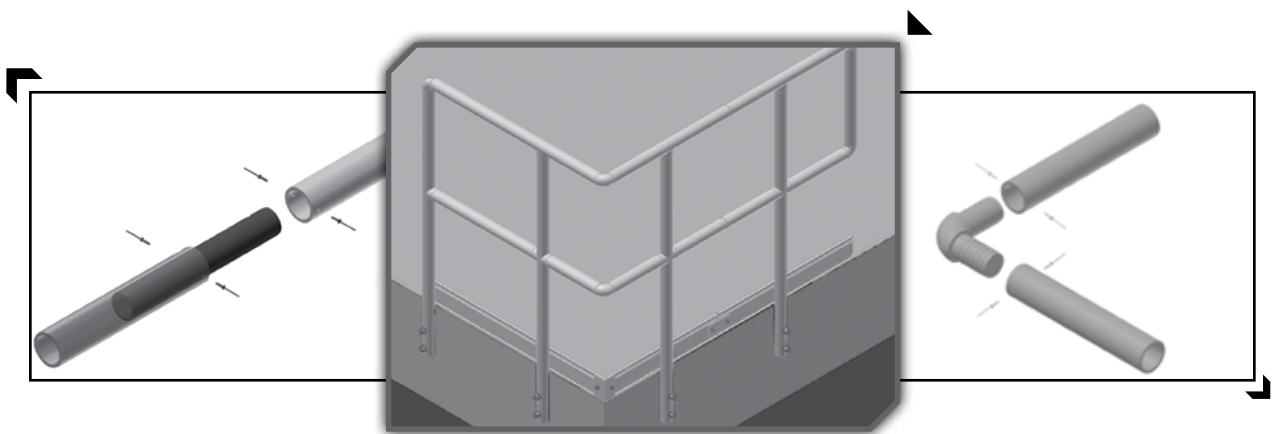


Installation Instructions DynaRound™ Guardrail System



Building the World to Last®

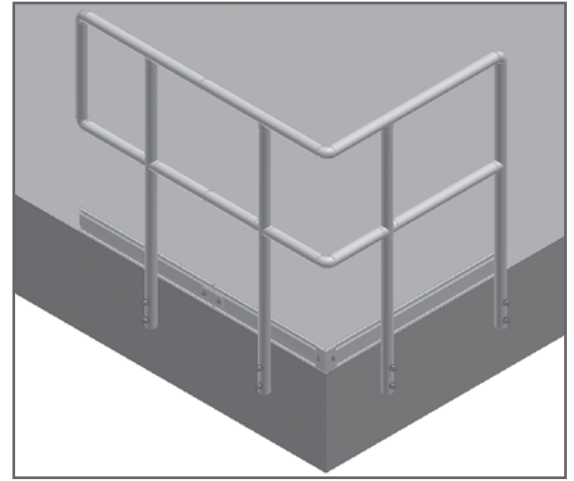
HIGH PERFORMANCE COMPOSITE SOLUTIONS



Installation Instructions

The **DynaRound® Modular Guardrail System Installation Instructions** have been designed to combine the best in fiberglass reinforced plastic (FRP) railing with simplicity of installation. Fibergrate has made every attempt to provide clear and thorough instructions for installing these products. If you have any further questions, or need additional information, do not hesitate to contact Fibergrate at (800) 527-4043.

By following these simple instructions, you should find installation of your railing system quick and easy.



TOOLS REQUIRED

- Drill**
- Bits**
 - 1/8" (for rivets)
 - 3/16" (for kickplate and handrail screws)
 - 3/8" (for rivet nuts)
 - 5/16" & 9/16" (for bolts)
- 1/2", 82° Countersink** (for Midrail to End Post Connector Kit - PN 503115.1)
- 10" Power Miter Saw with Masonry or Carbide Abrasive Blade**
- Sandpaper (80 grit) - for Deburring Cuts**
- 36" Spirit Level**
- Marker or Pencil**
- 25' Tape Measure**
- Rivet Gun**
- Rivet Nut Setting Tool (PN 729610)**
- Socket Set with Extensions**
- Open End Wrench Set**
- Bonding (Epoxy) Kit(s)** - one for every 15 posts PN 549100
- Spray Sealer** (PN 549060 - Insulating Epoxy 403 Clear, 12.5 oz. can)
- Blue (removable) or Red (non-removable) Thread Locking Compound**

NOTE: Cuts and drilled holes must be sealed to maintain corrosion protection.

IMPORTANT

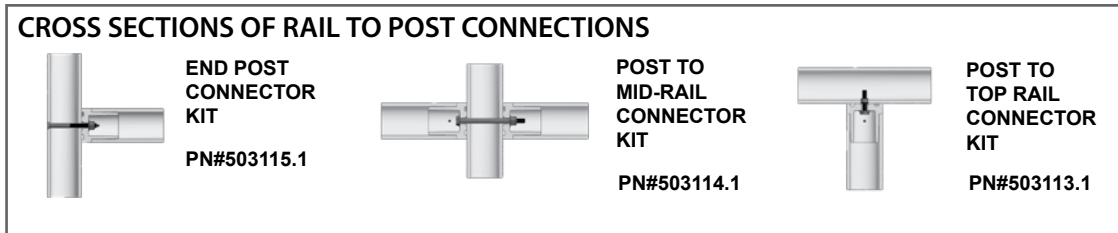
Read these instructions completely before attempting to install the DynaRound modular guardrail system. It is important to understand the installation procedure thoroughly prior to beginning work. It is the installer's responsibility to carefully follow fabrication and installation plans and instructions to ensure design performance characteristics of the DynaRound® guardrail system. The installer could be liable for claims that result from improper installation.

INSTALLING HORIZONTAL GUARDRAIL

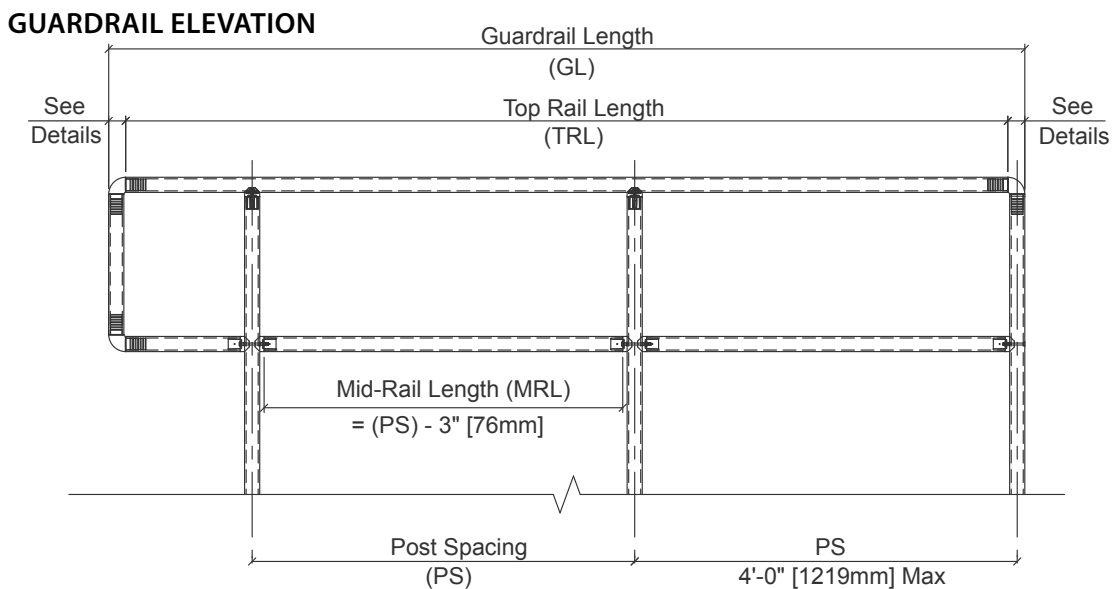
1. Install the post kits following the details shown on pages 4 and 5. Posts are to be placed at a maximum of 4'-0" (1219 mm) on center for continuous runs and a maximum of 18 inches (457 mm) from Returns, 90° Turns, or Non-90° Turns. Posts are to be placed at a maximum of 12 inches (305 mm) from a Stub End condition. Insure that the posts are installed plumb. Note: Do not install the Post to Top Rail Connector Kit (PN 503113.1) prior to Step 12. (

Installation Instructions

- For end posts, install the End Post Connector Kit (PN 503115.1) or for interior posts, the Post to Mid Rail Connector Kit (PN 503114.1) to each post. When installing the End Post Connector Kit, countersink the hole where the head of the flat head bolt will be located so that it is flush. When installing the 1/4" diameter bolt in either connector kit, torque the lock nut until it holds the Saddle Connectors tightly to the post. After assembly, it will not be possible to retighten these bolts.



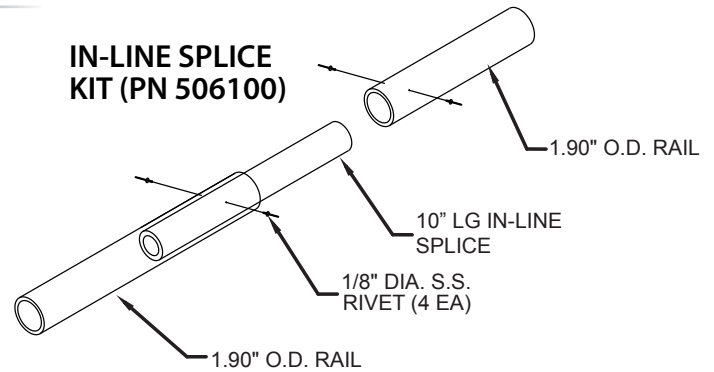
- Beginning at one end of the guardrail installation, measure the center to center distance between the first and second post. Cut the mid-rail from 1.9" OD Round Tube Rail (PN 5001010). The Mid-Rail Length (MRL) is equal to the Post Spacing (PS) minus 3 inches (76.2 mm).



- Loosen or remove the second post and install the mid-rail by bonding and riveting it to the saddle connectors on the first and second post. Mix only enough adhesive (PN 549100) that you can use in 20 minutes. Lightly sand the inside of the 1.9 inch OD Round Tube and the mating surfaces of the saddle connector and remove any dust. Bond the midrail tube to the saddle connectors by applying adhesive to both the inside of the 1.9 inch OD Round Tube and the Saddle Connector and pressing together firmly. Install the two rivets by drilling 1/8" diameter holes as indicated in the details and setting the rivets. Wipe away any excess adhesive. Reinstall and replumb the second post.
- Repeat this procedure until all mid-rails are installed between the posts in the guardrail run.
- Cut the top rail from 1.9 inch OD Round Tube (PN 5001010) following the dimensions given in the illustration. Subtract the dimensions listed below from the Guardrail Length (GL) to arrive at the Top Rail Length (TRL). The dimensions are also shown on the End Condition Details on page 6 and 7.
 - Reduce length by 2-1/8 inches (54 mm) for each Return, End Post, or 90° Turn Condition.
 - Reduce length by 1/8 inch (3 mm) for Stub End Condition.

Installation Instructions

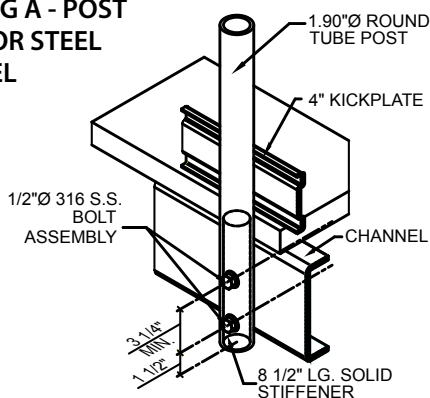
- c. Do not reduce length for Non-90° Turn End Condition. Miter end of rail as required to fit adjoining rail section.
 - d. Top Rails longer than 20 ft (6096 mm) may be spliced together using the In-Line Splice Kit (PN 506100) Splices may be placed anywhere between posts.
7. Dry fit the Saddle Connectors (PN 7926120) provided with the post kits to the top of each post. Dry fit and position the top rail cut in step (6) into the Saddle Connectors and verify that the end of the rail is in the correct location and that it is cut to the correct length. Using masking tape or packing tape, temporarily attach the top rail to the Saddle Connectors without taping them to the posts. This will temporarily position the Saddle Connectors relative to the posts to allow the top rail to be accurately drilled for their attachment.
 8. Gently lift the top rail/Saddle Connectors from the posts, rotate the top rail 180 degrees and mark the top rail using the Saddle Connectors as a guide. Mark the locations of the holes in the top rail using a permanent marker or pencil through the hole in the Saddle Connector.
 9. Remove the Saddle Connectors from the top rail and drill a 3/8" (9.5 mm) diameter hole at each Saddle Connector location. Drill the holes as perpendicular to the top rail as possible.
 10. At each Saddle Connector location, install a 1/4" – 20 UNC rivet nut using the Rivet Nut Installation Tool (PN 729610). Install rivet nut flush with the surface of the top rail.
 11. Attach each Saddle Connector to the top rail using the 1/4" x 1" hex head bolt and flat washer supplied with the post kit. Before installing the bolt, coat the threads with a thread locking compound to prevent loosening. After assembly to the posts, it will not be possible to tighten this bolt. Torque the bolt until the Saddle Connector is firmly held against the top rail.
 12. Attach the top rail/Saddle Connector assembly to the tops of the posts by bonding and riveting following the instructions given in step 4. If the guardrail run includes an End Post Condition, Install the Fixed 90° Rail Splice (PN 7926130) into the top rail prior to installing the top rail. Follow step 14 for connection to the end post.
 13. The end conditions of the rail section can now be installed following steps 14 through 18 and referencing the End Condition Details on pages 6 and 7.



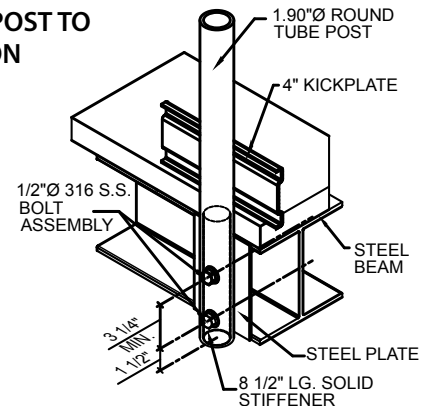
POST INSTALLATION METHODS - Not all base conditions shown can be installed using modular guardrail posts. Posts may be fabricated by the installer or a proposal for custom fabricated posts may be obtained from Fibergrate. For installation conditions not shown, contact Fibergrate.

All details are for posts spaced 4' max on centers to meet a F.O.S. of 2.0 under OSHA and IBC loads, unless noted otherwise.

DRAWING A - POST TO FRP OR STEEL CHANNEL



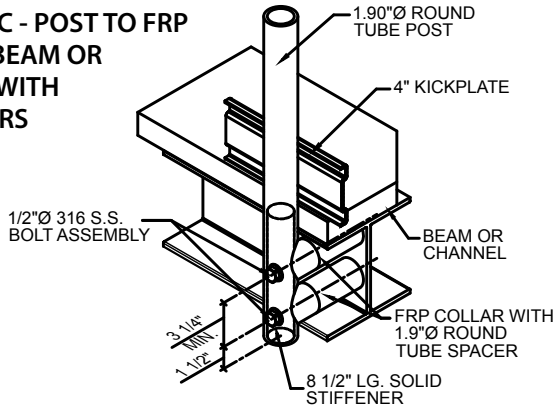
DRAWING B - POST TO STEEL PLATE ON STEEL BEAM



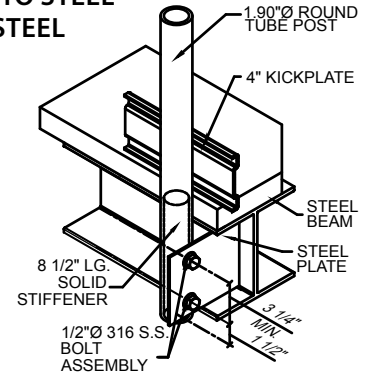
Post Installation Details

POST INSTALLATION METHODS CONT. - For installation conditions not shown, contact Fibergrate.
 All details are for posts spaced 4' max on centers to meet a F.O.S. of 2.0 under OSHA and IBC loads, unless noted otherwise.

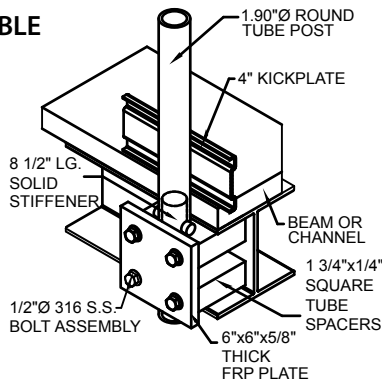
DRAWING C - POST TO FRP OR STEEL BEAM OR CHANNEL WITH FRP SPACERS



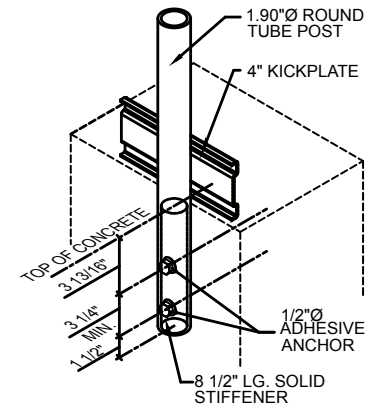
DRAWING D - POST TO STEEL ANGLE ON FRP OR STEEL BEAM



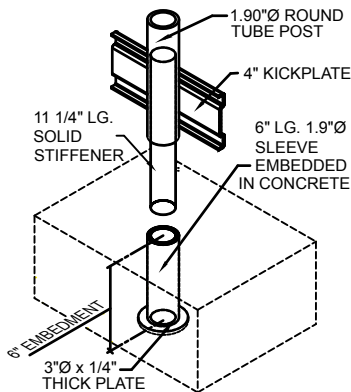
DRAWING E - REMOVABLE POST TO FRP OR STEEL BEAM



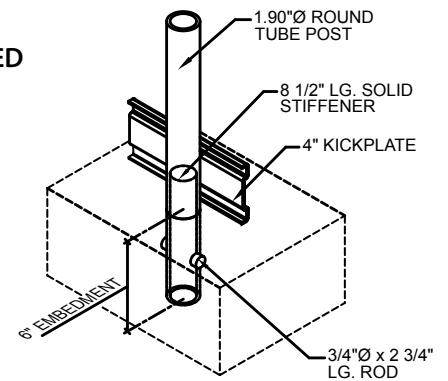
DRAWING F - SIDE MOUNT POST TO CONCRETE



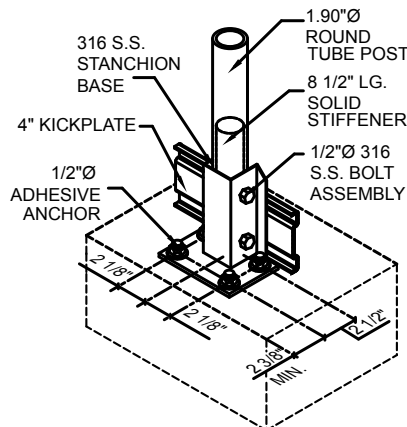
DRAWING G - REMOVABLE EMBEDDED POST IN CONCRETE



DRAWING H - FIXED EMBEDDED POST IN CONCRETE



DRAWING I - TOP MOUNTED STAINLESS STEEL STANCHION BASE

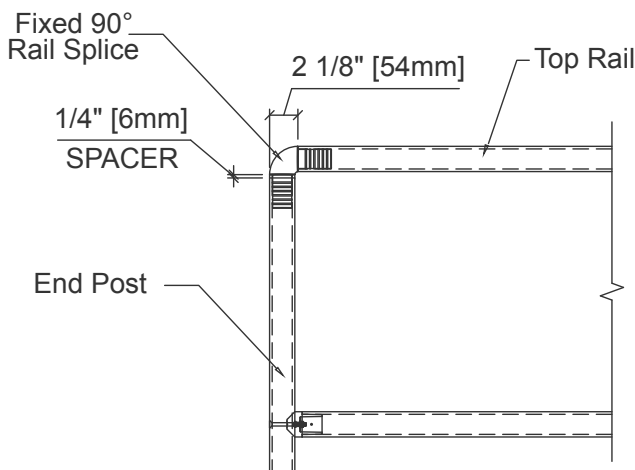


Installation Instructions

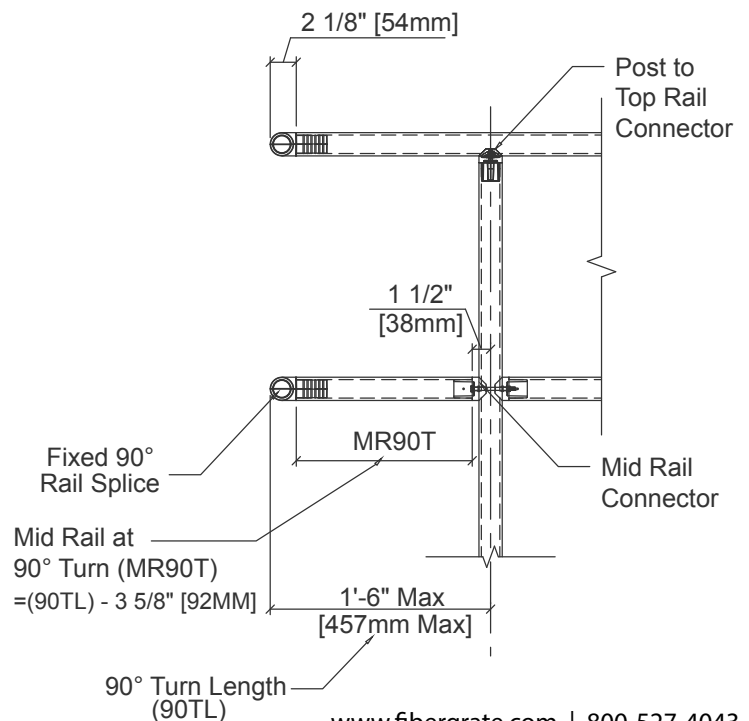
14. **End Post Condition:** Add a 1/4 inch (6.4 mm) long spacer cut from the 1.9" OD Round Tube Rail (PN 5001010) to fit between the Fixed 90° Rail Splice (PN 7926130) and the top of the end post. The connection between the Fixed 90° Rail Splice and the top rail and post are otherwise identical to the procedure described in step 4.
15. **90° Turn End Condition** (Max 18 inches/457 mm from Post): Connect the ends of the top and mid rail to the adjoining guardrail section using the Fixed 90° Rail Splice Kit (PN 503123.1). The mid rail is cut to the 90° Turn Length minus 2-11/16 inches (68mm). The connection between the Fixed 90° Rail Splices and the two rails are identical to the procedure described in step 4.
16. **Non-90° Turn End Condition** (Max 18 inches/457 mm from Post): Connect the ends of the top and mid rail to the adjoining guardrail section using the Adjustable Rail Splice Kit (PN 506510). The mid rail is cut to the Non-90° Turn Length minus 1-1/2 inches (38mm) and the end is miter cut to fit the adjoining rail section. The connection between the Adjustable Rail Splices and the two rails are identical to the procedure described in step 4.
17. **Return End Condition** (Max 18 inches/457 mm from Post): Cut a 17-5/8 inch (448 mm) length of 1.9" OD Round Tube Rail (PN 5001010) to act as the vertical portion of the return. The mid rail is cut to the Return Length minus
18. **Stub End Condition** (Max 12 inches/305 mm from Post): Bond and rivet an End Cap (PN 7926150) into the open end of the top and mid rails. The length of the mid rail is the Stub Length minus 1-5/8 inches (41mm). The connections are made using the procedure described in step 4.
19. **Kickplate:** Cut to length and align Kickplate (PN 510500) 1/4 inch (6mm) above the walking surface. Drill 3/16 inch (4.75 mm) diameter holes through the center of the kickplate at posts. Attach the kickplate to the post using 1/4 inch x 1 inch self-tapping screws. Be careful not to over torque the self-tapping screws and strip the holes.
20. **Kickplate Splices:** Drill kickplate for Kickplate Splice Kit (PN 516601.1) and 90° Kickplate Splice Kit (PN 516701.1) using 5/16-inch (8 mm) drill bits for installation of the 1/4 Inch diameter bolts supplied with the kits.

END CONDITION DETAILS

END POST CONNECTION DETAIL

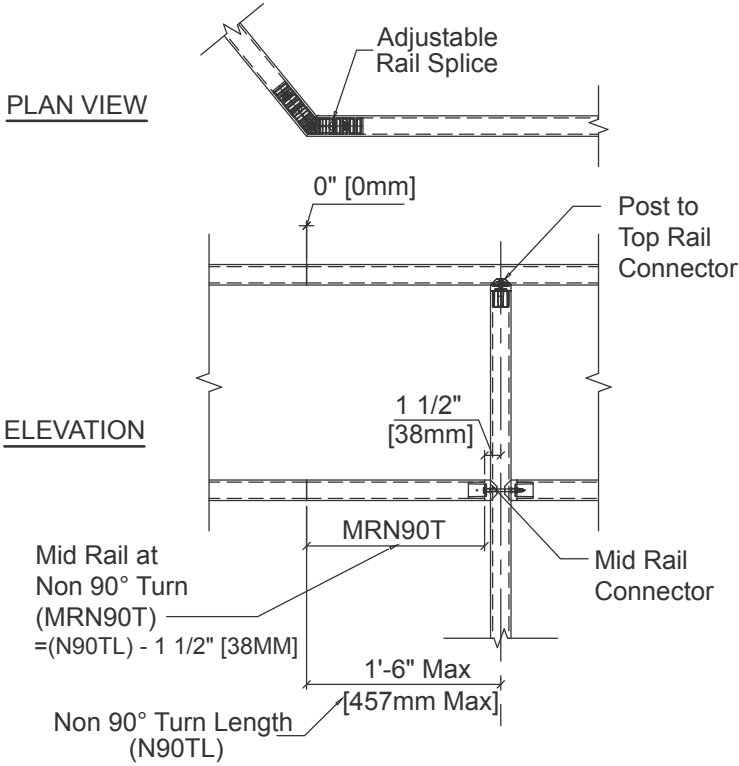


90° TURN END CONDITION

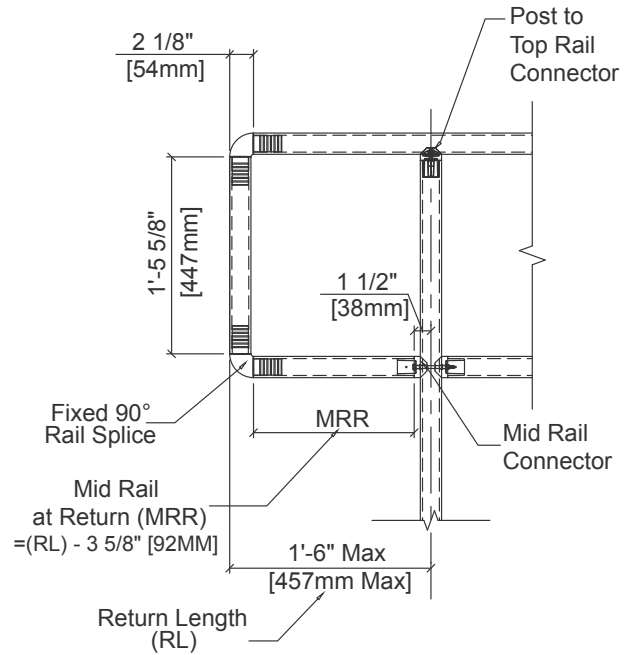


Installation Details

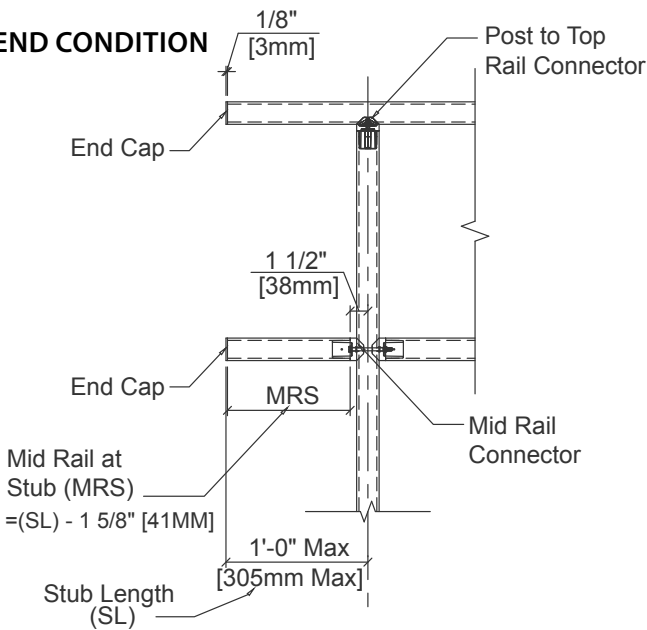
NON 90° TURN END CONDITION



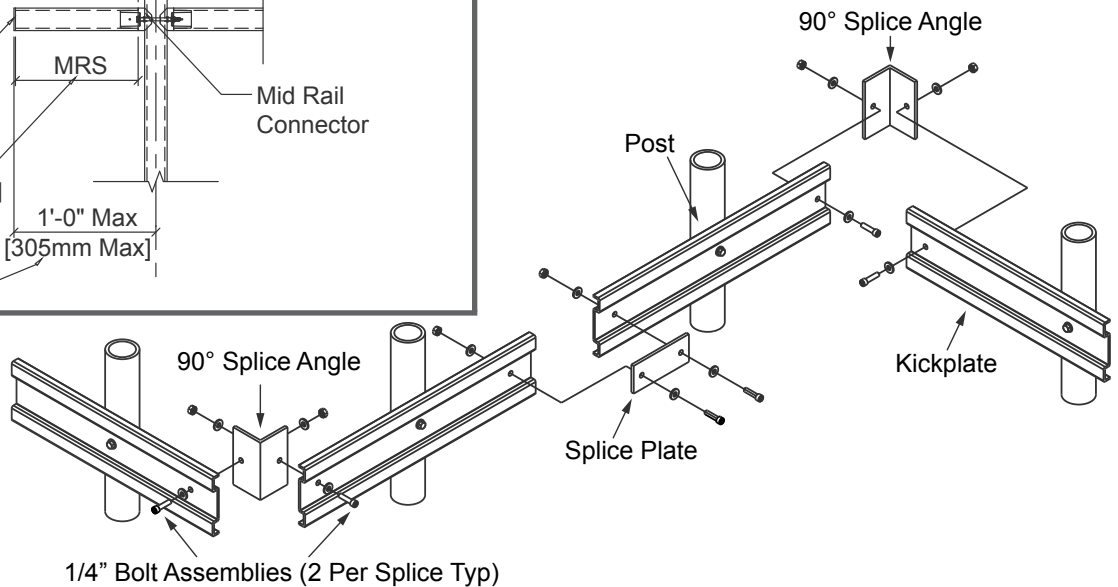
RETURN END CONNECTION



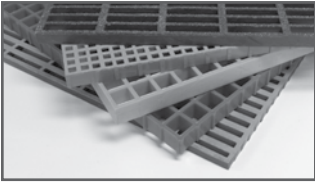
STUB END CONDITION



KICKPLATE SPLICE



Fibergrate Products & Services



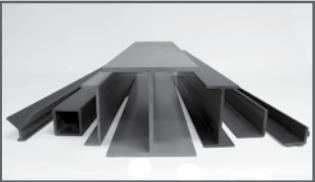
Fibergrate® Molded Grating

Fibergrate molded gratings are designed to provide the ultimate in reliable performance, even in the most demanding conditions. Fibergrate offers the widest selection in the market with multiple resins and more than twenty grating configurations available in many panel sizes and surfaces.



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Combining corrosion resistance, long-life and low maintenance, Safe-T-Span provides unidirectional strength for industrial and pedestrian pultruded grating applications.



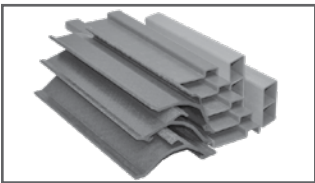
Dynaform® Structural Shapes

Fibergrate offers a wide range of standard Dynaform pultruded structural profiles for industrial and commercial use, including I-beams, wide flange beams, round and square tubes, bars, rods, channels, leg angles and plate.



Dynarail® & DynaRound™ Guardrail, Handrail & Ladders

Easily assembled from durable components or engineered and prefabricated to your specifications, Dynarail square tube and DynaRound round tube railing systems and Dynarail safety ladder systems meet or exceed OSHA and strict building code requirements for safety and design.



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