

Installation Guide

Composite Standard Rail

The following instructions will guide you through the installation of your new composite railing 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 3/32", 1/4", 5/16", 3/8", 1/2"
- 3/8" x 3" Concrete Anchors/Fasteners (for concrete installations)
- Philips Driver and #2 Square Driver
- Wrench and 3/4" deep socket
- Level (min 24") and small torpedo level
- Miter Saw
- Snap Line
- Quick Clamp
- (Christy's™) PVC Glue

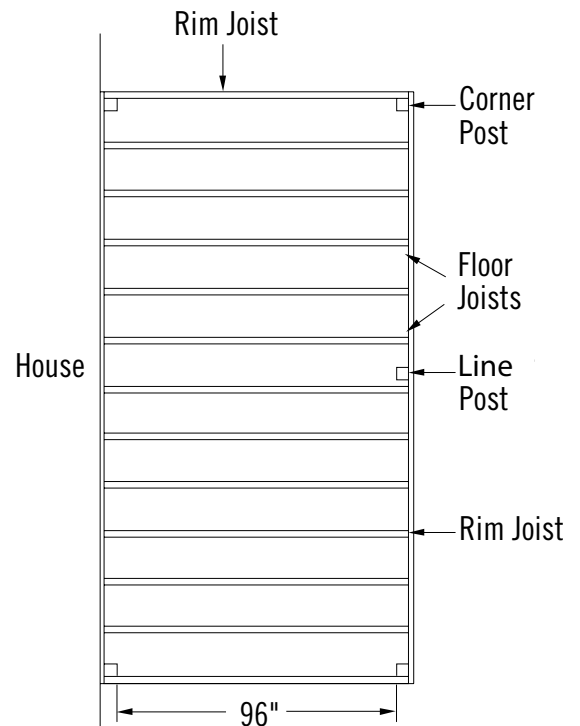
Installation Steps

Layout railing and position posts

The Composite Railing Systems are designed for posts sets of either 72" (6 feet) or 96" (8 feet) between posts. The composite rails and aluminum inserts (when required) 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 if the post will be anchored to the top of the deck substructure, bolted to the inside of the deck joists, or anchored to concrete. It is best to do a sketch of the general layout in order to plan for post locations and any adjustments to rail lengths. Check measurements for accuracy prior to beginning the project. Determine locations of all line and corner posts. These need to be located inside the joist as shown in the drawing below.

Measure each side of the deck so that line posts are spaced as evenly as possible between the corner posts. Remember that the outside dimensions of the composite posts are 4 1/4", unlike wood, which could be 3 1/2" to 3 7/8". Also check the structural members below the deck to be sure there is no interference with the mounting brackets. If necessary, adjust the post locations. (Designing your railing so the wood posts are against a floor joist will simplify installations.) After determining the location of the posts, install the corner posts first.



Install posts

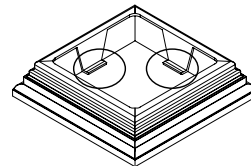
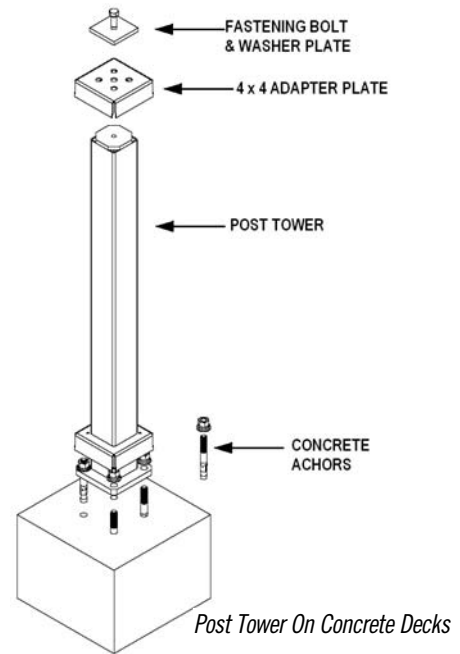
Composite railing posts can be installed using the following methods:

Post Tower (Concrete and Wooden Decks)

The surface mount tower system is designed for 4 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 decks 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 rail systems in residential applications.

Post Tower On Concrete Decks

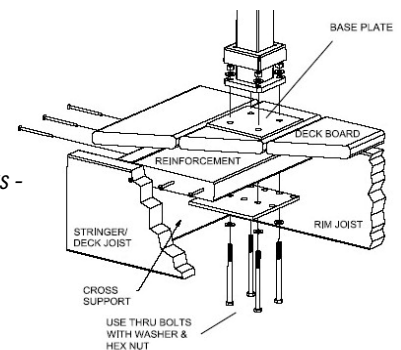
- 1) Lay out your post positions according to your railing design. You can use a chalk snap line to mark the railing line and centers of the post locations. Make sure to mark all post positions at least 5" from the edge of the concrete to reduce the chances of cracking the concrete when drilling holes 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 bend and slide the trim piece over the post tower. Next slide the post over the tower and into the trim piece.)*



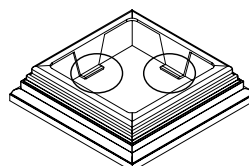
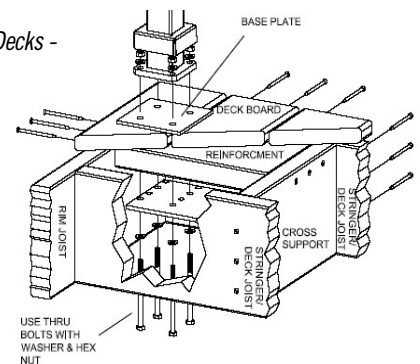
Post Tower on Wooden Decks

- 1) Lay out your post positions according to your railing design. You can use a chalk snap line to mark the railing line and centers of the post locations. Make sure to mark the post center line position at least 3 1/2" from the edge of the rim joist. The top plate must be a minimum of 1" from the rim joist so the bolts will clear the rim joist on the underside of the deck.
- 2) Install a piece of 2" x 8" treated lumber between the joists, under the deck boards where the tower is to be installed. Attach this reinforcement board to the rim joist and stringers. (Three 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 inches 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.
- 7) Take the second plate for underneath and drive the bolts up through the bottom plate, reinforcement board, 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 Tower on Wooden Decks - For Line Post



Post Tower on Wooden Decks - For Corner Post

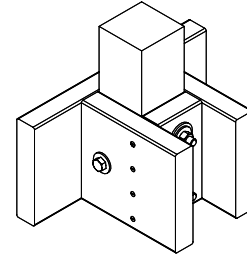


Install posts – Continued

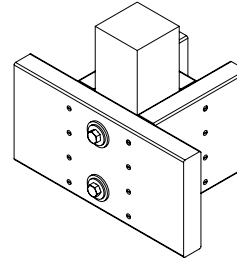
Sleeving a Wood 4" x 4" Post

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 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 attachments methods.**

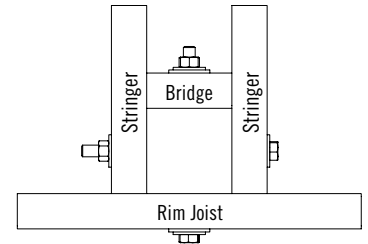
- 1) Designing your deck so the post spacing will end up with a stringer at each post will simplify installation. Lay out your post positions according to your railing design.
- 2) Temporarily attach the wood post in place. For corner post applications and where the post is against a stringer, add an additional stringer on the opposite side of the post. For line post applications, where the post doesn't butt up against a stringer, add a stringer on each side of the post. If the stringers run across the deck, a cross stringer may be placed 24 inches from the rim joist. The additional stringer(s) attached to the post is then attached to the cross stringer. For all of the applications, add a cross member between the two stringers thus creating a structural box around the post. (Four screws should be used on each end when creating the structural box.)
- 3) Drill two $\frac{1}{2}$ " holes through the rim joist, wood post, and back cross member $1\frac{1}{2}$ " from the top and bottom of the rim joist. Drill one $\frac{1}{2}$ " hole through the wood post and the stringers on each side. This hole will be perpendicular to the two holes already drilled and should be in the middle of the stringers and post. **For ACQ lumber, all bolts, washers, and nuts must be galvanized.** The bolts through the rim joist have a $\frac{1}{2}$ " washer, then a $\frac{3}{4}$ " washer, which is against the wood. Insert bolts and place a $\frac{3}{4}$ " washer, $\frac{1}{2}$ " washer and nut on the bolt. The bolt through the stringers and post only has a $\frac{1}{2}$ " washer on each side. Tighten all bolts.
- 4) Slide your composite posts over the wood posts and install the railing 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.)



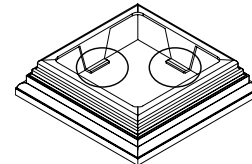
Wood Post Blocking



Wood Post Blocking



Wood Post Blocking

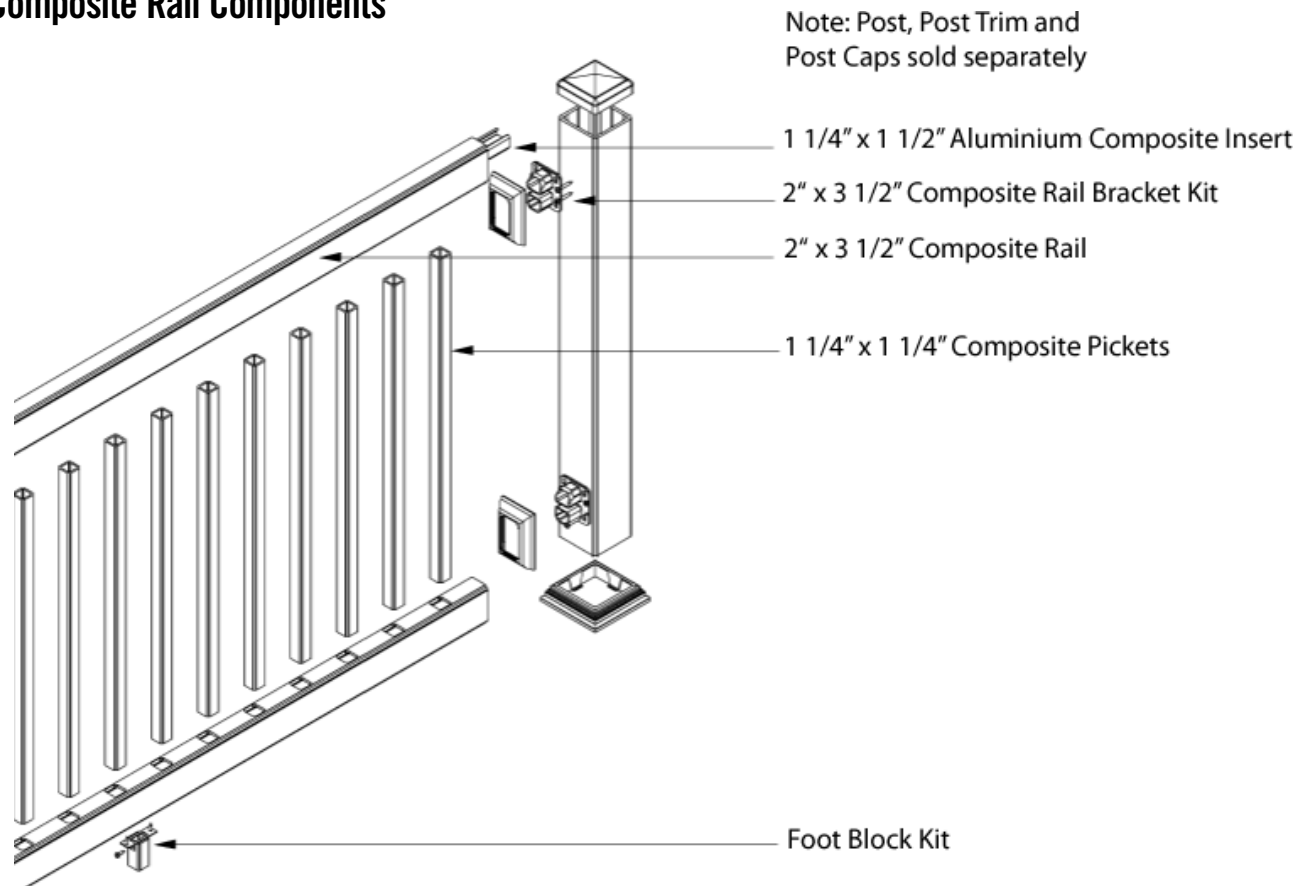


Post Trim

Standard Composite 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.

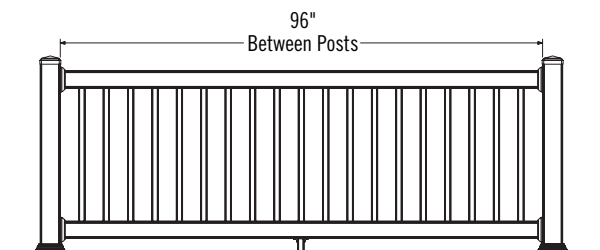
Standard Composite Rail Components



Railing Layout

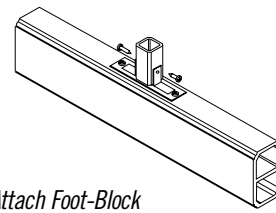
Remember to check local building codes for rail height requirements in your area. The composite railing systems are designed to meet requirements for 36" and 42" high rail systems in residential applications. This is dependent on the post installation methods detailed in the preceding post installation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

The 2" x 3 1/2" rails run in between the posts and are set in brackets. An aluminum insert is required in the top rail for all applications. The bottom of the railing section is designed to be 2 1/2" above the surface. The foot block is a 1 1/4" x 1 1/4" picket inserted into a metal bracket that is attached to the bottom of the bottom rail.

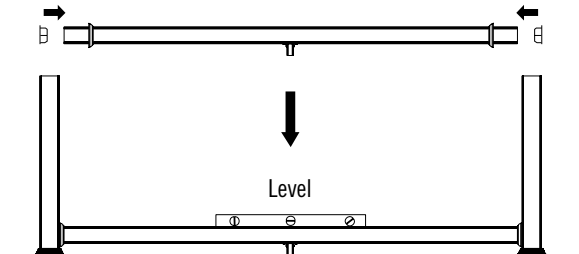


Railing Installation

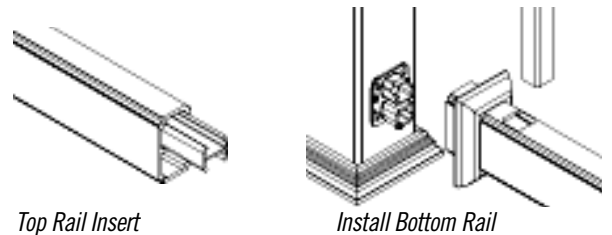
- 1) **Cut Rails to Length.** Measure distance between posts and subtract $\frac{1}{2}$ " to allow room for the brackets ($\frac{1}{4}$ " each end). Mark the rails to the calculated length using a square. *Important: Make sure that there is equal spacing between the last picket hole and each end of rail to maintain uniform picket spacing. Do not leave an open picket insert hole at the bracket.* Trim both ends of the rails. Trim the inserts to a length that is $2\frac{1}{2}$ " inches shorter than the rails
- 2) **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.
- 3) **Attach Foot-Block and Drill Weep Holes.** Cut foot-block picket to the length required for your installation. Attach the foot block bracket to the bottom of the bottom rail and foot-block picket to the bracket using the four screws included in the kit. **Make sure the foot block is in the center of the bottom rail. Foot block kits are required on all railing sections 6' or longer. When screwing into composite pre-drilling a $\frac{3}{32}$ " hole is always recommended.** Drill two or three evenly spaced $\frac{1}{4}$ " weep holes through the bottom of the bottom rail **and middle rib**. These holes will allow for proper water drainage.
- 4) **Install Bottom Rail.** Slide trim pieces onto the bottom rail facing the finished trim towards the center of the rail. Insert the $2" \times 3\frac{1}{2}"$ brackets at both ends of the bottom rail. Lower bottom rail (the rail with your weep holes) into position between posts. Make sure the holes for the pickets are facing up. Ensure the rail is level and the bracket is centered on the post. Pre-Drill $\frac{3}{32}$ " holes into the post through the bracket holes and attach bracket to the post using screws provided in the kit. Snap trim in place.
- 5) **Install Pickets and Top Rail.** Insert all the pickets into the bottom rail. Insert the aluminum insert into the top cavity of the top rail in the orientation shown below. Slide trim pieces onto the top rail facing the finished trim towards the center of the rail. Insert the $2" \times 3\frac{1}{2}"$ brackets at both ends the rail. Feed the rail onto the pickets. Once the top of the rail has been seated onto all the pickets and the rail is level, pre-drill $\frac{3}{32}$ " holes into the post through the bracket holes and attach bracket to the post using screws provided in the kit. Pre-drill four $\frac{3}{32}$ " holes (two on each side) through the side of the bracket, rail, and insert approximately $\frac{1}{4}$ " from the end of the rail or base of the bracket. Install the # 10 $\times \frac{3}{4}$ " screws into the pre-drilled holes. Snap trim in place.
- 6) **Install Post Cap.** Place a $1" \times \frac{1}{4}"$ 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".



Attach Foot-Block

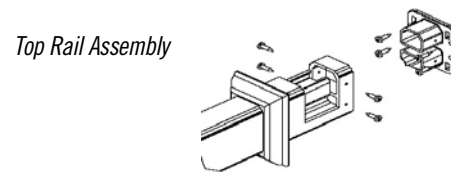


Install Bottom Rail

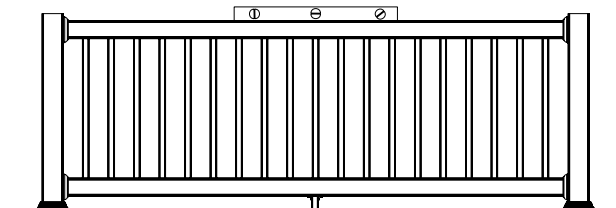


Top Rail Insert

Install Bottom Rail



Top Rail Assembly



Install Pickets and Top Rail

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™.

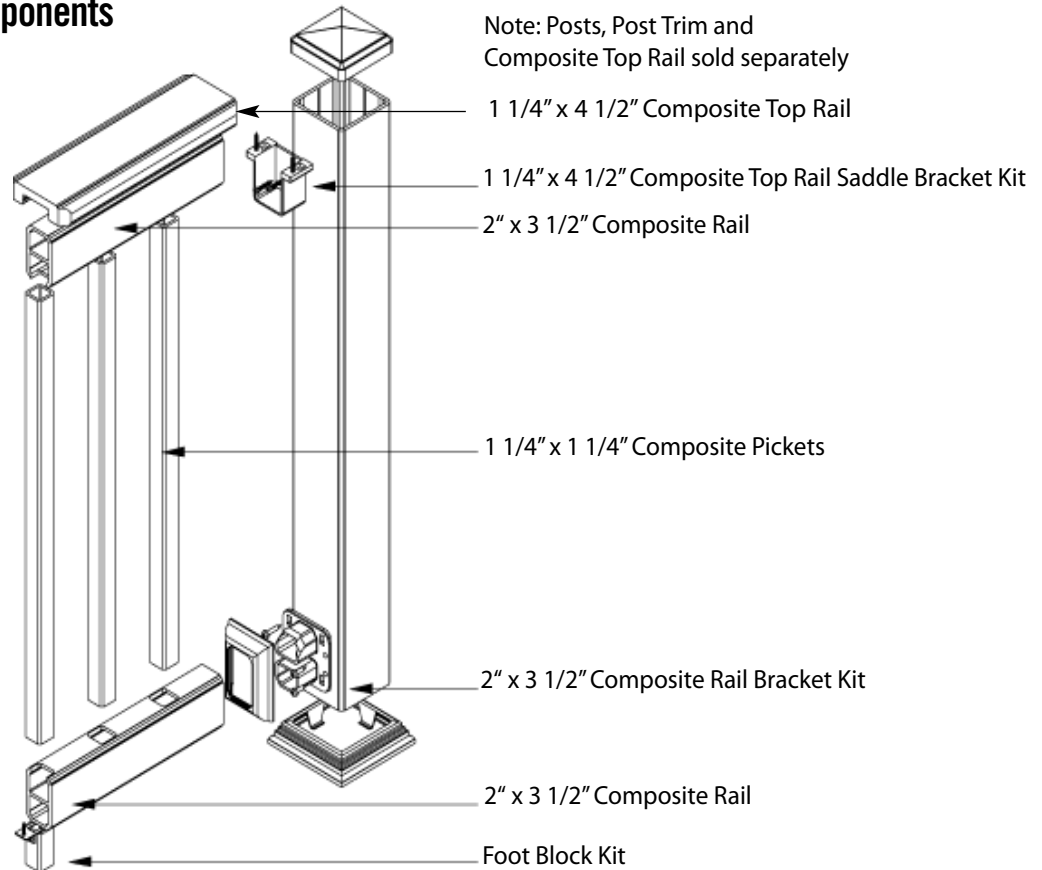
Important

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.

Composite Top 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.

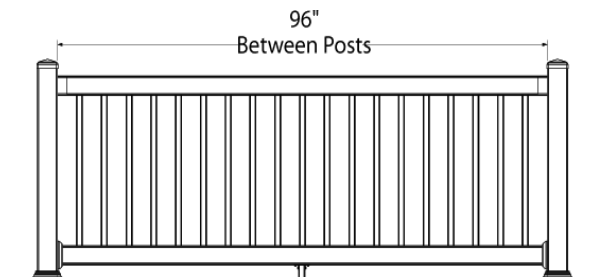
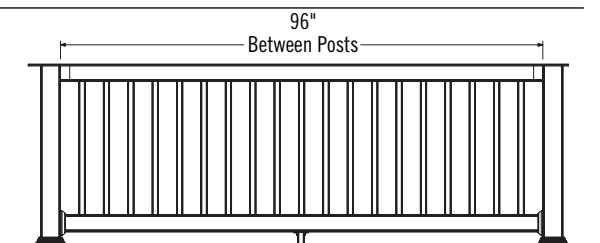
Composite Top Rail Components



Railing Layout

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

The 2" x 3 1/2" rails run in between the posts and are set in brackets. The 1 1/4" x 4 1/2" top cap rail can be installed on top or butted up against the posts. When installing the top rail over the post, continuous runs without splicing or in-line joints are recommended. When the top cap rail is butted up against the post, the corners need to be cut at 45°. The bottom of the railing section is designed to be 2 1/2" above the surface. The foot block is a 1 1/4" x 1 1/4" picket inserted into a metal bracket that is attached to the bottom of the bottom rail.



Railing Installation

1) **Cut Rails to Length.** Measure distance between posts and subtract $\frac{1}{2}$ " to allow room for the brackets ($\frac{1}{4}$ " each end). Mark the rails to the calculated length using a square. *Important: Make sure that there is equal spacing between the last picket hole and each end of rail to maintain uniform picket spacing. Do not leave an open picket insert hole at the bracket.* Trim both ends of the rails. If running the top cap rail on top of the post, do not cut the top cap rail (*Note: If the center rib in the 2" x 3 $\frac{1}{2}$ " top rail interferes with the top screw of the attached saddle brackets, trim an addition $\frac{1}{8}$ " off each end of the rail or file an $\frac{1}{8}$ " notch into the center rib on each end.*)

2) **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.

3) **Install Saddle Brackets.**

- a. **Top of Post Installation:** Align the saddle bracket with the top of the post. Center the bracket and mark the holes.
- b. **Butted Post Installation:** Locate the saddle bracket such that the top is $\frac{3}{4}$ " below the top of post. Center the bracket at this location and mark the holes.
- c. **Pre-drill two $\frac{3}{32}$ " holes into the post through the holes in the bracket or via the marks made through the bracket holes.** Attach brackets to post with two of the screws provided in the kit. (*Note: Screws must engage the wood post if sleeving a 4" x 4" wood post. If sleeving a post tower, screws must engage a minimum 6" piece of 2 x 4 wood. Please see the drawing on the next page for more details.*)

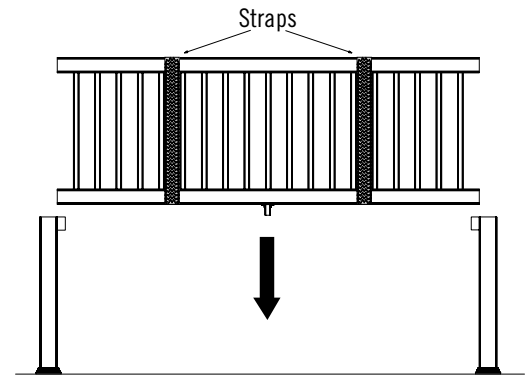
4) **Assemble Rail Section with the 2" x 3 $\frac{1}{2}$ " rails and pickets.**

Lay rails and pickets out on a clean, non-abrasive surface and assemble section. Strap section together using bungee cords or strapping to keep section tightly assembled. Do not cover middle of the section.

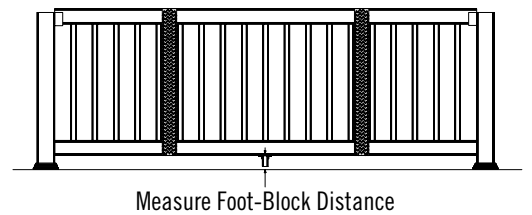
5) **Determine Foot-Block Length.** Hang assembled railing section in saddle brackets and measure the distance from the top of the deck to bottom of the bottom rail at the mid point.

6) **Attach Foot-Block and Drill Weep Holes.** Remove the assembled railing section and place on a non-abrasive surface. Cut foot-block picket to the length required for your installation. Attach the foot block bracket to the bottom of the bottom rail and foot block picket to the bracket using the four screws included in the kit. **Make sure the foot block is in the center of the bottom rail. Foot block kits are required on all railing sections 6' or longer. When screwing into composite pre-drilling a $\frac{3}{32}$ " hole is always recommended.** Drill two or three evenly spaced $\frac{1}{4}$ " weep holes through the bottom of the bottom rail and middle rib. These holes will allow for proper water drainage.

7) **Install Railing Section.** Slide trim pieces onto the bottom rail facing the finished trim towards the center of the rail and insert the 2" x 3 $\frac{1}{2}$ " brackets at both ends of the bottom rail. Then, re-hang the assembled railing section into the saddle brackets. Pre-Drill $\frac{3}{32}$ " holes into the post through the bracket holes and attach bracket to the post using screws provided in the kit.

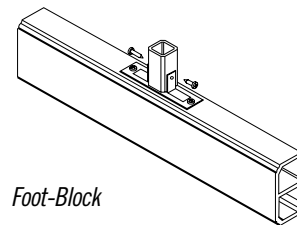


Assemble Rail Section

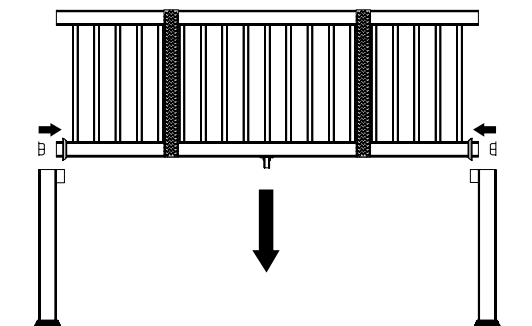


Measure Foot-Block Distance

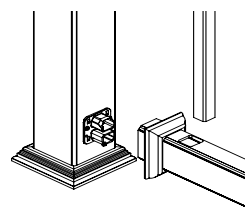
Determine Foot-Block Length



Foot-Block



Install Railing Section

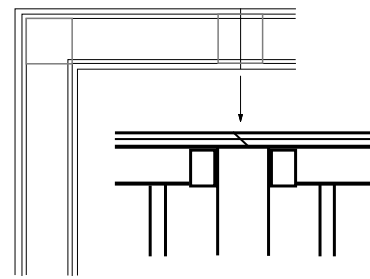


Install Bottom Rail

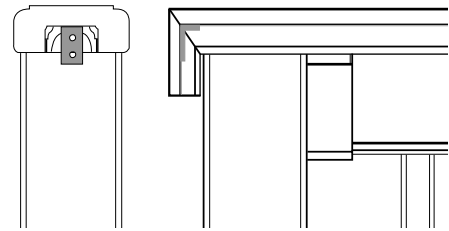
8) Install Top Cap Rail.

(Top of Post Installation): The top cap rail should be installed only after all of the 2" x 3½" rail sections have been installed.

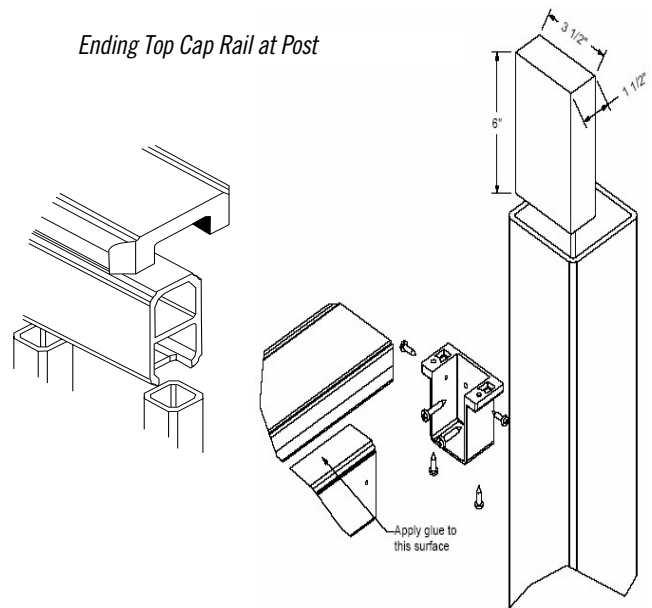
- Measure and plan out how the top cap rails will be installed. When joining rails together 45° lap joints are recommended. All joints should occur on top of the posts. Splicing or in-line joints are *not recommended*. If necessary, do so as shown in the inset picture to the right. Joints should be sealed with glue or caulk and touch up paint can be used to cover any exposed material.
- For end posts you can leave the rail open and paint the exposed end with matching touch-up paint or you can miter the end with a short piece of the top rail. The short piece can be fastened with glue and a tapered head #10 screw or an angle bracket on the inside channels. (Remember to pre-drill to prevent splitting.)
- Lay out all the rails on top of the post to verify fit and make adjustments as required. Make sure that the top cap rails are centered on the post tops so as not to expose the top edge of the post.
- Remove rails one at a time and apply a ⅛" bead of Christy's™ glue down the center of the inside channel of the top cap rail. Place the rail on the top 2" x 3½" rail. Press down and slide rail back and forth slightly to distribute the glue and set it into the correct position.
- Clamp top rail to 2" x 3½" rail with quick-clamps in two places for at least fifteen minutes to allow glue to set up.
- Next pre-drill ⅛" x ¼" deep holes through the counter bored holes in the top of the saddle bracket into the top rail. Be careful not to drill through the top of the rail. Secure the top rail to the bracket using the screws provided in the kit.
- Pre-drill two ⅜" holes (one on each side) through the side of the bracket and rail, just under the cap rail, approximately ¼" from the end of the rail or base of the bracket. Install the # 10 x ¾" screws into the pre-drilled holes.
- Continue this process until all the rails are installed.



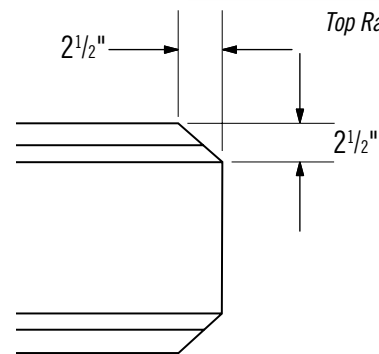
Splicing In-line Joint



Ending Top Cap Rail at Post



Top Rail Assembly



Butted Post Installation

(Butted Post Installation):

The top cap rail for this style can be installed one section at a time.

- Measure the distance between posts on the top of the saddle bracket. Cut the top cap rail to this length.
- Miter the corners of the cap rail. The exposed edges can be touched up with matching paint if desired.
- Lay out rails on top of the railing section and make adjustments as required.
- Remove rail and apply a ⅛" bead of Christy's™ glue down the center of the inside channel of the top cap rail. Place in the correct and centered position over the top 2" x 3½" rail and press down to distribute the glue.
- Next pre-drill ⅛" x ¼" deep holes through the counter bored holes in the top of the saddle bracket into the top rail. Be careful not to drill through the top of the rail. Secure the top rail to the bracket using the screws provided in the kit.
- Pre-drill two ⅜" holes (one on each side) through the side of the bracket and rail, just under the cap rail, approximately ¼" from the end of the rail or base of the bracket. Install the # 10 x ¾" screws into the pre-drilled holes.
- Clamp top rail to 2" x 3½" rail with quick-clamps in two places for at least fifteen minutes to allow glue to set up.
- Continue this process until all the rails are installed.

- 9) **Install Post Cap (Butted-to-Post style only).** Place a 1" x 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".

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.