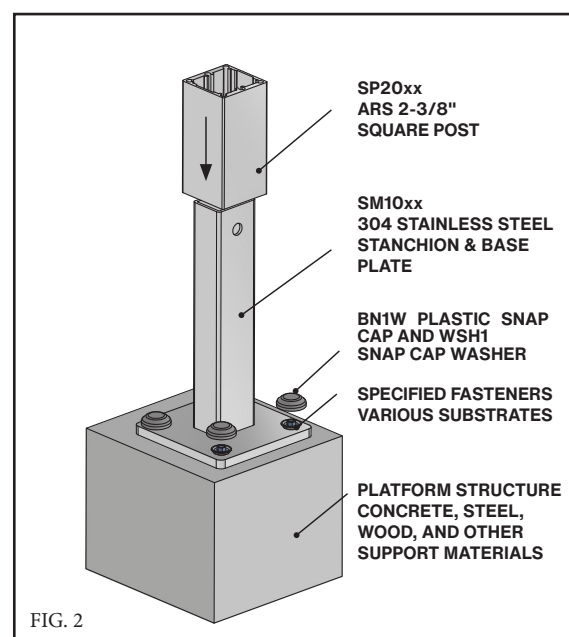


FIG. 2
STANCHION MOUNT FOR ALL FLOORS

INSTALLATION



Post Mounting Options Continued

Base Plate Surface-Mount

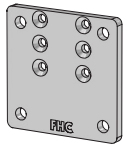
The most common mounting method and the most versatile with a wide selection of bases for specific configurations.



SBP5XX
2-3/8" X 2-3/8" POSTS
STANDARD SURFACE
MOUNTING ACCEPTING
UP TO 3/8" FASTENERS.



SBP2XX
1-1/8" X 2-3/8"
RECTANGULAR BASE
PLATES FOR SL20xx
RECTANGULAR POSTS. ALL
BASE PLATES ACCEPTS UP
TO 3/8" ANCHORS.



OBP5XX
2-3/8" X 2-3/8" POSTS
OFFSET BASE PLATES
FOR MOUNTING CLOSE
TO WALLS USE WITH
WALL-MOUNT END
CAPS ON RAILS.



OB2XX
1-1/8" X 2-3/8" OFFSET
BASE PLATES SL20xx
RECTANGULAR POSTS
FOR MOUNTING CLOSE
TO WALLS USE WITH
WALL-MOUNT END CAPS
ON RAILS.

Attach each baseplate to its corresponding post with (6) 5/16"-18 X 1" Phillips Flat Head thread-cutting screws before anchoring to floor. Insert an isolating film or bituminous paint on each mounting plate's contact surface if mounting to unsealed concrete. Base plate and fasteners can be covered to give a finished look with an optional flange cover (Figure 3). Apply a bead of silicone to the inside rim of each cover before placement. Remove excess sealant.

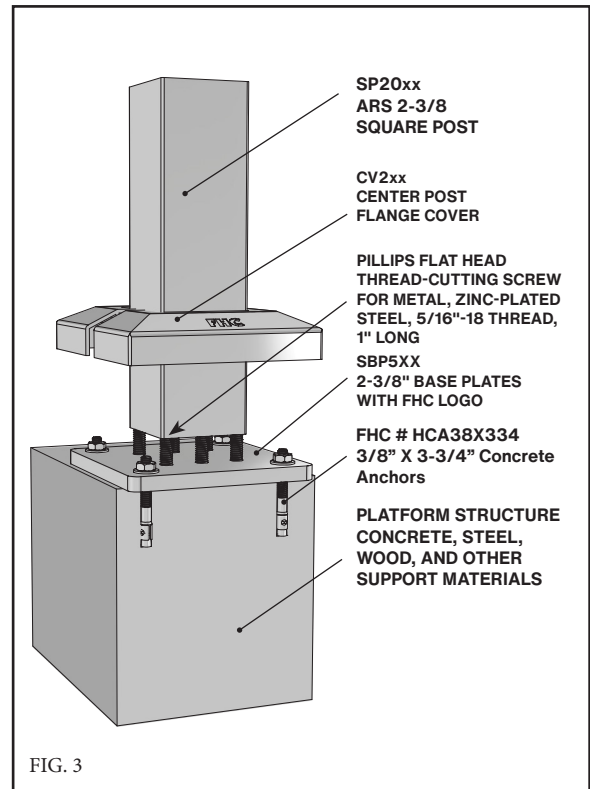
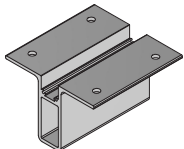


FIG. 3

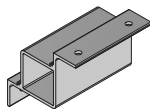
STANDARD POST AND BASE PLATE

Fascia-Mount

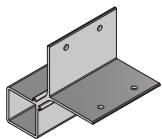
Benefits: Fascia mounts hide the lag screws and deck hardware along the side, providing a cleaner aesthetic. A fascia-mounted post base will not usually interfere with exterior deck waterproofing that helps prevent anchor corrosion and structure rot. Building Codes: Some jurisdictions mandate fascia mounts. Check you local codes.



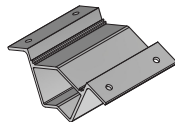
SPF1xx
RECTANGULAR
FASCIA POST
BRACKET, END CAP
AND GASKET



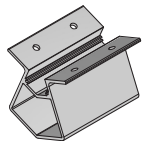
FMB91XX
90 DEG INSIDE
FASCIA POST
BRACKET, END CAP,
AND GASKET.



FMB90xx
90 DEG OUTSIDE
FASCIA POST
BRACKET, END CAP,
AND
GASKET.



FMB5XX
135 DEG INSIDE
FASCIA POST
BRACKET, END CAP,
AND GASKET.



FMB51XX
135 DEG OUTSIDE
FASCIA POST
BRACKET, END CAP,
AND GASKET.

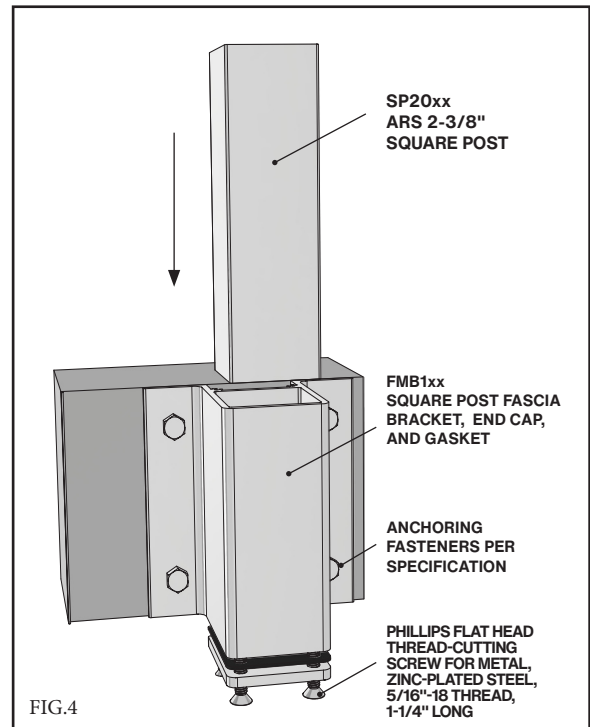


FIG. 4

STANDARD POST AND FASCIA BRACKET

INSTALLATION



Measuring and Layout - Surface Mount

When surface mounting, use the base plates to lay out the post locations. For posts that will be located against a wall like base plate (A), the (6) attachment screws will be offset to the wall direction. The offset gets the post as close as possible to the wall minimizing the gap.

Surface-Mounted System

- Always start the layout from the center and work out.
- Post spacing must comply with code requirements. Maximum 6 feet between post centers is recommended by most installers.

Base plates may be used for marking the anchor holes during layout.

FIG. 5

(B) Setback Distance: The setback refers to the distance from the edge of the deck to the center of the post. This distance is important to ensure that the post is far enough from the edge to provide stability but not so far that it reduces the usable space on the deck. Ensure that the fasteners have enough edge distance from the side of the deck to avoid splitting wood substructures or causing face cracks in concrete. This is particularly important in wood installations where edge splitting can compromise the integrity of the anchor point.

(C) Starting from the center of the deck and working outwards helps maintain alignment and evenly distribute any measurement errors across the guardrail. This approach allows for adjustments as the installer moves toward the edges, ensuring a consistent and professional-looking installation.

Optional Stanchion Base

SM10xx 304 STAINLESS STEEL STANCHION & BASE PLATE

Welded stanchion baseplate assemblies are an option to standard base plate mounting by providing additional structural support and stability. May be pre-installed prior to waterproofing or hot-mop.

Best when used for:

- High traffic areas with frequent impacts.
- Long spans greater than the recommended maximum of 60 feet
- Corners and turns.
- Areas with heavy wind loads.

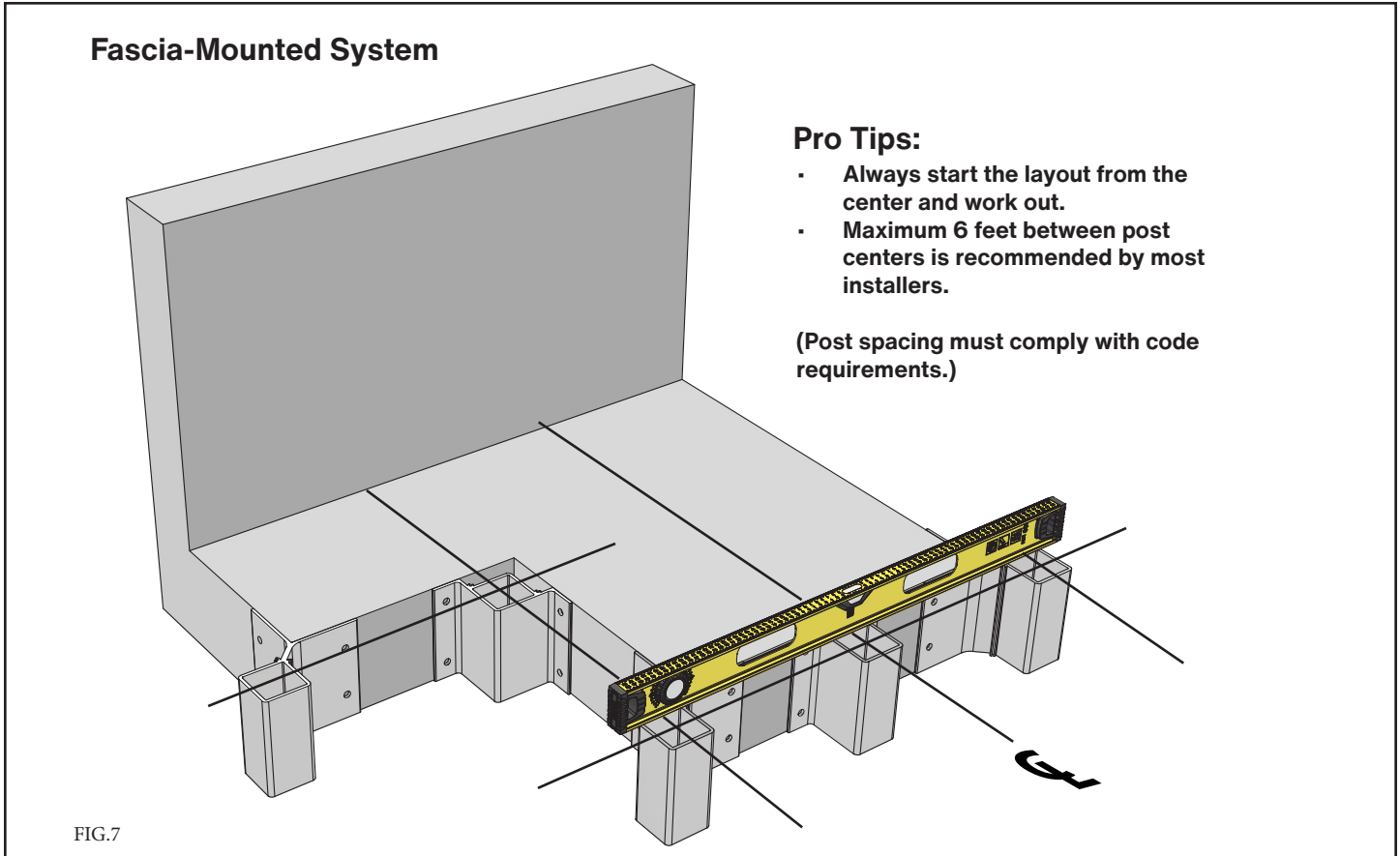
FIG. 6

INSTALLATION



Measuring and Layout- Fascia Mount

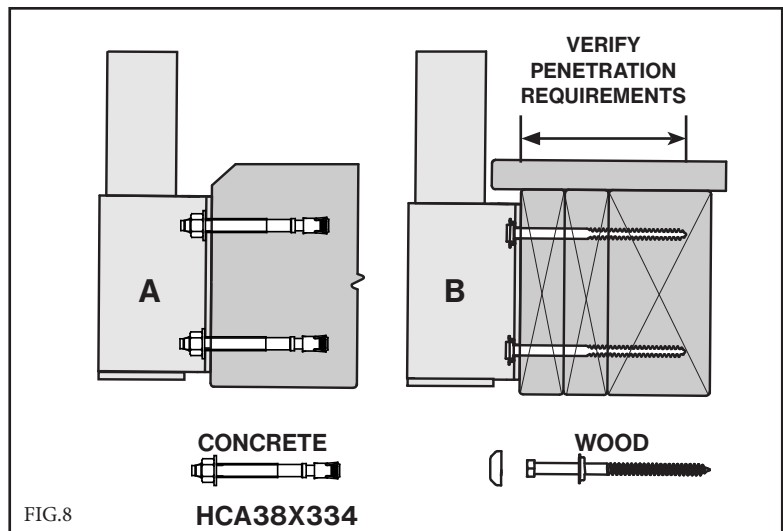
Fascia-mounted systems should be level across the top edges of all mounting brackets. Starting with the center bracket, it is advisable to set it 1/4" - 3/8" below the top deck surface or bottom of the overhang if applicable. This will allow room to vertically adjust each bracket up or down and still remain below the upper site-line.



Typical Anchoring methods for fascia-mount AR brackets.

A- Side mount to concrete platform using engineering-approved expanding concrete anchors.

B- Fascia-mount to wood rim-joint with engineering approved lag bolts and backing. Verify required penetration depth with local codes.



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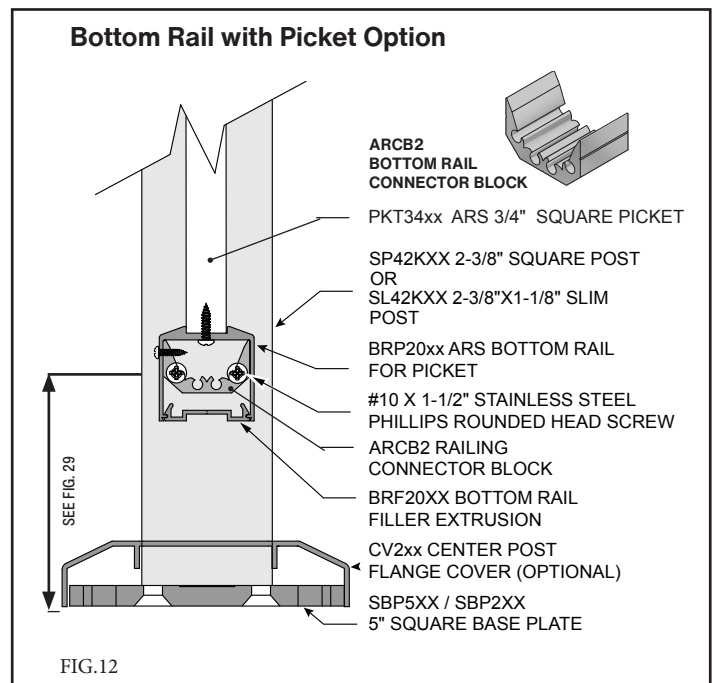
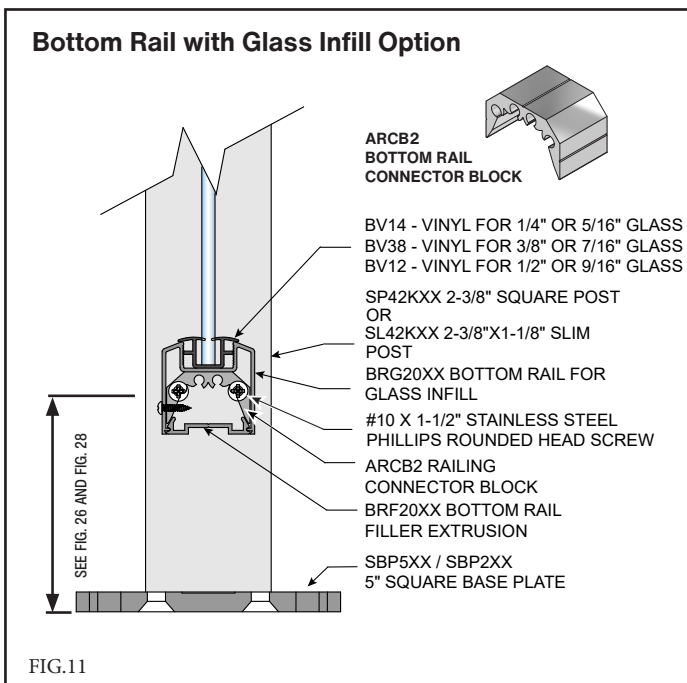
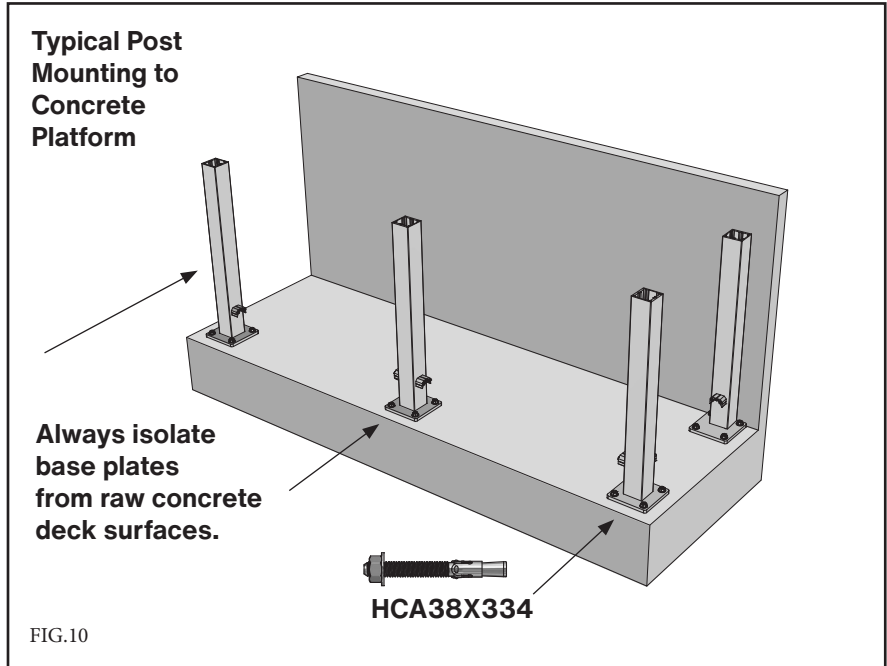
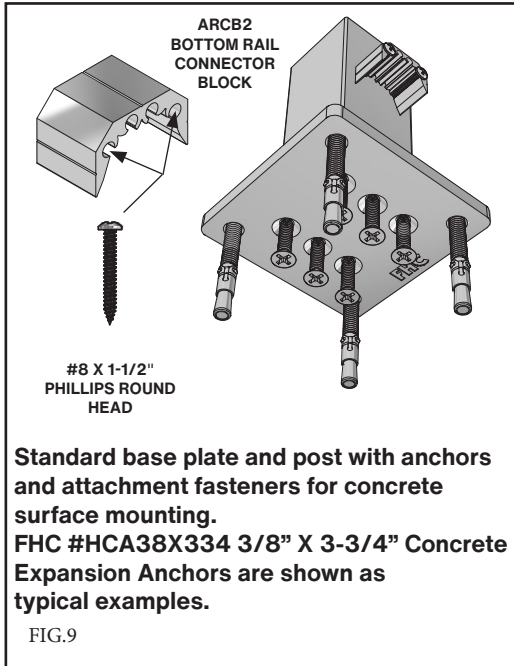


INSTALLATION



Surface-Mount Standard Post Installation

Post installation will vary base on the method selected, surface-mount or fascia-mount. Either method requires that all post be mounted to the deck, as shown below, before proceeding with rail attachment. Anchors will vary per the platform substrate. Consult engineering plans and local codes. Apply sealant to all fastener heads after anchoring.

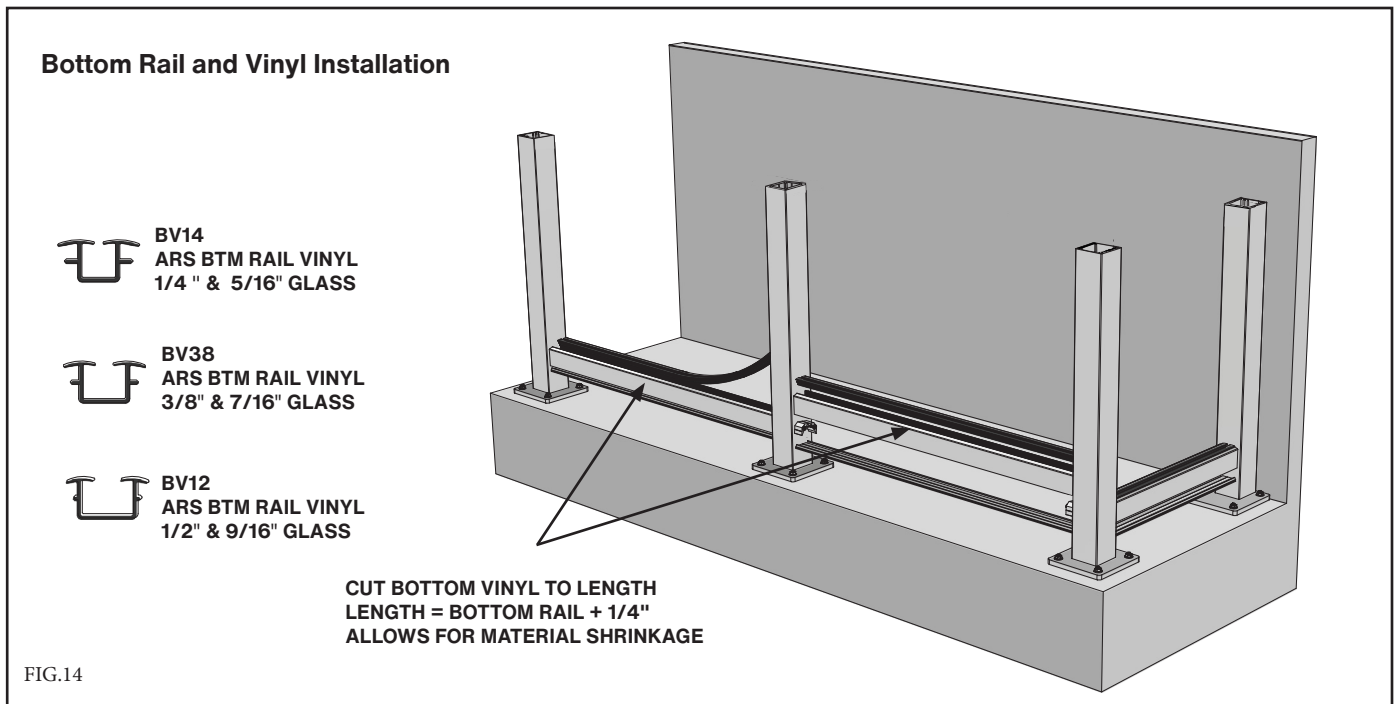
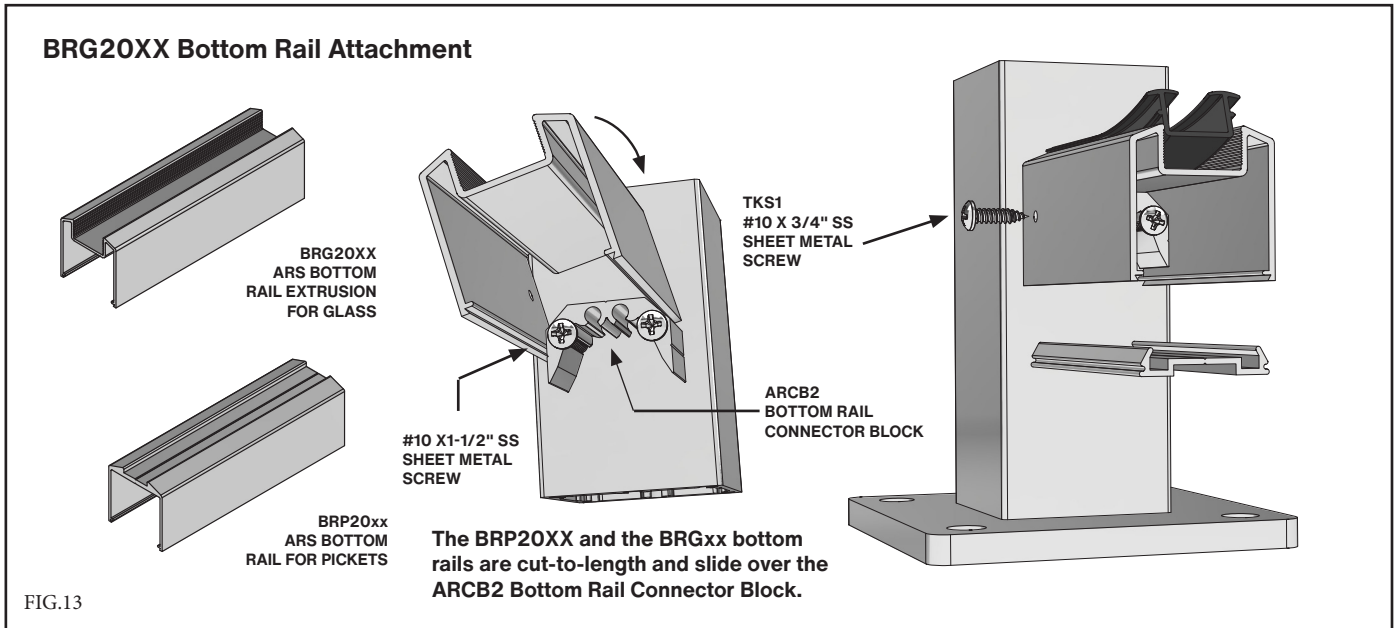


INSTALLATION



Bottom Rail Installation

The FHC AR Railing System offers (2) bottom rails profiles. Verify that the correct bottom rail is selected before proceeding. Note (Figure 13 and Figure 14) for bottom rail connector block positioning.



EXPERIENCE AND INNOVATION

INSTALLATION

Connector Plate and Top Railing Installation



Connector Plates

Connector Plates attached to AR posts ready to accept top rail and fasteners.

FIG.15

Attaching Connector Plates and Top Rail

TRBS 5/6" X 1" THREAD CUTTING SCREW

TKS1 #10 X 3/4" SS SHEET METAL SCREW

Optional LH/RH TRB1 Connector Plate

TRB1xx SQUARE TOP RAIL

TRB2 SLIM POST TOP RAIL

TRB2 SLIM POST TOP RAIL

CB135M 135 DEGREE TOP RAIL

TRB1LH / TRB1RH ADJUSTABLE PLATES L/R

FIG.18

Top Rail Installation

Welded Corners

TKS1 #10 X 3/4" TEK SCREW

FIG.16

Welded Corner Splice

TKS1 #10 X 3/4" SS SHEET METAL SCREW

WELDED CORNER ATTACHMENT CLIP

Use SP1N Splice Pins at all top rail splice joints

Fasten the attachment clip to the welded corner with (4) TKS1 #10 X 3/4" TEK screws. Set the bracket's square base tube into the post top. Do not fasten at this time. Some movement may be required for adjacent rail connections.

FIG.19

End Caps

Optional wall-mount guardrail end caps can be mounted directly to a wall capable of supporting the 200 lb lateral load requirement.

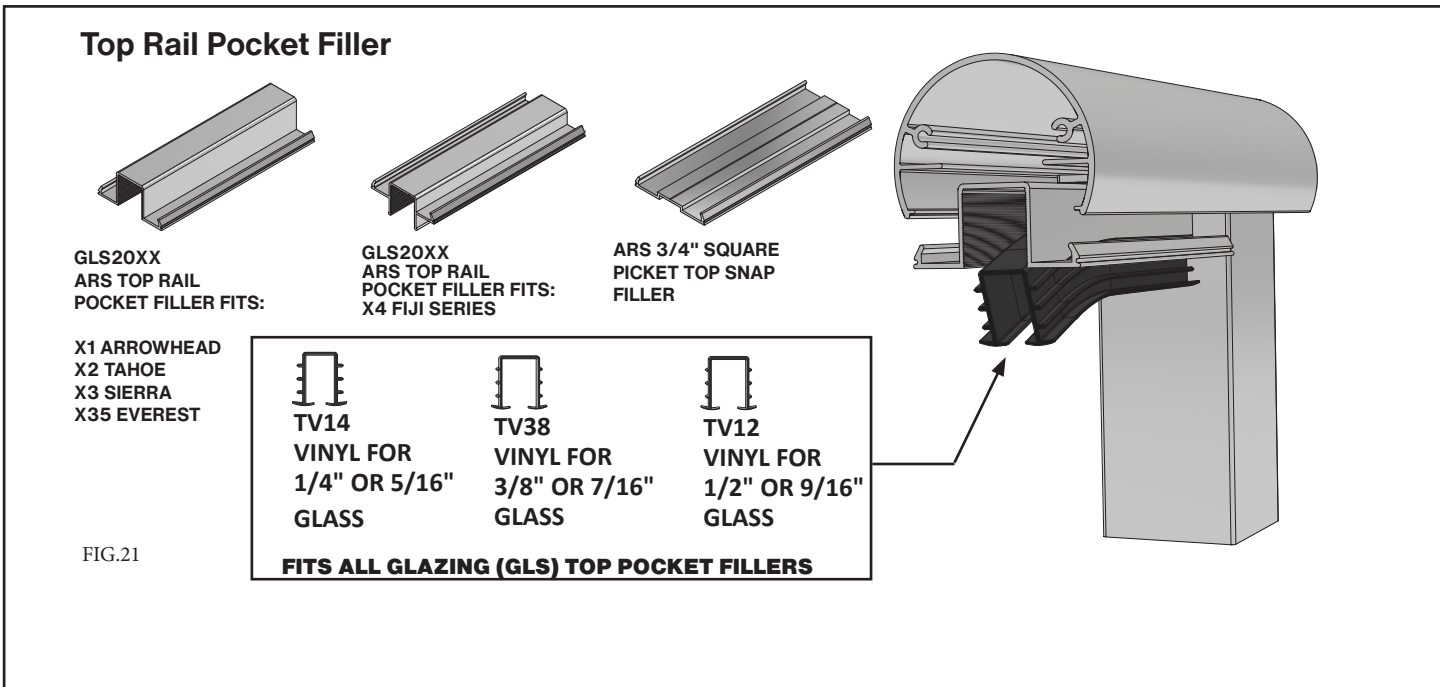
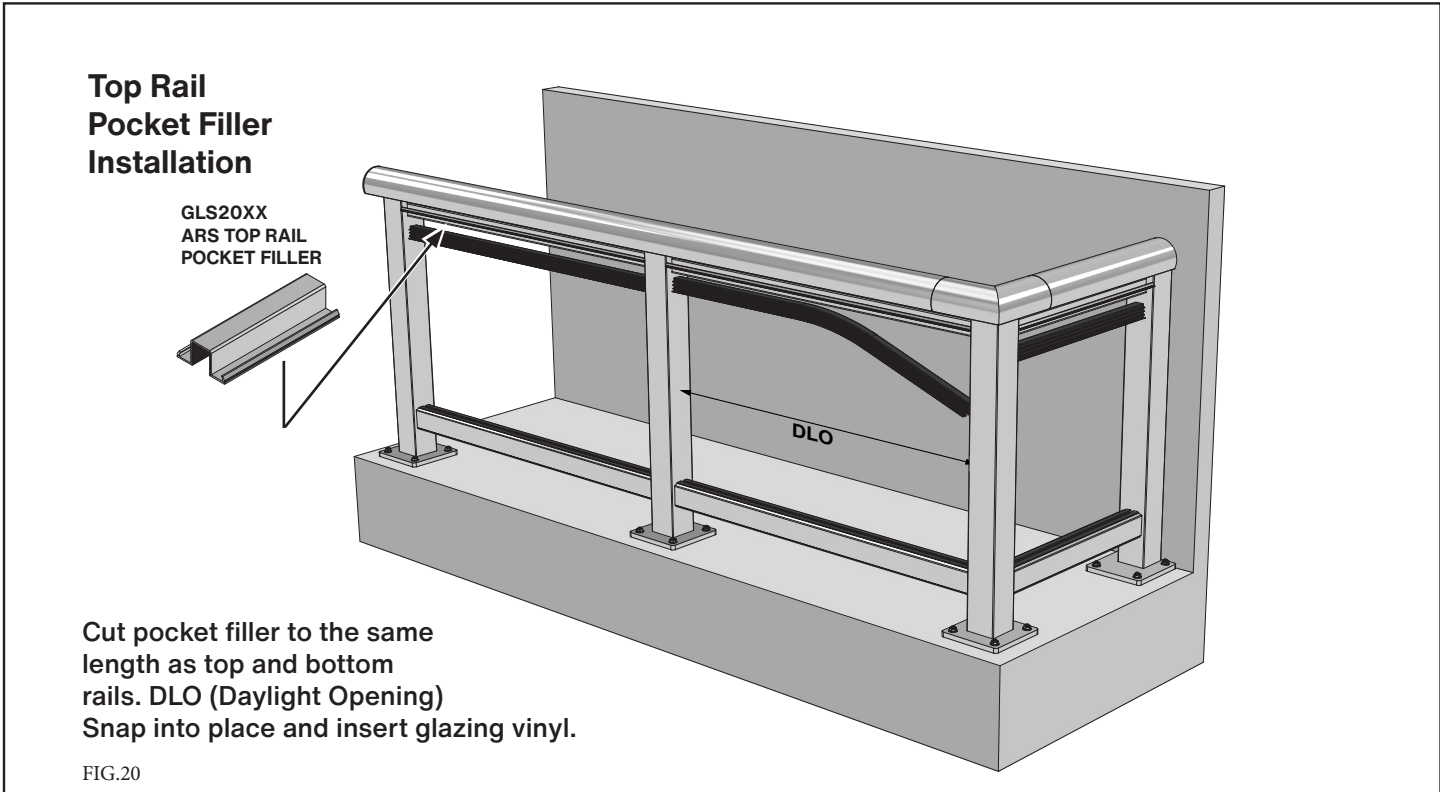
FIG.17

INSTALLATION



Top Rail Pocket Filler Installation

Pocket fillers attach to the underside of the AR top rails by snapping into place. They provide a top connecting surface/channel for the infill or picket below. Top Pocket Fillers can only be installed after completing the top rail installation. Cut to DLO (Daylight Opening). Dry-fit before snapping into place as they may be difficult to remove.



Installation



Glass Panel Installation

The FHC ARS Railing System is compatible with monolithic and laminated tempered glass ranging in thickness from 1/4" to 9/16". All infill panels should be polished on the vertical edges (min) due the 1-1/2" gap on each side. Glass measurements should be taken after completing all metal installation. Glass may be easily lifted in and out for service.

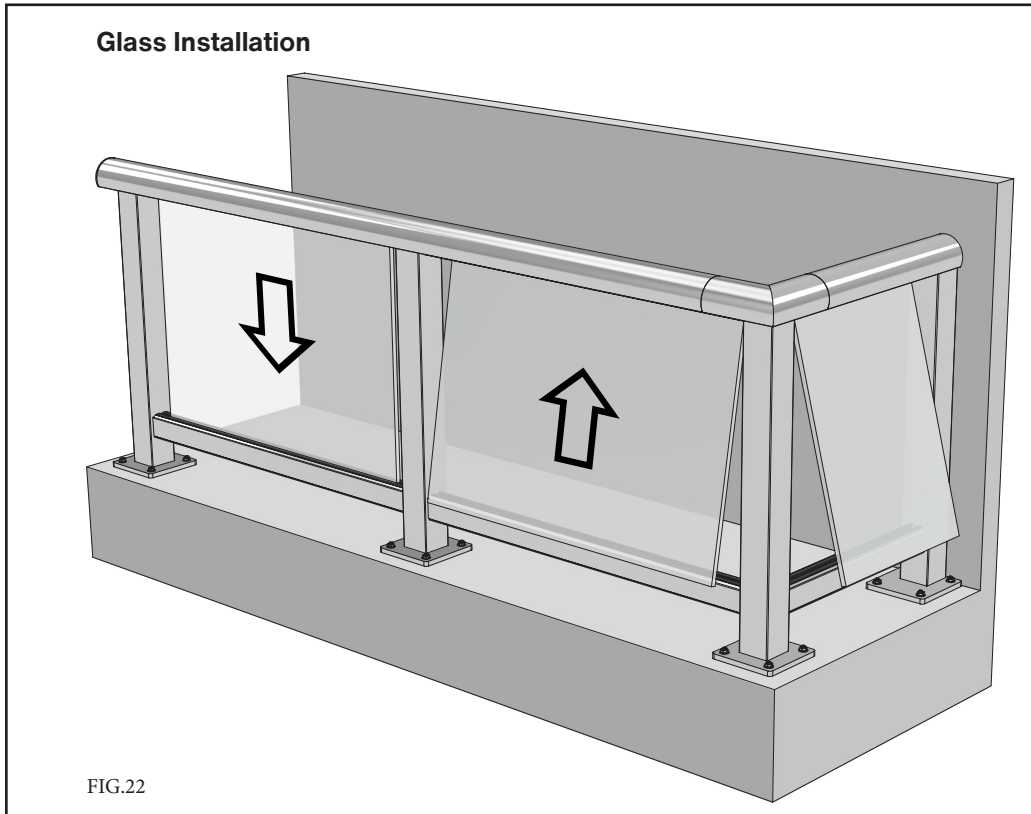


FIG.22

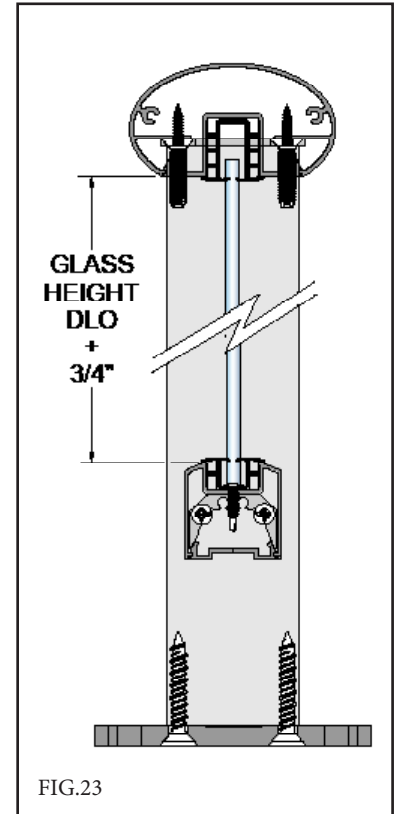


FIG.23

Glass Size Calculation

Calculate glass sizes using D.L.O. of post-to-post sections after the metal railing has been installed. D.L.O. (Daylight Opening) is metal-to-metal. Do not include vinyl edges. Glass height is calculated to allow a gap at the top of the pocket for lifting up and over the bottom rail. Glass width calculations allow a 1-1/2" gap on each side exposing the polished edges. Compatible glass thickness includes: 1/4", 5/16", 3/8", 1/2", 7/16", and 9/16".

NOTE: See Figures 29 & 30 for picket installation details.

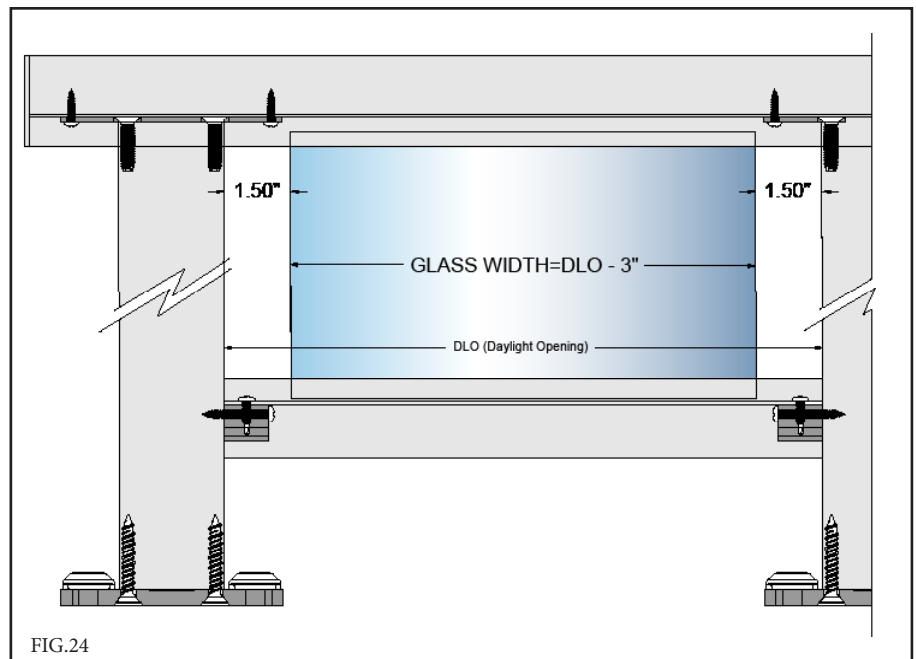
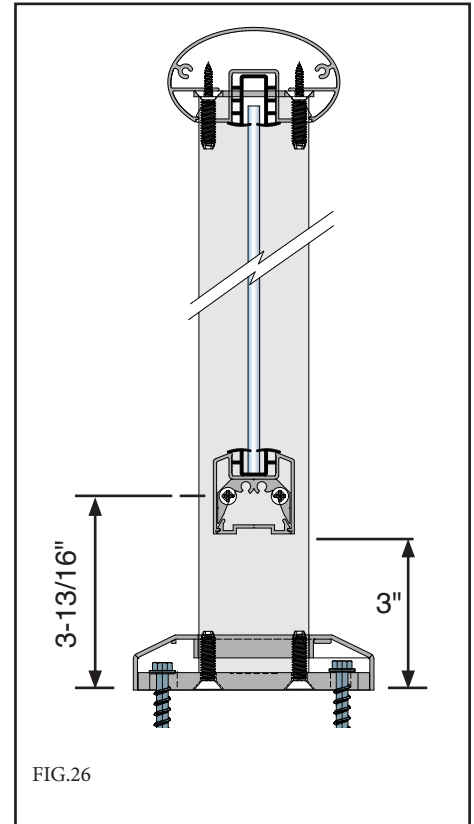
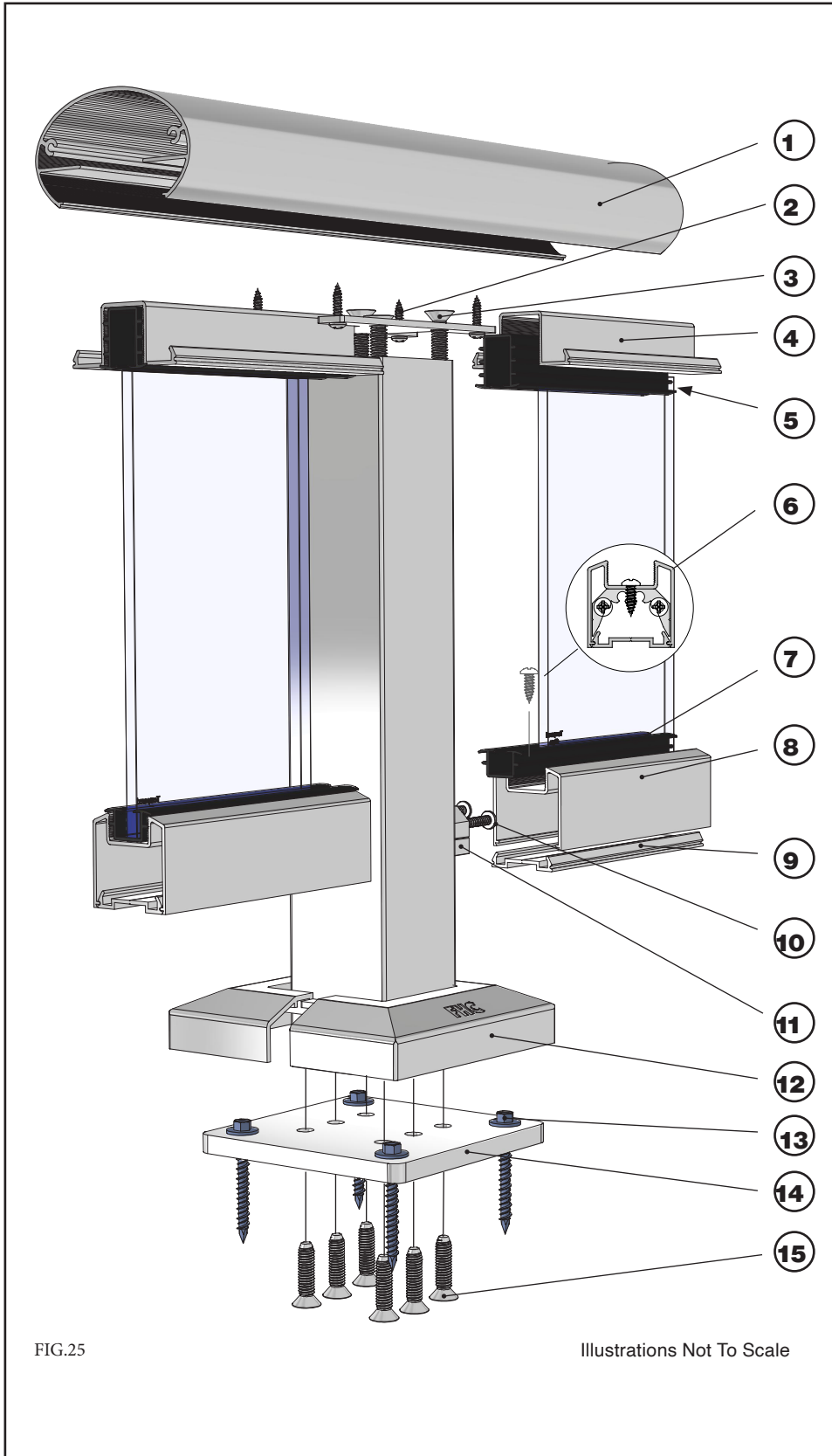


FIG.24

X2 | X3 | X35 TYPICAL DETAILS FOR GLASS INFILL



1	X2,X3,X35 SERIES TOP RAIL
2	TKS1 #10 X 3/4" TEK SCREWS
3	PHILLIPS ROUNDED HEAD SCREWS FOR SHEET METAL, 18-8 STAINLESS STEEL, # 8 SIZE, 3/4" LONG
4	GLS20xx ARS TOP RAIL POCKET EXTRUSION
5	TV14, TV38 OR TV12 TOP RAIL VINYL
6	#10 X 5/8" PHILLIPS ROUNDED HEAD SHEET METAL SCREW STAINLESS
7	BV14, BV38, BV12 BOTTOM RAIL VINYL
8	BRG20xx ARS BOTTOM RAIL EXTRUSION
9	BRF20xx ARS BOTTOM RAIL SNAP COVER
10	PHILLIPS ROUNDED HEAD SCREWS STAINLESS STEEL, # 10 SIZE, 1-1/2" LONG
11	ARCB2 BOTTOM RAIL CONNECTOR BLOCK
12	CV2xx CENTER POST FLANGE COVER (OPTIONAL)
13	ANCHOR FASTENERS SUPPLIED BY OTHERS
14	SBP5XX 2-3/8" BASE PLATES WITH FHC LOGO
15	PHILLIPS FLAT HEAD THREAD-CUTTING SCREW FOR METAL, ZINC-PLATED STEEL, 5/16"-18 THREAD, 1" LONG

FIG.25

Illustrations Not To Scale

X1 Arrowhead Series Surface-Mount Rail

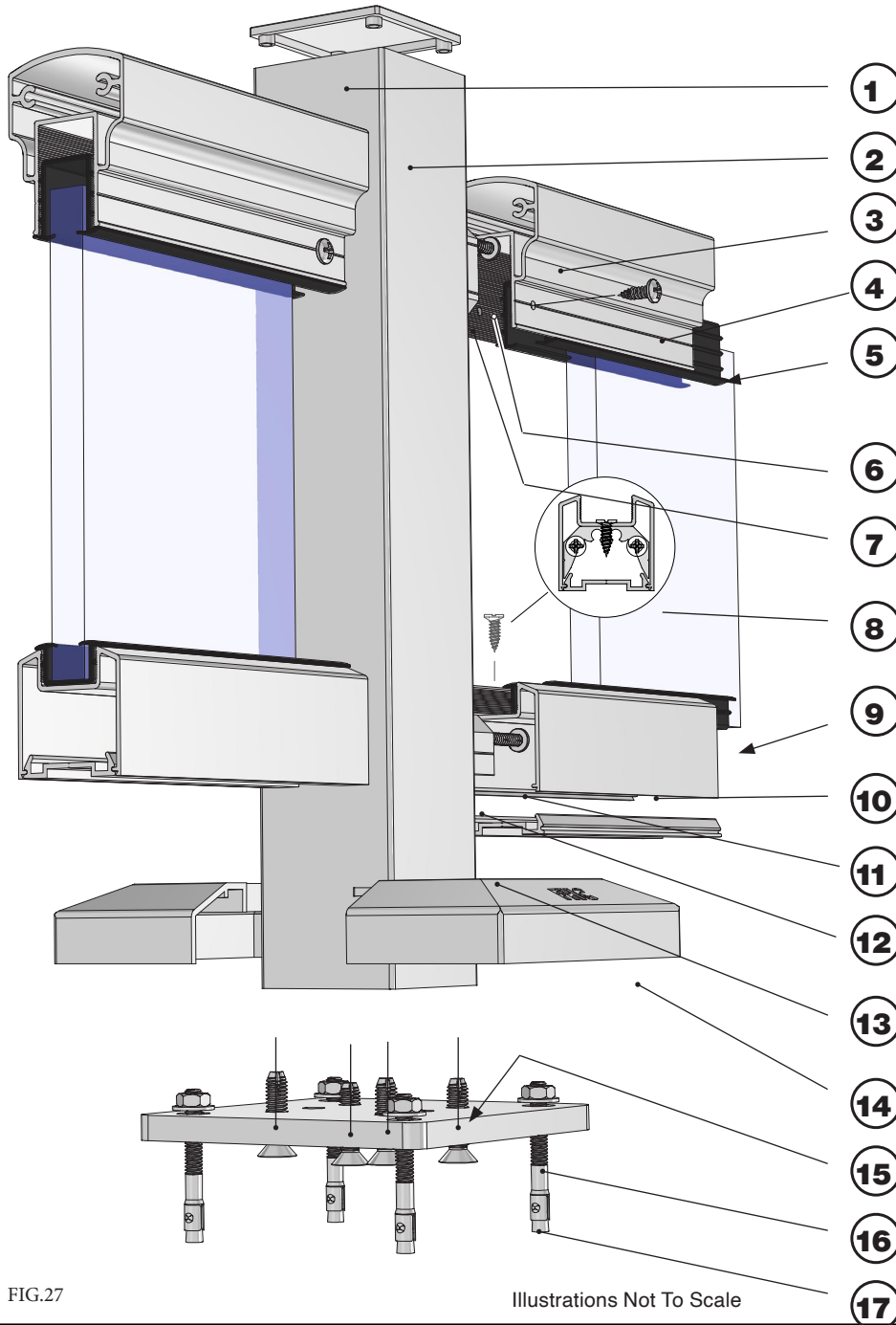


FIG.27

Illustrations Not To Scale

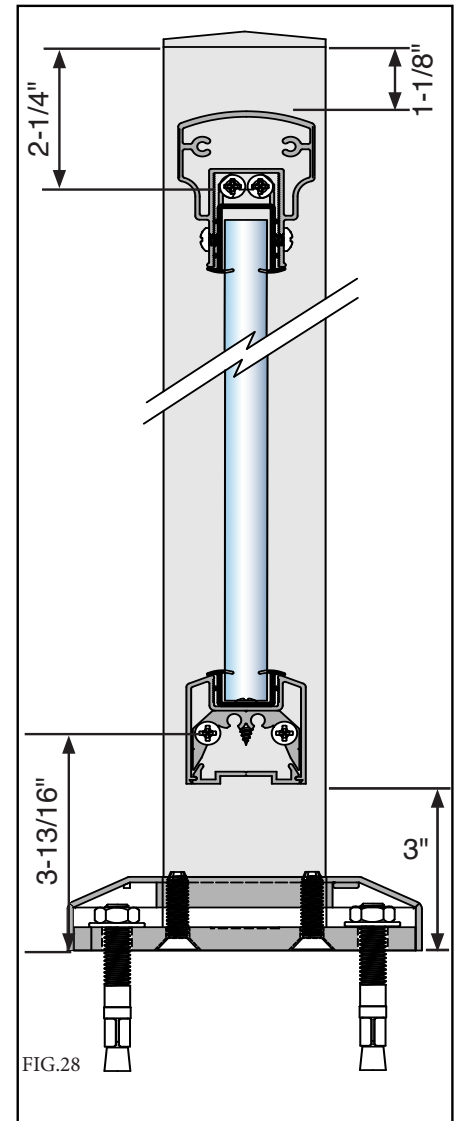


FIG.28

8	#10 X 5/8" PHILLIPS FLAT HEAD SHEET METAL SCREW STAINLESS
9	BV14, BV38, BV12 BOTTOM RAIL VINYL
10	BRG20xx ARS BOTTOM RAIL EXTRUSION
11	#10 X 1-1/2" PHILLIPS ROUNDED HEAD SCREWS STAINLESS STEEL
12	ARCB2 BOTTOM RAIL CONNECTOR BLOCK
13	BRF20xx ARS BOTTOM SNAP COVER
14	CV2xx CENTER POST FLANGE COVER
15	5/16" X 1" PHILLIPS FLAT-HEAD THREAD-CUTTING SCREW STAINLESS
16	SBP5XX 2-3/8" BASE PLATES WITH FHC LOGO
17	ANCHOR FASTENERS SUPPLIED BY OTHERS

1	ATC2xx CENTER POST FLANGE COVER
2	SP20xx ARS 2-3/8" SQUARE POST
3	X1T20xx ARS X1 ARROWHEAD SERIES TOP RAIL

4	#10 X 5/8" PHILLIPS ROUNDED HEAD SHEET METAL SCREW STAINLESS
5	TV14, TV38 OR TV12 TOP RAIL VINYL
6	#10 X 1-1/2" PHILLIPS ROUNDED HEAD SCREWS STAINLESS STEEL
7	ARCB1 ARROWHEAD SERIES CONNECTING BLOCK

X2 | X3 | X35 TYPICAL DETAILS FOR PICKET INFILL

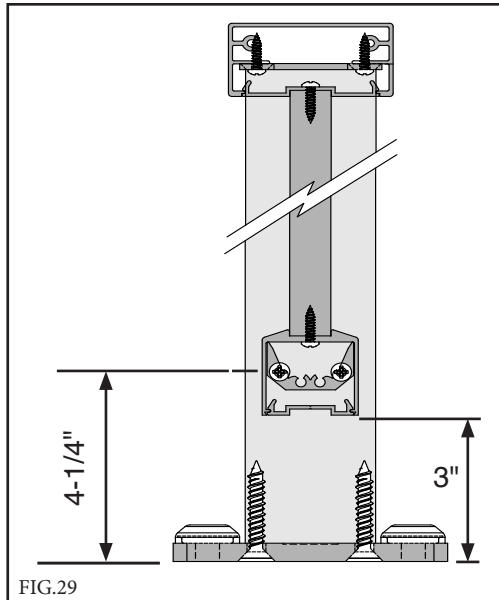


FIG.29

1	X2, X3, X35 SERIES TOP RAIL
2	5/16" X 1" PHILLIPS FLAT-HEAD THREAD-CUTTING SCREW STAINLESS
3	TRB2 ARS RECTANGULAR POST CLIP (SPLICE)
4	TKS1 #10 X 3/4" TEK SCREWS
5	PKT20xx ARS 3/4" SQUARE PICKET TOP SNAP FILLER
6	#8 X 3/4" PHILLIPS ROUNDED HEAD SHEET METAL SCREW STAINLESS
7	PKT34xx ARS 3/4" SQUARE PICKET
8	SL20xx ARS 1-1/8" X 2-3/8" ALUM. RECTANGULAR POST
9	ARCB2 BOTTOM RAIL CONNECTOR BLOCK
10	BRG20xx ARS BOTTOM RAIL EXTRUSION
11	#10 X 1-1/2" PHILLIPS ROUNDED HEAD SCREWS STAINLESS STEEL
12	#8 X 3/4" PHILLIPS ROUNDED HEAD SHEET METAL SCREW STAINLESS
13	BRF20xx ARS BOTTOM SNAP COVER
14	BN1W PLASTIC SNAP CAP
15	WSH1 SNAP CAP WASHER
16	ANCHOR FASTENER SUPPLIED BY OTHERS
17	SBP5XX 2-3/8" BASE PLATES WITH FHC LOGO
18	5/16" X 1" PHILLIPS FLAT-HEAD THREAD-CUTTING SCREW STAINLESS

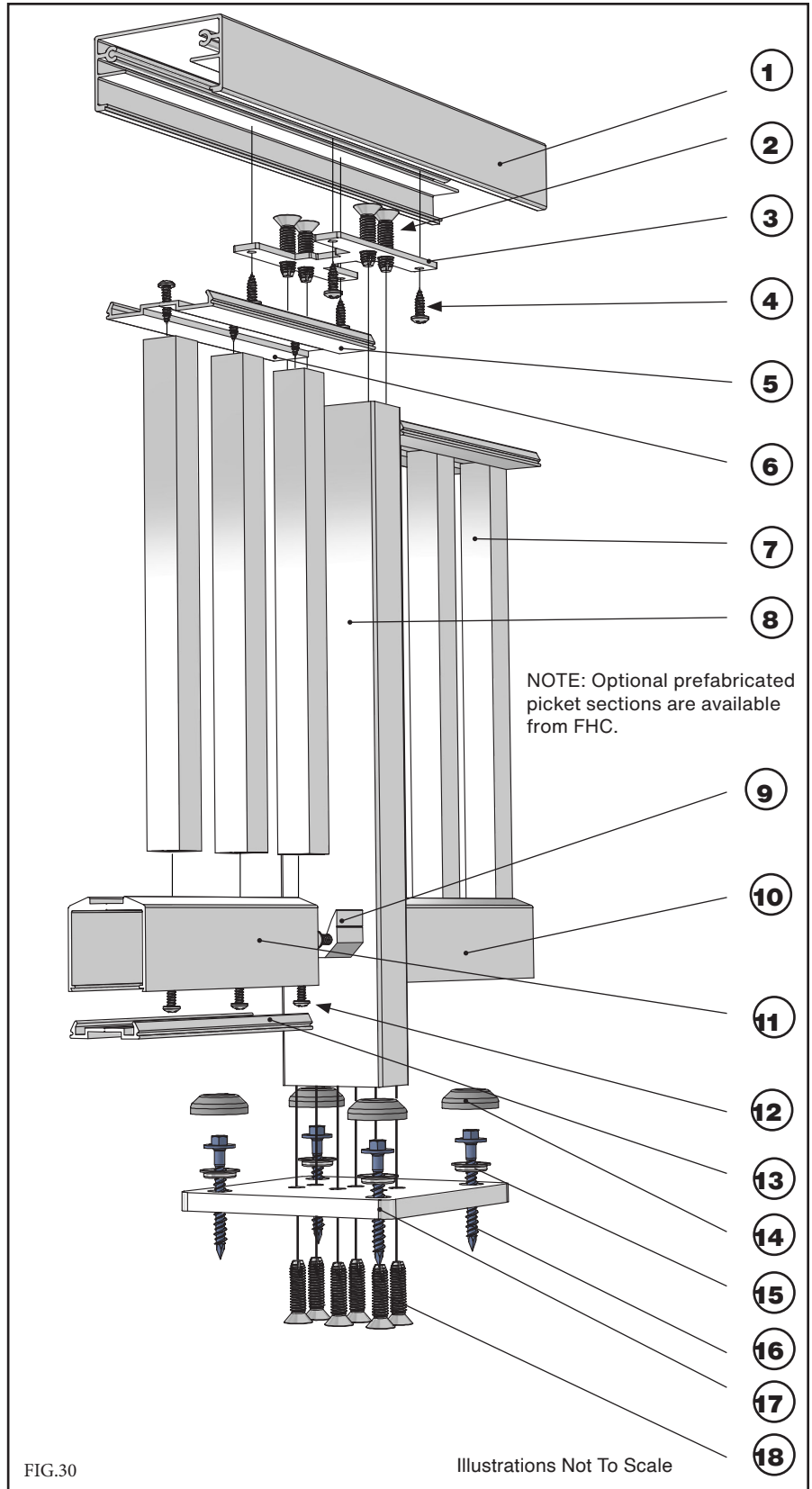


FIG.30

Illustrations Not To Scale

EXPERIENCE AND INNOVATION



X2 TAHOE SERIES FASCIA CORNER-MOUNT

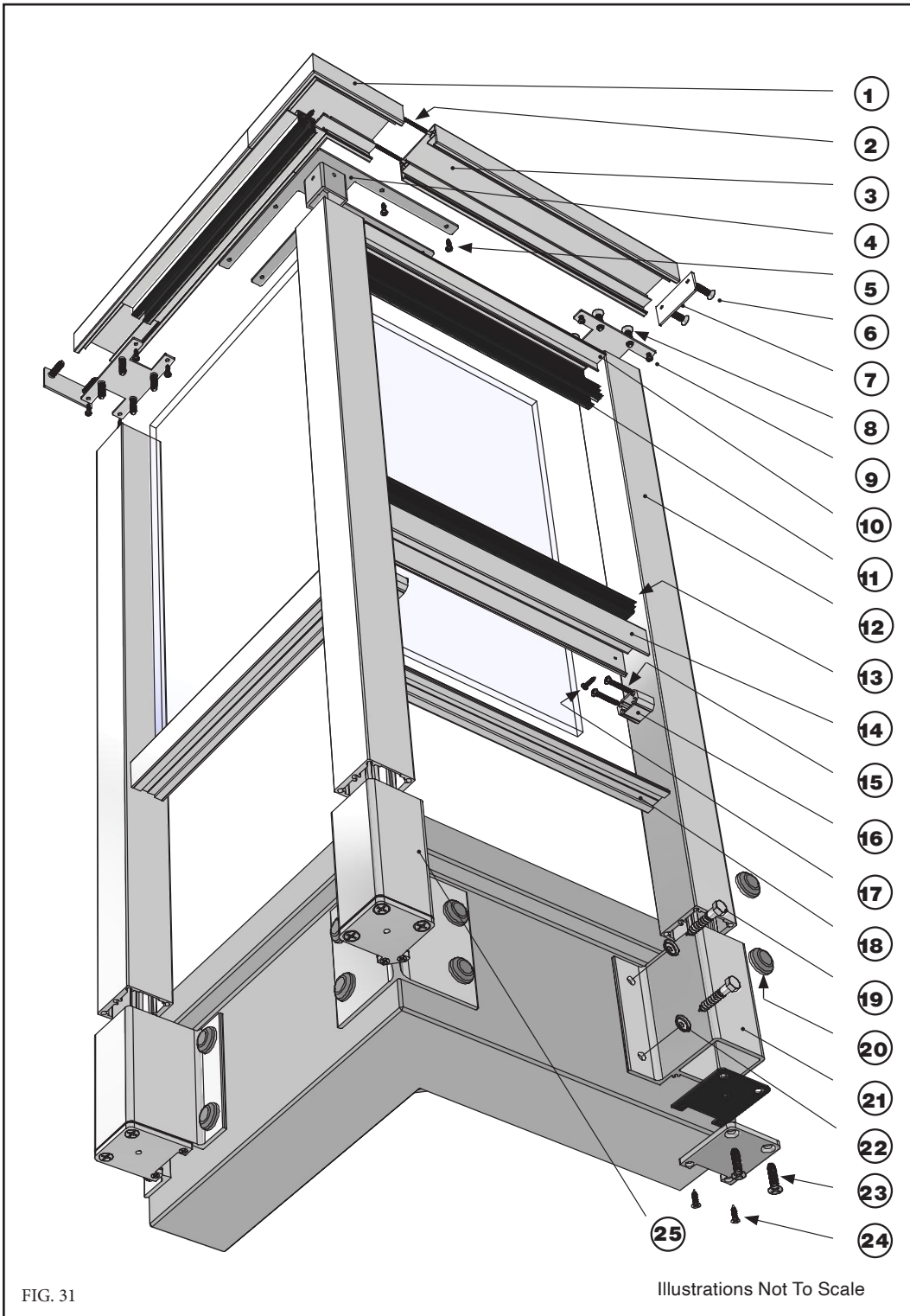


FIG. 31

Illustrations Not To Scale

1	X2THXX ARS TAHOE 90° WELDED CORNER
2	SP1N ARS SPLICE PIN
3	X2T20xx ARS X2 TAHOE SERIES TOP RAIL
4	UNIVERSAL WELDED CORNER RAIL CLIP
5&9	TKS1 #10 X 3/4" TEK SCREWS
6&8	5/16" X 1" PHILLIPS FLAT-HEAD THREAD-CUTTING SCREW STAINLESS
7	X2ECxx ARS TAHOE SERIES TOP RAIL END CAP
10	GLS20xx ARS TOP RAIL POCKET EXTRUSION
11	TV38 ARS TOP RAIL VINYL 3-8" & 7-16" GLASS
12	SP20xx ARS 2-3/8" SQUARE POST
13	BV38 ARS BTM RAIL VINYL 3-8" & 7-16" GLASS
14	BRG20xx ARS BOTTOM RAIL EXTRUSION
15	#10 X 1-1/2" PHILLIPS ROUNDED HEAD SCREWS STAINLESS STEEL
16	ARCB1 ARROWHEAD SERIES CONNECTING BLOCK
17	#10 X 3/4" PHILLIPS PAN HEAD SHEET METAL SCREW
18	BRF20xx ARS BOTTOM SNAP COVER
19	ANCHOR BOLTS (VARY)
20	BRF20xx ARS BOTTOM SNAP COVER
21	FMB1xx SQUARE POST FASCIA BRACKET, GASKET, AND END CAP
22	WSH1 SNAP CAP WASHER
23	5/16" X 1" PHILLIPS FLAT-HEAD THREAD-CUTTING SCREW STAINLESS
24	#10 X 3/4" PHILLIPS PAN HEAD SHEET METAL SCREW
25	FMB90xx 90 DEG OUTSIDE FASCIA POST BRACKET, GASKET, AND END CAP