

# Horizontal Cable Systems



**1) Check Contents Of Packages:** Verify that all parts have arrived and that they match the packing list.

**1A) Coastal applications:** Confirm grommets fit post holes and isolation pads are correct for your system.

**2) Gather and Identify All Posts:** Use the rail connecting bracket (RCB) holes on each post to identify the post type:

- End posts – RCB holes on one side only.
- Intermediate posts – RCB holes on opposite sides.
- Single corner posts – RCB holes on adjacent sides.

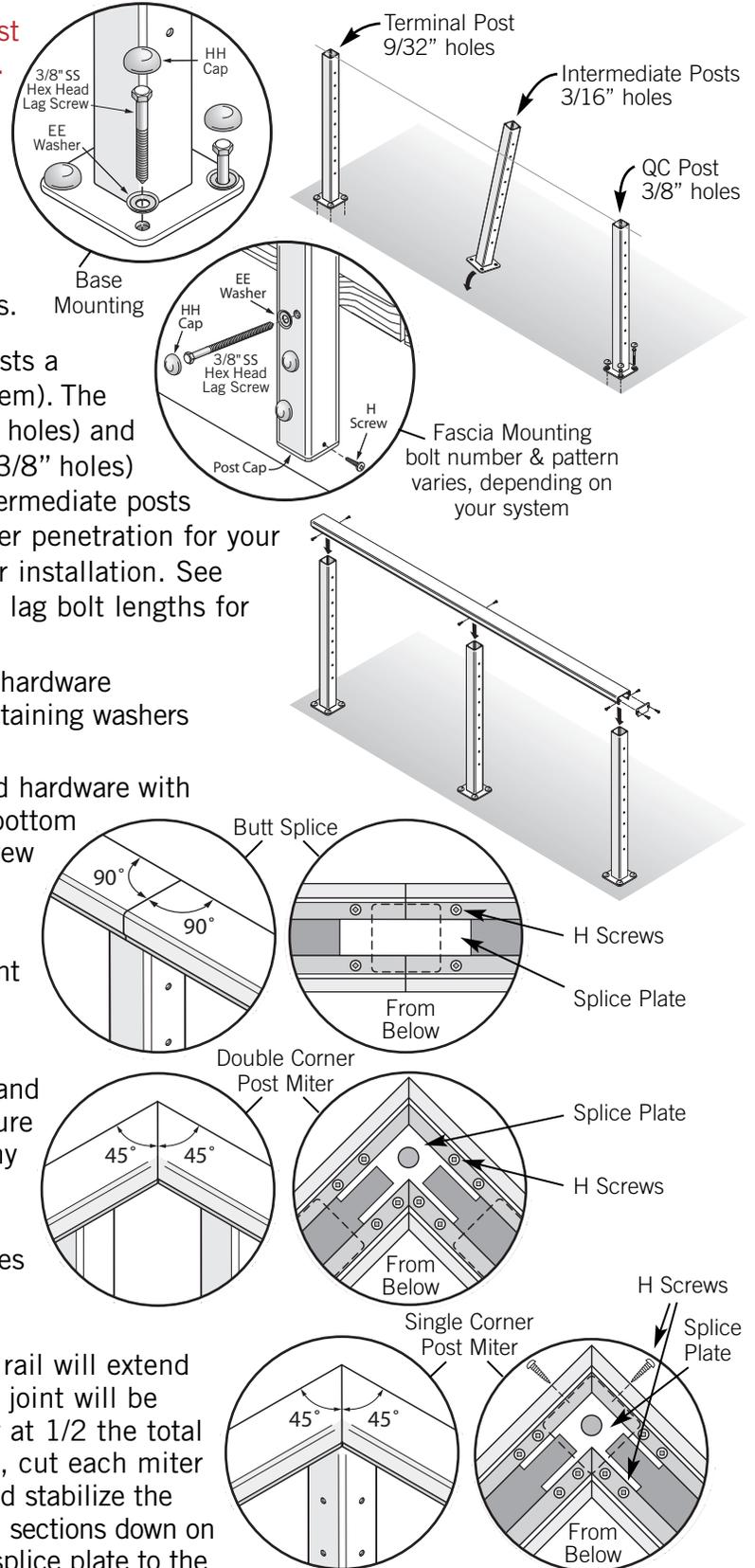
**3) Anchor Posts:** Position all main posts (space posts a maximum of 5' or 6' on center - depending on system). The posts for the Threaded Terminal fittings (with 9/32" holes) and the posts for the Quick-Connect®SS fittings (with 3/8" holes) should be positioned at opposite ends, and the intermediate posts (with 3/16") holes positioned in between. The proper penetration for your lag bolts is critical and will vary depending on your installation. See drawing at the end of this document for details on lag bolt lengths for your project.

- Base mounting: anchor each post using provided hardware (see detailed sheet included in your order) with retaining washers and large plastic caps.
- Fascia mounting: anchor each post using provided hardware with retaining washers and large plastic caps. Cover bottom of each post with a post cap; pre-drill post & screw an H screw through the side of the post to secure the post cap.

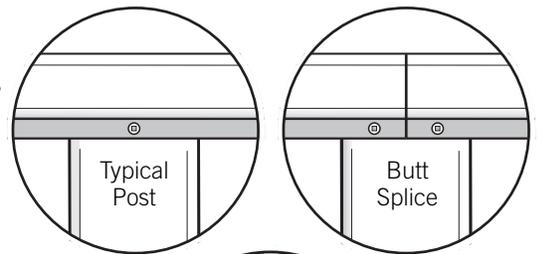
If you are mounting posts using the stanchion mount or fascia bracket mount methods, please call for additional installation details.

**4) Cut & Snap Top Rails:** Cut the top rail to length and then snap it into position on top of the posts. Be sure to attach decorative end plates (see step #5) to any ends that butt-up against a wall face or that have limited access.

- Butt splices: always cut the top rail at 90 degrees and center the joint over a post. Use a rectangular splice plate with four H screws to secure this joint.
- Mitered joints with double corner posts: the top rail will extend past each of the corner posts and the actual miter joint will be unsupported. Remember to cut each top rail miter at 1/2 the total corner angle (i.e. if the corner angle is 90 degrees, cut each miter at 45 degrees). Add one splice plate to connect and stabilize the miter joint. Insert the plate before setting the two rail sections down on top of the post; use eight (8) H screws to secure the splice plate to the rails. Also, on each side of the miter cut, screw an H screw through the top rail flange and into the post face.

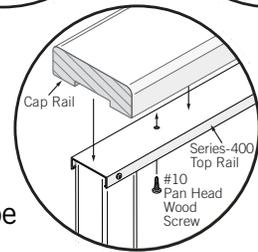


**5) Fasten Top Rails:** Secure the top rail to each post using two H screws (four screws for butt splices); screws should run through the top rail flange and into the post face. Attach screws to both the front and back of each post.

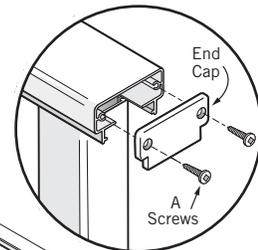


**5A) Cut & Attach Wood/Composite Cap Rails (for Series-400 Top Rails only):**

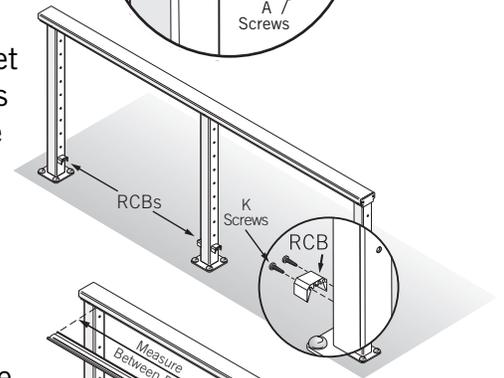
Cut the wood or composite cap rails to fit the top rails (cap rails supplied by customer). Drill holes through the top rail and use #10 Pan Head Wood Screws (screws supplied by customer) to securely attach the cap rail to the top rail. Position screws no more than 16" apart and select a screw length that will provide a minimum 5/8" penetration into the top rail. A wood or composite cap rail **must** be used with the Low-Profile Top Rail (Series-400) to achieve the necessary frame strength, and the top rails **must** be attached prior to installing the cables.



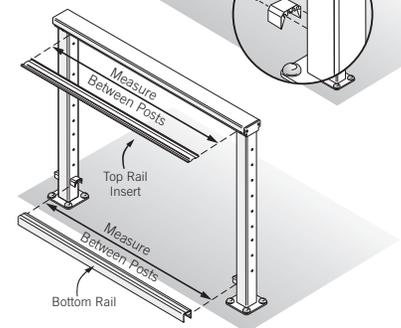
**6) Attach Decorative End Caps:** Attach the decorative end caps to all of the exposed top rail ends using two A screws. (If not using a bottom rail then skip to step #8)



**7) Attach RCBs:** If using a bottom rail, locate the rail connecting bracket (RCB) holes on each post (these are pre-drilled except on stair rail posts where all the holes must be drilled in the field). Attach the RCBs to the posts using two K screws. The RCBs should be mounted wings down for frames using cable systems.

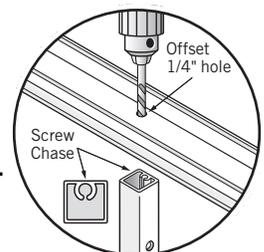


**8) Cut Bottom Rails:** Measure between each set of posts just above the RCBs. Cut the bottom rail for each section to  $+0/-1/16$ " of your corresponding measurement. Do not attach the bottom rails to the frame at this time.

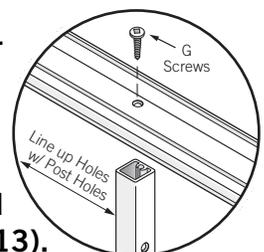


**9) Cut Top Rail Inserts:** Measure between each set of posts just below the top rail. Cut the top rail Insert for each section to  $+0/-1/16$ " of your corresponding measurement. Do not attach the top rail inserts to the top rail at this time.

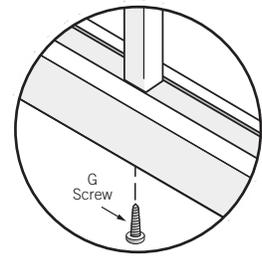
**10) Locate & Drill Picket Attachment Holes:** If your posts are spaced more than 3 feet apart, you will need at least one mid-span picket placed between each set of posts (quantity & spacing of mid-span pickets will depend on your frame design). Determine the position of the pickets to create equally spaced sections between posts. Drill 1/4" diameter holes in the top rail insert and bottom rails (if applicable) at all picket locations. Please note that each picket has a built-in screw chase hole located on the inside edge of the picket, **not the center** of the picket (see diagram); therefore you'll need to slightly offset the 1/4" holes to line up the screw chase hole.



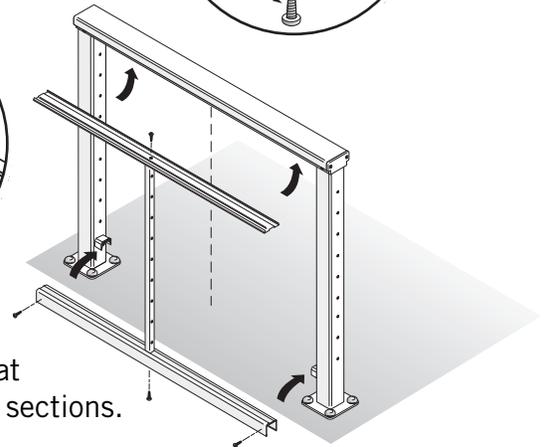
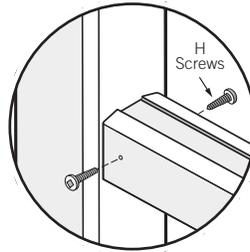
**11) Attach Pickets To Top Rail Insert:** Identify which end is the top end of each picket by comparing the spacing of the first cable hole in each picket to that of the first (top) pre-drilled cable hole on the posts. Use the G screws to attach the top end of the picket(s) to the top rail insert. (If not using a bottom rails then skip to step #13).



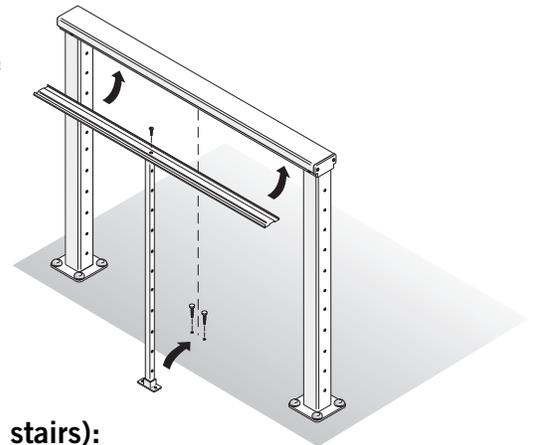
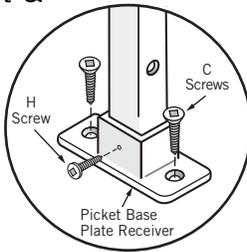
**12) Attach Pickets To Bottom Rail:** Using the G screws attach the bottom end of the picket(s) to the bottom rail. Assemble all sections using the same procedure.



**13) Install Assembled Picket Panels:** Lift the panels (assembled top infill insert, bottom rail & picket) into position on the frame by first setting the bottom rail on top of the RCBs and then tilting the panel vertically into position. The top of the cap infill channel should just clear the bottom of the top rail. At this point you should be able to lift the entire section up by the top infill insert and snap it up into place inside the top rail. Use two H screws to fasten the bottom rail to each RCB. Pre-drill these holes with a 9/64" drill bit before attaching screws, as the wings of the RCBs tend to flex when pushed by a pan head screw. Also, be sure to slightly offset opposing screw holes so that the screws don't hit one another inside the RCB. Complete this for all sections. You are now ready to install the cables. **(Skip to step #14).**

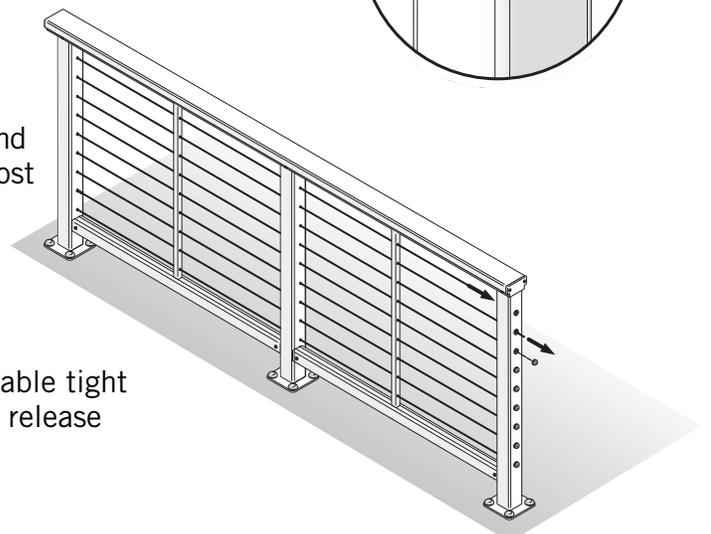
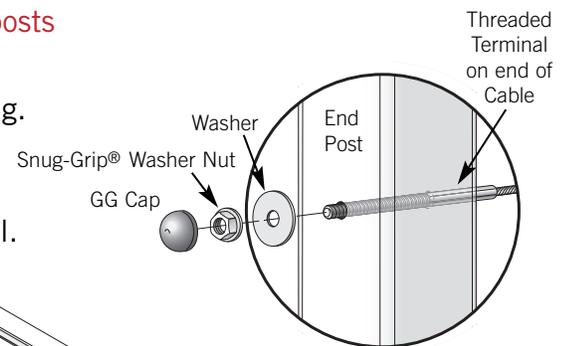


**14) Install Assembled Picket Panels Using Picket Base Plate Receiver:** Loosely slip a picket base plate receiver onto the bottom of each of the pickets. Slide the entire panel (top rail insert, picket & picket base plate receiver) into position under the top rail then lift and snap the top rail insert into the bottom of the top rail. Line-up and plumb each picket and secure the picket base plate receiver to the deck surface using two C screws. An H screw can be used to center and secure the picket to the picket base. You are now ready to install the cables.



**15) Install the CableRail Cables (applies to horizontal cables only—not stairs):**

- **Coastal Applications:** Make sure all grommets are inserted into posts before threading cable.
- Identify the proper length cable assemblies for each run of railing.
- To start, pass the Threaded Terminals through the Threaded Terminal end post (9/32" holes) and attach a nylon flat washer and Snug-Grip® washer nut onto the end of each terminal.
- Spin the washer nut so that approximately 1/4" of the thread is exposed on the end.
- Using a lacing needle (optional tool item), lace the free end of the cable through all of the intermediate posts and pickets and continue through the Quick-Connect®SS end post (3/8" holes) at the opposite end.
- Slip a nylon flat washer and Quick-Connect®SS fitting on to the cable end, and slide them into the post until they rest against the post face.
- Holding the Quick-Connect®SS with one hand, pull the cable tight with the other. The fitting automatically locks when you release the cable.

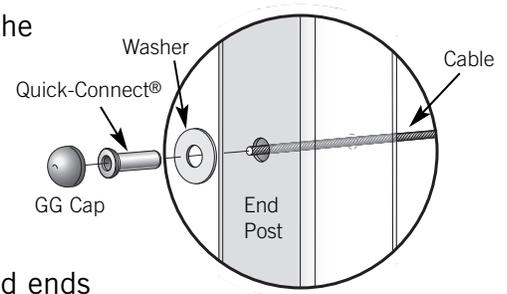


- Using a 7/16" wrench, tighten the Snug-Grip® washer nuts until the cables are taut. Hold the shaft of the Threaded Terminal with Vise-grip® pliers while tightening.

- Saw off the excess threads as close to the washer-nut as possible, and touch up cut ends with an electric grinder.

- Using cable cutters or a cut-off disk, trim the excess cable from behind the Quick-Connect®SS fitting, and grind flush any exposed ends with an electric grinder.

- Snap-on the colored or stainless steel end caps over the lip of the exposed Quick-Connect®SS fittings and Snug-Grip® washer nuts. You're done.



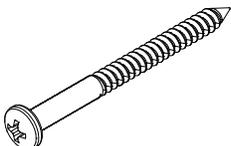
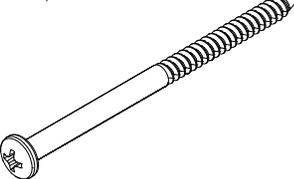
Maintenance: Any scratches on the railing can be refinished with touch-up paint. Frames and cables can be cleaned with warm soapy water and a sponge or soft cloth.

# HARDWARE FOR DESIGNRAIL® INSTALLATIONS

## FLAT HEAD SCREWS

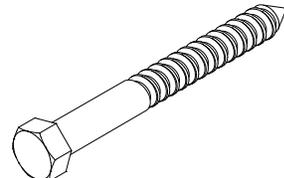
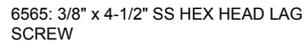
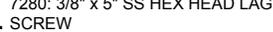
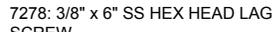
- A.**  7294: #8 x 1" SS SCREW, FLAT HEAD, PHILLIPS DRIVE
- B.**  7289: #10 x 3/4" SS SCREW, FLAT HEAD, SQUARE DRIVE
- C.**  7273: #12 x 1" SS SCREW, FLAT HEAD, SQUARE DRIVE
- D.**  7265: #14 x 2" STEEL MAGNA-COAT SCREW, TYPE F, FLAT HEAD, TORX DRIVE

## HEX HEAD SCREWS

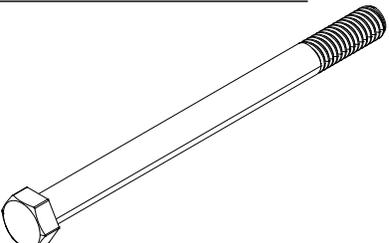
- E.**  7017: #14 x 1" SS SELF-TAPPING SCREW, HEX WASHER HEAD
- F.**  8024: 5/16" x 1" SS SELF-TAPPING SCREW, HEX WASHER HEAD
- G.**  7272: #10 x 3/4" SS SCREW, PAN HEAD, SQUARE DRIVE
- H.**  7270: #8 x 3/4" SS SELF-TAPPING SCREW, PAN HEAD, SQUARE DRIVE
- I.**  7285: #8 x 1" SS SELF-TAPPING SCREW, PAN HEAD, SQUARE DRIVE
- J.**  7271: #10 x 1-1/2" SS SELF-TAPPING SCREW, PAN HEAD, SQUARE DRIVE
- K.**  7267: #10 x 1-3/4" SS SELF-TAPPING SCREW, PAN HEAD, SQUARE DRIVE
- L.**  7355: #10 x 2" SS SELF-TAPPING SCREW, PAN HEAD, SQUARE DRIVE
- M.**  7282: #14 x 3" SS SCREW, PAN HEAD, #3 PHILLIPS DRIVE
- N.**  7966: #14 x 4" SS SCREW, PAN HEAD, #3 PHILLIPS DRIVE

## PAN HEAD SCREWS

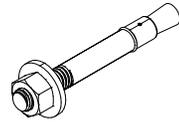
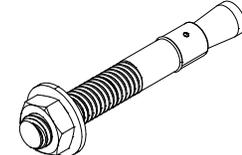
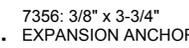
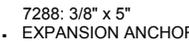
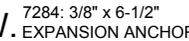
## SS HEX HEAD LAG SCREWS

- O.**  7277: 3/8" x 3-1/2" SS HEX HEAD LAG SCREW
- P.**  6565: 3/8" x 4-1/2" SS HEX HEAD LAG SCREW
- Q.**  7280: 3/8" x 5" SS HEX HEAD LAG SCREW
- R.**  7278: 3/8" x 6" SS HEX HEAD LAG SCREW

## SS HEX HEAD BOLTS

- X.**  8017: 3/8"-16 x 5" SS HEX HEAD BOLT
- Y.**  8016: 3/8"-16 x 6" SS HEX HEAD BOLT
- Z.**  8004: 3/8"-16 x 7" SS HEX HEAD BOLT

## EXPANSION ANCHORS

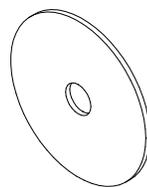
- S.**  7276: 1/4" x 2-1/4" EXPANSION ANCHOR
- T.**  8015: 3/8" x 3" EXPANSION ANCHOR
- U.**  7356: 3/8" x 3-3/4" EXPANSION ANCHOR
- V.**  7288: 3/8" x 5" EXPANSION ANCHOR
- W.**  7284: 3/8" x 6-1/2" EXPANSION ANCHOR

## WASHERS

- CC.**  7070: 1/4" ID RETAINING WASHER, FOR SMALL VINYL CAPS
- DD.**  7062: 1/4" ID RETAINING WASHER, FOR LARGE VINYL CAPS
- EE.**  7063: 3/8" ID RETAINING WASHER, FOR LARGE VINYL CAPS
- FF.**  7064: 9/16" ID RETAINING WASHER, FOR LARGE VINYL CAPS

## CAPS

- GG.**  PART # VARIES: END CAP (SMALL)
- HH.**  PART # VARIES: VINYL CAP (LARGE)

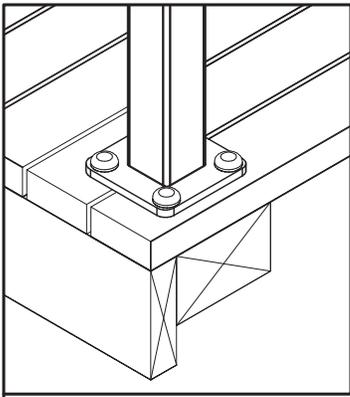
- AA.**  7224: 3/8" ID, 2" OD FENDER WASHER
- BB.**  7225: 3/8"-16, NYLON INSERT LOCKNUT, HEX HEAD

DESIGN·RAIL® Reference Drawing:  
STANDARD ASSEMBLY HARDWARE

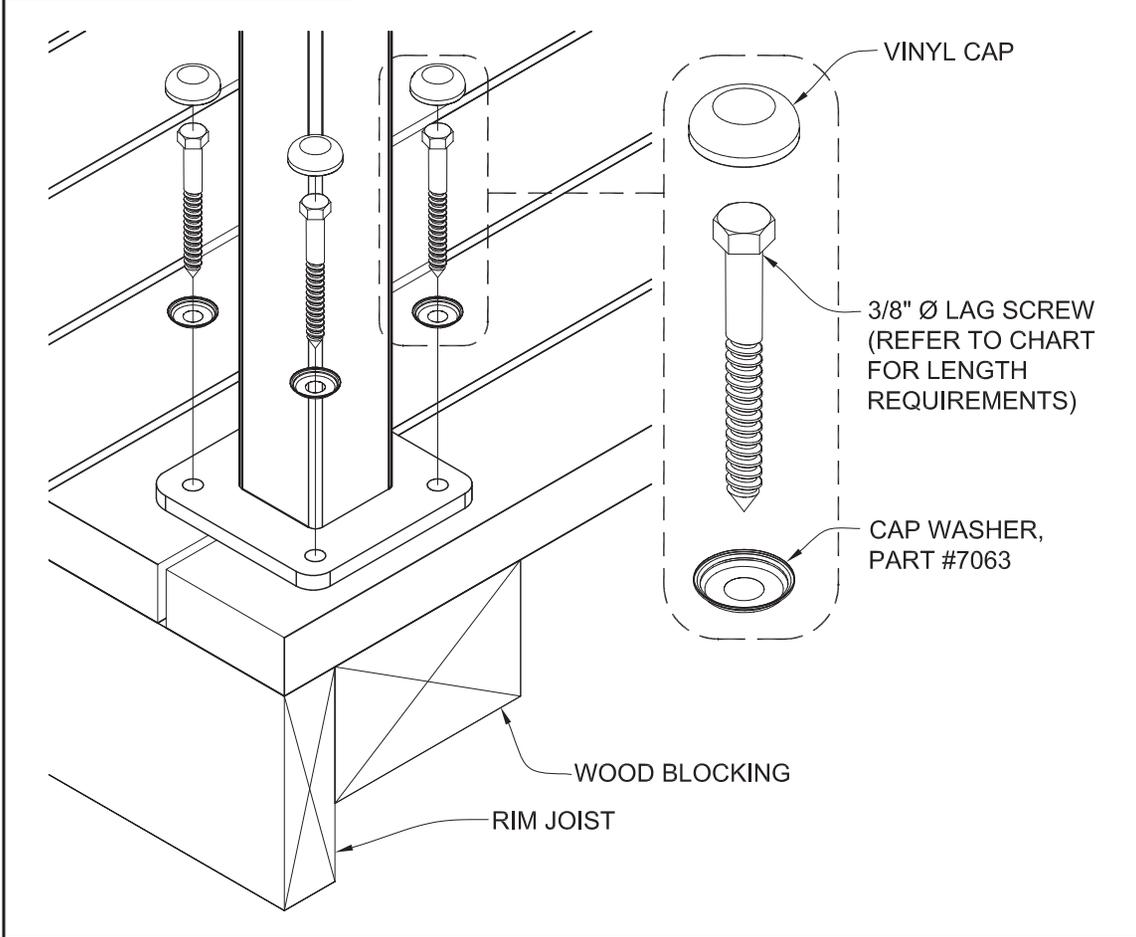
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**NOTES:**  
 MINIMUM LAG PENETRATION DIMENSION, REFER TO REQUIREMENTS FOR LAG SCREW PENETRATION INTO SOLID LUMBER. LUMBER ASSUMED TO HAVE A MINIMUM 0.43 SPECIFIC GRAVITY (ie: HEM-FIR).  
 WOOD DECK BOARDS MUST BE PROPERLY ATTACHED TO STRUCTURE TO ACCOUNT FOR A PORTION OF THE LAG SCREW PENETRATION REQUIREMENT.  
 IF USING COMPOSITE MATERIAL AS DECKING, DECK BOARDS WILL NOT CONTRIBUTE TO PENETRATION REQUIREMENT. LAG SCREW LENGTH AND BLOCKING MUST BE ADJUSTED TO ACCOUNT FOR ADDITIONAL LENGTH, AS NECESSARY.



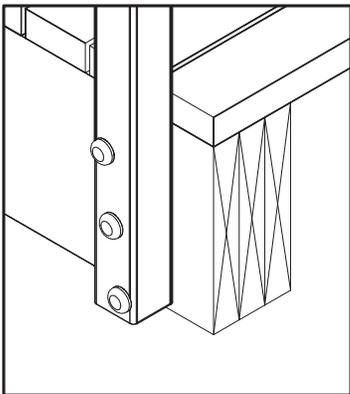
		INTERIOR	EXTERIOR
RESIDENTIAL (MAX 6' OC)	36"	<p>3" MIN. LAG PENETRATION            3-1/2" LAG SCREWS,            PART #7277</p>	<p>4" MIN. LAG PENETRATION            4-1/2" LAG SCREWS,            PART #6565</p>
	38"-42"	<p>3-1/2" MIN. LAG PENETRATION            4-1/2" LAG SCREWS,            PART #6565</p>	<p>4-1/2" MIN. LAG PENETRATION            5" LAG SCREWS,            PART #7280</p>
COMMERCIAL (MAX 5' OC)	42"	<p>4-1/2" MIN. LAG PENETRATION            5" LAG SCREWS,            PART #7280</p>	<p>5-5/8" MIN. LAG PENETRATION            6" LAG SCREWS,            PART #7278</p>

**DESIGN·RAIL®** Reference Drawing:  
**BASE MOUNT TO WOOD - LAG SCREWS**

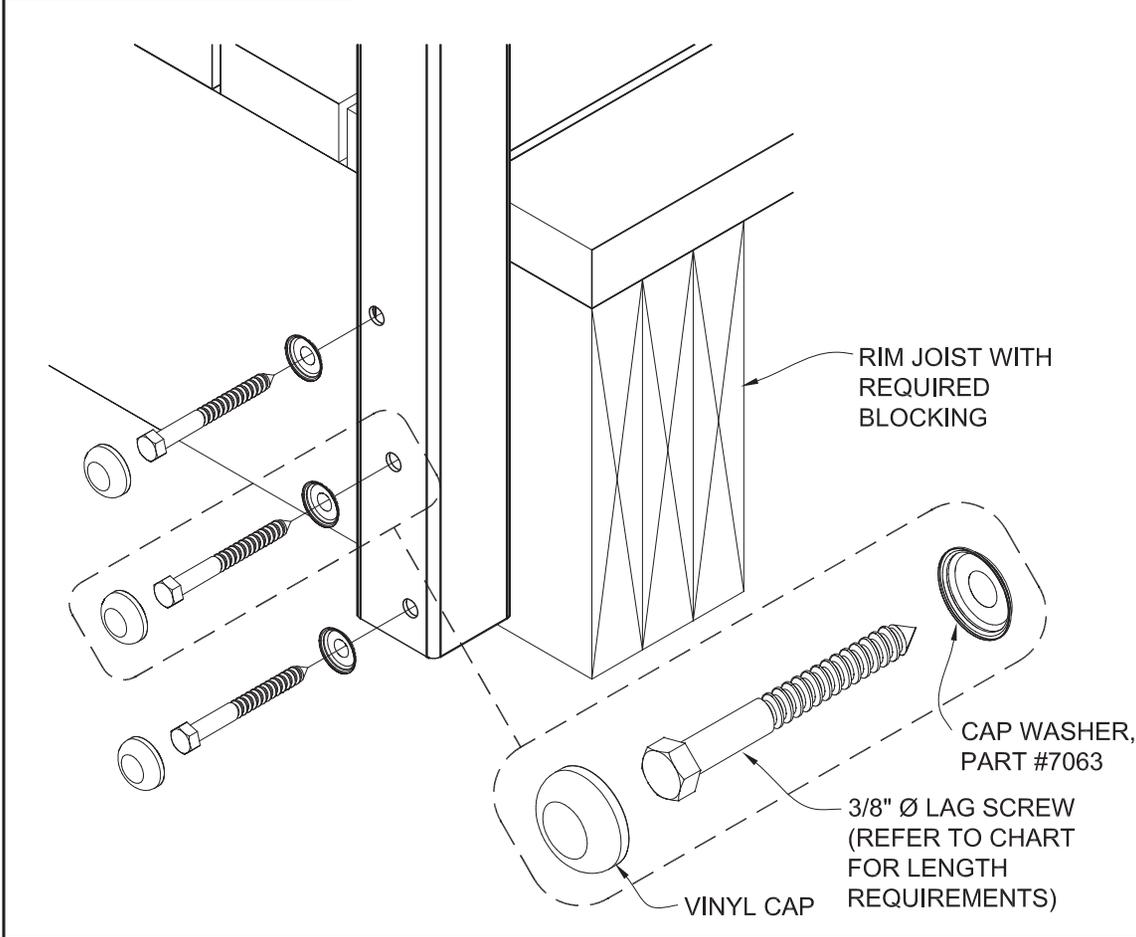
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 RIM JOIST AND BLOCKING MUST BE PROPERLY ATTACHED TO STRUCTURE TO RESIST TRANSFERRED LOADS FROM POSTS.  
 IF USING COMPOSITE MATERIAL AS FASCIA BOARD, FASCIA THICKNESS WILL NOT CONTRIBUTE TO PENETRATION REQUIREMENT. LAG SCREW LENGTH AND BLOCKING MUST BE ADJUSTED TO ACCOUNT FOR ADDITIONAL LENGTH, AS NECESSARY.  
 BOLT PATTERN MAY VARY DEPENDING ON JOIST HEIGHT AND PROJECT TYPE.



		INTERIOR	EXTERIOR
RESIDENTIAL (MAX 6' OC)	36"	<p>2-3/4" MIN. LAG PENETRATION 6" LAG SCREWS, PART #7278</p>	<p>3-5/8" MIN. LAG PENETRATION 6-1/2" LAG SCREWS, PART #7209</p>
	38"-42"	<p>3" MIN. LAG PENETRATION 6" LAG SCREWS, PART #7278</p>	<p>4" MIN. LAG PENETRATION 7" LAG SCREWS, PART #7248</p>
COMMERCIAL (MAX 4' OC)	42"	<p>3" MIN. LAG PENETRATION 6" LAG SCREWS, PART #7278</p>	<p>4" MIN. LAG PENETRATION 7" LAG SCREWS, PART #7248</p>

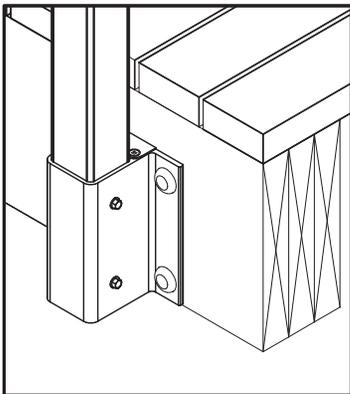
**DESIGN·RAIL®** Reference Drawing:  
**FASCIA MOUNT TO WOOD - LAG SCREWS**

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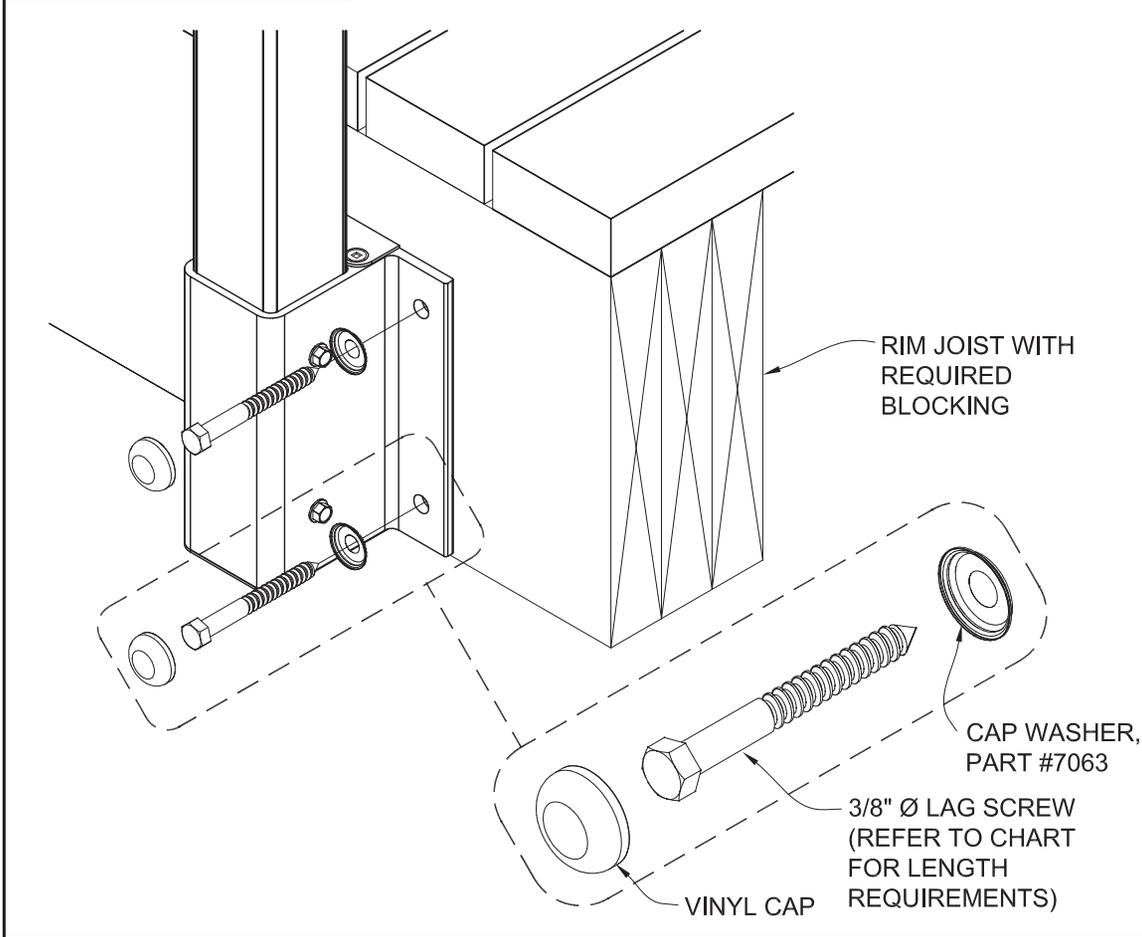


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RIM JOIST AND BLOCKING MUST BE PROPERLY ATTACHED TO STRUCTURE TO RESIST TRANSFERRED LOADS FROM POSTS.

IF USING COMPOSITE MATERIAL AS FASCIA BOARD, FASCIA THICKNESS WILL NOT CONTRIBUTE TO PENETRATION REQUIREMENT. LAG SCREW LENGTH AND BLOCKING MUST BE ADJUSTED TO ACCOUNT FOR ADDITIONAL LENGTH, AS NECESSARY.

BOLT PATTERN MAY VARY DEPENDING ON JOIST HEIGHT AND PROJECT TYPE.



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	38"-42"	<p>3-1/4" MIN. LAG PENETRATION            3-1/2" LAG SCREWS,            PART #7277</p>	<p>4-1/4" MIN. LAG PENETRATION            4-1/2" LAG SCREWS,            PART #6565</p>
COMMERCIAL (MAX 5' OC)	42"	<p>4" MIN. LAG PENETRATION            4-1/2" LAG SCREWS,            PART #6565</p>	<p>5" MIN. LAG PENETRATION            6" LAG SCREWS,            PART #7278</p>

**DESIGN·RAIL®** Reference Drawing:  
**FASCIA BRACKET MOUNT TO WOOD - LAG SCREWS**

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