

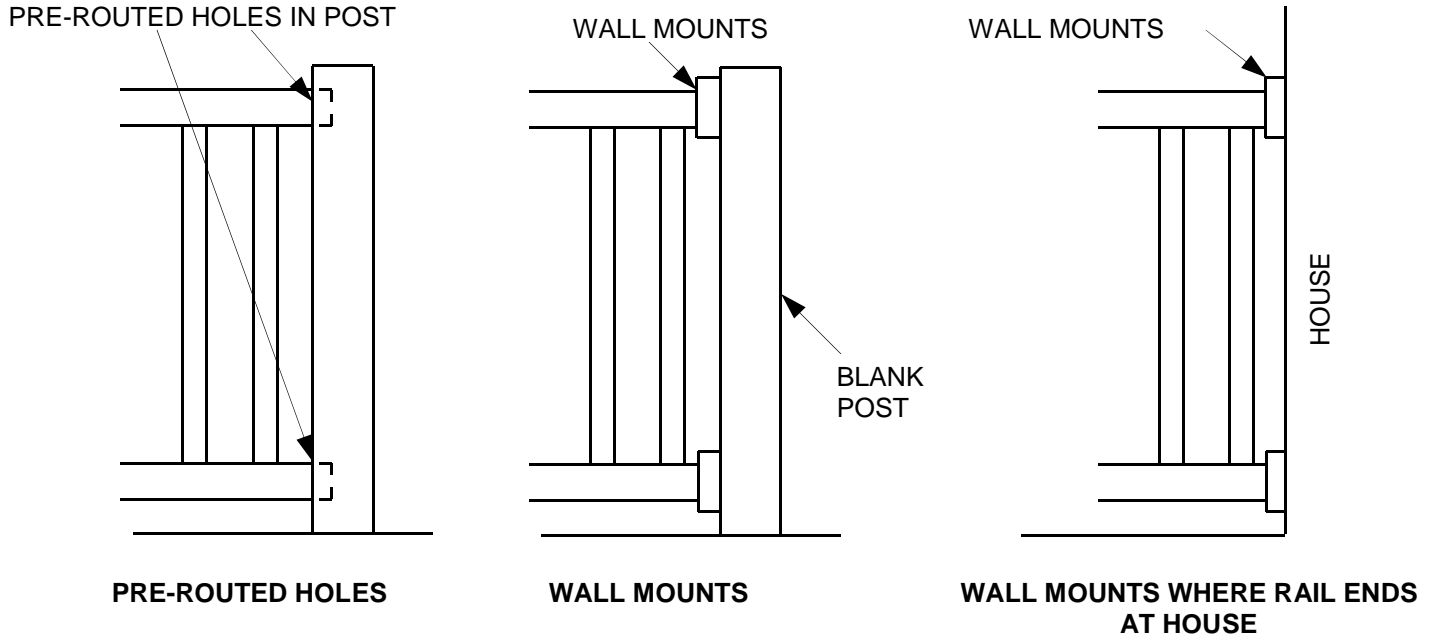


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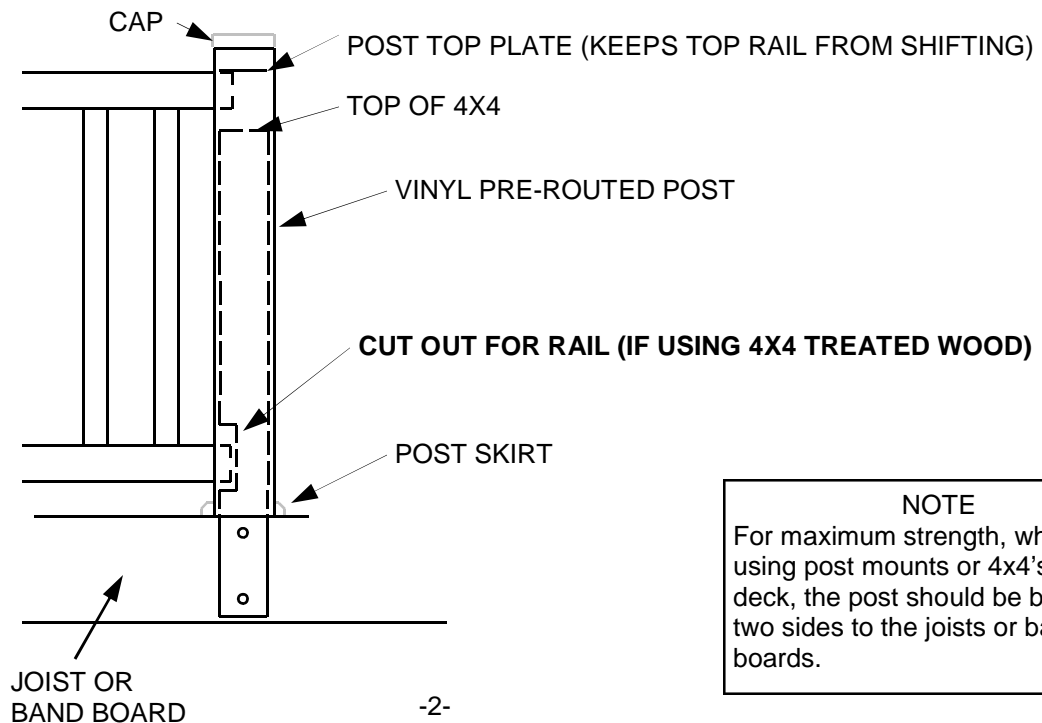
## WALL MOUNTS VS PRE-ROUTED HOLES

There are two basic styles of mounting the rail to the posts, either wall mounts or pre-routed holes in the posts. Wall mounts are often used for connecting the rails to the house even when the rest of the job consists of pre-routed posts. Wall mounts are sometimes called collars or flanges. When stair rail is used, they almost always use stair mounts with blank posts instead of pre-routed holes in the posts. Stair mounts are like wall mounts except for being longer and having an elongated hole to allow the rail to come off at an angle.

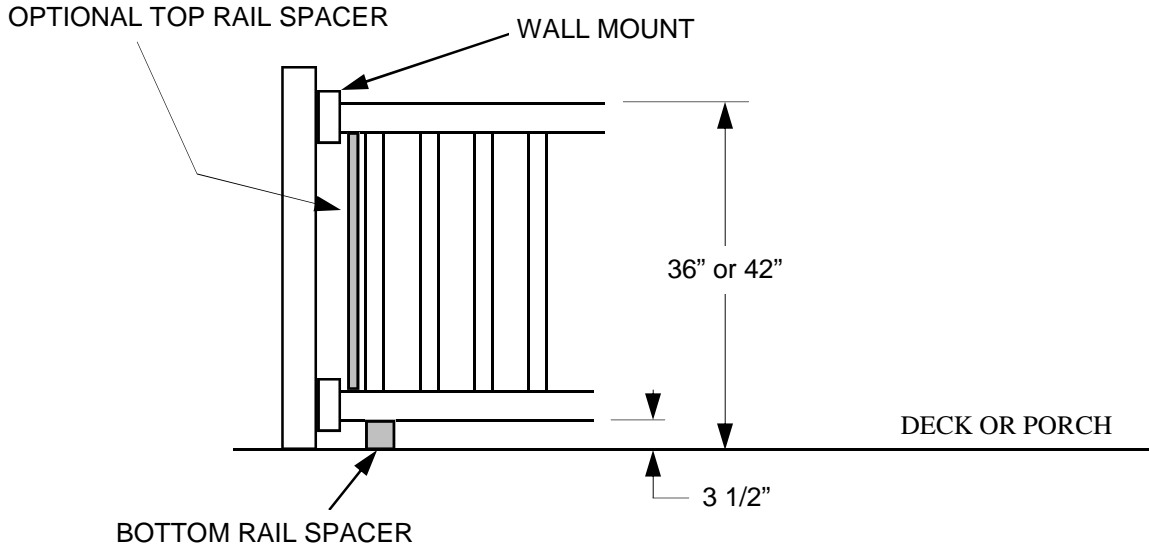


## POST MOUNTS VS 4X4'S

Most installations use our patented steel post mounts, either the standard (for wood decks) or concrete mounts for concrete porches. However, a few use treated 4x4's instead of post mounts on wood decks. When using 4x4's and pre-routed posts, you will have to cut away some of the 4x4 where the rail slides into the post as shown. Standard and concrete post mounts are channel shaped plus they already have clearance holes for the rails.



## SPACING FOR RAIL HEIGHT

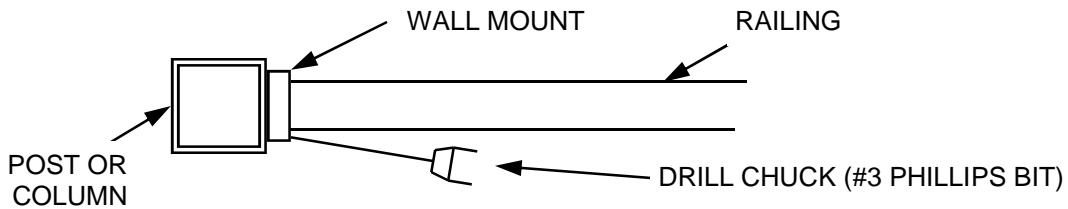


Bottom of bottom rail is 3 1/2" from deck surface. Simply use a couple of chunks of 2x4 or 4x4 to hold it up.

Top of top rail is normally 36" or 42" from deck surface. To be totally accurate, you might want to cut spacers to go from top of bottom rail (after mounting) to bottom of top rail.

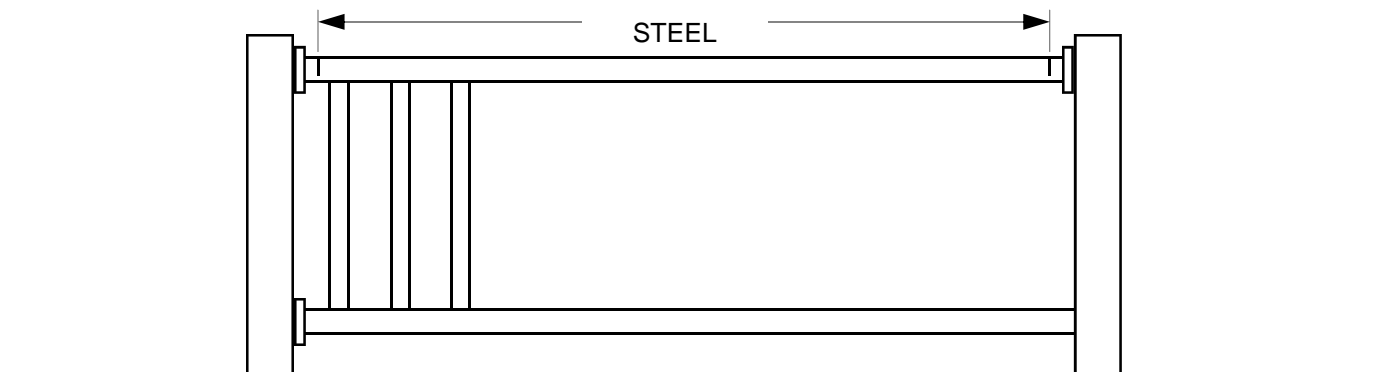
## LONG DRILL BIT & PHILLIPS FOR ATTACHING WALL MOUNTS

**IMPORTANT**



When attaching wall mounts, it is best to predrill with an extra long bit (1/8" dia. or less) and then use a long #3 phillips bit to screw in. If you use a shorter drill bit or phillips bit, it is easy to mar the corner of the rail with your drill chuck.

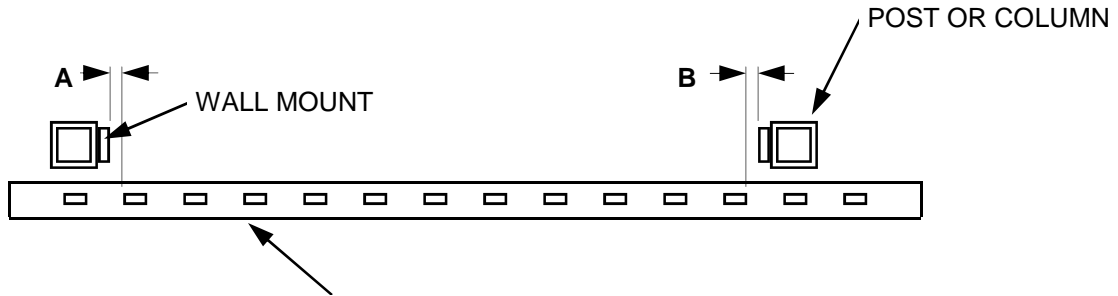
## CUTTING REINFORCEMENT STEEL



The steel is almost always cut shorter than the rails. We usually cut it 2-3" less than the inside dimension between the posts. On longer rail such as over 10', the maximum length of the steel is 10'.

## CUTTING THE VINYL TOP/BOTTOM RAILS

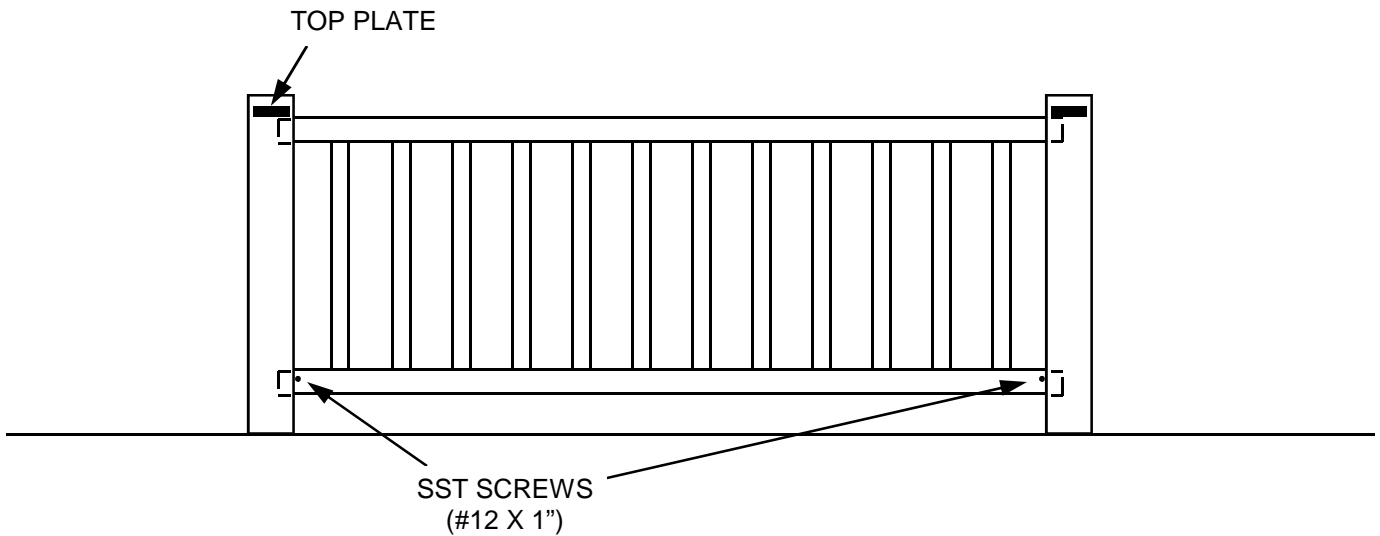
The distance from the posts to the first picket should be the same. If you are using wall mounts, be sure to take their thickness into consideration when marking rails for cutting.



PRE ROUNDED RAILING - Move back and forth until distance **A** and **B** are the same.

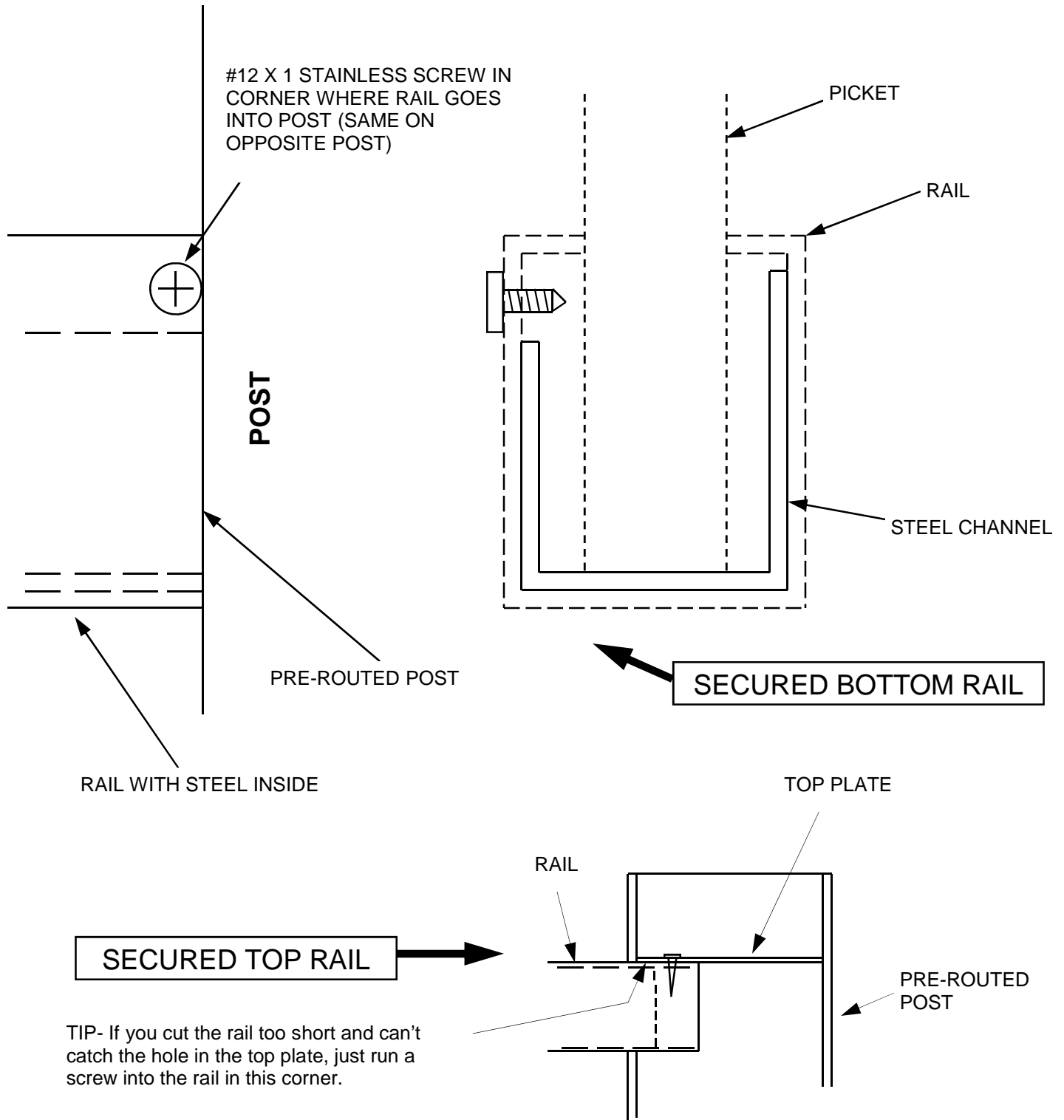
## TOP PLATES AND BOTTOM SCREWS TO PREVENT SHIFTING

When using pre-routed posts, the top rail is held in place with top plates that fit inside the posts. The bottom rail is held in place with stainless steel screws in the corners. See steel placement note



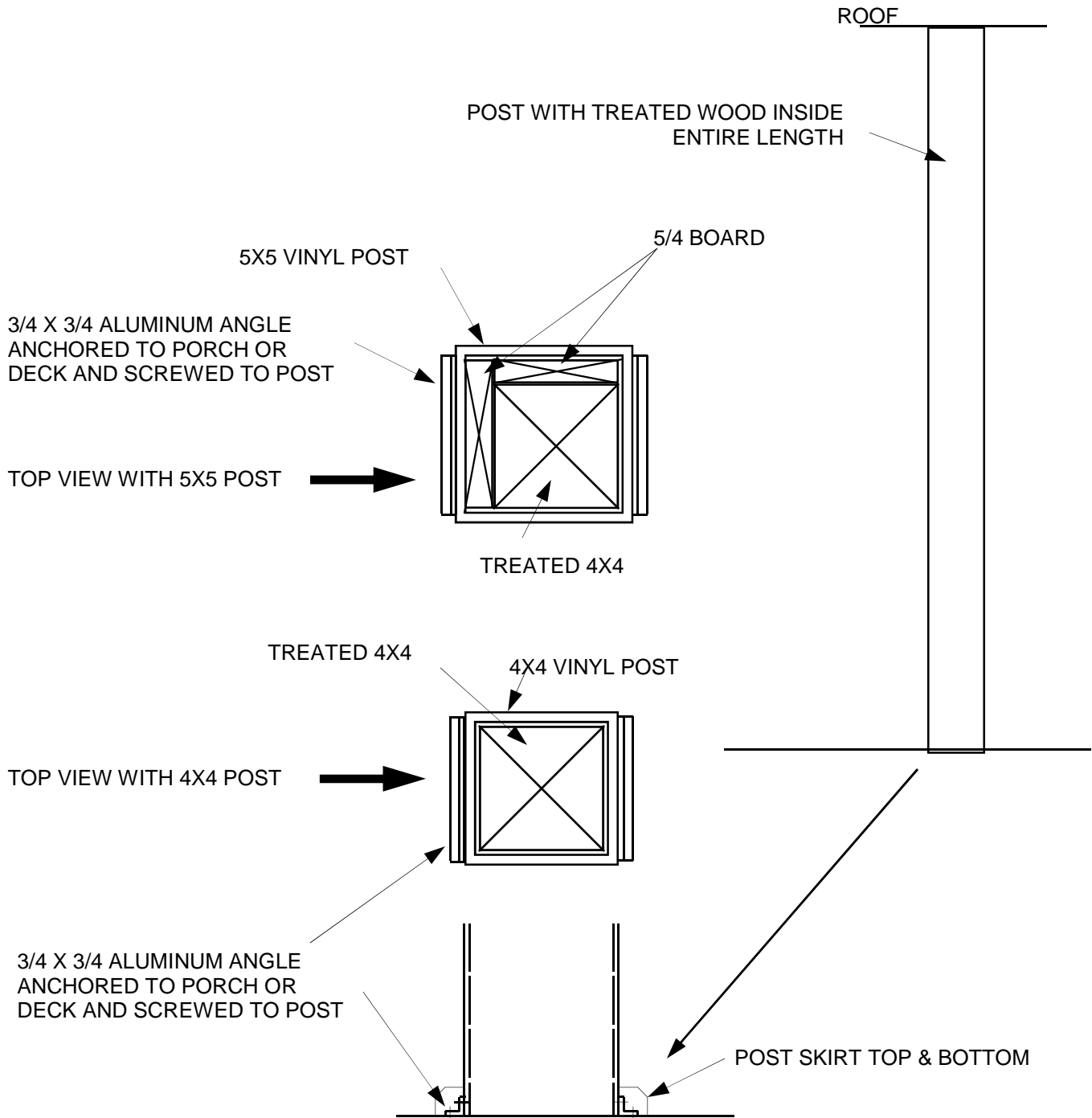
## SECURING TOP AND BOTTOM RAILS TO PREVENT SHIFTING

When using **pre-routed posts**, the top rail is held in place with "post top plates" placed inside the post. The top plate has drilled holes to run a screw through once the rail is set in position. The bottom rail is typically held in place with screws in the corners where the rails slide into the posts. **By sliding the steel into the rail so that the short leg is on the side where the screw will go, you avoid running into the steel with the screw.**



## LOAD BEARING SQUARE COLUMNS

Vinyl posts are available in up to 20' lengths. When using as load bearing columns (such as with porch roofs), treated wood is used inside of the vinyl posts. A treated 4x4 will slide comfortably inside a vinyl 4x4. When using 5x5 vinyl posts, a treated 4x4 as well as two pieces of 5/4 board are used. When mounting a 4x4, we usually use 3/4 x 3/4 aluminum angle to secure the top and bottom. The angle and screw heads are then covered with a post skirt.



## LOAD BEARING DECORATIVE TURNED COLUMNS

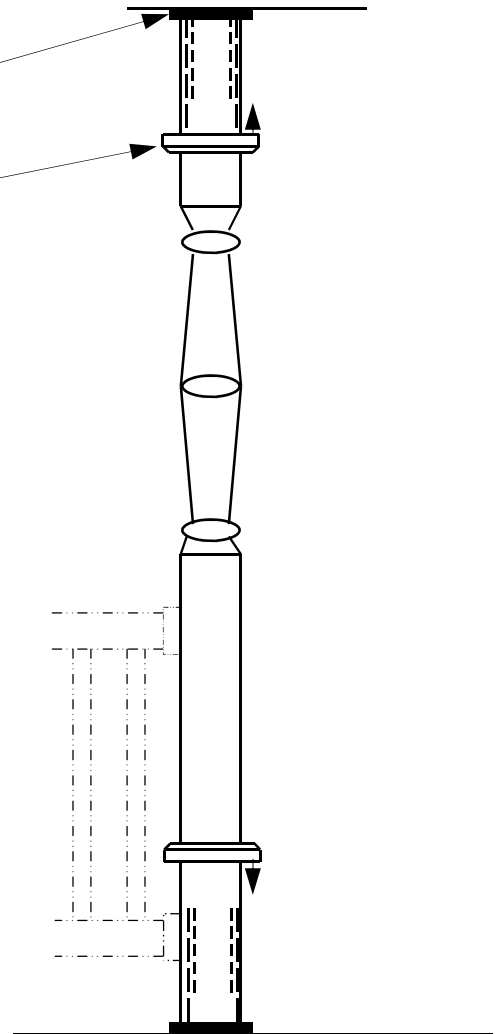
Vinyl decorative porch columns are 104" long. They are designed to work with 36" or 42" railing so normally the top is cut rather than the bottom. The mounting plates on the top and bottom are used for mounting. After mounting, the plates are covered with post skirts. The aluminum tube inside provides the load bearing capability.

### TYPICAL MOUNTING SEQUENCE (ON CONCRETE PORCH):

1. Measure from porch/deck to bottom of overhang.
2. Cut aluminum tube and vinyl post to approximately 3/8" less (thickness of mounting plates).
3. Slide entire assembly into location and mark hole locations after squaring mounting plate and plumbing post.
4. Remove post and add anchors in concrete porch.
5. Replace entire assembly and anchor top and bottom mounting plates (don't forget skirts).
6. Slide bottom skirt down.
7. Slide top skirt up and secure with stainless or aluminum screws.

MOUNTING PLATE

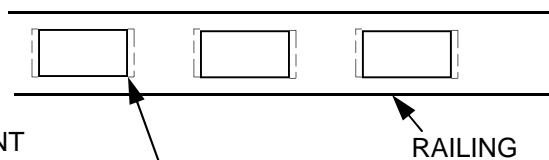
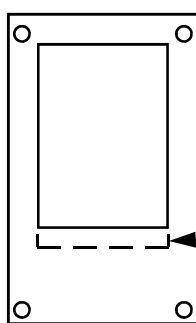
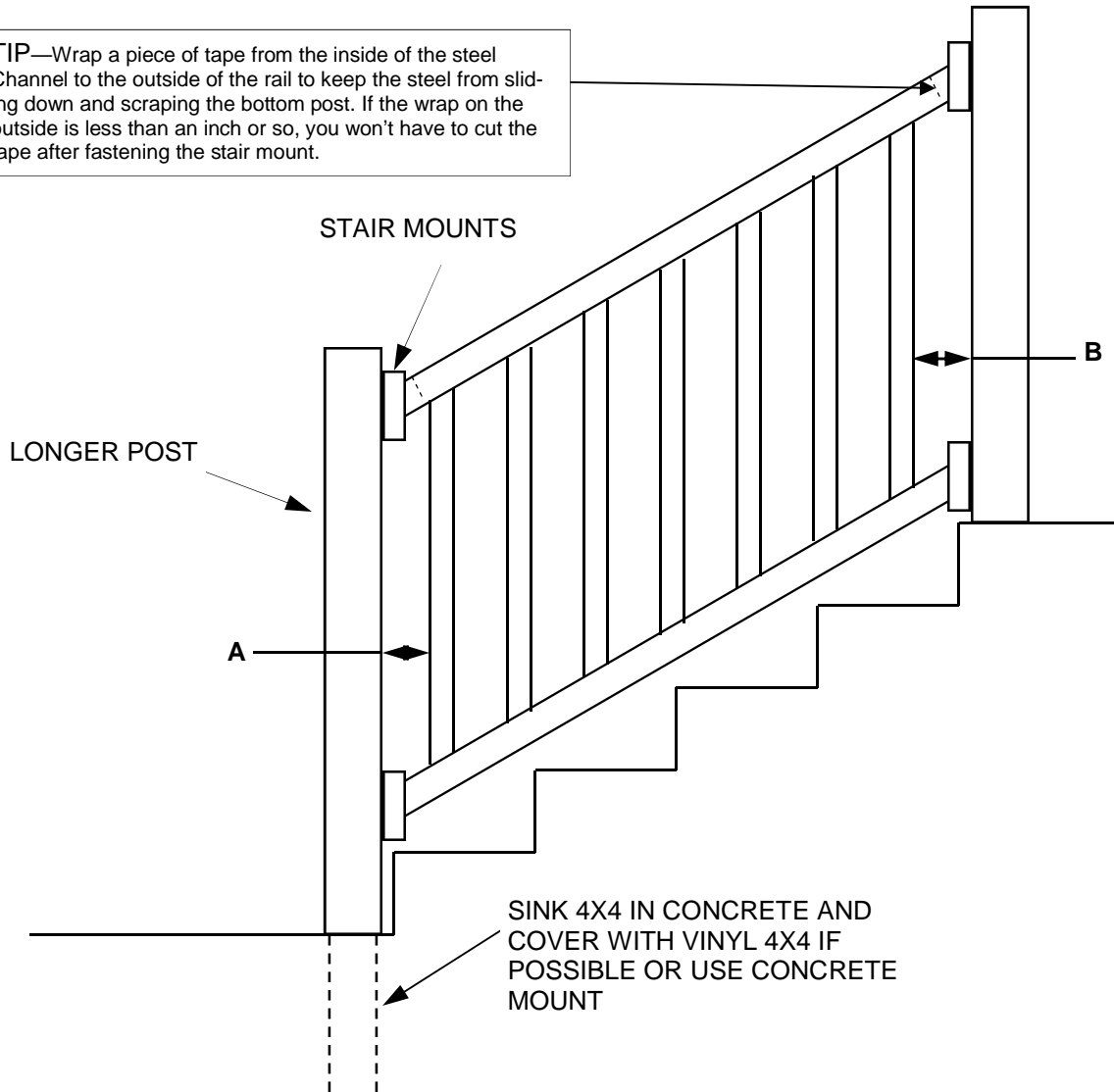
POST SKIRT



## STAIR RAILING

Stair railing comes with elongated holes in the top/bottom rails to allow the pickets to come out at an angle. The rails allow for a 6/12 or 7/12 rise/run (30 degrees). Due to the post placement, the bottom post has to be longer than the top post. The best way to mark your rail for cutting is to clamp it in place and confirm that the pickets are plumb, dimension A & B are about the same and you have allowed for the thickness of the stair mounts. The stair mounts also have elongated holes for allowing the rails to come out at an angle. On steeper grades, we use a Dremmel tool with 1/2" drum sander attachment to further elongate rail and stair mount holes.

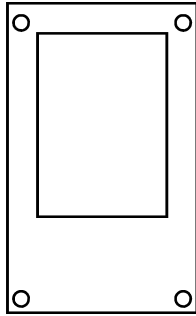
**TIP**—Wrap a piece of tape from the inside of the steel Channel to the outside of the rail to keep the steel from sliding down and scraping the bottom post. If the wrap on the outside is less than an inch or so, you won't have to cut the tape after fastening the stair mount.



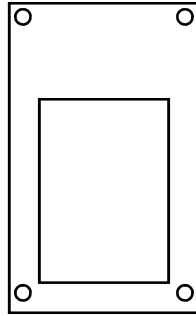
IF YOUR ANGLE IS GREATER THAN 30°, YOU WILL HAVE TO ENLARGE THESE HOLES. A 1/2" DRUM SANDING ATTACHMENT ON A DREMME TOOL WORKS WELL FOR THE STAIR MOUNT AND A 1/4" WORKS WELL FOR THE RAILING.

## STAIR RAILING (CONTINUED)

If you are “close but not quite” to a 7/12 rise/run with your stair mounts but they don’t quite fit, sometimes simply flipping the top stair mounts 180° will make the rail fit better. This arrangement is used most often.

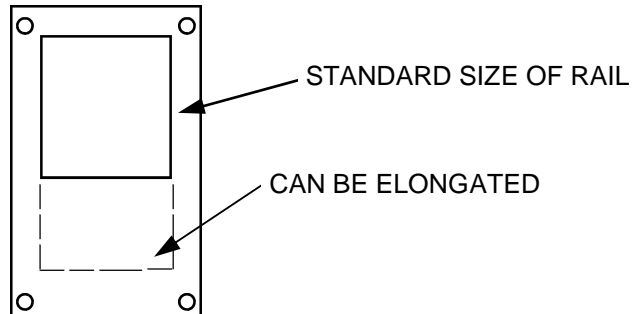


ON BOTTOM POST



ON TOP POST

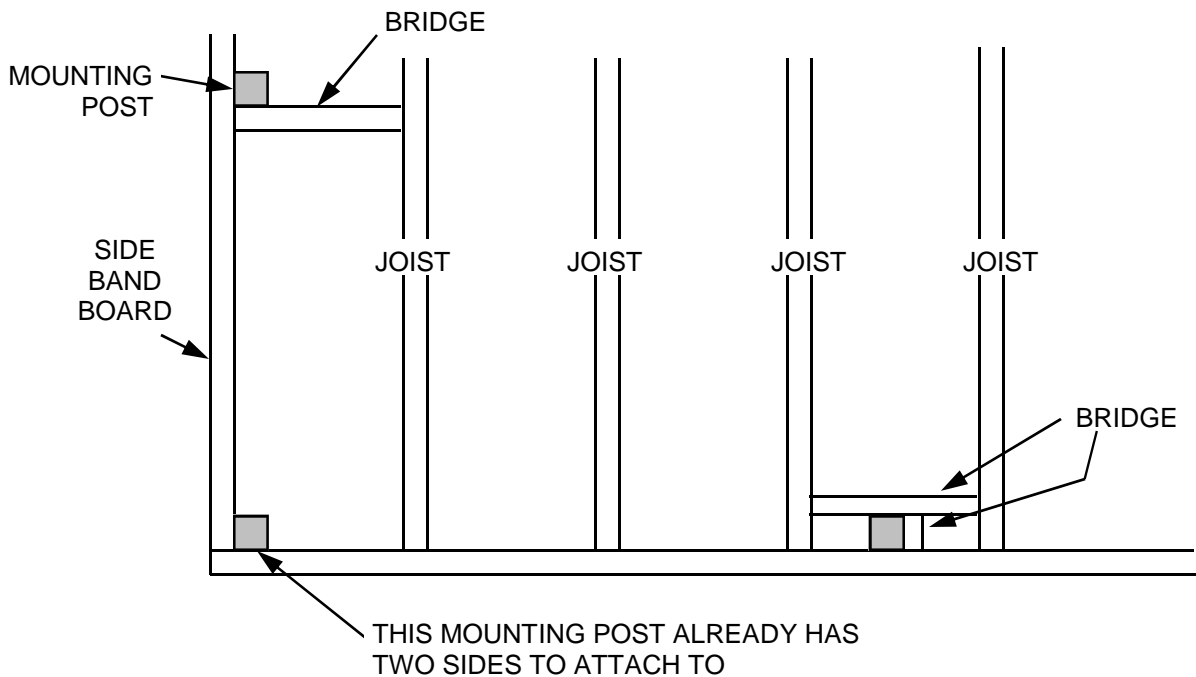
Some applications have a very light angle where the rails would be “sloppy” in the stair mounts and the pickets would be sloppy in the rails. Under these conditions, you start with standard rails and elongate the holes in the rails. Custom stair mounts are available that come with standard rail holes initially but are designed to allow for some elongation with a Dremmel tool, router or file.



**CUSTOM STAIR MOUNT**

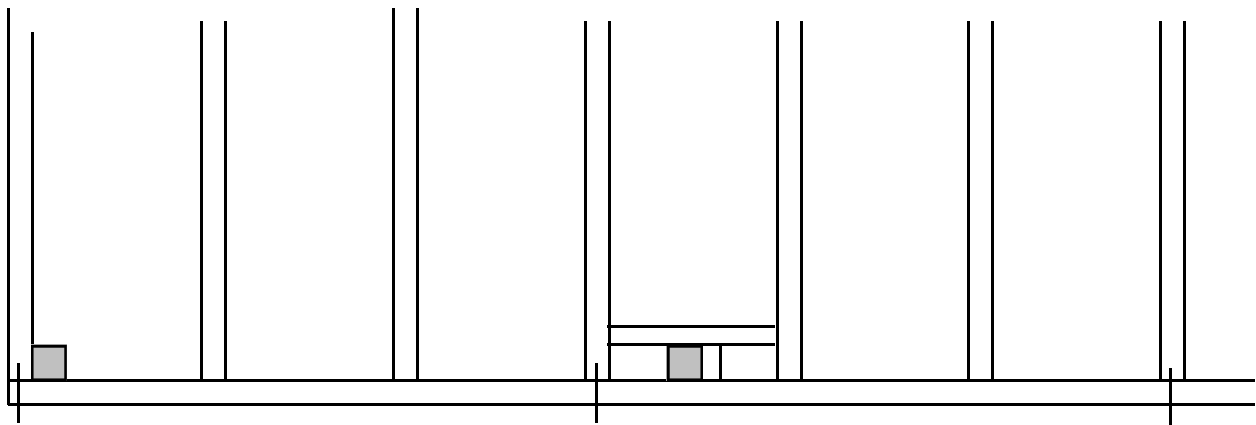
## EXTRA SUPPORT FOR MOUNTING POSTS

When mounting rail posts, additional strength is attained by making sure the posts are attached on at least two sides. When using steel post mounts, holes are provided on all three sides. If the post mount does not fall next to a joist or band board, bridging is added to provide an additional side to attach to.



## ADDITIONAL BAND BOARD SUPPORT

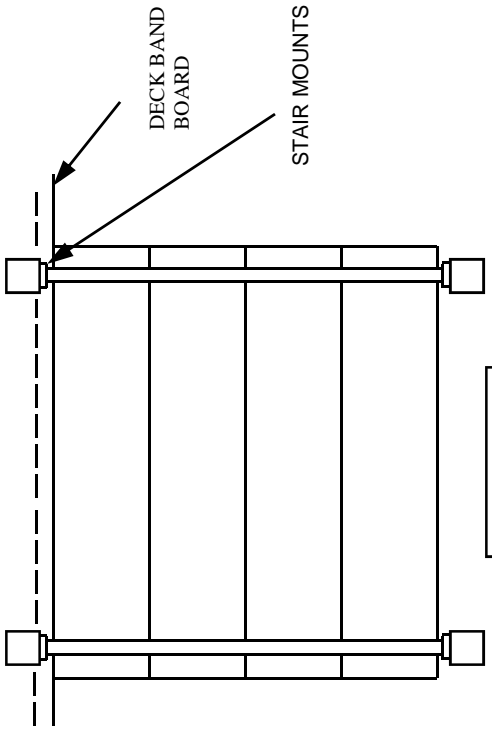
Remember that your railing is only as strong as the wood you're attaching it to. Where the outside band board (and the side bands) are attached to the joists, we usually use lag screws at least every third joist in addition to (or in place of) any deck screws. If you will later be adding trim over your band boards, be sure to counterbore the holes so the bolt heads are below the band surface.



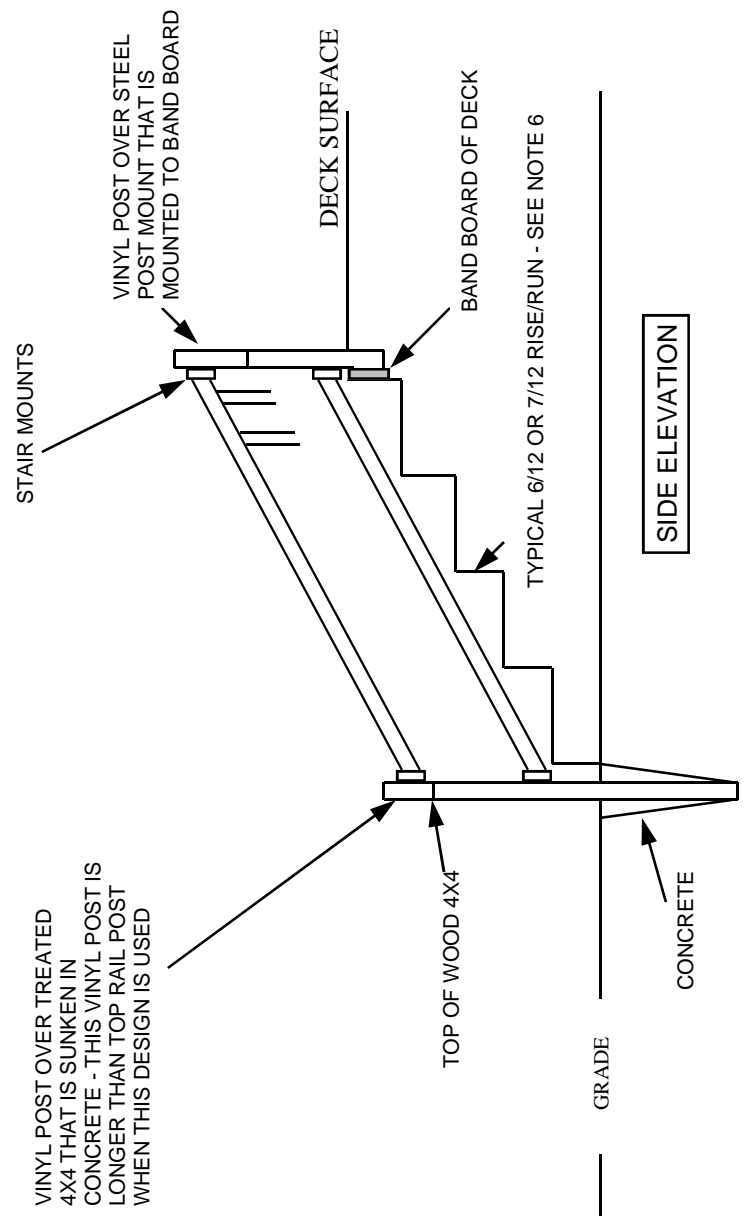
# TYPICAL STAIR RAIL MOUNTING

**NOTES:**

1. DRAWING ASSUMES A WOOD DECK. A CONCRETE PORCH WOULD USE A CONCRETE MOUNT.
2. BOTH REGULAR POST MOUNTS (WOOD MOUNTING) AND CONCRETE MOUNTS ARE 12 GAGE GALVANIZED STEEL SHAPED LIKE A CHANNEL WITH SLOTS IN SIDES ONLY FOR RAILS.
3. STAINLESS SCREW HEADS TEND TO STRIP EASIER THAN STANDARD. PILOT DRILL WITH A LONG 1/8" BIT AND USE A LONG PHILLIPS HEAD BIT TO TIGHTEN TO AVOID MARRING RAIL WITH DRILL CHUCK.
4. IF THE SOLID SIDE OF THE POST MOUNT IS FACING THE STAIRS, RATHER THAN SCREWING INTO THE STEEL, IT MAY BE EASIER TO:
  - A. MARK THE HOLES FOR THE STAIR MOUNTS WITH YOUR 1/8" BIT
  - B. REMOVE THE VINYL SLEEVE
  - C. DRILL LARGER HOLES THROUGH THE STEEL AT THE WALL MOUNT LOCATIONS
  - D. PUT A PIECE OF WOOD INSIDE THE CHANNEL TO ACCEPT THE SCREWS
  - E. SLIDE THE VINYL BACK ON
  - F. ATTACH THE STAIR MOUNTS
5. THE TOP OF A REGULAR POST MOUNT IS 20" ABOVE THE DECK SURFACE.
6. STANDARD STAIR RAIL SECTIONS AND STAIR MOUNTS ARE DESIGNED FOR A 6/12 OR 7/12 A MORE SEVERE ANGLE MAY REQUIRE ENLARGING SLOTS IN STAIR MOUNTS AND RAILS WITH A DREMEL TOOL AND SANDING DRUM ATTACHMENT.

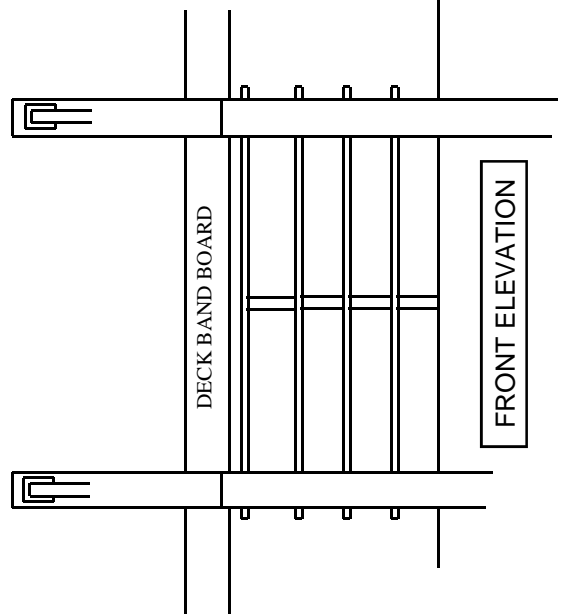


PLAN VIEW



VINYL POST OVER TREATED 4X4 THAT IS SUNKEN IN CONCRETE - THIS VINYL POST IS LONGER THAN TOP RAIL POST WHEN THIS DESIGN IS USED

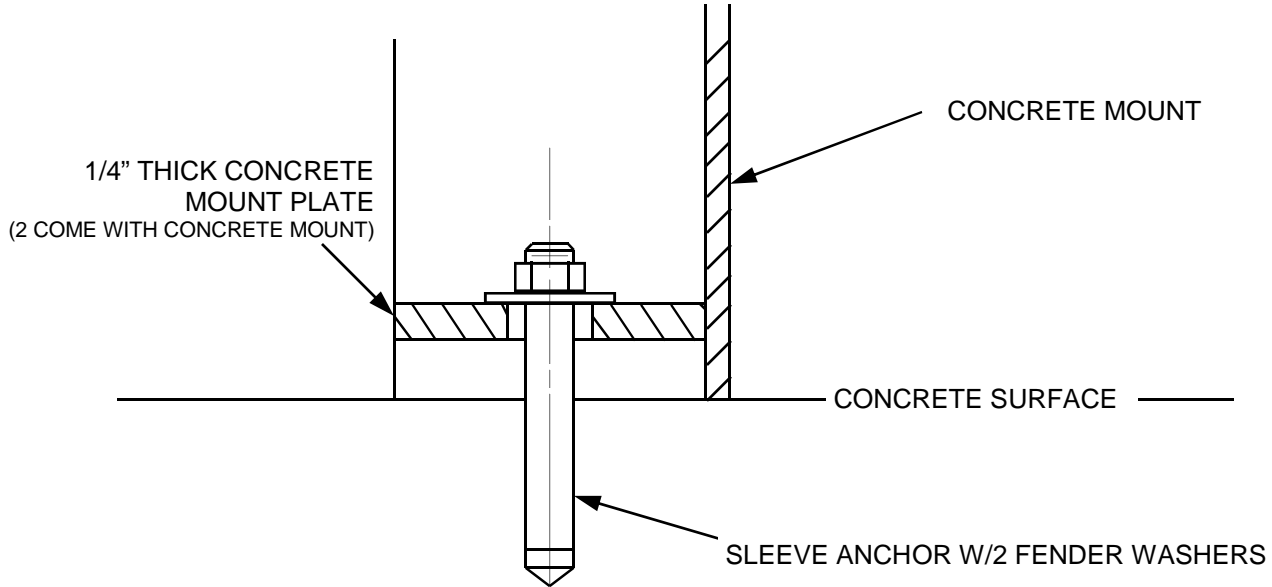
SIDE ELEVATION



FRONT ELEVATION

## ATTACHING CONCRETE MOUNTS

Concrete mounts are usually attached with a 1/2" x 3" Red Head sleeve anchor. It is best to replace the standard washer on the sleeve anchor with a 3/8 fender washer. You will need to drill a 1/2" hole in the concrete at least 2 1/2" deep (a hammer drill helps a lot). Drilling concrete is a lot easier if you start with a small bit and work your way up to the 1/2" bit. You can use about anything to shim the bottom of the post to make it plumb. We usually just use scraps of thinner vinyl as shim material.

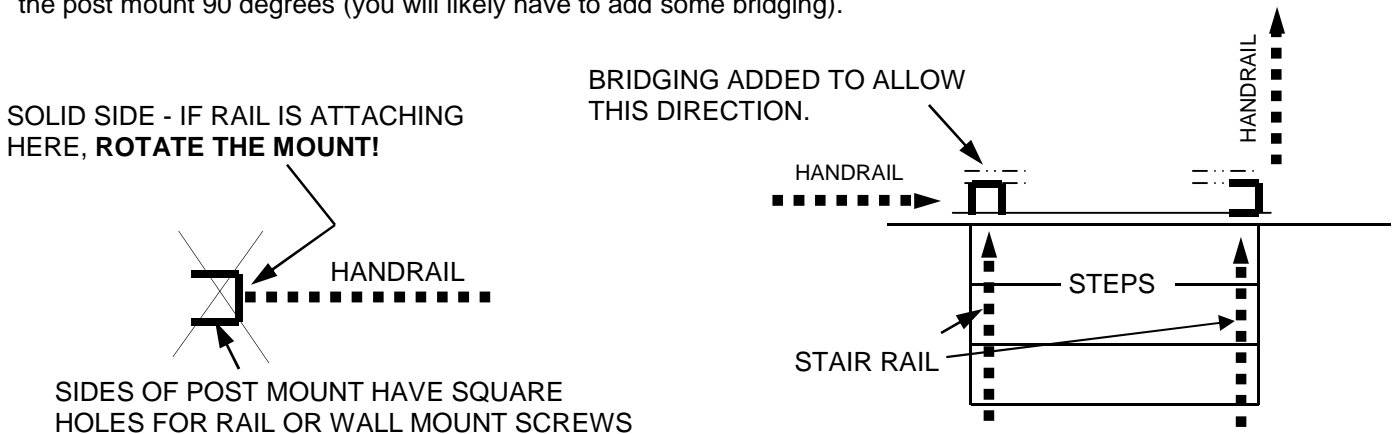


## ATTACHING POST CAPS

Square caps seldom need to be secured to the post since they fit down inside the post. Other styles such as New England, Dome and Gothic may be held with either adhesive caulk or our double sided vinyl tape.

## PLANNING DIRECTION OF YOUR POST MOUNTS

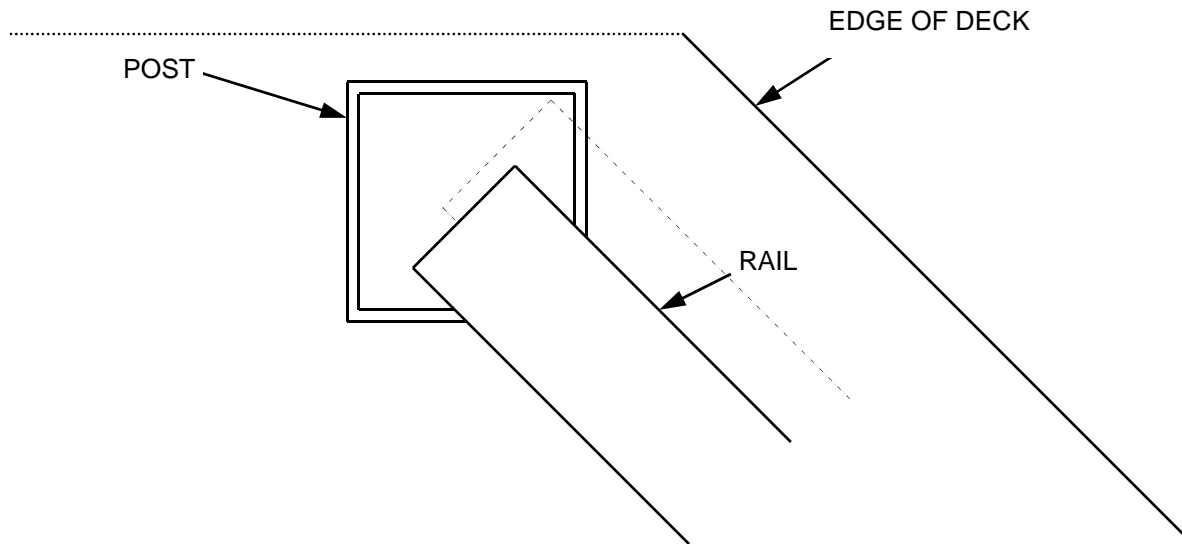
Since post mounts are channel shaped, you can assure a smooth installation by planning where the open side is and where the closed side is. (It is very difficult to drive stainless steel screws through the galvanized steel post mounts.) For instance, when dealing with stair rail, try to avoid having the solid side facing the stair rail by rotating the post mount 90 degrees (you will likely have to add some bridging).



TOO LATE? Slide the vinyl post on to the post mount, accurately locate your stair mount, drill thru the vinyl post to mark the hole locations on the post mount, remove the vinyl post, drill a larger hole (1/4") thru the steel post mount, cut some small chunks of wood for the screws to bite in to inside the post mount.

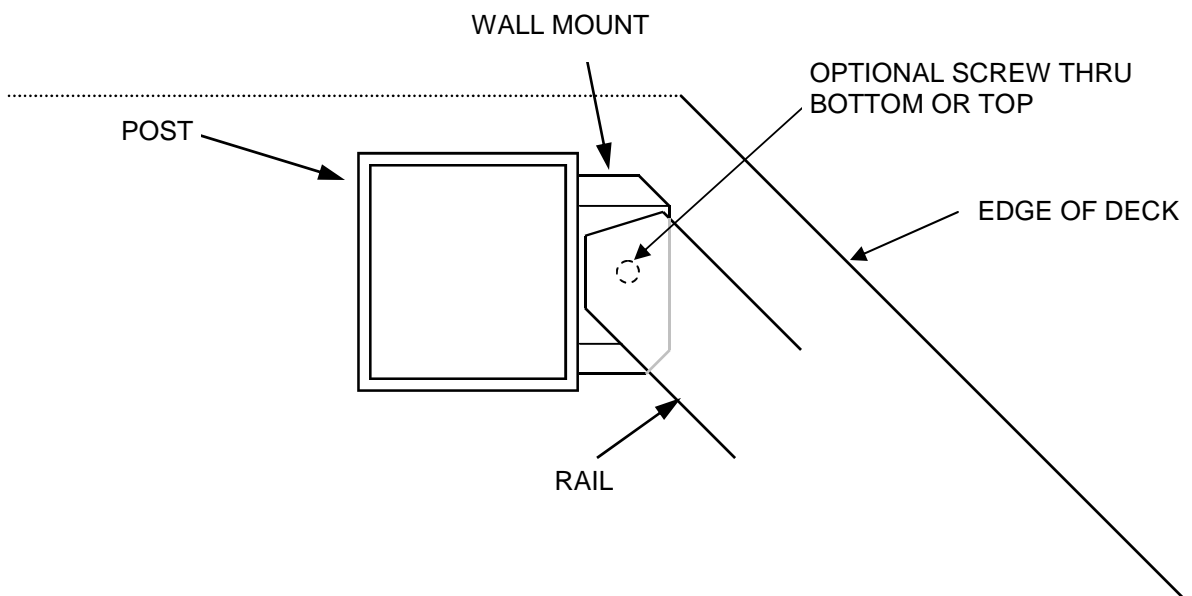
## MOUNTING RAILS ON AN ANGLE - ROUTED POSTS

When rails run at a special angle, you will need to cut your holes into the post. The exact location of the holes will vary depending on the angle and the location of the rail in relation to the edge of the deck. Lay the rail on top of the posts and mark the preferred location. Typically the rough hole is cut with a jig saw or Roto-zip and then finished with a Dremmel tool with a 1/2" drum sander attachment.



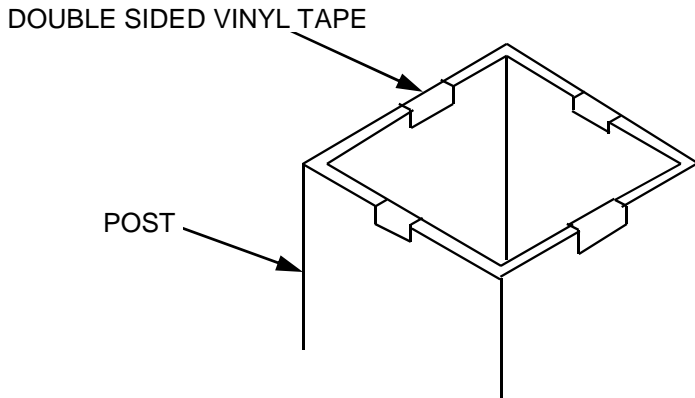
## MOUNTING RAILS ON AN ANGLE - WALL MOUNTS

When using wall mounts on an angle, we offer 45° and 22 1/2° mounts. However, in order to make the rail fit properly, you should request a template to mark the ends of the railing.



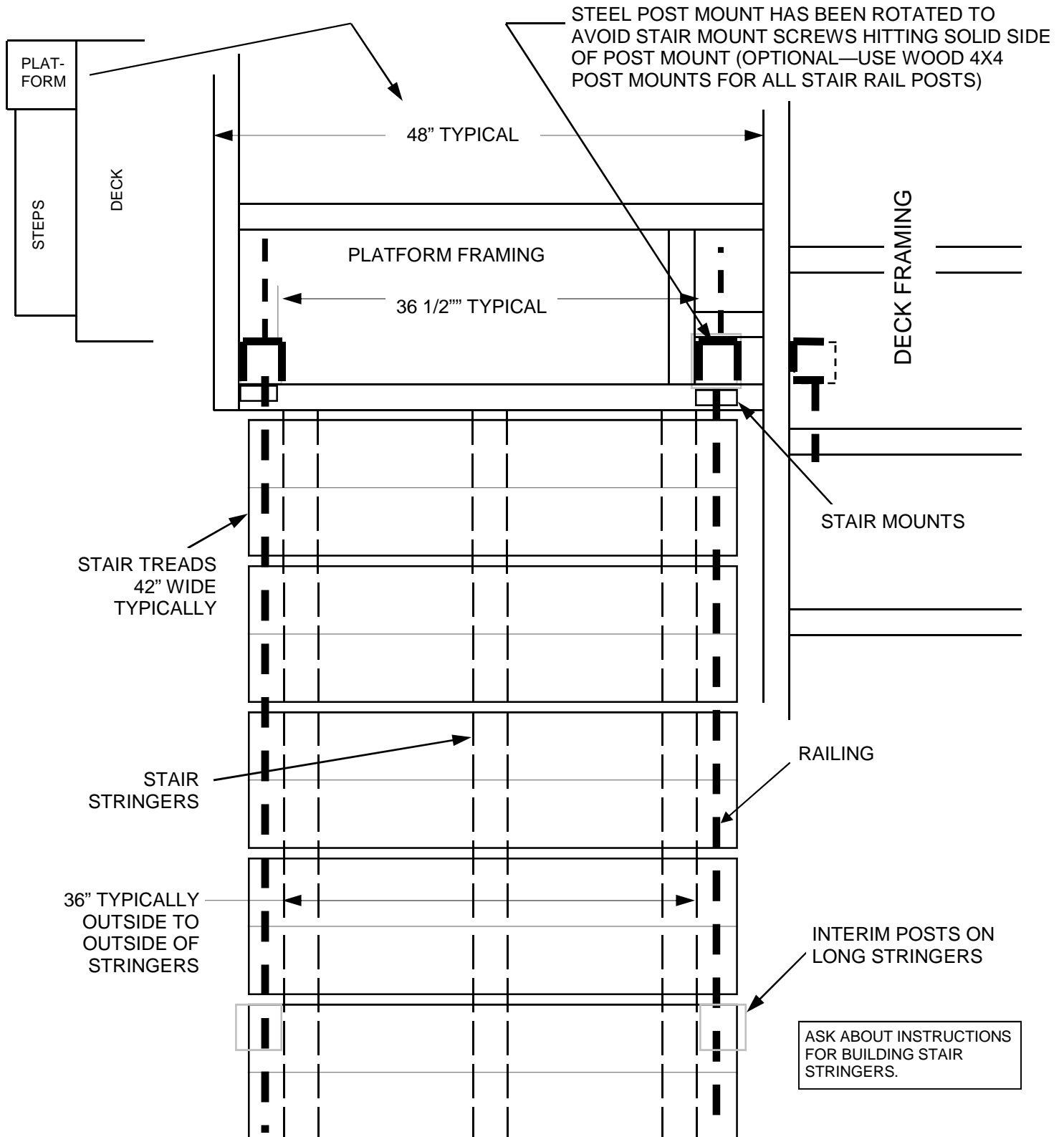
## ATTACHING VINYL POST CAPS

There are currently four styles of post caps, square, New England, dome and gothic. The base of square caps slide down inside the post and generally require no additional fastening. The other three slide over the outside of the post and can be slipped off relatively easily. They are usually attached with our double sided vinyl tape. Simply cut four 1" long pieces and wrap them over the edge of the post and then push the cap on. This method has been found to be very effective.



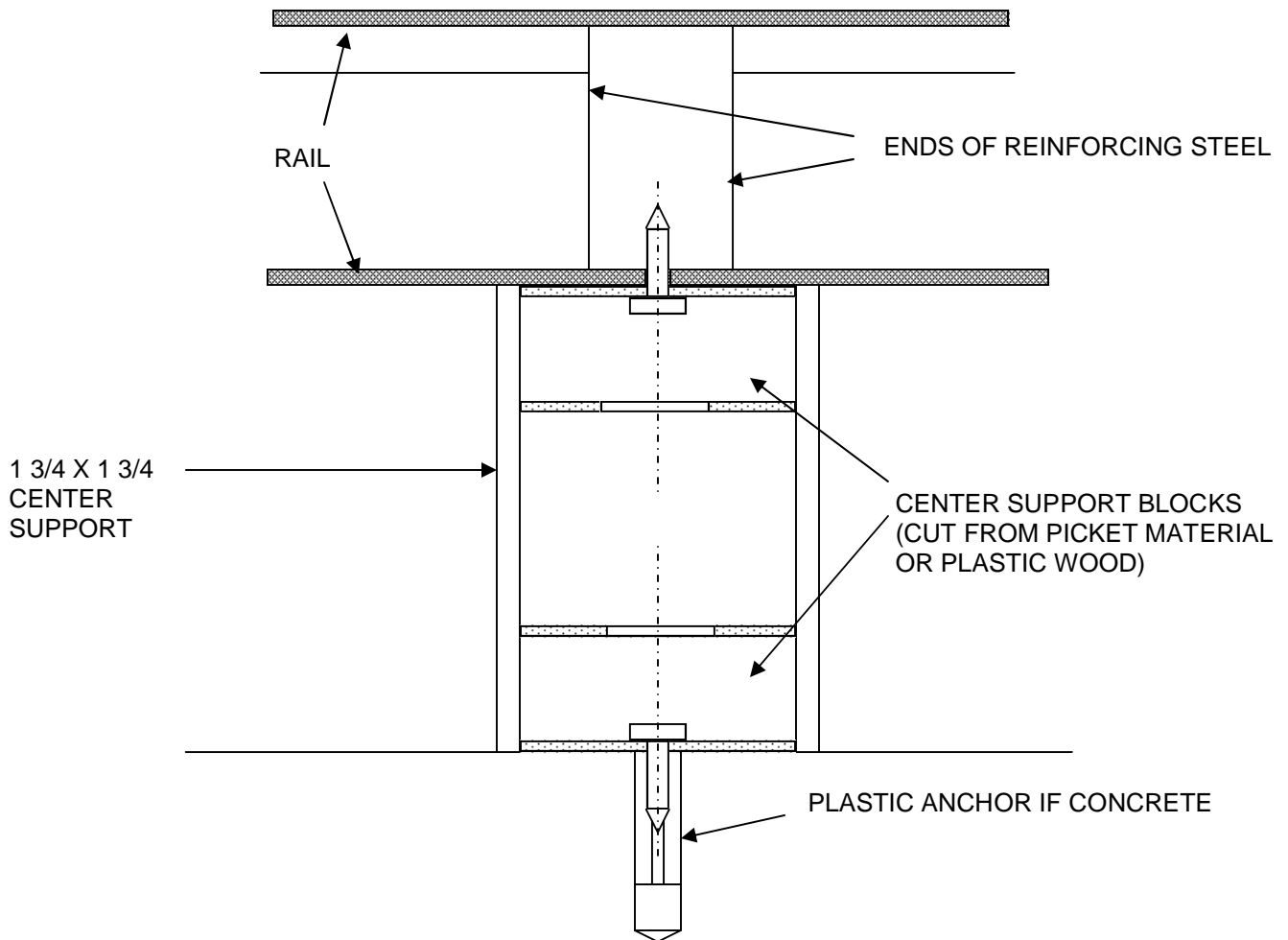
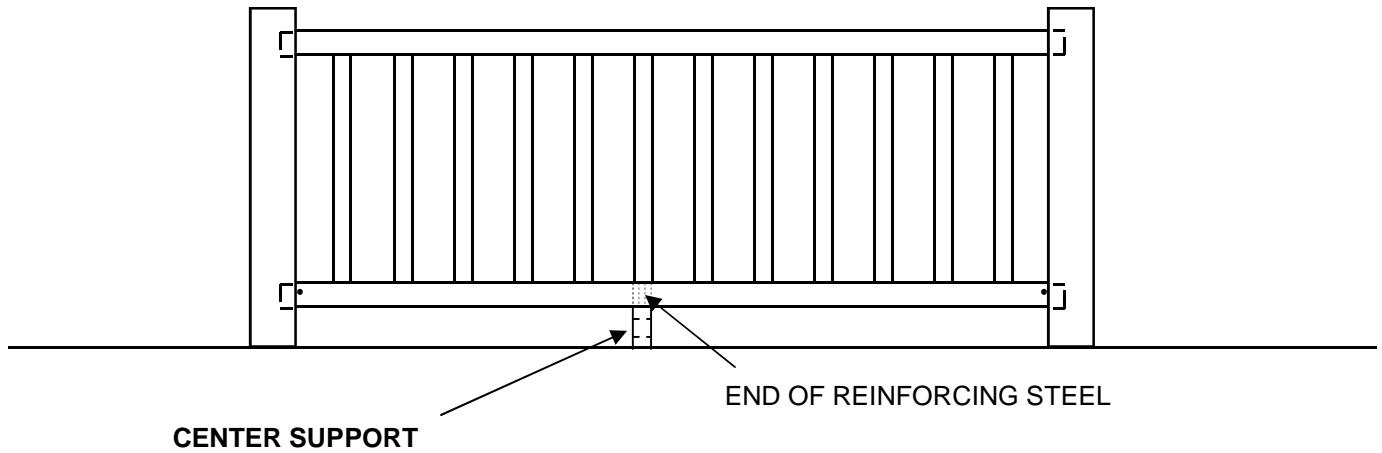
## LOCATING POST MOUNTS AT TOP OF STAIRS

It is best to avoid having to drive any screws through the solid side of the steel post mounts. This can usually be avoided by rotating the post mount by adding some extra bridging. In this case, there is a platform on the rear of the deck with steps running down from it. See page 11 for typical bottom post mounting. The other option is to use wood 4x4's for the stair rail posts, both top and bottom.



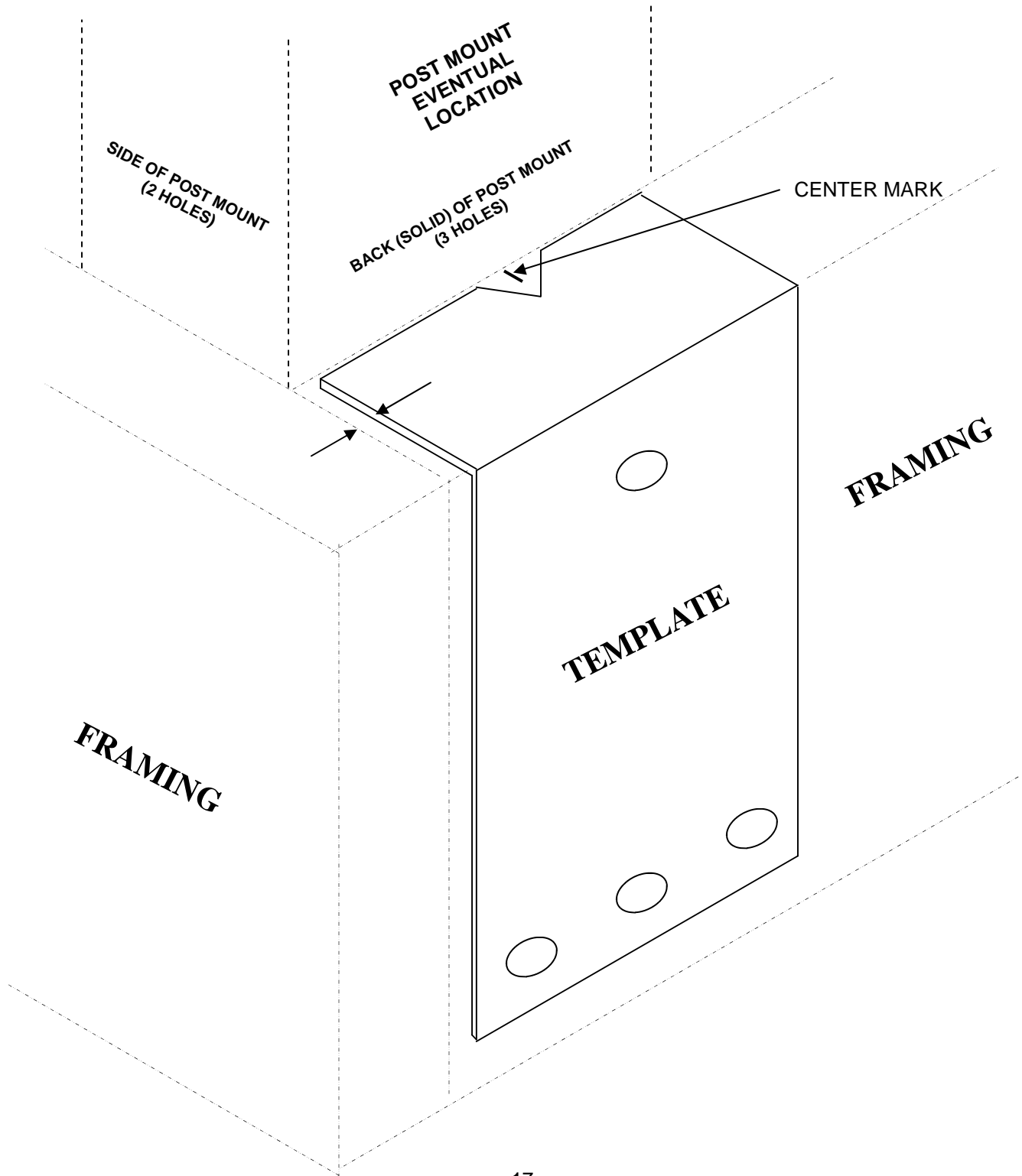
## CENTER SUPPORT FOR LONG RAIL

In general, longer lengths of rail (10' & 12') will not require a center support due to the reinforcing steel inside. However, where the rail must accept a vertical load, a center support is recommended to prevent sagging. The standard center support consists of a 1 3/4 x 1 3/4 stub and two center support blocks. One block is attached to the rail (typically opposite a picket hole) and one is anchored to the floor. The procedure would be to mount the first block to the rail, position the rail and then mark the location of the bottom of the center support on the floor.



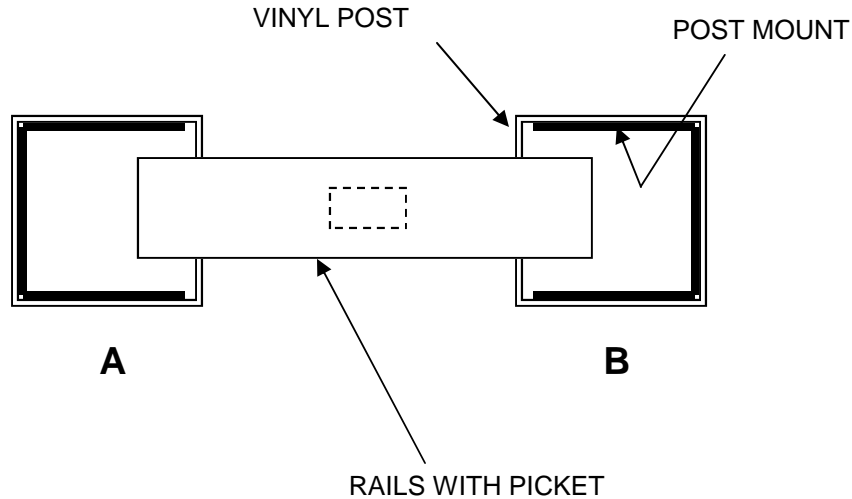
## POST MOUNT DRILL TEMPLATE

If you are mounting several steel post mounts, the post mount drill template will save you time and make hole location easier than trying to hold a heavy post mount in place and locate from slots. The drill template hangs on the top of the framing (not decking) and has a notch in the center. Note that the back of the post mount is somewhat wider than drill template so either hold the post mount in the corner and mark the center hole or measure the post mount widest width to mark the center mark on the frame as shown. Where the bolts are going thru the back of the post mount, mark or drill the top and side holes in the template. Where the bolts are going thru the side of the post mount, mark or drill the center holes in the template. Assemble post mount typically with 5/16 x 2 1/2" carriage bolts.



## SHORT RAIL SECTIONS—ROUTED HOLE STYLE

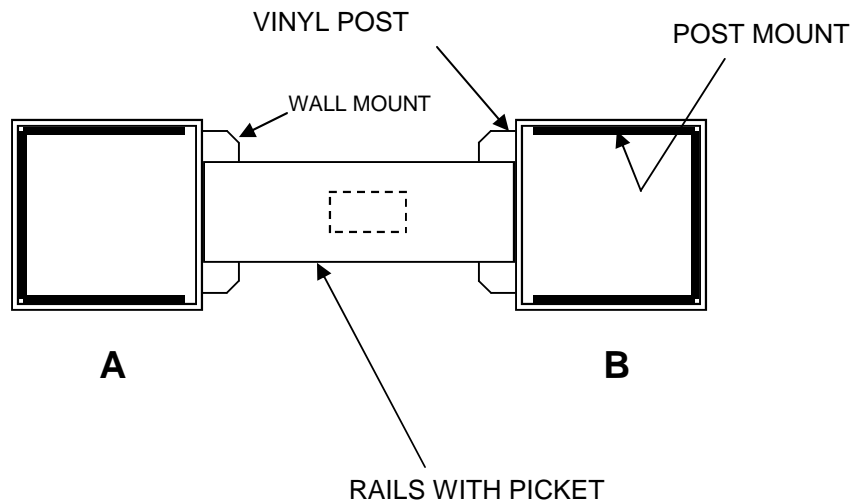
When working with short sections of rail it can be more difficult to deal with the rail. When using routed hole posts, slide vinyl on **B** above post mount, slide both rails with picket into **B**, then slide entire assembly down on post mount and slide rails with picket into **A**.



## SHORT RAIL SECTIONS—WALL MOUNT STYLE

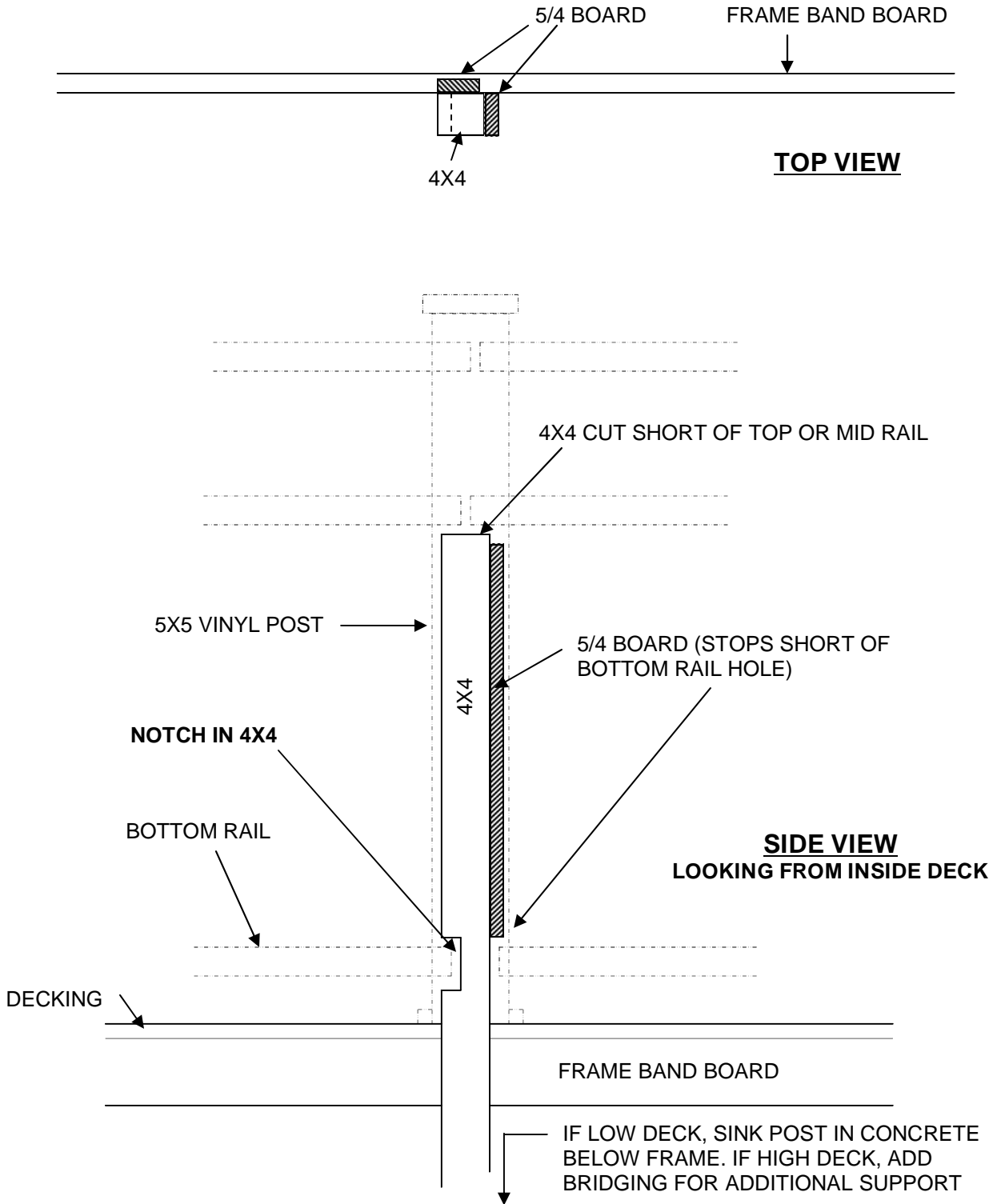
When working with short sections of rail it can be more difficult to deal with getting to the wall mount screws. If you are in "tight quarters", we have resorted to the following:

- Cut top and bottom rails
- Insert picket
- Set bottom rail to correct height (usually 3 1/2")
- Mark location of wall mounts
- Move rail assembly (rails with picket)
- You may also have to remove one post
- Pre-drill pilot holes (usually 1/8")
- Slide post back on post mount
- Use a small ratchet with #3 Phillips bit to tighten screws (usually #12 x 2) in wall mounts



## PRIVACY FENCE (WITH 5X5 POSTS) ON DECK

Many styles of privacy fence come with 5x5 posts. When using a 4x4 inside the vinyl post, additional material must be added to "fill up" the inside of the 5x5 post. This is usually accomplished by adding 5/4 board on two sides of the 4x4. If the post is a line post (as shown below—rails coming in both sides), a notch must be cut in the side opposite the 5/4 board to allow rail clearance.

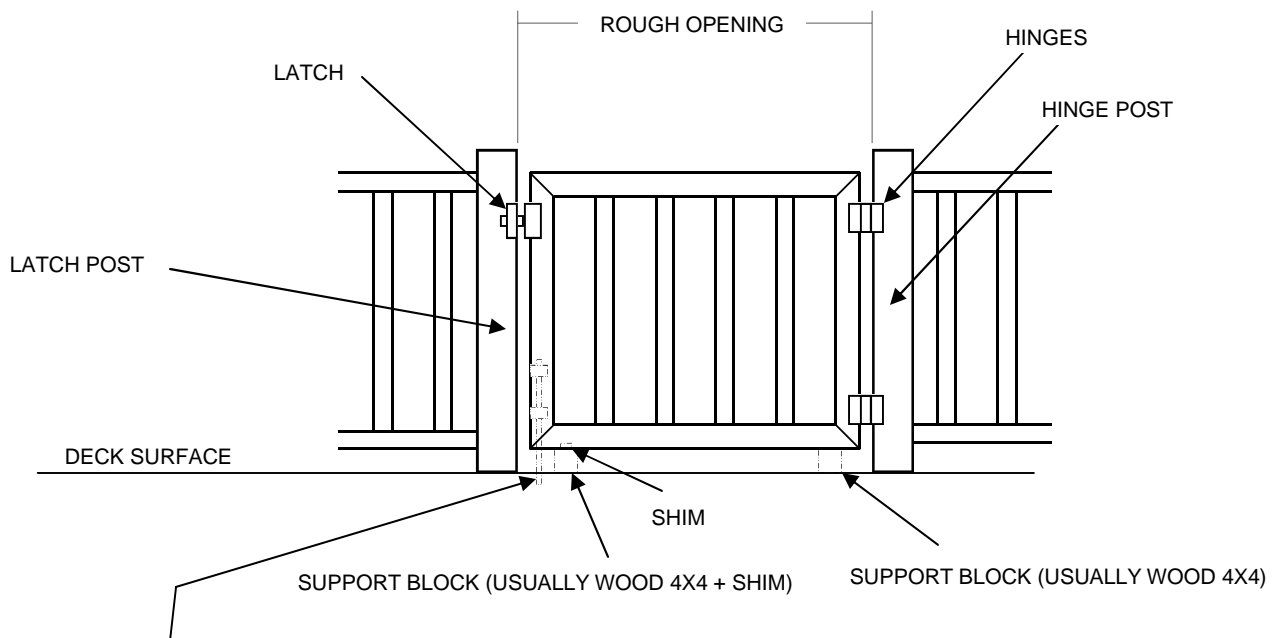


## INSTALLING GATES

Most vinyl gates are pre-manufactured in our shop. The width of the gate is typically 1 1/2" narrower than the rough opening (after vinyl posts are installed). The height of the gate is determined by the rail height allowing for the rail clearance at the bottom, e.g., for 36" rail, the gate would be 32 1/2" high). The most common hardware package includes self-closing hinges and a lockable latch.

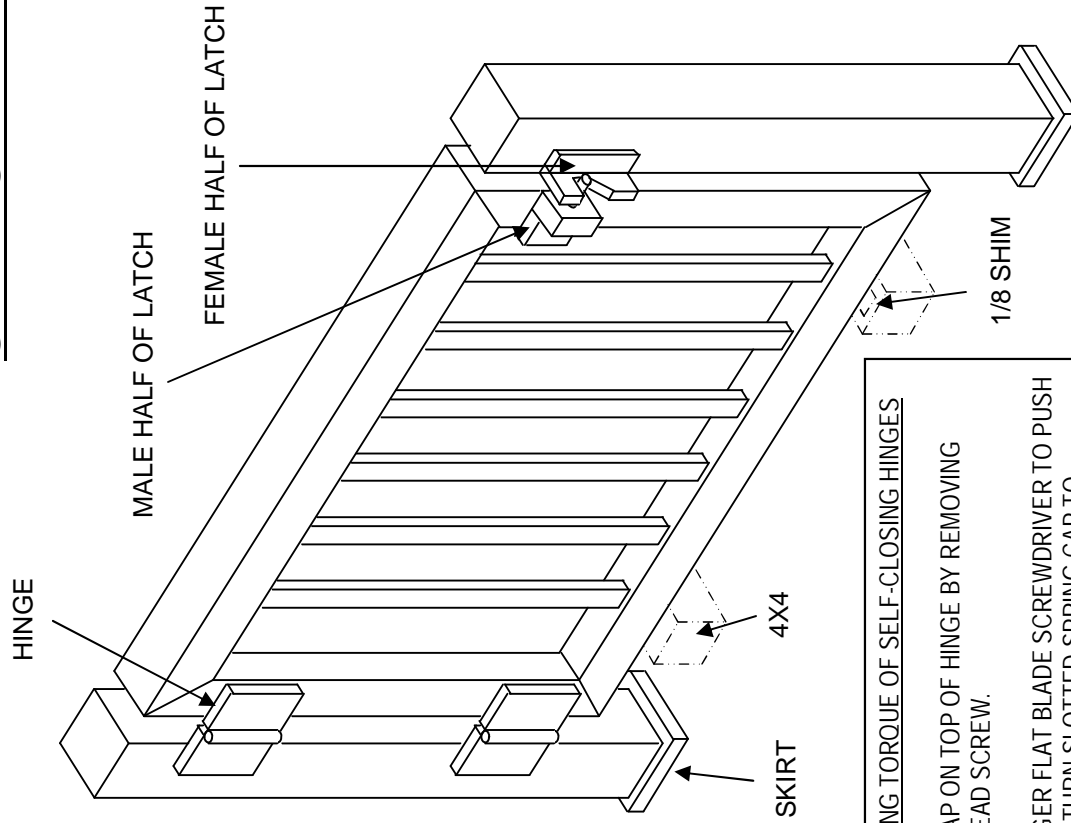
When mounting the hinges, we assume the weight of the cantilevered gate will cause it to sag slightly after the support blocks are removed so a 1/8" shim is set on top of the outboard block. The hinges are completed prior to attaching the latch. Complete attaching the gate side of the hinges to the gate first (that way you will avoid interference with any screw heads)\*. Set the gate on the blocks and locate the gate between the posts, **ATTACH ONE SCREW ONLY IN BOTH THE TOP AND BOTTOM SIDES OF THE POST SIDE OF THE HINGES**. Remove the blocks and confirm you have minimum sagging. This leaves you in a situation where you won't have a bunch of holes to deal with if some adjustment is required. If adjustment is required, use another hole. Once the gate is "happy", complete the screws in the hinges. Attach the gate half of the latch (the one with the bar sticking out) in an appropriate location near the top of the gate. Hold the latch part (the one that mounts on the latch post) on the latch post and close the gate. Mark the location of this half of the latch and attach it. If the latch part does not drop correctly on to the pin, the mechanism can be reversed by removing the six screws on the back and flipping it over.

\*The standard hinges are self closing and the torsion spring inside is adjustable by removing the cap and screw on the top of the hinge so turn the hinge so that the screw is up.



On rare occasions (usually because the gate is next to the house), there is no latch post. Usually you can use a drop rod (sometimes called a cane bolt) as a latch.

# GATE INSTALLATION



## ADJUSTING TORQUE OF SELF-CLOSING HINGES

REMOVE CAP ON TOP OF HINGE BY REMOVING PHILLIPS HEAD SCREW.

USE A LARGER FLAT BLADE SCREWDRIVER TO PUSH DOWN AND TURN SLOTTED SPRING CAP TO INCREASE OR DECREASE CLOSING TORQUE. SPRING CAP SHOULD POP BACK UP TO SAME LEVEL AFTER TURNING.

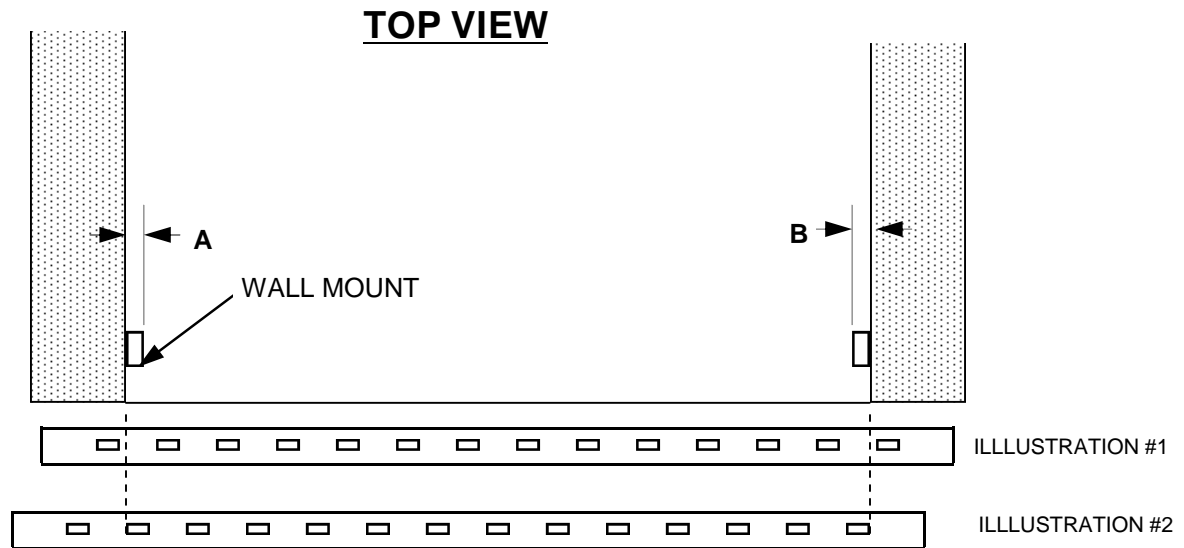
CONFIRM CLOSING TORQUE IS CORRECTED BY LETTING GATE CLOSE.

REPLACE TOP CAP/S AND PHILLIPS SCREWS.

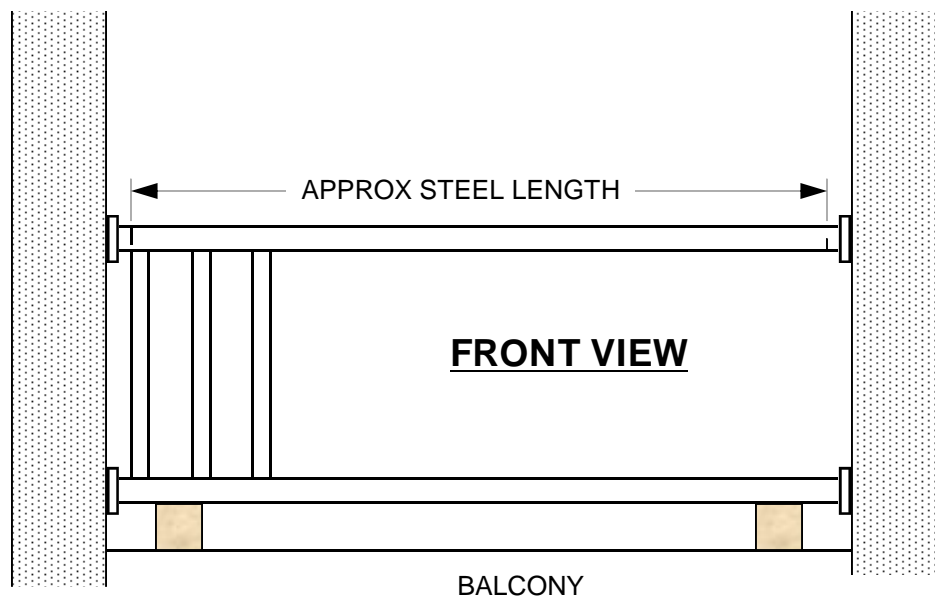
1. MAKE SURE SKIRTS ARE ON POSTS
2. ATTACH HINGES TO GATE MAKING SURE THEY MISS ANY SCREW HEADS ON BOTH GATE AND HINGE POST. ALSO MAKE SURE AND TORQUE ADJUSTMENT SCREWS ON SELF CLOSING HINGES ARE ON TOP.
3. SET GATE ON WOOD 4X4S TO SPACE UP 3 1/2" FROM DECK
4. SHIM LATCH END OF GATE 1/8" HIGHER THAN HINGE END. THIS WILL ALLOW FOR SOME SMALL SAG ON LATCH END.
5. LOCATE GATE IN OPENING AND ATTACH HINGES TO HINGE POST WITH ONE SCREW EACH HINGE. THIS WILL HOLD IT GOOD ENOUGH TO CONFIRM INSTALLATION LOOKS CORRECT. REMOVE 4X4'S AND CONFIRM GATE LINES UP WELL WITH RAILING. ADJUST AS NECESSARY. JUST IN CASE SOMETHING IS WRONG, YOU WILL HAVE ONLY TWO SCREW HOLES TO COVER IF YOU HAVE TO ADJUST THE HINGES.
6. COMPLETE SCREWS ON HINGES
7. ATTACH MALE HALF OF LATCH MAKING SURE TO MISS ANY SCREW HEADS. DOUBLE CHECK THAT THE FEMALE HALF WILL NOT ENCOUNTER ANY SCREW HEADS WHEN ATTACHED.
8. AFTER MOUNTING MALE HALF, HOLD FEMALE HALF ON POST SO PIN ON MALE HALF CLOSSES AT THE TOP OF THE SLOT IN THE FEMALE HALF LATCH TOP.
9. FINISH ADDING ANY ADDITIONAL SCREWS THAT HAVE NOT BEEN USED.

## RAIL BETWEEN PREEXISTING WALLS USING WALL MOUNTS

The distance from the walls to the first picket should be the same. If you are using wall mounts, be sure to take their thickness into consideration when cutting rails.



**PRE ROUNDED RAILING** - Move rail back and forth (or measure accurately) until distance **A** and **B** are the same taking into account the thickness of the wall mounts. In this case, Illustration #2 would have the same distance from the walls to the first picket holes but the picket holes would partially show when looking down on the bottom rail. By shifting the rail as shown in illustration #1, the problem is corrected.



1. Cut bottom rail
2. Confirm length fits and also hold in approx. location of top rail. If OK, go ahead and cut top rail making sure distance to holes is the same for top and bottom.
3. Cut reinforcing steel (typically 1-2" shorter than rail)
4. Slide wall mounts on each end of bottom rail
5. Set rail on a couple of junk pieces of 2x4 or 4x4 to locate 3.5 inches up from floor
6. Mark at least one hole for each wall mount anchor
7. Remove rail, 1/4" drill for anchor and attach wall mount to locate remaining holes, mark and drill for remaining anchors
8. Permanently attach bottom rail
9. Insert pickets in bottom rail and set top rail (with a couple of wall mounts) on pickets
10. Use a 4-6' level to confirm top wall mounts are plumb to bottom wall mounts.
11. Locate top wall mount anchors and pivot top rail out of the way
12. Drill for anchors, pivot top rail back into place and permanently attach

NOTE: Consider using a long 1/8" masonry bit to locate holes and a long #3 Phillips bit to tighten screws to avoid your drill chuck rubbing against the rail.