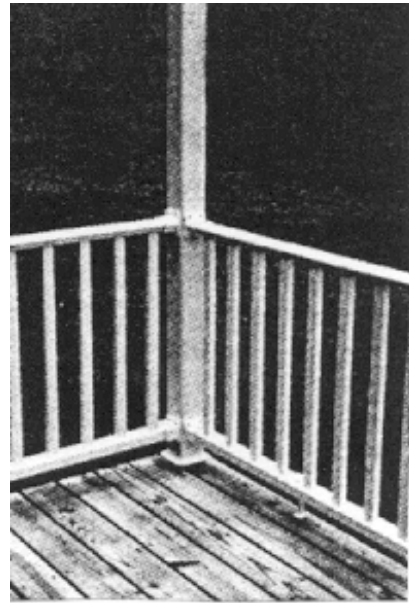


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System Features

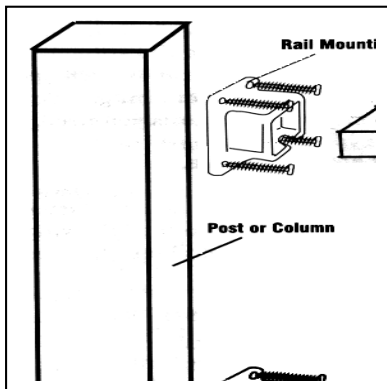
- Structural posts and columns
- Neat and attractive, adds value and beauty
- Resistant to salt, corrosion, and chemicals
- Won't rust, rot, crack, peel, blister, or deteriorate
- Virtually maintenance free, never needs painting
- High strength, up to 12' between posts
- No loss of strength over the life of the product
- Easy to install using only basic tools
- Pre-assembled rail sections easily cut to size
- Standard and adjustable-slope stair sections
- Simple post mounting system
- Mounting hardware included
- Colorfast and UV resistant, meeting AAMA specs
- 25 Year Warranty

Simple – Strong - Safe

About Glasrail® Railing Systems

Glasrail® structural fiberglass deck and stair railing system can be installed on new or existing decks or porches. It can be installed on stairs, of either standard or adjustable slope. Grippable hand railing is available also.

The system's structural posts are designed to be attached in a variety of ways. Depending on the construction of your deck, you can attach them to concrete, wood, or masonry. Glasrail® can span up to 12 feet between posts. Structural 4x4 and 5x5 columns are also available.



Installation Overview

Installation is a simple, three-step process:

- Mount the posts and columns
- Attach the pre-assembled railing sections
- Install stair railings and hand rail

Glasrail® accommodates a variety of deck and porch construction. Simply select a post attach method for Step 1 that applies to your specific project. Both standard slope and adjustable slope stair railings are available, and Glasrail® also comes in a Glass Panel style that lets you put tempered glass panels where the pickets would be.

← **Corner Post Installation Only. Contact Dealer for addition**

Choosing the components for your railing

Glasrail® comes with (round pickets) and as well as Glaspanel (glass panels set between round pickets). Next, choose a color. All components of all three Glasrail® styles are available in white, green, black and sand.

Railing Height

To meet differing building codes, Glasrail® deck and stair railing systems are available in three standard heights: 32", 38" and 40". The railings are designed to be installed at a 36" or 42" mounting height, depending on building code requirements. Check the building code for your area and choose the railing's height and "toe space" accordingly.

Post Column Heights

Post heights are determined by the height of the railing you use, with one exception: For stair posts other than the top post, use a post one size longer than the top post. For example, if you use a 40" post at the top of a stair, use a 45" post at the bottom.

As you plan, keep in mind that you can also attach any of the Glasrail® styles to a wall of suitable structural strength, saving a post.

How many sections?

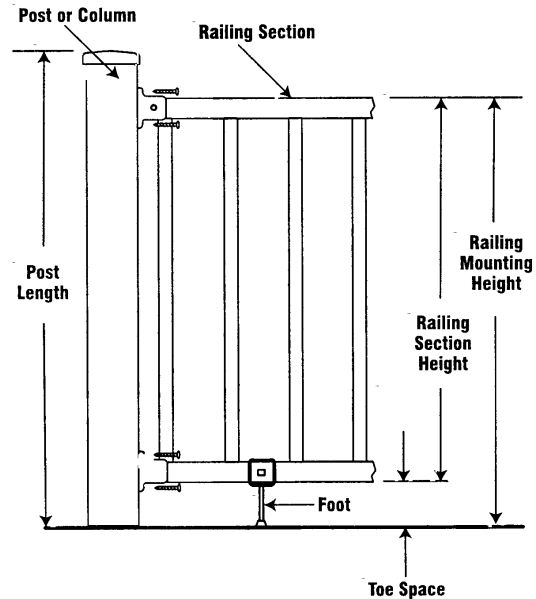
Lay out the location of your posts and columns. The distance between posts can be up to (but not more than) 12 feet. Note the method(s) of attachment for your posts and count the flush mount brackets, long posts, and other components.

Count the sections of railing you'll need. Glasrail® pre-assembled railing sections are available in 8, 10, and 12' lengths. These can be easily trimmed to size as needed. For best efficiency, try to cut shorter sections evenly out of longer ones. For example, you can get one 4 and one 8 foot section out of a 12 foot assembly.

You need four brackets and hardware fasteners for each section of railing and for each additional section you cut out of a given length of pre-assembled railing. Mounting brackets are also available for tuning angled corners, for bay or gazebo applications. Note the angle of these turns so you can order the appropriate kits 22.5°, 30°, and 45° brackets.

to the following list of fasteners (not included) to use for typical installations on various materials.

Material	Fastener to use
Concrete	Tapcon fasteners
Masonry	Tapcon fasteners
Wood	Stainless steel woodscrews



Stair railings

The next consideration is your stairs. Directions for determining whether your stairs are "standard slope" (7 x 11" pitch) are on page 15. Choose Glasrail® standard or adjustable slope stair railings to match your deck's stairs. (Remember to allow extra-height posts for all but the top post in stair railings.)

Don't forget to add the handrail on any stair railings. These are required by most building codes and strongly recommended by Glasrail®. Handrail can be "wrapped" around a stair, and can adapt to a variety of configurations. Check the parts list to select any corner turns you need.

A word about hardware.

You will need Glasrail® mounting brackets with fasteners to attach them to fiberglass posts. Refer

4x4 Wood Stub Post Installation

For new construction decks, lay out post locations 2" from the edge of the deck along the side of the floor joists. Make sure the post centers are at the proper spacing for the railing sections. Posts should be located at least 2" from the edge of the decking along the side parallel to the floor joists. Cut wooden 4x4 stubs 16" long, and position them at the post locations alongside a joist so that approximately 8" of the stub post protrudes above the deck surface. Bolt the stub posts securely to the deck with lag screws or through bolts. Make sure the stubs are plumb and square.

For existing decks, if you determine that the wooden 4x4 posts, which support the old railing, are sturdy enough. They can be used as the support for new Glasrail® fiberglass deck and stair railing. Cut the existing wooden posts off evenly, approximately 8" to 10" above the deck's surface, leaving a "stub" to which to attach the fiberglass posts. Make sure the stubs are plumb and square.

Use a rasp or a wood plane to slightly round the edges of the wooden 4x4 stubs so the fiberglass posts will fit onto them snugly.

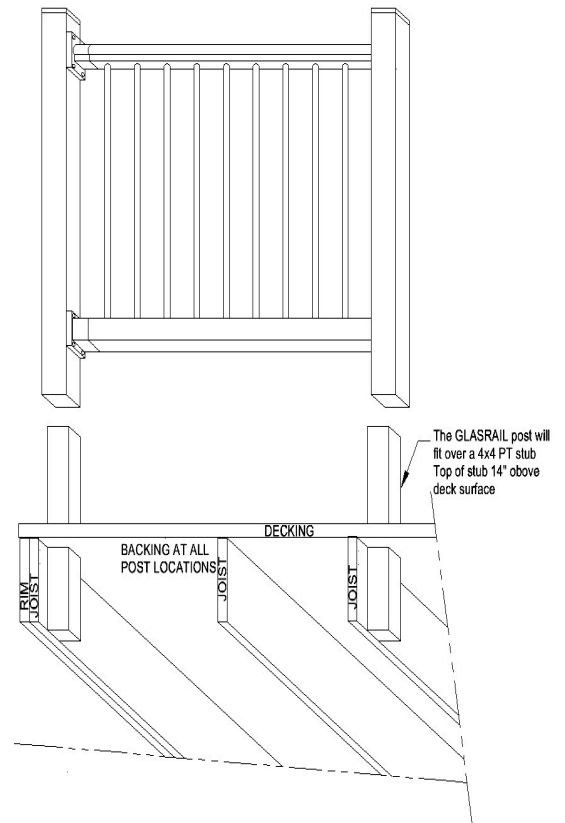
Slide the fiberglass posts over the wooden stubs. Use a level and a large framing square to insure that the new posts are square and plumb. Do not hammer the

end of the fiberglass post to force it onto the stub. If force needs to be applied, remove the post cap and hold a thick wooden block over the end of the post while hammering.

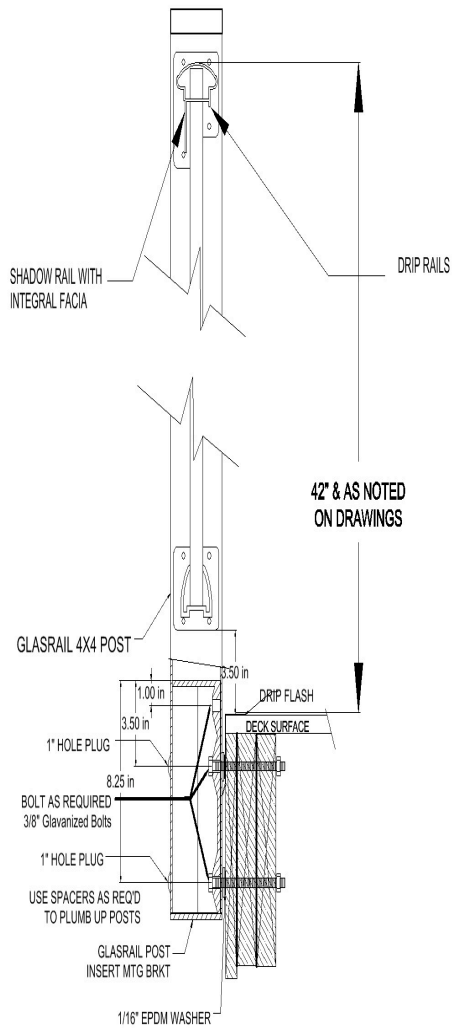
Attach the fiberglass 4x4 post to the wooden stub by assembling the railings to the post. Attaching the bottom railing bracket secures the Glasrail® post to the wooden stub inside it.

GLASRAIL
4215 - A Russell Rd
Mukilteo, WA 98275
425-349-3606

DECK MOUNTING DETAIL



Stub-Mount option for
Post Install



Many deck and porch posts bolt onto the outside of the structure. You can simply bolt Glasrail® structural fiberglass posts to your deck in the normal way. Here's how:

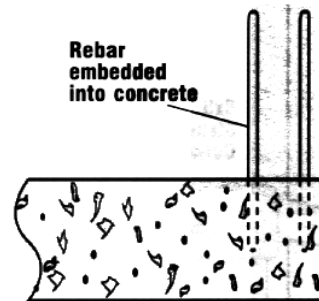
1. Lay out post locations for the deck railing. Glasrail® recommends positioning the posts at floor joists.
2. Drill two 1-inch diameter holes (upper and lower) using Glasrail side mount post insert as a template in one face of each post and a 3/8" hole in the opposite face, aligned with the center of the larger hole. See detail illustration. The small holes are for through-bolts that will fasten the post to the deck. The larger holes are there to admit a socket so you can tighten the bolts on the inside surface of the hollow post.
3. Mark the location on the joists where the posts will be attached. Position the post square and plumb along the joist and fasten it securely with 3/8" Lag Screws or Through-Bolts, washers, and nuts. Use furnished 1" hole plug to fill outside holes.

Direct Installation of Fiberglass Posts

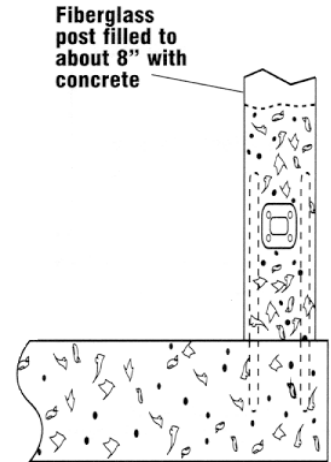
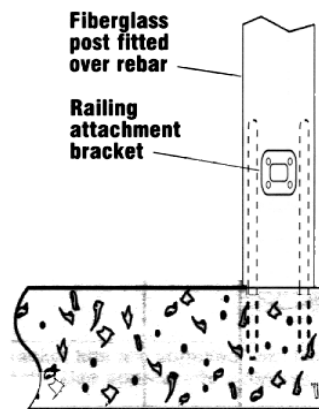
Typical Post Installation on Concrete or Masonry

Post Installation on Concrete or Masonry (alternative method)

1. Lay out locations for your posts at the proper spacing for the railing sections. Post installation can proceed in one of two ways. (See "Alternative Method Using Flush Mount Brackets")
2. Drill two 1/2-inch diameter holes into the concrete or masonry surface. The holes should be about six inches deep, approximately two inches apart and located within the area enclosed by the hollow end of the post when in its installed position.
3. Insert a 14" piece of 3/8" diameter steel rebar in each hole and bond it into place with epoxy.
4. After the epoxy has set, slide the structural fiberglass 4x4 post over the rebar. Slightly bend the rebar so that the fit is tight and snug.
5. Use a level and a large framing square to make sure the post is square and plumb, and attach the railing sections in the normal way.
6. Remove the post's top cap and fill the inside of the post with concrete to a height of about eight inches. Reinstall the cap.



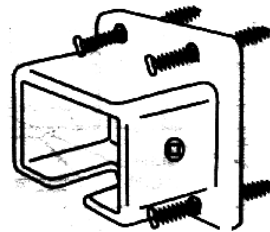
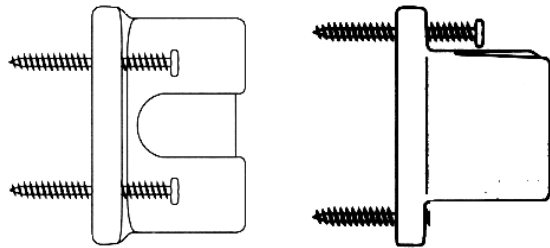
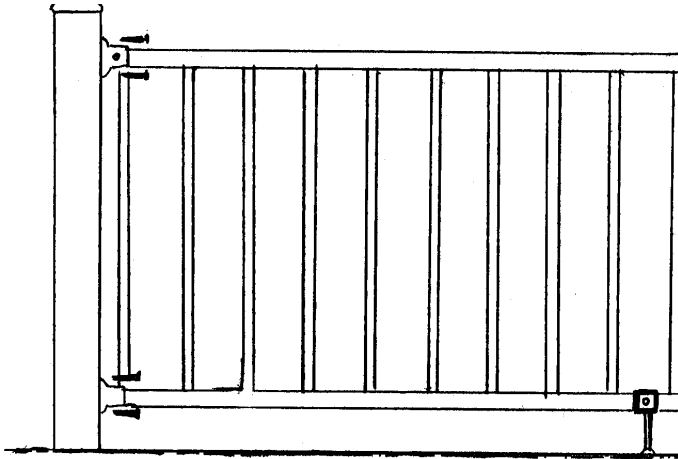
**POST
INSTALLATION
ON CONCRETE
OR MASONRY
(alternative
method)**



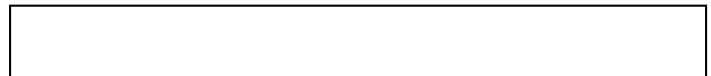
It is recommended to use stainless rebar in high corrosive areas.

Step 2: Attaching Rail Sections

1. Measure the distance between the posts 4" above the deck. Subtract 1" and cut the bottom rail at this length. Measure the distance between posts 38" above the deck, subtract 1" and cut the top rail to this length.
2. Drive railing supports onto the ends of the railing. If needed, the notch in the bracket provides clearance for a picket if it's located within 2" of a post. If not needed, the notch in the bracket can be turned to face the deck.



3. Use the 1 1/2" square-drive stainless steel screws to attach the brackets to the posts. The center support foot can be used to establish the spacing under the railing during installation.
4. If the length of a rail section is six feet or more snap the supplied center support to the outside of the center of the railing.
5. Install a 1 1/2" square-driver screw through the side of the upper two brackets on the building side of the brackets.



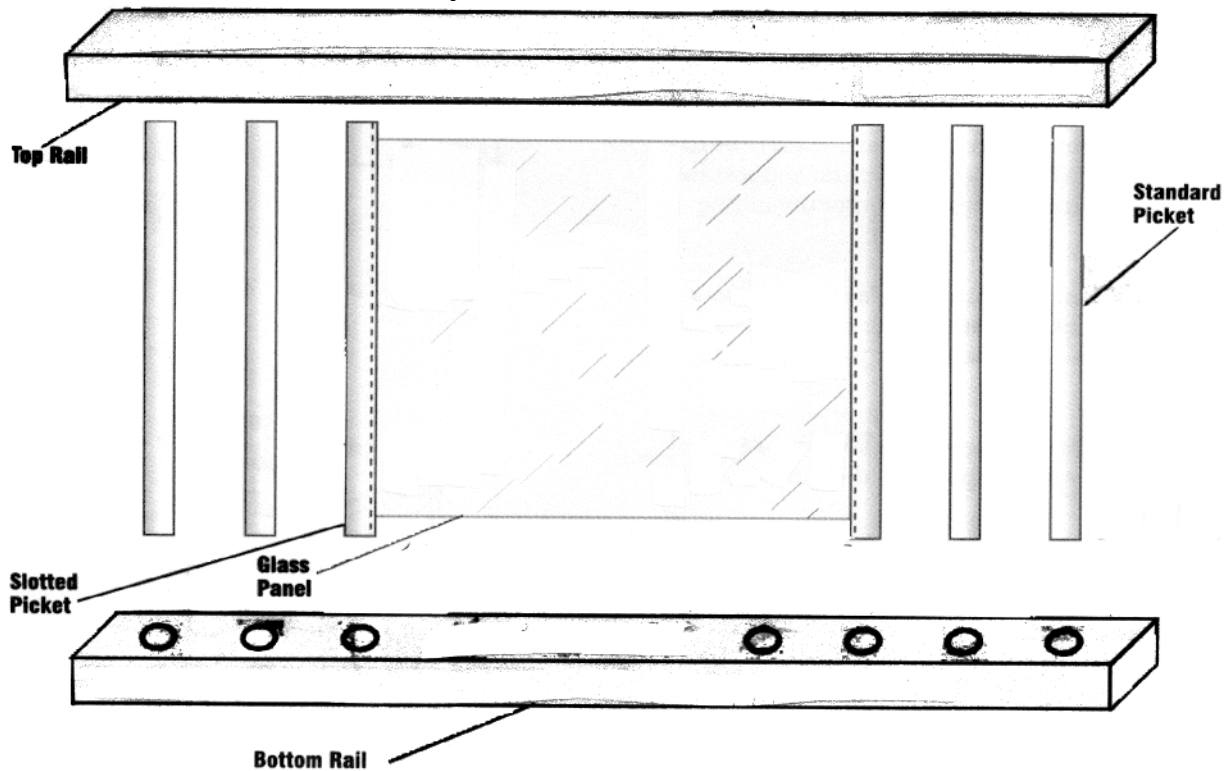
Installing Glasrail® Glaspanel Railing

The posts for Glaspanel style railing attach as described in Step 1. Simply choose an attachment method that is appropriate to your deck.

The Glaspanel Railing system comprises pairs of rails, slotted pickets (round), standard non-slotted pickets, hole cover strip, and attachment bracket kits. Obtain the ¼" tempered glass panels from a local supplier.

1. Install the posts first and make sure they are plumb. Measure the distance between the posts approximately 2" above the deck. Subtract 1" from this measurement and mark the resulting length on one of the rails. Cut the rail to this length. This is the bottom rail.
2. Drive end brackets onto the bottom rail with a block and a hammer. Use the block to cushion the hammer blows.
3. Attach the center clip to the bottom rail, then position and level the rail between posts. Its holes should face upward. Use the screws provided with the Bracket Kit to attach the end brackets to the posts.
4. Insert standard (i.e., non-slotted) pickets into the bottom railing, except where glass panels occur. Slide slotted pickets over the vertical edges of the tempered glass panels. This is the glass panel assembly.
5. Set the glass panel assembly (or assemblies) into the remaining holes in the bottom rail.
6. Prepare the top rail. Measure the distance between the posts approximately 38" above the deck. Subtract 1" from this measurement and mark the resulting length on one of the rails. Cut the top rail to this length. **Be sure the holes on the underside of the top rail align with the pickets in the bottom rail.** Drive end brackets onto the top rail with a block and a hammer. Use the block to cushion the hammer blows.
7. Place the top rail into position with its holes over the pickets in the bottom rail. Mark the position of the 8 screw holes on the posts and drill a pilot hole no larger than 11/64" for each screw.

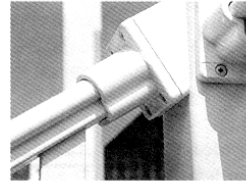
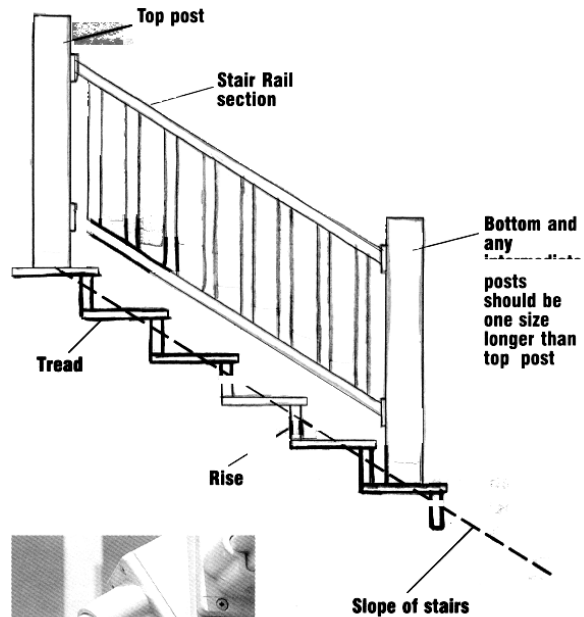
CAUTION: When inserting the screws, do not tilt the driver bit or the screw head will strip.



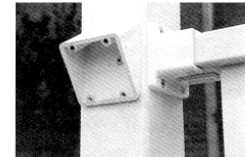
Installing Stair Railings

If your deck has steps, install stair posts using the directions for installation of posts, according to the surfaces to which the posts attach. **Important:** For stair posts other than the top post, use the next size longer post. For example, if you're installing a 45" post for your deck railing, the posts to be used down and at the bottom of the stair section should be 50".

Attach all other railing sections first, and then follow these directions for installing stair railing. Standard slope installations (7" rise, 11" tread) use Glasrail® Standard Slope Stair Railing sections.



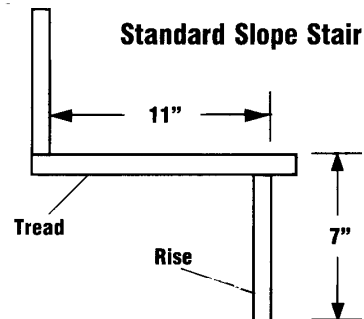
32° Stair Railing Bracket on post with Victorian Style Stair Railing attached.



32° Stair Railing Bracket installed on post

Are your steps standard slope?

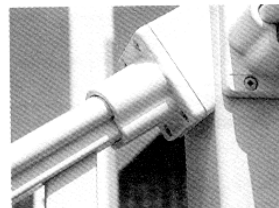
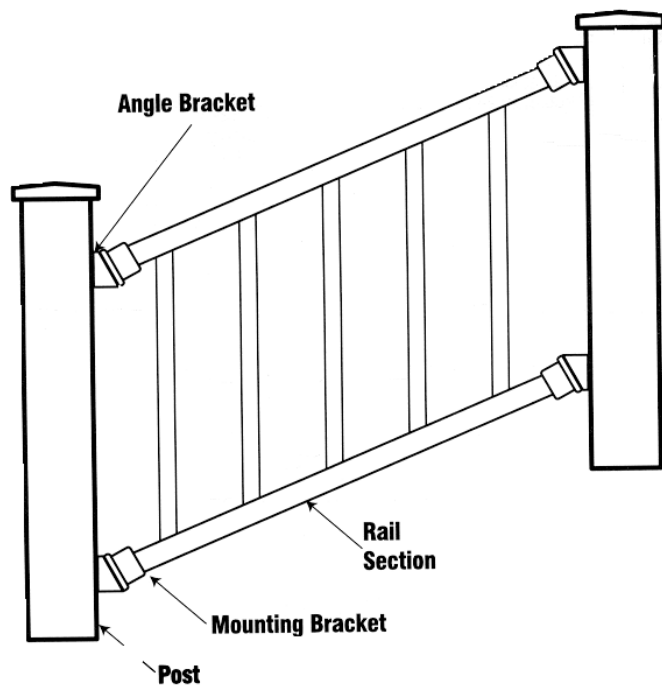
Most manufactured stair sections conform to the standard slope for deck stairs. This is a 7" rise per 11" tread—approximately 32 degrees from horizontal. To determine whether your stairs are of standard slope, measure the rise, not counting the thickness of the step itself, and then measure the tread, not counting any lip or overhang.



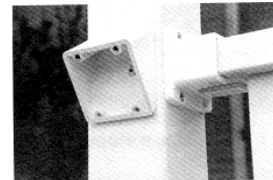
For Standard Window Style Stair Railing (using 32° angle brackets):

Lay out stair railing and posts. Install posts using the appropriate method described in Section 1. Make sure the posts are plumb. **Important:** Stair posts other than the top post should be one size longer than the other posts.

1. Choose the appropriate lengths of stair rail: 3-step, 4-step, etc. These can be used in combination with posts (for example, to make a 7-step out of one 3-step plus one 4-step).
2. Measure the distance between the posts 2" above the stair treads. You can use a string line on a 2x4 to help obtain this measurement. Cut the bottom rail a total of 3 3/4" shorter than your measurement.
3. Attach railing mounting brackets on the ends of the stair railing.
4. Mount the 32° stair rail brackets to the posts (The flat side of the angle bracket with the single hole fits against the post). Then mount the railing section to the brackets, bottom rail first.



32° Stair Railing Bracket on post with Breadloaf Style Stair Railing attached.



32° Stair Railing Bracket installed on post.

Window Style Stair Railing

Glasrail® Stair Railing system will accommodate stair slopes of 10° to 40°. The components of the railing system are supplied individually, not pre-assembled. Choose the appropriate Stair Railing beams for the length of your stairs. Beams come in sets of two: one top and one bottom beam. You will need four brackets and the number of pickets required by the length of your stair railings.

Install the posts and any other railing sections first. See Section 1 appropriate to the type of post installation you need. Be sure the posts are plumb. **Important:** Stair posts other than the top post should be one size longer than the other posts.

1. Start with the bottom rail. Stretch a string line parallel to the stair to define the pitch of the steps. The string line should cross the post 2" above the slope of the stairs. Use a T-bevel to measure the angle of the taut string line against the post. This is the pitch angle of your stairs. The ends of the beams must be cut to fit the mounting brackets using this angle, plus a bottom cut to clear the bracket.
2. Position the bottom beam with its holes pointing up. On the edge of the beam that will face the stairs, mark the angle defined by the T-bevel. Cut the end of the bottom rail at this angle. **Before cutting, visually inspect the beam in place against the posts, with its holes pointing up to be sure you're cutting it at the appropriate angle.**
3. Measure 1 5/8" in from the angle you've just cut, and mark the point. This is approximately half of the cut edge. Use a carpenter's square to mark a perpendicular line from this point to the cut edge. This will mark an end cut to permit the beam to fit into the mounting bracket. Again, hold the beam against the posts to make sure you've marked this cut at the correct orientation. Remember, the holes for this bottom beam will face up.
4. Cut off the end of the bottom rail on the mark you've drawn.
5. Measure the distance from the cut point and mark a line on the rail at the distance between the posts 2" above the stair treads minus 1 1/4" –that is, subtract 1 1/4" from the distance between posts measured 2" above the stair treads. Mark the distance from the bottom of the rail to the cut point. Transfer this measurement to the opposite end from the top of the rail.
6. Mark the angle at the end of the beam so that it intersects Point A. Visually inspect the beam in place against the posts; with its holes pointing up, to be sure you're cutting it at the appropriate angle. Cut the end of the bottom rail at the marked angle.
7. Measure 1 5/8" in from the angle you've just cut, and mark the point. This is approximately half of the cut edge. Use a carpenter's square to mark a perpendicular line from this point to the cut edge. This will mark an end cut to permit the beam to fit into the mounting bracket. Again, hold the beam against the posts to make sure you've marked this cut at the correct orientation. Also check to be sure the length is correct.
8. Cut off the other end of the bottom rail on the mark you've drawn.
9. Repeat this procedure for the top rail. Make sure the cutting and measuring is done with the top rail's holes point **down** and that the distance from the edge to the first hole is the same on the top rail as it is on the bottom rail. Be sure the posts are plumb when you measure the distance between them.
10. Fit the bottom end brackets to the bottom rail. Install the bottom rail parallel to the stair jack using the end brackets to attach it to the posts. The bottom beam's slots should face up and they should be centered in the space between the posts. Orient the brackets and the screws according to the drawing.
11. Place a 32" or 38" picket in the bottom rail and fit the top rail and brackets into place. Check to make sure the holes line up and that the picket is plumb. Adjust the length of the top rail to correct any misalignment.

Breadloaf Adjustable Slope Stair Railing:

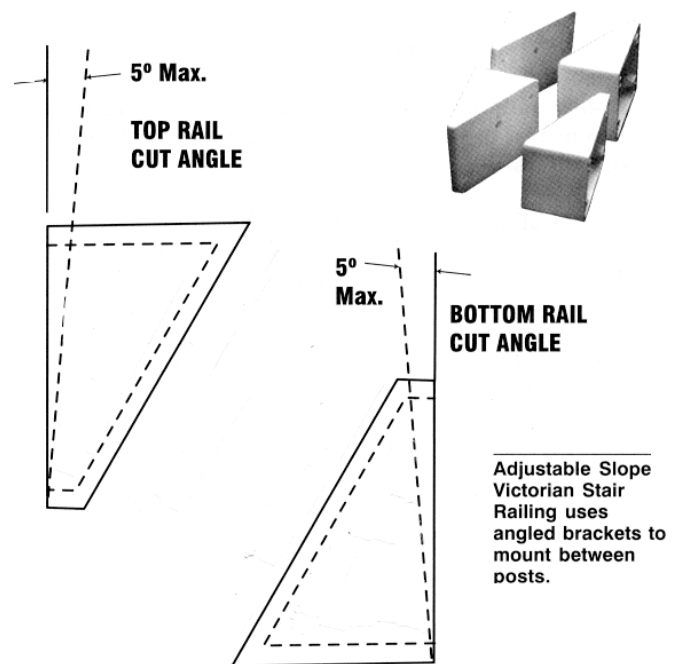
Bread Loaf Glasrail® sections attach somewhat differently from other styles. For standard slope stair railings, use the 32° Stair Angle Bracket. The system will accommodate stair slopes of 27 to 37°. Components of the adjustable slope railing system are supplied individually, not pre-assembled. Choose the appropriate Adjustable Slope Stair Railing beams for the length of your stairs. Beams come in sets of two: one top (BreadLoaf-shaped) and one bottom beam (rectangular). You'll need one mounting bracket kit per pair of beams, plus the number of pickets required by the length of your stair railings.

Install the posts and any other railing sections first. See Section 1 appropriate to the type of post installation you need. Be sure the posts are plumb. **Important:** Stair posts other than the top post should be one size longer than the other posts.

1. Start with the bottom rail. Stretch a string line parallel to the stair to define the pitch of the steps. The string line should cross the post 2" above the slope of the stairs. Use a T-bevel to measure the angle of the taut string line against the post. This is the pitch angle of your stairs. You can use a standard office supply protractor to determine whether this angle is within the allowable range for the system: 27° to 37°. The ends of the 32° brackets must be cut to this angle, and the amount to be cut off cannot exceed 5°. Before cutting, note whether your required angle would cut off the bracket's mounting holes. If so, the angle to be cut is too great.

Important: To cut the brackets, insert a screw into the center hole of the bracket. Use vice grips or other gripping tool to hold the bracket while sawing. Be careful not to get your hands too close to the saw blade during cutting.

2. After cutting the brackets, mount the bottom brackets in position on the posts.
3. Subtract 3 3/4" from the measured length between posts and mark off this measurement on the bottom rail. This is the length to be cut. **Before cutting, visually inspect the beam in place against the posts; with its holes pointing up, to be sure you're cutting it at the correct length.**

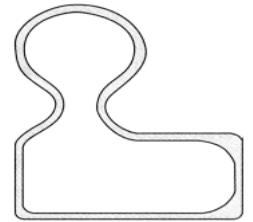
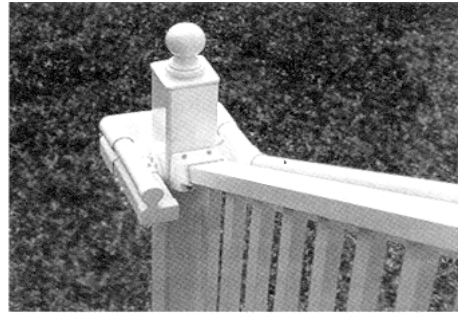


4. Fit the bottom end brackets to the bottom rail. Install the bottom rail onto the stair angle brackets. The bottom beam's slots should face up, and they should be centered in the space between the posts.
5. Repeat the measuring and cutting procedure for the top rail. Remember, the top rail's holes will point down.
6. Place a 32" or 38" picket in the bottom rail and fit the top rail and brackets into place. Check to make sure the holes line up and that the picket is plumb. Adjust the length of the top rail to correct any misalignment.
7. Use the fasteners provided with the mounting bracket kit to attach the end brackets of the top beam to the angle brackets.

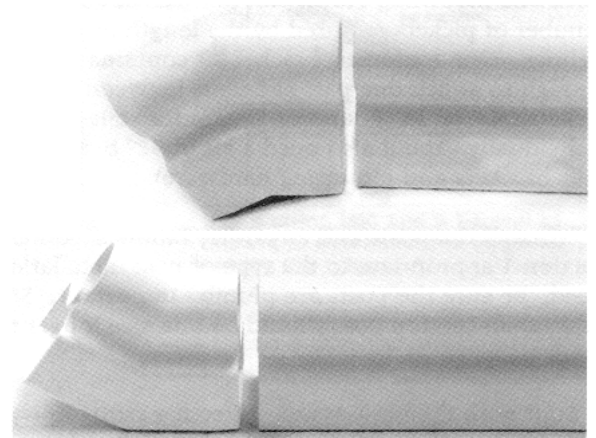
Installing Hand Rail

Most building codes require, and Glasrail® strongly recommends, the addition of grippable handrail to all stair railings.

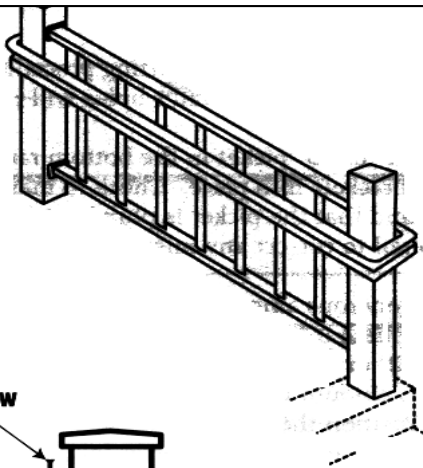
1. Install the handrail side brackets on the posts oriented so that the handrail will be parallel to the stair rail and at the appropriate height. Mark the location for 11/64" pilot holes by holding the handrail support bracket in place, then securely bolt the support brackets to the posts. Use supplied stainless steel screws to attach the brackets to fiberglass posts. Do not use self-tapping screws on fiberglass. Use other hardware as appropriate if you are attaching brackets to other surfaces, such as masonry walls, wood framing, etc. Be sure the attachment surface is sturdy.
2. Assemble the handrail section(s) using the appropriate end cap(s) and angle brackets for your application. You can choose to have the handrail wrap around the ends of the posts. Secure the brackets to the handrail with epoxy adhesive.
3. Snap the handrail into the side mount brackets and secure with setscrews (stainless) from the topside of the assembly.



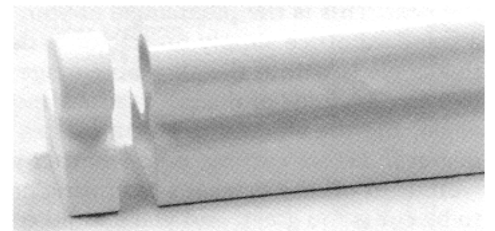
HandRail cross section view



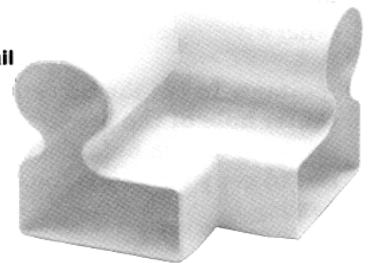
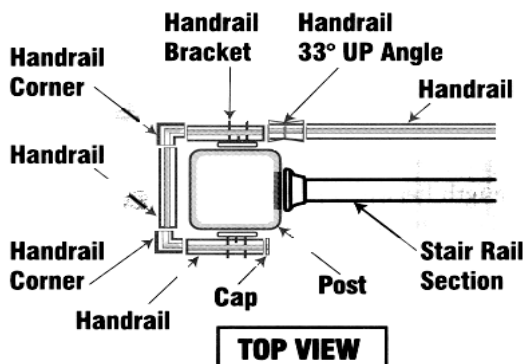
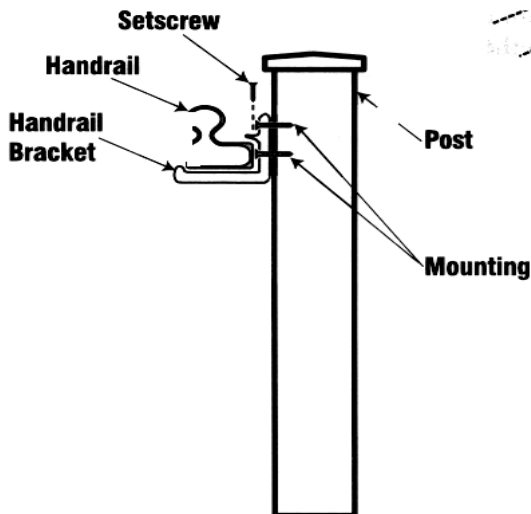
Up-angled and down-angled handrail fittings.



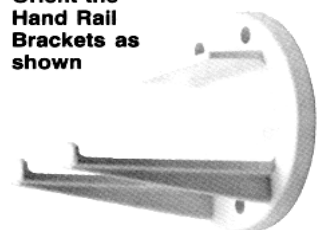
Hand Rail End Cap



Use Angle fittings to wrap Hand Rail around posts, as shown here.



Orient the Hand Rail Brackets as shown



Angled Railing Installation

For applications where a railing needs to be mounted at an angle other than straight or 90°. Glasrail® uses an angled bracket to easily accommodate various° angles. These are useful for a bay or gazebo application. Angled railing installation is similar to regular railing installation, as described in Step 2 above.

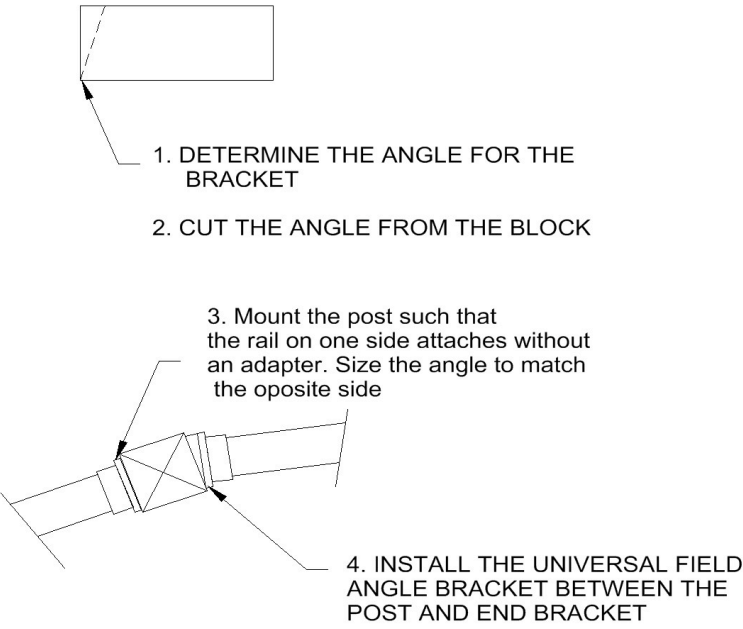
Universal Field Cut Installation

1. Measure the distance between posts at the middle of the flat face of the post.
2. Cut the railing to this measurement. Use a sliding T-bevel to record the angle between the posts. Cut off the end of the railing square
3. Measure the angle with a T Bevel. Cut off the adapter from the block. Before you cut, check to be sure you have marked these angles at the correct orientation for the section.
4. Repeat this procedure for the other ends of the railing.
5. Secure the railing brackets to the post with the supplied fasteners and then secure the railing to the bracket with the setscrew.

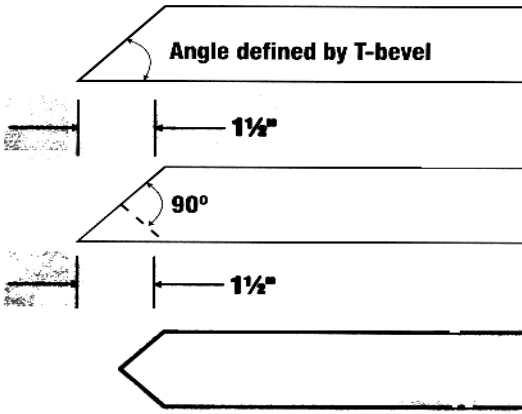
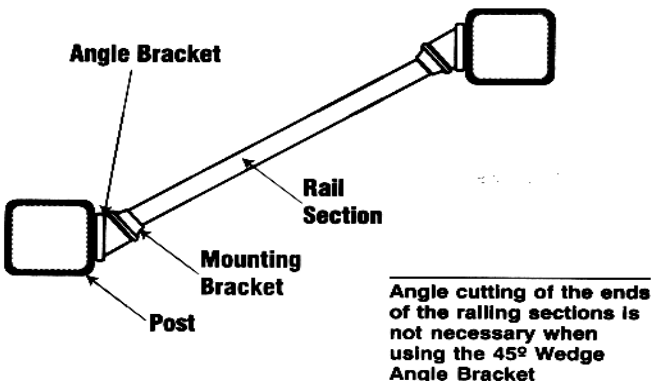
45° Angle Bracket Installation

Railings to be installed at 45° angles can utilize the Angle Bracket attachment to simple installation.

1. Cut the railing section to the dimension between posts less 3 1/2". Install end brackets onto the ends of the railing section using a small block to cushion blows of a hammer.
2. Mount the 45° Mounting brackets to the post and then mount the railing to the brackets.



UNIVERSAL FIELD CUT BRACKET



Cleaning Instructions

Glasrail® system components are finished at the factory to retain their good looks with a minimum of care. To remove dirt, use common household cleaners, like dishwashing detergents, turtle wax car wash and a garden hose. For stubborn stains and mildew, use a cleaner made for vinyl siding. Do not use bleach or other products that may affect the color.

IMPORTANT: do not use abrasive detergents, scouring devices, sanders, scrapers, or other tools to clean Glasrail® railings and brackets, and **do not use pressure-wash devices of any kind.**

Painting Your Railing

The Glasrail® Structural Deck and Stair Railing system comes pre-finished in the color you choose, so no painting is necessary. However, it can be painted, if you wish, either on installation or later – for example, if you change your décor's color scheme.

To paint your railing, use a good quality, durable exterior grade paint. The factory recommendation is an exterior urethane paint.

Sand all surfaces of the railing lightly with very fine grit sandpaper. Wipe the sanding dust clean.

Apply an automotive plastic primer only to the molded brackets and caps. Then apply an exterior-grade coating to the railing and other parts.

For more information, contact your Glasrail® distributor



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