Installation Instructions

SRT-350 8 POST™
Guardrail End Treatment
Revised June 24, 2008

TRINITY
HIGHWAY PRODUCTS

HIGHWAY SAFETY SOLUTIONS TODAY

SRT-350 8 POST™ System

Guardrail End Treatment

Installation, Maintenance, and Repair Manual

Trinity Highway Products, LLC
2525 Stemmons Freeway
Dallas, Texas 75207

⚠	**IMPORTANT:** These instructions are to be used only in conjunction with the installation of the SRT-350 8 POST™ system. These instructions are for standard installations specified by the appropriate state/specifying agency. In the event the specified system installation requires or involves special circumstances, contact the appropriate state/specifying agency before proceeding. Trinity Highway Products, LLC (THP) representative is available for consultation if required.

This Manual should be available to the installation/ maintenance/repair workers at all times. For additional copies, contact Trinity Highway Products, LLC at 800-527-6050.

All information, illustrations, and specifications in this Manual are based on the latest SRT-350 8 POST™ system information available at the time of printing. We reserve the right to make changes at any time.

CUSTOMER SERVICE CONTACTS

Trinity Highway Products, LLC is committed to the highest level of customer service. Feedback regarding the SRT-350 8 POST™ system, their installation procedures, supporting documentation, and performance is always welcome. Our goal is to enhance highway safety through innovation. Additional information for materials and product specifications can be obtained by calling the telephone numbers or writing to the email address below:

TRINITY HIGHWAY PRODUCTS, LLC:	
Telephone:	800-644-7976 (U.S. Calls) +1-214-589-8140 (International)
E-mail:	product.info@trin.net
REGIONAL TELEPHONE CONTACTS:	
Dallas, Texas	800-527-6050
Centerville, Utah	800-772-7976
Elizabethtown, Kentucky	800-282-7668
Girard, Ohio	800-321-2755
Orangeburg, South Carolina	800-835-9307
International	+1-214-589-8140

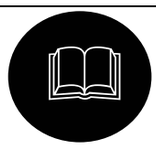
SUGGESTED SAFETY RULES FOR INSTALLATION - MAINTENANCE - REPAIR

*** IMPORTANT SAFETY INSTRUCTIONS ***

Always keep this Manual in a location where it is easily accessed by persons who install, maintain, or repair the SRT-350 8 POST™ system.

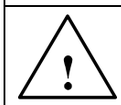
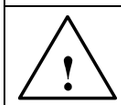
SAFETY SYMBOLS

Below are the safety symbols that may appear on the SRT-350 8 POST™ system or in the documentation. Read the entire Manual for suggested safety, assembly, installation, maintenance, repair, and service information.

SYMBOL	MEANING
	▪ **SAFETY ALERT SYMBOL** Indicates Danger, Warning, or Caution. Failure to read and follow the Danger, Warning, and Safety or Caution indicators could result in serious injury or death to the workers and/or bystanders.
	▪ **WARNING – READ MANUAL** Read the Manual(s) and follow all warnings and safety instructions. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders.

WARNINGS AND CAUTIONS

Read all warnings, cautions and instructions before installing/maintaining/ repairing the SRT-350 8 POST™ system.

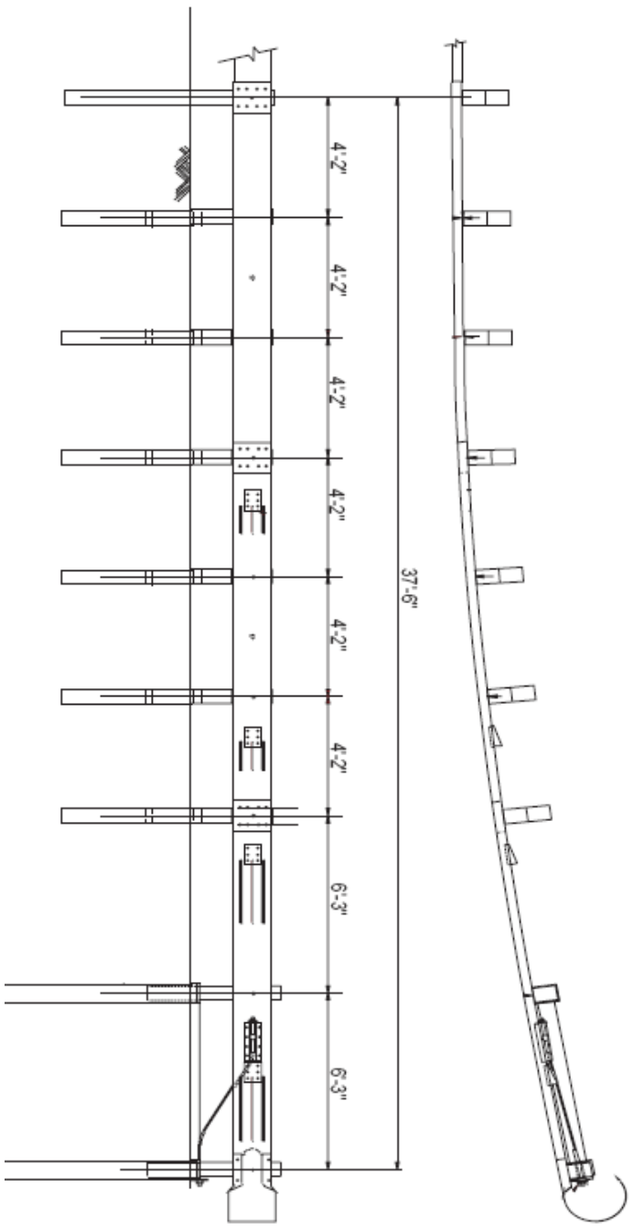
	**IMPORTANT:** READ SAFETY INSTRUCTIONS THOROUGHLY AND FOLLOW THE SAFE OPERATION PRACTICES WHILE INSTALLING THE SRT-350 8 POST™ SYSTEM. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders.	
	**WARNING:** Read the instructions carefully. Be familiar with the complete instructions for the SRT-350 8 POST™ system before installing, maintaining, or repairing the SRT-350 8 POST™ system. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Ensure that the necessary traffic control is setup and any debris that has encroached onto the traveled way or shoulder has been removed before beginning installation or repairs. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Be sure adequate time is available for complete installation, before beginning the installation process. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Do NOT perform installation, maintenance, or repair of the SRT-350 8 POST™ system when tired, ill, or under the influence of alcohol, drugs, or medication. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Do not install, maintain, or repair the SRT-350 8 POST™ system, until you have read this Manual thoroughly. Please call Trinity Highway Products, LLC at 800-527-7976 if you do not understand the installation instructions. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Use only Trinity Highway Products' parts on the SRT-350 8 POST™ system for installation, maintenance, or repair. The installation or co-mingling of unauthorized parts is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with a system that has not been accepted by the Federal Highway Administration ("FHWA"). The SRT-350 8 POST™ system and its component parts have been accepted for state use by FHWA. However, a co-mingled system has not been accepted.	
	**WARNING:** Do NOT modify the SRT-350 8 POST™ system in any way. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Do NOT perform installation, maintenance, or repair, if the SRT-350 8 POST™ system site, shoulder, or traveled area are covered or encroached by road debris. Failure to follow this warning could result in serious injury or death in the event of a collision.	
	**WARNING:** Safety measures, incorporating traffic control devices, must be used to protect all personnel while at the installation, maintenance, or repair site. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders. Trinity Highway Products offers an economical and effective truck mounted attenuator, the MPS-350, for the protection of workers in work zones. For more information on the MPS-350, call 800-644-7976 or visit the Trinity Highway Products website at www.highwayguardrail.com.	
	**WARNING:** Ensure that the entire work zone site is visible at all times for safety. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders.	

	**WARNING:** Use caution when working near public roads. Be mindful of vehicles in motion nearby. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders.
	**WARNING:** Ensure that all Guardrail products and delineation used meet all federal, state/specifying agency, and local specifications. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that your installation, repair, and maintenance meet all appropriate Manual on Uniform Traffic Control Devices (MUTCD) and local standards. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that the Guardrail you install is terminated, as dictated by the state/specifying agency, pursuant to FHWA acceptance. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that there is proper site grading for tube and post placement, as dictated by the state/specifying agency, pursuant to FHWA acceptance. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that all of the SRT-350 8 POST™ system Warnings, Cautions, and Important statements within the SRT-350 8 POST™ system Manual are followed. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Always use safety precautions when performing installation, maintenance, repair, mixing chemicals, and/or moving heavy equipment. Wear steel toe shoes, gloves, safety goggles, and back protection. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders.
	**CAUTION:** Ensure before installing, maintaining, or repairing the SRT-350 8 POST™ system that no parts are frayed, damaged, or broken. Failure to follow this warning could result in serious injury to the workers and/or bystanders.

KNOW YOUR SRT-350 8 POST™ SYSTEM

SRT 8-POST™ SYSTEM

FOR SPECIFIC INSTALLATION, MAINTENANCE, OR REPAIR DETAILS, REFER TO THE STATE/SPECIFYING AGENCY'S STANDARD DRAWING



NOTES:	
1.	Alternate to long foundation tube without soil plate is short tube with soil plate.
2.	Alternate to two 12' 6" (3.81 m) long rail panel is one 25' 0" (7.62 m) long rail panel.

SHIPPED - LOOSE PARTS LIST

WARNING: Use only Trinity Highway Products' parts on the SRT-350 8 POST™ system for installation, maintenance, or repair. The installation or co-mingling of unauthorized parts is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with a system that has not been accepted by the Federal Highway Administration ("FHWA"). The SRT-350 8 POST™ system and its component parts have been accepted for state use by FHWA. However, a co-mingled system has not been accepted.

SRT-350 8-POST ™SYSTEM
BILL OF MATERIAL ENGLISH (METRIC)
(QUANTITIES COULD VARY ACCORDING TO STATE/SPECIFYING AGENCY OPTIONS)

PC	Quantity	Description
9G	1	12/12.5'/6' 3"/S (2.67/3.81/1.905/S) GUARDRAIL
30G	1	12/12.5'/6' 3"/S (2.67/3.81/1.905/S) SRT-1 ANC (GUARDRAIL)
39G	1	12/12.5'/6' 3"/S (2.67/3.81/1.905/S)SRT-2 (GUARDRAIL)
69G	1	12/25'/6' 3"/S (2.67/7.62/1.905/S)SRT-2 (GUARDRAIL)
700A	1	CABLE ANCHOR BRACKET
705G	1	PIPE SLEEVE - 2" STD PIPE x $5^{1}/_{2}$" (50 STD PIPE x 150 PIPE)
740G*	2	6" x 8" x 4' 6" x $^{3}/_{16}$" (152 x 203 x 1375 x 4.8) TUBE SLEEVE
742G	2	6" x 8" x 6' 0" x $^{3}/_{16}$" (152 x 203 x 1830 x 4.8 TUBE SLEEVE (ALTERNATE TO USING 740G and 766G)
766G*	2	18" x 24" x $^{1}/_{4}$" (460 x 610 x 16) SOIL PLATE
775G	1	6" x 8" x $^{5}/_{8}$" (150 x 200 x 16) BEARING PLATE
907G	1	12 (2.67)/BUFFER/ROLLED (TERMINAL)
3000G	1	CABLE ASSEMBLY $^{3}/_{4}$" x 6' 6" (19 x 1981)
3300G	12	$^{5}/_{8}$" (16) WASHER
3340G	(Varies)	$^{5}/_{8}$" HGR NUT
3360G	(Varies)	$^{5}/_{8}$" DIA. x $1^{1}/_{4}$" (16 DIA. x 35) HGR SPLICE BOLT
3380G	8	$^{5}/_{8}$" DIA. x $1^{1}/_{2}$" (16 DIA. x 40) HEX HEAD BOLT
3478G*	4	$^{5}/_{8}$" DIA. x $7^{1}/_{2}$" (16 DIA. x 190) HEX HEAD BOLT
3497G	2	$^{5}/_{8}$" DIA. x $9^{1}/_{2}$" (16 DIA. x 240) HEX HEAD BOLT
3500G	2	$^{5}/_{8}$" DIA. x 10" (16 DIA. x 255) HGR POST BOLT
3580G	6	$^{5}/_{8}$" DIA. x 18" (16 DIA. x 460) HGR POST BOLT
3900G	1	1" (25) WASHER
3910G	2	1" (25) HEX NUT
4063B	6	WOOD POST 6" x 8" x 6' 0" (150 x 200 x 1830)
4075B	6	WOOD BLOCK 6" x 8" x 14" (150 x 200 x 360) DR
5968G	14	16d NAIL SRT
6058B	2	WOOD POST $5^{1}/^{2}$" x $7^{1}/_{2}$" x 3' 9" (140 x 190 x 1145)
9852A	1	STRUT
9960G	4	SLOT GUARD
9961G	1	$^{3}/_{8}$" x 3" x 4" (10 x 75 x 100) PLATE WASHER

* OPTION TO THE 6' 0" POST SLEEVE TUBE

Delineation Options

PC	Quantity	Description
6665B	1	16" x 16" (400 x 400) Striped (Yellow/Black) REFLECTIVE SHEETING **Note:** See state/specifying agency's MUTCD for options or proper delineation.

INSTALLING THE SRT-350 8 POST™ SYSTEM

Use Trinity Highway Products' drawings for the SRT-350™ 8 POST system with these instructions. Review the state/specifying agency's standard drawing(s) for this system, details will be specific to the project or site locations. The installation of the SRT-350 8 POST™ system is similar to the Breakaway Cable Terminal (BCT) installation. The same equipment and expertise is required for both systems.

	**WARNING:** Ensure that there is proper site grading for tube and post placement as dictated by the state/specifying agency, pursuant to FHWA acceptance. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that all Guardrail products and delineation used meet all federal, state/specifying agency, and local specifications. Failure to follow this warning could result in serious injury or death in the event of a collision.

MATERIALS

As packaged, the SRT-350 8 POST SRT system includes all materials needed for the installation of the 37' 6" (11.43 m) of the SRT-350 8 POST™ system. Note that concrete footings or foundations are NOT required.

TOOLS REQUIRED

The following list shows required tools for **installation** of the SRT-350 8 POST™ system:

- Calibrated tape measure
- $^{9}/_{16}$" (14 mm) Socket or Wrench
- $^{15}/_{16}$" (24 mm) Socket or Wrench
- $1^{1}/_{4}$" (32 mm) Socket or Wrench
- $1^{1}/_{2}$" (38 mm) Socket or Wrench
- Augers
- Post pounders (commonly used in driving posts)
- Vise grip pliers

The following list shows recommended tools for the **repair** of the SRT-350 8 POST™ system. However, since repair is directed by the state/specifying agency, they may have more specific guidelines.

- Channel lock pliers
- Sledge hammer
- Post removal tool and other normal guardrail tools
- Eye bolts connected to heavy duty chain (to remove the posts from tubes)
- Vehicle to pull the posts from the tubes

SITE PREPARATION

Site grading is usually necessary for the proper placement of the steel tubes and the Control Release Terminal ("CRT") posts. Use the state/specifying agency's standard specifications and drawings for the site grading. Trinity does not direct grading. Complete this grading before the start of the installation of the SRT-350 8 POST™ system.

	**WARNING:** Ensure that there is proper site grading for tube and post placement as dictated by the state/specifying agency, pursuant to FHWA acceptance. Failure to follow this warning could result in serious injury or death in the event of a collision.

INSTALLATION

The post installation of the SRT-350 should be per the following Post Installation Section. If the system is installed on a curve, see figures on page 16 for the layout. If there are special field conditions encountered when installing the SRT-350 8 POST™ system, contact the state/specifying agency. Trinity Highway Products, LLC at 1-800-644-7976, is available to assist the state/specifying agency, if needed.

POST INSTALLATION

Complete the following instructions for the installation of the CRT posts and the foundation tubes with wood posts.

POST LAYOUT

Complete the following steps and use the table below to layout the posts for the SRT-350 8 POST™ system:

Step	Actions
1.	Start at the **location 9** end of the Guardrail run that is the connection point for the terminal. The length of the installation is 37' 6" (11.43 m).
2.	Layout the post locations starting at **location 8**, which is the first offset post. (Dimensions are from a tangent line along the back of the Guardrail to the center of the post.)
3.	Measure the offset points from a tangent line of the Guardrail run extending from **post 9** towards **post 1**.
4.	Locate the offset points by chord measurements at the center of the post, equal to the post spacing.
5.	Ensure that the Posts are approximately tangent to the railing at each post location.

POST LAYOUT MEASUREMENTS TABLE						
Post Location	**Offsets**					
	3'	**(.91 m)**	**3.5'**	**(1.07 m)**	**4'**	**(1.22 m)**
	Ft.	**mm**	**Ft.**	**mm**	**Ft.**	**mm**
9	1.00	305	1.00	305	1.00	305
	4' 2" (1270 mm) Post Spacing					
8	1.00	305	1.00	305	1.05	320
	4' 2" (1270 mm) Post Spacing					
7	1.00	305	1.06	325	1.20	365
	4' 2" (1270 mm) Post Spacing					
6	1.06	325	1.23	375	1.45	440
	4' 2" (1270 mm) Post Spacing					
5	1.25	380	1.50	460	1.79	545
	4' 2" (1270 mm) Post Spacing					
4	1.56	475	1.88	570	2.22	675
	4' 2" (1270 mm) Post Spacing					
3	1.97	600	2.36	720	2.76	840
	6'3" (1905 mm) Post Spacing					
2	2.17	660	2.62	805	3.10	945
	6'3" (1905 mm) Post Spacing					
1	3.30	1005	3.80	1160	4.30	1320

INSTALLING THE CRT POSTS

Complete the following steps to install the CRT posts:

Step	Actions
1.	Install the wood posts (PC-4063B) at **locations 8 through 3**, spaced at 4' 2" (1270 mm) apart. Select Option A or Option B for the post installation.

Option A	Drive posts into the ground.
Option B	1. Drill 12” (300 mm) maximum diameter holes approximately 44" (1120 mm) deep. 2. Insert the 6' 0" (1830 mm) wood post into these holes. 3. Backfill the hole with compactable materials in 6" (150 mm) lifts and compact with pneumatic equipment to optimum compaction. **Note:** If compactable, the material removed from the hole may be used for the backfill.

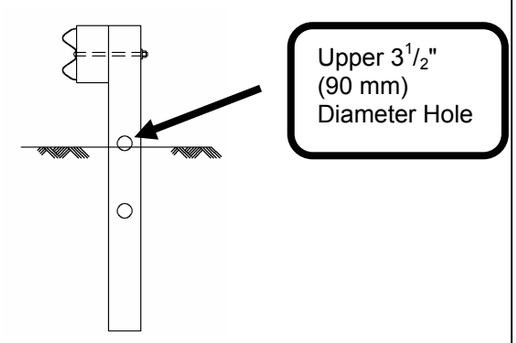


Figure 1

Note: In either option within the previous step, the bottom of the upper $3^1/_2$" (90 mm) diameter hole in the post is approximately at the finished grade. (See Figure 1)

PLACING FOUNDATION TUBES FOR WOOD POSTS

Complete the following steps to position foundation tubes and wood posts:

TUBE OPTIONS

Step	Actions
1.	Select Option A or Option B for this installation.

Option A	**6' 0" (1830 mm) Tube, no Soil Plate** 1. No assembly required. 2. Install the foundation tube (PC-742G), as described below.
Option B	**4' 6" (1375 mm) Tube with Soil Plate** 1. Assemble the soil tubes and soil plates. 2. Insert two (2) $^5/_8$" x $7^1/_2$" (16 mm x 190 mm) Hex Head Bolts through the soil plate (PC-766G) and the foundation tube (PC-740G). 3. Place HGR nuts (no washers) on the inserted bolts to secure. Tighten the bolts to a snug position. (There is no torque requirement for these bolts.) 4. Install the foundation tube (PC-766G) with soil plate as described below.

Note: Do not over tighten the bolts and deform the tubes, as that will complicate possible post replacement.

Step	Actions
2.	Install the foundation tubes at **locations 1 and 2**. Use the strut as a guide for the spacing of the tubes. Position the soil plate on the side of the post, away from the impacting end, if applicable. **Note:** Do not drive tubes with the wood post inserted, as that will complicate possible post replacement.

INSTALLATION OPTIONS FOR FOUNDATION TUBES

Select the steps below for Permeable Soil or Non-Permeable Soil to install foundation tubes:

FOR PERMEABLE SOIL

Step	Actions
1.	If the soil is permeable (water will drain from the tubes), drive the tubes with an approved driving head to the optimum height where the top of the tube is $2^{5}/_{8}$" (67 mm) above the finished grade. **Note:** Take extra care to prevent settlement or lateral displacement of the tubes, to ensure the posts attach to the Guardrail correctly.
2.	Ensure that the finished Guardrail height will be approximately $27^{3}/_{4}$" (706 mm) above the finished grade, or as the state/specifying agency plans indicate, by placing a wood post in the tube and checking the height of the bolt hole. Correct, if needed.
3.	Ensure that the tubes do not project more than 4" (100 mm) above the finished grade.

FOR NON-PERMEABLE SOIL

Step	Actions
1.	Select Method A, Method B, or Method C below, if soil is non-permeable. **Method A** **For Tube Only** 1. Drill a 12" (300 mm) diameter pilot hole approximately 75" (1905 mm) deep. 2. Insert the tube into the hole to the optimum height where the top of the tube is $2^{5}/_{8}$" (67 mm) above the finished grade. **For Tube with Soil Plate** 1. Drill a 12" (300 mm) diameter pilot hole approximately 75" (1905 mm). 2. Insert the soil plate/tube assembly into the hole by impact or vibratory means with an approved driving head. 3. Drive the tube to the optimum height where the top of the tube is $2^{5}/_{8}$" (67 mm) above the finished grade. **Method B** Cut slots for the soil plates out by hand or by using a rock bar. Follow all of the steps of Option A, above. **Method C** Drill three adjacent 12" (300 mm) diameter holes or one 24" (610 mm) diameter hole to accommodate the soil plate/tube assembly. Follow all of the steps of Option A, above. **Note:** If Option C is used, material must be placed in 6" (150 mm) lifts and compact with pneumatic equipment to optimum compaction. **Note:** Take extra care to prevent settlement or lateral displacement of the tubes, to ensure the posts attach to the Guardrail, correctly.

Step	Actions
2.	Ensure that the finished Guardrail height will be approximately $27^{3}/_{4}$" (706 mm) above the finished grade, or, as the state/specifying agency plans indicate, by placing a wood post in the tube and checking the height of the bolt hole. Correct, if needed.
3.	Ensure that the tubes do not project more than 4" (100 mm) above the finished grade.

INSTALLING TUBES WHEN ENCOUNTERING ROCK

Complete the following steps to install foundation tubes when encountering rock:

Step	Actions
1.	Select Option A or Option B below when encountering rock, unless there is a more restrictive state/specifying agency specification.

Option A	**If rock is encountered with 20" (510 mm) or less depth for full installation** 1. Drill a 12" - 16" (300 mm - 400 mm) diameter hole into the rock 2" (50 mm) deeper than required full embedment depth. 2. Place granular material or small pieces of the drilled rock in the bottom 2" (50 mm) of the hole for drainage. 3. Insert the tube into the hole to the proper mounting height. 4. Backfill the hole with compactable materials in 6" (150 mm) lifts and compact with pneumatic equipment to optimum compaction. (If compactable, the material removed from the hole may be used for the backfill.) 5. Ensure that the finished Guardrail height is approximately $27^{3}/_{4}$" (706 mm) above the finished grade, or as the state/specifying agency plans indicate. 6. Ensure that the tubes do not project more than 4" (100 mm) above the finished grade. **Note:** Take extra care to prevent settlement or lateral displacement of the tubes, to ensure the posts attach to the Guardrail, correctly.
Option B	**If rock is encountered with greater than 20" (510 mm) depth for full installation** 1. Drill a 12" - 16" (300 mm - 400 mm) diameter hole 22" (560 mm) deep into the rock. 2. Insert the tube into the hole and measure from the bottom of the tube to the finished grade. 3. Determine the proper length of tube to install to ensure the tube is fully embedded in the hole and does not project more than 4” (100 mm) above the finished grade. (The optimum height for tube projection is $2^{5}/_{8}$”.) 4. Remove tube from the hole. Measure and mark from the top of the tube the length to remove from the bottom. 5. Cut off the measured length from the bottom of the tube. 6. Place granular material or small pieces of the drilled rock in the bottom 2" (50 mm) of the hole for drainage. Continues on next page.

	7. Insert the tube in the hole to the proper mounting height. 8. Backfill the hole with compactable materials in 6" (150 mm) lifts and compact with pneumatic equipment to optimum compaction. (If compactable, the material removed from the hole may be used for the backfill.) 9. Ensure that the finished Guardrail height is approximately $27^{3}/_{4}$" (706 mm) above the finished grade, or as the state/specifying agency plans indicate. 10. Ensure that the tubes do not project more than 4" (100 mm) above the finished grade. **Note:** Take extra care to prevent settlement or lateral displacement of the tubes, to ensure the posts attach to the Guardrail, correctly.

INSTALLING WOOD POSTS IN TUBES

Complete the following steps to install wood posts in tubes:

Step	Actions
1.	Insert the Pipe Sleeve (PC-705G) in post (PC-6058B) and install in steel tube at **location 1**. **Note:** A metal band must be around the post under the post bolt hole.
2.	Install second (PC-6058B) post in steel tube at **location 2**. **Note:** A metal band must be around the post under the post bolt hole.

INSTALLING THE STRUT

Complete the following steps to install the strut:

Step	Actions
1.	Place the slotted yokes of the ground strut (PC-9852A) over the top of the foundation tubes for **posts 2 and 1**.
2.	Place a washer on a $^{5}/_{8}$" X $9^{1}/_{2}$" (16 mm x 240 mm) Hex Head Bolt.
3.	Insert the bolt through the strut, foundation tube, and the wood post from the embankment side.
4.	Install a second washer and a nut on the inserted bolt. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.) **Note:** Do not over tighten the bolt and deform the tubes, as that will complicate possible post replacement.

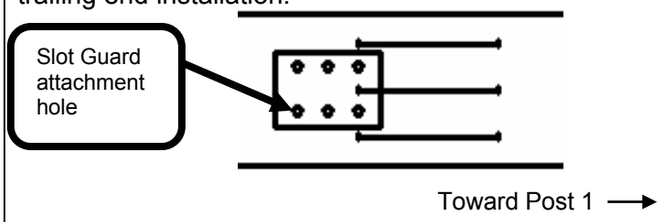
INSTALLING WOOD BLOCKOUTS AT POSTS 8 & 7

Complete the following steps to install the Wood Blockouts at posts 8 and 7:

Step	Actions
1.	Insert a $^{5}/_{8}$" x 18" (16 mm x 460 mm) post bolt through the Wood Blockout (PC-4075B) and the post at **posts 8 and 7**. **Note: Do not bolt the Guardrail panel to posts 8 and 7**.
2.	Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.)

ARRANGING RAIL PANELS

Complete the following steps to arrange the rail panels:

Step	Actions
1.	Layout that Guardrail panels (PC-30G and PC-39G and PC-69G) with slots between **posts 6 and 5**, **4 and 3**, **3 and 2**, and **2 and 1**.
2.	Position the Guardrail panels so that the Slot Guard attachment holes are at the end of the slots away from **Post 1**. (See Figure 2) Position the Guardrail panels and Slot Guards the same for a trailing end installation.  **Figure 2**
3.	Ensure that the 12' 6" (3.81m) Guardrail panel (PC-39G) or 25' 0" (7.62 m) Guardrail panel (PC-69G) slots are between **posts 6 and 5** and **posts 4 and 3**.
4.	Ensure that the 12' 6" (3.81m) Guardrail panel (PC-30G) anchor bracket holes are between **posts 2 and 1**.

INSTALLING RAIL PANELS

Complete the following steps to install the rail panels:

Step	Actions
1.	Splice and post bolt the 12' 6" (3.81m) rail panel (PC-9G) or the 25' 0" (7.62 m) rail panel (PC-60G) at **post 9** to the run of Guardrail. Use hardware provided by the standard Guardrail supplier. **Note:** Lap the terminal rail in the direction of traffic, unless the state/specifying agency's policy dictates otherwise.
2.	Select Option A or Option B for this installation.

Option	
A	**For Installing Two 12' 6" (3.81 m) Panels** 1. Splice the 12' 6" (3.81m) rail panel to the other 12' 6" (3.81m) rail panel (PC-39G) at **post 6**, with eight (8) $^{5}/_{8}$" x $1^{1}/_{4}$" (16 mm x 32 mm) Splice Bolts and Hex Nuts. 2. Insert a $^{5}/_{8}$" x 18" (16 mm x 460 mm) post bolt through the rail panel, Wood Blockout, and the wood post, at **posts 6, 5 and 4**. 3. Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.) 4. Splice the 12' 6" (3.81 m) rail panel (PC-39G) to the other 12' 6" (3.81 m) rail panel (PC-30G) , at **post 3**, with eight (8) $^{5}/_{8}$" x $1^{1}/_{4}$" (16 mm x 32 mm) Splice Bolts and Hex Nuts. 5. Insert a $^{5}/_{8}$" x 18" (16 mm x 460 mm) post bolt through the rail panels, Wood Blockout, and the wood post at **post 3.** 6. Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.) 7. Insert a $^{5}/_{8}$" x 10" (16 mm x 255 mm) post bolt through the rail panel and the post, at **posts 2 and 1.** 8. Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.)

Option B	**For Installing One 25' 0" (7.62 m) Panel** 1. Insert a $^{5}/_{8}$" x 18" (16 mm x 460 mm) post bolt through the 25' 0" (7.62 m) rail panel (PC-69G), Wood Blockout, and the wood post, at **posts 6, 5, and 4**. 2. Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.) 3. Splice the 25' 0" (7.62 m) rail panel to the 12' 6" (3.81 m) rail panel (PC-30G), at **post 3**, with eight (8) $^{5}/_{8}$" x $1^{1}/_{4}$" (16 mm x 32 mm) Splice Bolts and Hex Nuts. 4. Insert a $^{5}/_{8}$" x 18" (16 mm x 460 mm) post bolt through the rail panels, Wood Blockout, and the wood post at **post 3.** 5. Place a round washer under a Hex Nut on the inserted bolt to secure. 6. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.) 7. Insert a $^{5}/_{8}$" x 10" (16 mm x 255 mm) post bolt through the rail panel and the wood posts, at **posts 2 and 1**. 8. Place a round washer under a Hex Nut on the inserted bolt to secure. Tighten the bolt to a snug position. (There is no torque requirement for these bolts.)

TOE NAILING THE WOOD OFFSET BLOCKS

Complete the following step to toe nail the wood offset blocks to the posts:

Step	Actions
1.	Toe nail the wood offset blocks at all post locations with 16d hot-dipped galvanized nails to prevent the blocks from rotating. Install the nails approximately 3" (75 mm) from the top of the post or block, one on each side of the block.

INSTALLING THE SLOT GUARDS

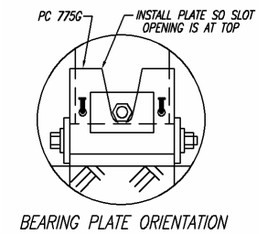
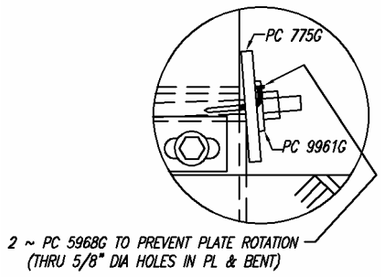
Complete the following steps to install the Slot Guards:

Step	Actions
1.	Place the Slot Guards (PC-9960G) against the backside of the Guardrail panels with the deflector angle gap opening toward (closest to) the elongated slots. Align the six holes in the Slot Guard with the six holes in the Guardrail panel near the elongated slots.
2.	Bolt each Slot Guard to the backside of the Guardrail panels with six (6) $^{5}/_{8}$" x $1^{1}/_{4}$" (16 mm x 32 mm) Splice Bolts and Hex Nuts.

INSTALLING THE CABLE ANCHOR ASSEMBLY

Complete the following steps to install the cable anchor assembly:

Step	Actions
1.	Place a round washer on each of the eight (8) $^{5}/_{8}$" x $1^{1}/_{2}$" (16 mm x 38 mm) Hex Head Bolts needed.
2.	Insert the bolts through the traffic side of the rail panel and the Cable Anchor Bracket (PC-700A) on the backside of the Guardrail panel. Secure the Hex Head Bolts with a Hex Nut on each bolt. Tighten each bolt to a snug position. (There is no torque requirement for these bolts.)
3.	Slide one end of the cable (PC-3000G) into the Cable Anchor Bracket and the other end through the Pipe Sleeve (PC-705G) in **post 1**.
4.	Place a 1" (25 mm) washer and a 1” (25 mm) Hex Nut on the end of the cable that extends through the Cable Anchor Bracket. Tighten the nut, until at least 2 threads are completely through the nut.

Step	Actions
5.	Place the Bearing Plate (PC-775G), so that the open side of the V-notch is at the top and connect it to **post 1**, by driving a nail through each of the 2 holes provided. Bend the nails to attach the Bearing Plate. (See Figures 3 and 4.)  **Figure 3**  **Figure 4**
6.	Place the Plate Washer (PC-9961G) and a 1" (25 mm) Hex Nut on the end of the cable that extends through **post 1**.
7.	Restrain the cable with vise grip pliers at the end being tightened, to avoid twisting the cable.
8.	Tighten the Hex Nuts on the cable ends, until the cable is taut. The cable is considered taut, when it does not deflect more than 1 inch, when pressure is applied by hand in an up or down direction.

INSTALLING THE END SECTION AND DELINEATION

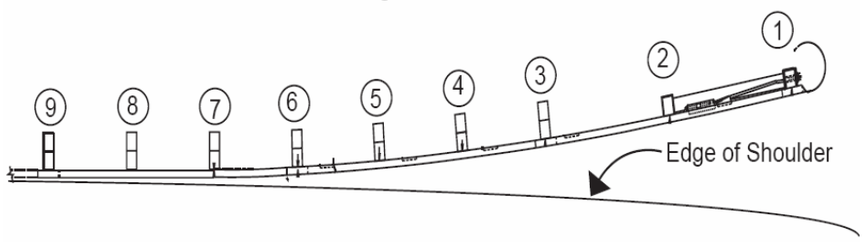
Complete the following steps to install the end section and delineation:

Step	Actions
1.	Connect the end section (PC-907G) to the end of the Guardrail panel with four (4) $^{5}/_{8}$" x $1^{1}/_{4}$" (16 mm x 32 mm) Splice Bolts and Hex Nuts. Tighten the bolts to a snug position. (There is no torque requirement for these bolts.)
2.	Install high intensity reflective sheeting (PC-6665B) on the front face of the end section, per the state/specifying agency's MUTCD for options or proper delineation. **Note:** The reflective sheeting is an option to the SRT-350 8 POST™ and needs to be ordered separate from the SRT-350 8 POST™ package. **WARNING:** Ensure that all Guardrail products and delineation used meet all federal, state/specifying agency, and local specifications. Failure to follow this warning could result in serious injury or death in the event of a collision.

LAYOUT OF SRT-350 8 POST™ SYSTEM ON A CURVE

Outside of Curve

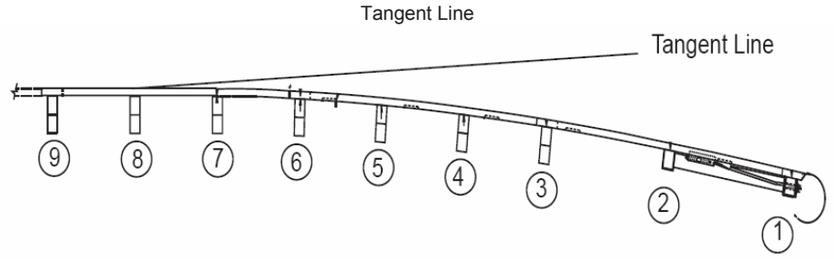
Edge of Shoulder



The SRT-350 8 POST™ system offsets are measured at the edge of shoulder from the start of the SRT-350 8 POST™ system.

Inside of Curve

Tangent Line



The SRT-350 8 POST™ system offsets are measured at a tangent line from the start of the SRT-350 8 POST™ system. If an offset places a post on the shoulder, then the face of the rail must be on the edge of the shoulder for that offset.

Note: Refer to Post Layout Measurement table on page 8 of this Manual.

INSTALLATION CHECKLIST

STATE: _____PROJECT: _____

DATE: _____LOCATION: _____

- ❑ The finished Guardrail height is approximately $27^{3}/_{4}$" (706 mm) above the finished grade, or as the state/specifying agency plans indicate.
- ❑ Any site grading needed was completed, before the start of the installation of the SRT-350 8 POST™ system.
- ❑ The steel tubes do not protrude more than 4" (100 mm) above the finished grade measured by the American Association of State Highway and Transportation Officials ("AASHTO") 5' 0" (1.5 m) cord method. Site grading may be necessary to meet this requirement.
- ❑ The bolts at the top of the steel tubes are not over tightened. The walls of the steel tubes are not collapsed.
- ❑ The 6" x 8" (150 mm x 200 mm) Bearing Plate at **post 1** is correctly positioned and the anchor cable is taut and correctly installed (it should be rechecked after installation to be sure it has not relaxed). The taut cable does not deflect more than 1 inch, when pressure is applied by hand in an up or down direction. A nail is driven through each of the holes and bent to prevent the plate from rotating.
- ❑ The rail panel is not attached to **posts 7 and 8**.
- ❑ No rectangular washers are used on the face of the rail.
- ❑ Slot Guards are in place against the backside of the Guardrail panels with the deflector angle gap opening toward (closest to) the elongated slots.
- ❑ Rail panels are oriented correctly and lapped in the direction of traffic, unless the state/specifying agency's policy dictates otherwise.
- ❑ All blockouts have been toe nailed to the posts with 16d hot-dipped galvanized nails.
- ❑ If backfilled, the backfill material around the posts is properly compacted.
- ❑ The CRT post has two $3^{1}/_{2}$" (90 mm) breakaway holes (checked prior to installation). The breakaway holes are located parallel to the roadway with the bottom edge of the top hole located approximately at the finished grade.
- ❑ The tube bolts are installed with the nuts on the pavement side of the tube for ease of future removal.
- ❑ **Posts 1 and 2** have metal bands around them, under the post bolt hole.

MAINTENANCE AND REPAIR INSTRUCTIONS

*** IMPORTANT MAINTENANCE AND REPAIR INSTRUCTIONS ***

Always keep this Manual in a location where it is easily accessed by persons who install, maintain, or repair the SRT-350 8 POST™ system. If you have any questions concerning the information in this Manual or about the SRT-350 8 POST™ system, contact the state/specifying agency, then Trinity Highway Products, LLC at 800-527-6050.

	**WARNING:** Use only Trinity Highway Products' parts on the SRT-350 8 POST™ system for installation, maintenance, or repair. The installation or co-mingling of unauthorized parts is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with a system that has not been accepted by the Federal Highway Administration ("FHWA"). The SRT-350 8 POST™ system and its component parts have been accepted for state use by FHWA. However, a co-mingled system has not been accepted.
	**WARNING:** Ensure that the necessary traffic control is setup and any debris that has encroached onto the traveled way or shoulder has been removed before beginning installation or repairs. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Safety measures incorporating traffic control devices must be used to protect all personnel while at the installation, maintenance, or repair site. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders. Trinity Highway Products offers an economical and effective truck mounted attenuator, the MPS-350, for the protection of workers in work zones. For more information on the MPS-350, call 800-644-7976 or visit the Trinity Highway Products website at www.highwayguardrail.com.
	**WARNING:** Do NOT perform installation, maintenance, or repair if the SRT-350 8 POST™ system site, shoulder, or traveled area are covered or encroached by road debris. Failure to follow this warning could result in serious injury or death in the event of a collision.
	**WARNING:** Ensure that all Guardrail products and delineation used meet all federal, state/specifying agency, and local specifications. Failure to follow this warning could result in serious injury or death in the event of a collision.

MAINTENANCE

Complete the following steps, periodically, to check the safety of the system:

Step	Actions
1.	Ensure the nuts have not been removed from the cable. Replace nuts, if needed.  **WARNING:** Use only Trinity Highway Products' parts on the SRT-350 8 POST™ system for installation, maintenance, or repair. The installation or co-mingling of unauthorized parts is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with a system that has not been accepted by the Federal Highway Administration ("FHWA"). The SRT-350 8 POST™ system and its component parts have been accepted for state use by FHWA. However, a co-mingled system has not been accepted.
2.	Ensure the cable is taut. The cable is considered taut, when it does not deflect more than 1 inch when pressure is applied by hand in an up or down direction. Tighten, if needed.
3.	Ensure Wood Blocks are in place and in good condition, as defined by the state/specifying agency.
4.	Ensure the blockouts have not rotated. Correct the blockout position and reinstall the toe nails, if needed.

REPAIR

Complete the following steps to repair the SRT-350 8 POST™ system:

Step	Actions
1.	Setup necessary traffic control at the accident site and then remove any debris that has encroached onto the traveled way or shoulder.  **WARNING:** Ensure that the necessary traffic control is setup and any debris that has encroached onto the traveled way or shoulder has been removed before beginning installation or repairs. Failure to follow this warning could result in serious injury or death in the event of a collision.  **WARNING:** Safety measures incorporating traffic control devices must be used to protect all personnel while at the installation, maintenance, or repair site. Failure to follow this warning could result in serious injury or death to the workers and/or bystanders. Trinity Highway Products offers an economical and effective truck mounted attenuator, the MPS-350, for the protection of workers in work zones. For more information on the MPS-350, call 800-644-7976 or visit the Trinity Highway Products website at www.highwayguardrail.com.
2.	Take inventory of the damaged system and determine what parts are reusable as defined by the state/specifying agency and what parts need to be replaced.
3.	Obtain the Trinity Highway Products' parts that need to be replaced from Trinity Highway Products, LLC (See page 7 of this Manual for list of recommended tools for the repair of the SRT-350 8 POST system.)  **WARNING:** Use only Trinity Highway Products' parts on the SRT-350 8 POST™ system for installation, maintenance, or repair. The installation or co-mingling of unauthorized parts is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with a system that has not been accepted by the Federal Highway Administration ("FHWA"). The SRT-350 8 POST™ system and its component parts have been accepted for state use by FHWA. However, a co-mingled system has not been accepted.
4.	Return to the repair site with the replacement parts and tools needed.
5.	Disconnect and remove the damaged rail from the posts.
6.	Remove the broken posts from the steel tubes.
7.	Remove any damaged CRT posts.
8.	Reconstruct the system following the installation instructions, after the site has been cleared of damaged debris.  **WARNING:** Do NOT perform installation, maintenance, or repair if the SRT-350 8 POST™ system site, shoulder or traveled area are covered or encroached by road debris. Failure to follow this warning could result in serious injury or death in the event of a collision.
9.	Install proper delineation for the repaired SRT-350 in accordance with the state/specifying agency's MUTCD.  **WARNING:** Ensure that all Guardrail products and delineation used meet all federal, state/specifying agency, and local specifications. Failure to follow this warning could result in serious injury or death in the event of a collision.

2525 N. Stemmons Freeway
Dallas, Texas 75207
800-527-6050
Domestic: 800-644-7976
International: +1-214-589-8140
www.highwayguardrail.com