

Installation Guide

Contoured Composite Railing Stair Kit

The following instructions will guide you through the installation of your new composite railing stair kit.

This installation guide is a recommendation for meeting most code requirements. Always check your local building codes before starting a project and for determining the acceptable installation practices of your area.
Please read assembly instructions completely before beginning construction.
Always wear protective goggles and gloves when installing a composite railing system.

Remember to register your Limited Lifetime Warranty at the web site listed on the product box label.

Tools Required

- Protective eye glasses
- Tape measure
- Variable speed drill/screwdriver
- Rotary hammer or hammer drill and a masonry percussion bit recommended for concrete anchors purchased (for concrete installations)
- Drill bits $\frac{3}{32}$ " , $\frac{1}{4}$ " , $\frac{5}{16}$ " , $\frac{3}{8}$ " , $\frac{1}{2}$ " , $\frac{11}{16}$ "
- $\frac{3}{8}$ " x 3" Concrete Anchors/Fasteners (for concrete installations)
- Philips Driver and #2 Square Driver
- Wrench and $\frac{3}{4}$ " deep socket
- Level (min 24") and small torpedo level
- Miter Saw
- Snap Line
- Quick Clamp
- (Christy's[™]) PVC Glue

Installation Steps

Layout railing and position posts

The Composite Stair Rail Systems are designed for posts sets that are 62" between posts and/or a rail length of 72" between the posts. Stair systems are based off a standard 7-11 pitch. The composite rails and aluminum inserts can be trimmed to shorter lengths using a miter saw. When trimming of the rails is necessary, equal amounts should be cut from both ends of the rails in order to maintain equal spacing from the outer pickets and the adjacent posts.

Determine ahead of time where the posts will be anchored at the top and bottom of the stair system. It is best to do a sketch of the general layout in order to plan or post locations and any adjustments to rail lengths. Check measurements for accuracy prior to beginning the project. Remember that the outside dimensions of the composite posts are 4 $\frac{1}{4}$ " , unlike wood, which could be 3 $\frac{1}{2}$ " to 3 $\frac{5}{8}$ ". Also check the structural members below the deck and stair system to be sure there is no interference with the mounting brackets. If necessary, adjust the post locations. Stair post instructions are to be used for installing posts on the stairs, not horizontal landing areas. *(If the top post of the stair system is mounted to the deck surface/substructure please refer to the composite horizontal post and railing instructions.)*

Install posts

Composite railing stair kits can be installed using the following methods:

- Post Tower (Concrete and Wooden Stair Systems)
- 4" x 4" Wood post sleeving

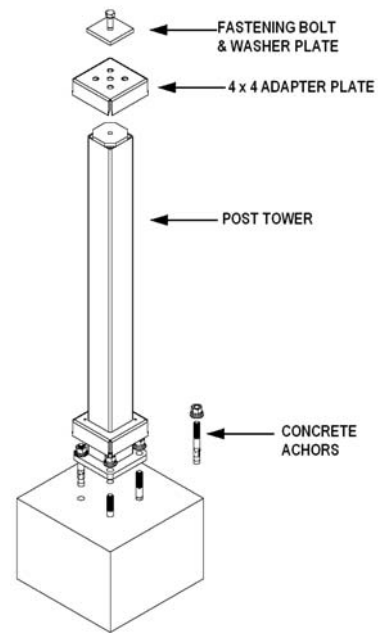
Post Tower (Concrete and Wooden Stair Systems)

The surface mount tower system is designed for 4 $\frac{1}{4}$ " composite posts in railing applications where the posts need to be mounted to a hard surface such as concrete, or this tower system can be used on wood stair systems when the substructure is modified as detailed at the end of this section. When installed as detailed below, composite posts using the post tower can meet post requirements for 42" high stair rail systems in residential applications.

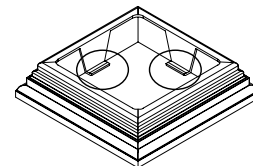
Install posts – *Continued*

Post Tower on Concrete Stairs

- 1) Lay out your post positions according to your stair rail design. Make sure to mark all post positions at least 5" from the edge of the concrete to reduce the chances of cracking the concrete when drilling holes for the concrete anchors.
- 2) Remove the tower assembly and bolt the top adapter plate to the top of the tower in the configuration shown in the assembly drawing.
- 3) Using an adjustable wrench or vice grips, bend the flanges of the top and bottom adapter plates in on all sides so that the post will slide over the tower without damaging the post. Don't bend the tabs in too far as the post should not be able to slide off the tower.
- 4) Place the tower in the designated area on the concrete surface and mark the location of the four bolt holes. Make sure tower is centered over your post location marks.
- 5) Remove the tower. Using a masonry bit, drill four holes deep enough and large enough to accommodate the fasteners that you have chosen. Install concrete anchors.
- 6) Place the tower back into the desired position. Make sure the tower is plumb using a level. If required, shim the tower base with stainless steel washers. Once level, secure to the concrete anchors.
- 7) Slide your posts over the tower and install the railing sections. *(Note: If using a post trim, cut the plastic tabs at the 90 degree band and slide the trim piece over the post tower. Next slide the post over the tower and into the trim piece)*



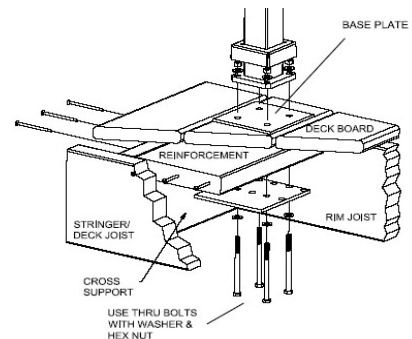
Post Tower on Concrete Stairs



Post Trim

Post Tower on Wood Stairs

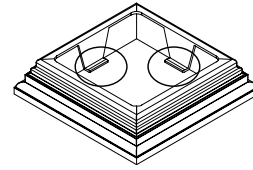
- 1) Lay out your post positions according to your stair rail design. Make sure to mark the post center line position at least 3 1/2" from the edge of the outside rim joist/stair stringers. The top plate must be a minimum of 1" from the stair stringer so the bolts will clear the rim joist/stair stringer on the underside.
- 2) Install a piece of 2" x 8" treated lumber between the stringers, under the stair boards where the tower is to be installed. Attach this reinforcement board to the stair stringers. (Three to four #10 x 4" screws should be used on each end.)
- 3) Thickness of the deck board and reinforcement board underneath should be a minimum of 2 1/2" actual thickness.
- 4) Take surface plate and use as a template. Mark the four corner holes for the four 5/16" x 4 1/2" threaded bolts.
- 5) Pre-Drill four 5/16" holes through the marked holes, drilling through the deck board and the reinforcement board.
- 6) Align the surface plate over the holes.



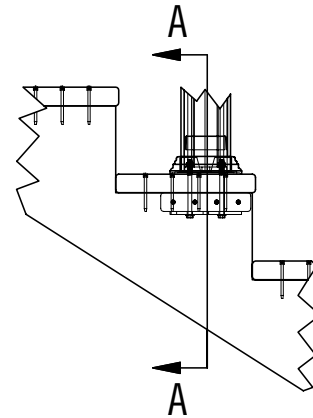
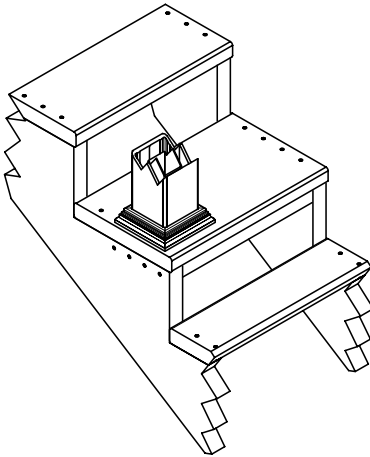
Post Tower on Wood Stairs

Install posts – *Continued*

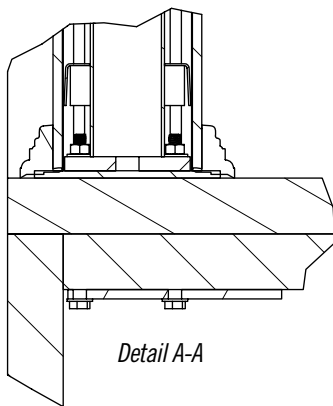
- 7) Take the second plate for underneath and drive the bolts up through the bottom plate, reinforcement board, stair tread deck board, surface plate, and tower mount.
- 8) Apply the washers and nuts. Tighten the bolts.
- 9) Bolt the top adapter plate to the top of the tower in the configuration shown in the assembly drawing.
- 10) Using an adjustable wrench or vice grips, bend the flanges of the top and bottom adapter plates in on all sides so that the post will slide over the tower without damaging the post. Don't bend the tabs in too far as the post should not be able to slide off the tower.
- 11) Slide your posts over the tower and install the railing sections. (*Note: If using a post trim, cut the plastic tabs at the 90 degree bend and slide the trim piece over the post tower. Next slide the post over the tower and into the trim piece.*)



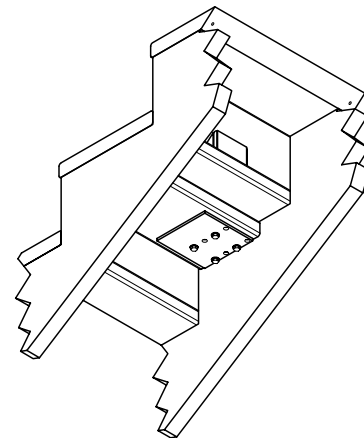
Post Trim



Post Tower Mounts - Stairs



Detail A-A

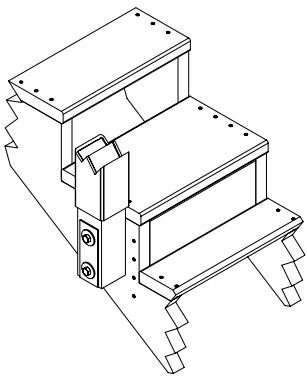


Install posts – Continued

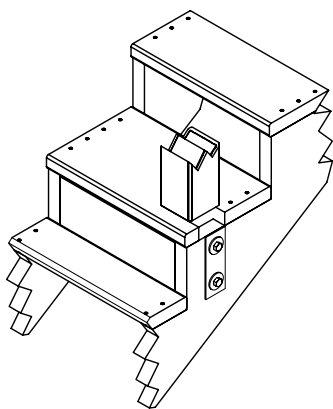
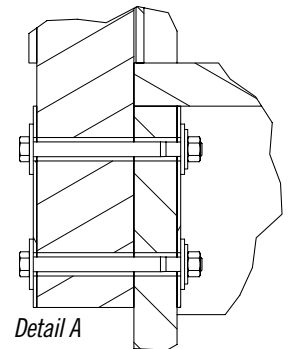
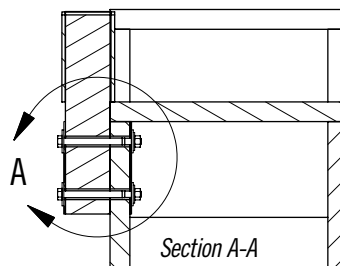
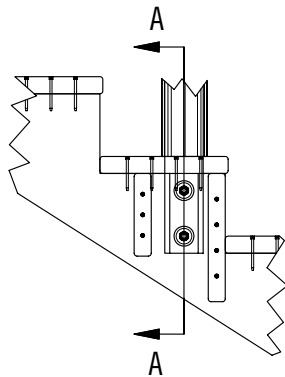
Sleeving a Wood 4" x 4" Post

The composite post can be used to sleeve 4" x 4" wooden posts. When installed as detailed below, composite posts used as a sleeve can meet post requirements for 42" high stair rail systems in residential applications. **Note: The instructions reflect how the wood posts were installed during testing to ensure the post attachment and substructure would meet the same load requirements as the railing system. Check with your local code official for other acceptable attachment methods. (Please refer to the composite horizontal post and railing instruction when mounting to the deck surface/substructure.)**

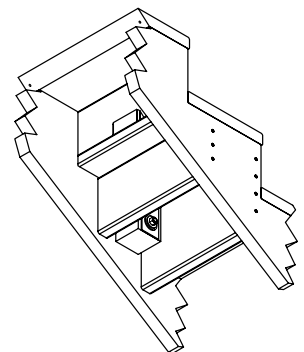
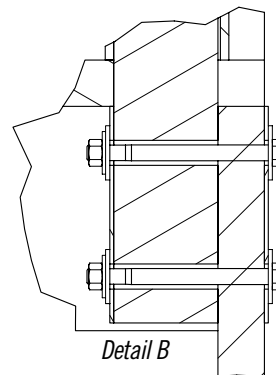
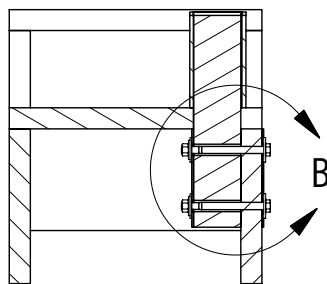
- 1) Lay out your post positions according to your stair rail design.
- 2) Temporarily attach the wood post in place.
- 3) Drill two 1/2" holes through the outside stair stringer, wood post, and galvanized steel plate. These holes should be approximately 4" apart. Enlarge the two holes on the galvanized steel plate to 11/16". The galvanized steel plate is 2 1/2" x 7" x 1/8". This galvanized steel plate will need to be purchased from your local metal shop or hardware store.
- 4) Insert two 1/2" x 6" carriage bolts and place a 5/8" washer under the head of each bolt. At the free end of the bolt use a 5/8" and 1/2" washer before the nut. Tighten all bolts. **For ACQ lumber, all bolts, washers, and nuts must be galvanized.** Please see the drawings below for assistance and always check with your local code officials for requirements in your area.



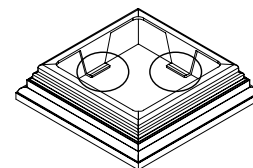
Post Mounting - Outside of Stair Stringer



Post Mounting - Inside of Stair Stringer



- 5) Slide your composite posts over the wood posts and install the stair rail sections.
 (Note: If using a post trim, cut the plastic tabs at the 90 degree bend. Slide the trim piece over the wood post, then slide the composite post over the wood post and into the trim piece.)

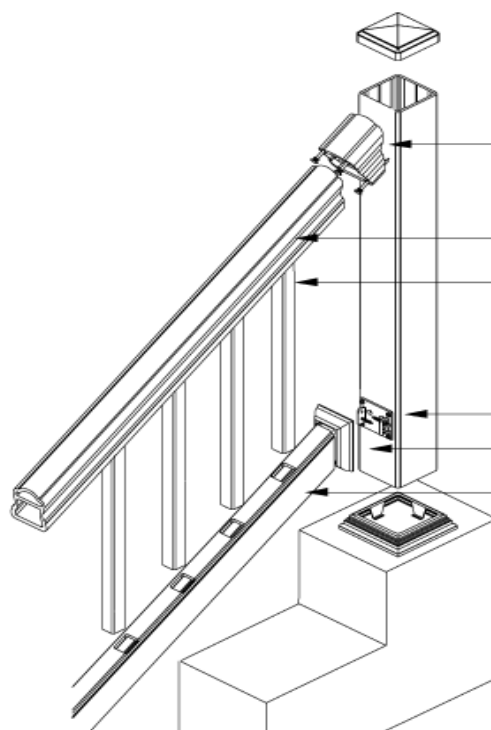


Post Trim

Contoured Composite Stair Rail Installation

Always check your local building codes before starting a project. Please read assembly instructions completely before beginning construction. Always wear protective goggles and gloves when installing a composite railing system.

Contoured Composite Stair Rail Components



Note: Composite Posts, Post Trim and Post Caps sold separately

2 3/4" x 3 1/4" Composite Stair Bracket Kit

2 3/4" x 3 1/4" Composite Contour Rail

1 1/4" x 1 1/4" Composite Pickets

2" x 3 1/2" Composite Stair Rail Bracket Kit

1 1/4" x 1 1/2" Aluminium Insert

2" x 3 1/2" Composite Rail

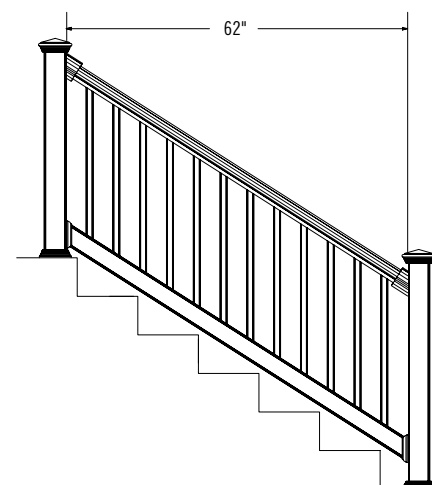
Railing Layout

Always check your local building codes before starting a project. Please read assembly instructions completely before beginning construction. Always wear protective goggles and gloves when installing a composite railing system.

Remember to check local building codes for stair rail height requirements in your area. The composite railing systems are designed to meet requirements for 36" and 42" high stair rail systems in residential applications. This is dependent on the stair post installation methods detailed in the preceding post installation instructions section.

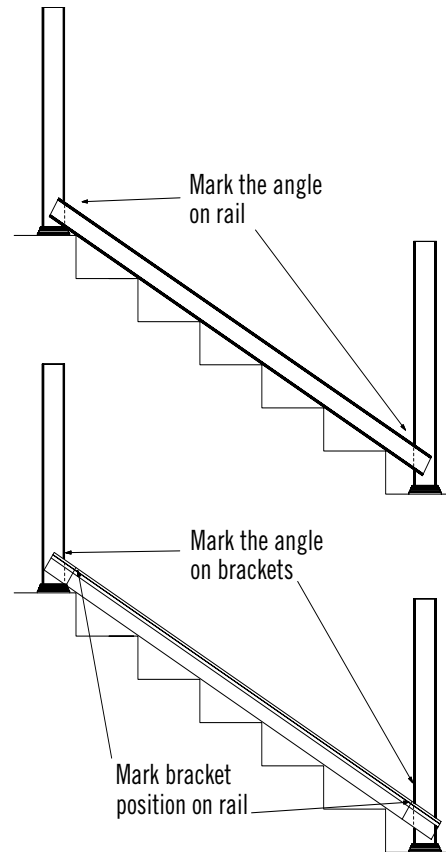
The 2 3/4" x 3 1/4" Composite Contoured Stair Rail System is designed for posts set 62" apart and/or a rail length of 72" between posts. The stair systems are designed to accommodate angles up to 35°. An aluminum insert is required in the bottom rail only in this stair rail system.

The 2" x 3 1/2" and 2 3/4" x 3 1/4" rails run in between the posts and are set in brackets.

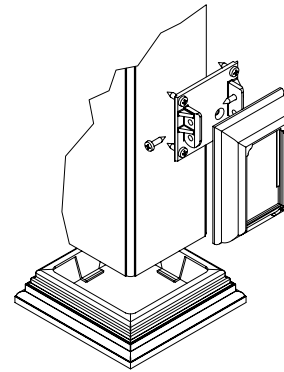


Railing Installation

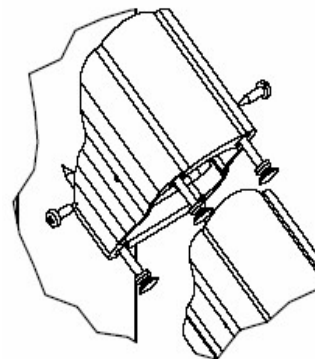
- 1) **Determine Rail and Accessories Cut Angles.** Slide a $2\frac{3}{4}$ " x $3\frac{1}{4}$ " stair bracket over each end of the $2\frac{3}{4}$ " x $3\frac{1}{4}$ " top rail, such that the counter-bored holes are toward the picket holes in rail. Adjust the bracket position such that it does not cover any portion of the picket/spindle hole. To determine the cut angle at each end of your top and bottom rail, lay the rails on top of the stair steps with the rails centered between the posts. Mark the angle on each end of the rails, using the posts as a guide. **It is imperative the posts are square and level.** Make certain the bottom rail is oriented with the routed holes up and top rail is oriented with the routed holes facing down. For the $2\frac{3}{4}$ " x $3\frac{1}{4}$ " top rail, mark the angle on each rail bracket using the post as a guide and mark the rail against the bracket to record the bracket location.
Important: Make sure that there is equal spacing between the picket holes and each end of rails/posts to maintain uniform picket spacing. Do not leave an open picket insert hole at the bracket.
- 2) **Cut Rails and Accessories.** For the 2" x $3\frac{1}{2}$ " bottom rail, subtract $\frac{1}{4}$ " from each mark on each end to allow for the thickness of the mounting bracket. Insert the $1\frac{1}{4}$ " x $1\frac{1}{2}$ " aluminum composite insert into the bottom cavity of the 2" x $3\frac{1}{2}$ " rail and cut both the rail and insert at the marked angles on each end. The bottom rail insert should be the same length as the bottom rail. For the $2\frac{3}{4}$ " x $3\frac{1}{4}$ " top rail, make sure the brackets are lined up to the marks you made on the rail in the previous step. Cut the rail and bracket simultaneously at each end using the angled mark you made on the bracket.
- 3) **Install Trim Base.** If using a trim piece, be sure you install the trim base section over the posts before you start attaching the rail sections to the posts.
- 4) **Install Bottom Rail.** Slide the notched trim covers from the 2" x $3\frac{1}{2}$ " stair rail bracket kit onto the bottom rail. Make sure the notch in one end of the trim cover is facing up on the lower location of the rail and facing down at the upper location of the rail. Ensure the $1\frac{1}{4}$ " x $1\frac{1}{2}$ " aluminum insert is inserted into the bottom cavity of the 2" x $3\frac{1}{2}$ " rail. Install the stair bracket base at both ends of the bottom rail. This is done by pre-drilling one $\frac{3}{32}$ " hole through the bottom side hole of the bracket on each side into the rail. Drive one of the screws provided through the hole of the bracket on each side into the rail. Make sure this screw goes into the metal insert. This will provide the mechanical attachment of the rail to the bracket. Lower bottom rail into position between posts. Make sure the holes for the pickets are facing up. Ensure the rail is at the correct angle and the bracket is centered on the post. You may need to place equal shims between two stair tread noses to elevate the bottom rail. Make sure you do not exceed code allowances for spacing in the "tread-rise triangle space". Pre-Drill $\frac{3}{32}$ " holes into the post through the bracket holes and attach bracket to the post using screws provided. Snap trim in place.
- 5) **Install Pickets and Top Rail.** Insert all the pickets into the bottom rail. Place the $2\frac{3}{4}$ " x $3\frac{1}{4}$ " stair brackets, previously cut, at the end of each rail and feed top rail onto the pickets. Ensure the rail is at the correct angle, the brackets are centered on the posts, and the pickets are plumb. Once the top of the rail has been seated onto all the pickets and the rail is at the correct angle, mark the bracket holes on the posts. Remove the top rail. Pre-drill $\frac{3}{32}$ " holes into the post where marked, estimating the angle of the bracket. Reinstall the top rail and attach the rail with brackets to the posts using screws provided in the kits. Pre-drill two $\frac{3}{32}$ " holes (one on each side) through the side of the bracket and rail approximately $\frac{5}{8}$ " from the end of the rail or post. Install the # 10 x $\frac{3}{4}$ " screws into the pre-drilled holes. Finish off the brackets by gluing the screw hole covers in place.
- 6) **Install Post Cap.** Place a 1" x $\frac{1}{4}$ " wide bead of glue on inside of cap along the center of all four sides. Slide cap onto top of post. The glue will smear as the cap is slid on the post and a permanent bond will take effect after a few minutes. Be careful not to drip glue on the outside of a post or cap or it will cause a "scar".



Determine Rail and Accessories Cut Angles



Install Bottom Bracket



Install Top Bracket

Cleaning

Your composite railing system is manufactured using a blend of wood and plastic that binds the wood together and provides a coating around the individual wood fibers. An additional vinyl coat is applied to the surface to provide superior weather performance and color retention. For this reason and unlike traditional wood products, it is resistant to paints and penetrating stains. A mild detergent and water should be sufficient to keep the composite railing system looking new. For tough stains, Soft Scrub™ or baking soda works well. If stains or scuff marks appear, use a fiberglass cleaner/glaze or #0000 steel wool and Simple Green™.

Important

It is the responsibility of the contractor to meet or exceed all code and safety requirements, and to obtain all required building permits. These instructions are only a guide, and may not address every circumstance. The deck and railing installer should determine and implement appropriate installation techniques for each situation. Manufacturer shall not be held liable for improper or unsafe installations.