

TREND™ 350 Flared End Terminal

Product Description Assembly Manual

Part No. 618897B

Revision C January 2013



TREND™ 350

Flared End Terminal

Product Description Assembly Manual



2525 Stemmons Freeway
Dallas, Texas 75207



Important: This Manual is to be used only in conjunction with the assembly, maintenance, and repair of the TREND™ 350 End Terminal. These instructions are for standard assemblies specified by the appropriate highway authority only. In the event the specified system assembly, maintenance, or repair requires or involves deviations from standard parameters, contact the appropriate highway authority engineer. Trinity Highway Products representatives are available for consultation if required.

This Manual must be available to the worker overseeing and/or assembling the product at all times. For additional copies, contact Trinity Highway Products at (888) 323-6374 or download from websites listed below.

The instructions contained in this Manual supersede all previous information and Manuals. All information, illustrations, and specifications in this Manual are based on the latest TREND™ 350 End Terminal system information available to Trinity Highway Products at the time of printing. We reserve the right to make changes at any time. Please contact Trinity Highway Products to confirm that you are referring to the most current instructions.

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Customer Service Contacts

Trinity Highway Products is committed to the highest level of customer service. Feedback regarding the TREND™ 350 End Terminal, its assembly procedures, supporting documentation, and performance is always welcome. Additional information can be obtained from the contact information below:

Corporate Contacts:

Telephone:	(888) 323-6374 (U.S. Calls) (214) 589-8140 (International Calls)
Fax:	(800) 770-6755 (U.S. Calls) (214) 589-8423 (International Calls)
E-mail:	product.info@trin.net customerservice@energyabsorption.com
Internet: Energy Absorption Systems Trinity Highway Products, LLC	http://www.energyabsorption.com http://www.highwayguardrail.com

Regional Telephone Contacts:

Centerville, Utah	(800) 772-7976
Dallas, Texas	(800) 527-6050
Elizabethtown, Kentucky	(800) 282-7668
Girard, Ohio	(800) 321-2755
Orangeburg, South Carolina	(800) 835-9307

Important Introductory Notes

Proper assembly of the TREND™ 350 End Terminal is critical to achieve performance that has been evaluated and accepted by the Federal Highway Administration (FHWA) per NCHRP Report 350. These instructions should be read in their entirety and understood before assembling the TREND™ 350 End Terminal. These instructions are to be used only in conjunction with the assembly of the TREND™ 350 End Terminal and are for standard assemblies only as specified by the applicable highway authority. If you need additional information, or have questions about the TREND™ 350 End Terminal, please contact the highway authority that has planned and specified this assembly and, if needed, contact Trinity Highway Products Customer Service Department (See Page 3). This product must be assembled in the location specified by the appropriate highway authority just as it was tested. If there are deviations, alterations, or departures from the assembly protocol specified in this Manual, the device may not perform as it was tested and accepted.

This system, like other Energy Absorption Systems and Trinity Highway Products systems, has been crash tested pursuant to NCHRP Report 350 mandated criteria. Based on a specific assembly of component parts, the performance of this system, under those criteria, has been observed and reported as such. DO NOT use any component part that has not been specifically crash tested and/or approved for this system during the assembly or repair of this system.

Further, this product has been specified for use by the appropriate highway authority and has been provided to that user who has unique knowledge of how this system is to be assembled. No person should be permitted to assist in the assembly, maintenance, or repair of this system that does not possess the unique knowledge described above. These instructions are intended for an individual who is qualified to both read and accurately interpret them as written. They are intended for the individual who is experienced and skilled in the assembly of highway products which are specified and selected by the highway authority.

A manufacturer's drawing package will be supplied by Trinity Highway Products. Each system will be supplied with a specific drawing package unique to that system. Such drawings take precedence over information in this Manual and shall be studied thoroughly by a qualified individual who is skilled in interpreting them before the start of any product assembly.



Important: Read safety instructions thoroughly and follow the suggested safe practices before assembling, maintaining, or repairing the TREND™ 350 End Terminal. Failure to follow this warning can result in serious injury or death to the worker and/or bystanders. Please keep these instructions for later use.



Warning: Ensure that all of the TREND™ 350 End Terminal Warnings, Cautions, and Important statements within the TREND™ 350 End Terminal Manual are completely followed. Failure to follow this warning could result in serious injury or death in the event of a collision.

Recommended Safety Rules for Assembly

*** Important Safety Instructions ***

This Manual must be kept in a location where it is readily available to persons who assemble, maintain, or repair the TREND™ 350 End Terminal. Additional copies of this Manual are immediately available from Trinity Highway Products by calling (888) 323-6374 or by E-mail at product.info@trin.net. Please contact Trinity Highway Products if you have any questions concerning the information in this Manual or about the TREND™ 350 End Terminal. This Manual may also be downloaded directly from the websites listed in the Customer Service Contact section (See Page 3).

Always use appropriate safety precautions when operating power equipment and when moving heavy equipment or the TREND™ 350 End Terminal components. Work gloves, safety goggles, steel toe boots and back protection should be used.

Safety measures incorporating traffic control devices specified by the highway authority must be used to provide safety for personnel while at the assembly, maintenance, or repair site.

Safety Symbols

This section describes safety symbols that may appear in the TREND™ 350 End Terminal Manual. Read the Manual for complete safety and assembly information.

Symbol

Meaning



Safety Alert Symbol: Indicates Danger, Warning, or Caution. Failure to read and follow the Danger, Warning, Safety, or Caution indicators could result in serious injury or death to the workers and/or bystanders.

Warnings and Cautions

Read all instructions before assembling, maintaining, or repairing the TREND™ 350 End Terminal.



Warning: Do not assemble, maintain, or repair the TREND™ 350 End Terminal until you have read this Manual thoroughly and completely understand it. Ensure that all Warnings, Cautions, and Important Statements within the Manual are completely followed. Please call Trinity Highway Products at (888) 323-6374 if you do not understand these instructions. **UNDER NO CIRCUMSTANCES SHOULD ASSEMBLY, MAINTENANCE, OR REPAIR BE ATTEMPTED BY SOMEONE WHO DOES NOT HAVE THE EXPERIENCE, SKILL, OR ABILITY, TO READ, COMPREHEND, AND PRECISELY FOLLOW THESE INSTRUCTIONS.** Failure to follow this warning could result in serious injury or death in the event of a collision.



Warning: Safety measures incorporating appropriate traffic control devices specified by the highway authority must be used to protect all personnel while at the assembly, maintenance, or repair site. 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 assembly, maintenance, or repair before beginning the assembly, maintenance, or repair process. 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 that are specified herein for the TREND™ 350 End Terminal for assembling, maintaining, or repairing the TREND™ 350 End Terminal. Do not utilize or otherwise comingle parts from other systems even if those systems are other Energy Absorption Systems or Trinity Highway Products systems. Such configurations have not been tested, nor have they been approved for use. Assembly, maintenance, or repairs using unspecified parts or accessories is strictly prohibited. Failure to follow this warning could result in serious injury or death in the event of a vehicle impact with an UNACCEPTED system.



Warning: Do NOT modify the TREND™ 350 End Terminal in any way. Failure to follow this warning could result in serious injury or death in the event of a collision.



Warning: Ensure that the TREND™ 350 End Terminal 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 assembly meets all appropriate Manual on Uniform Traffic Control Devices (MUTCD) and local specifications. If you have any questions during the assembly of a TREND™ 350 End Terminal at a particular system installation site, contact the specifying highway authority immediately. 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 TREND™ 350 End Terminal as dictated by the state or specifying agency, pursuant to Federal Highway Administration (FHWA) acceptance. Failure to follow this warning could result in serious injury or death in the event of a collision.

Limitations and Warnings

Trinity Highway Products, in compliance with the National Cooperative Research Highway Program 350 (NCHRP Report 350) “Recommended Procedures for the Safety Performance of Highway Safety Features”, contracts with FHWA approved testing facilities to perform crash tests, evaluation of tests, and submittal of results to the Federal Highway Administration for review.

The TREND™ 350 End Terminal has been approved as meeting the requirements and guidelines of NCHRP Report 350, Test Level 3 (TL-3). These tests evaluate product performance by closely simulating actual impacts involving a range of vehicles from lightweight cars (approx. 820 kg [1800 lb.]) to full size pickup trucks (approx. 2000 kg [4400 lb.]).

These tests are not intended to represent the performance of products when impacted by every vehicle type, nor every impact condition existing on the roadway. The tests are performed to measure impacts involving vehicles specified by NCHRP Report 350, under those specific impact conditions.

Trinity Highway Products does not represent nor warrant that the results of these NCHRP Report 350 tests show that vehicle impacts with the products in other conditions would avoid injury to person(s) or property. Impacts that exceed the design capabilities of the product may not result in acceptable impact performance as outlined in NCHRP Report 350, relative to structural adequacy, occupant risk and vehicle trajectory.

Trinity Highway Products expressly disclaims any warrant or liability for injury or damage to persons or property resulting from any impact, collision, or harmful contact with products, other vehicles, or nearby hazards or objects by any vehicle, object or person.

The TREND™ 350 End Terminal is intended to be assembled, delineated, and maintained in accordance with specific state and federal guidelines.

The highway authority should be careful to properly select, assemble and maintain the product. Careful evaluation of the site geometry, vehicle population type, speed, traffic direction and visibility are some of the elements that require evaluation in the proper selection of a highway appurtenance. For example, curbs could cause conditions which differ from those described in NCHRP Report 350 for gating, redirecting end terminals and may result in different crash results than those encountered in testing.

System Overview

The TREND™ 350 End Terminal is a cost-effective, energy absorbing end treatment used to shield the ends of W-beam barriers. The TREND™ 350 End Terminal can be flared up to an offset of 4'-0" depending on site conditions.

The TREND™ 350 End Terminal has a nominal length of 37'-6" and a nominal rail height of 27 3/4".

The TREND™ 350 End Terminal is supported by a Hinged Break-Away™ (HBA) post in the first post position, a Steel Yielding Terminal Post™ (SYTP) in the second post position, and standard guardrail line posts in the remaining post positions.

Impact Performance

The TREND™ 350 End Terminal has been approved as meeting the requirements and guidelines of NCHRP Report 350, Test Level 3 (TL-3) as a redirective, gating end treatment.

During head-on impacts, NCHRP Report 350 crash testing has shown that longitudinal forces separate the HBA Post, releasing the Upper HBA post from the Lower HBA post. The energy of an impacting vehicle is absorbed by friction between the panels and deformation of the rail sections as they slide rearward over the shaper fins on the adjoining panels.

During side impacts within the length of need, the HBA post, SYTP post, and the standard guardrail line posts have been shown to remain intact, laterally supporting the rail sections, having the potential to be redirective if impacted within NCHRP Report 350 criteria.

Know Your TREND™ 350 Flared End Terminal

For specific assembly, maintenance, or repair details, refer to the state or specifying agency's standard drawing(s) and/or Trinity Highway Products standard layout drawings (See Pages 30 and 31).

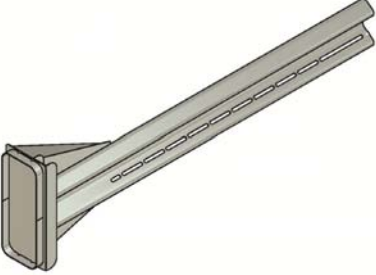
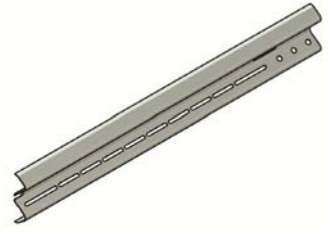
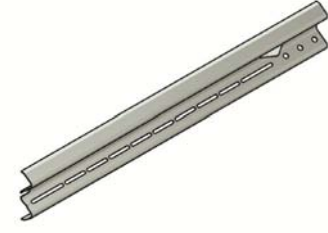






Inspect Shipment

Carefully uncrate all components. Before assembling the TREND™ 350 End Terminal, check the received parts against the shipping list supplied with the system. Refer to the System Components section on the next page of this Manual for help in identifying each component. Verify that all parts were received. If parts are missing from the shipment do not attempt to assemble the system; contact Trinity Highway Products immediately at the numbers provided above. If parts not specified herein were part of the shipment, do not attempt to assemble the system with a non-specified part; contact Trinity Highway Products immediately.



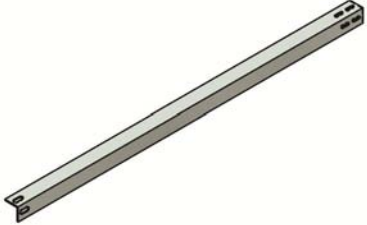
System Components


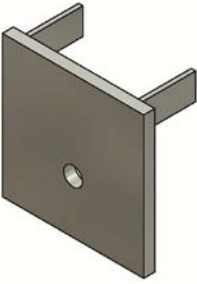
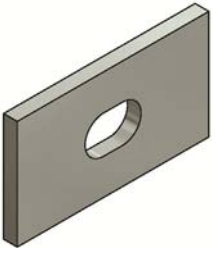
Below is the list of required system components and quantities.




Note: The components are not shown to scale.

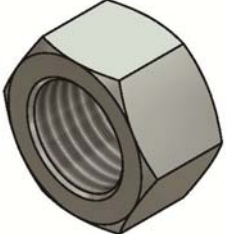


Head Rail Assembly* 			Intermediate Rail 			Intermediate Rail with Fin 		
618194B	x1		618192G	x1		618193G	x4	
End Rail with Fin 			Backing Plate 			Spacer 		
613554G	x1		604465G	x6		614529G	x5	
Spacer with Cable Anchor 			HBA Top Post 			HBA Bottom Post 		
614512G	x1		034074A	x1		033873A	x1	




***Note:** The Head Rail Assembly is symmetrical and can be used on the upstream and downstream ends of highway guardrail and on either side of the roadway.




SYTP Post		W6x8.5 Line Post		Angle Strut	
					
014578G	x1	000533G	x4	033795G	x1




Cable		Bearing Plate		Washer Bar	
					
003012G	x1	019258A	x1	617000G	x6

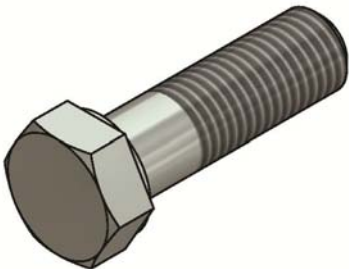


5/8" x 2" Rail Bolt [Grade 5]		5/8" Hex Nut [Grade 5]		5/8" Flat Washer [Thick]	
					
118614G	x34	003361G	x34	118615G	x34

1" Hex Nut		1" Flat Washer		5/8" x 2" Hex Bolt	
					
003910G	x2	003900G	x2	003403G	x7

5/8" Rail Nut		7/16" x 1 1/2" Hex Bolt		7/16" Hex Nut	
					
003340G	x7	004390G	x2	004396G	x2

7/16" Flat Washer		7/16" Lock Washer		3/8" x 2" Hex Bolt	
					
004389G	x2	004393G	x2	006321G	x2

3/8" Hex Nut		3/8" Flat Washer		3/8" Lock Washer	
					
006405G	x2	004254G	x2	004258G	x2

3/4" x 2 1/2" Hex Bolt		3/4" Hex Nut		3/4" Flat Washer	
					
003717G	x2	003704G	x2	003701G	x2

3/4" Lock Washer



004699G

x2

TREND™ 350 End Terminal Assembly

Recommended Tools

Documentation

- Manufacturer's Instructional Manual
- Manufacturer's Drawing Package

Wrenches

- 1 1/2" Wrench
- 1 1/4" Wrench
- 11/16" Wrench
- 9/16" Wrench
- 120 ft-lb Calibrated Torque Wrench

Personal Protective Equipment

- Safety Glasses
- Work Gloves
- Steel Toe Boots
- Back Protection
- Reflective Vest

Miscellaneous

- Traffic Control Equipment
- Chalk Line
- Tape Measure
- Marking Paint
- Straight Edge
- Level
- Plumb Line
- Augers
- Soil Tamper
- Post Pounder (commonly used for driving posts)
- 5/8" Alignment Tool (Drift Pin)
- Vice Grip Pliers

Note: The above list of tools is a general recommendation. Depending on specific site conditions and the complexity of the assembly specified by the appropriate highway authority, additional or fewer tools may be required. Decisions as to what tools are needed to perform the job are entirely within the discretion of the specifying highway authority and the authority's selected contractor performing the assembly of the system at the authority's specified site.

Assembly Procedures

Note: *The drawing package provided with the TREND™ 350 End Terminal must be used with these instructions for proper assembly and should take precedence over these general instructions.*

Deploy Traffic Control

A traffic control plan appropriate to the complexity of the project should be prepared and understood by all parties before assembling the TREND™ 350 End Terminal.

Deploy the appropriate work zone safety devices prior to beginning the assembly and keep them present through all phases on the assembly.



Warning: The correct safety equipment and approved traffic management must be used as required for any particular installation site using the TREND™ 350 End Terminal.



Important: Positioning of the posts is critical. Measure each post center and relevant distance back from the road carefully. Double check all measurements before placing the posts into the ground.

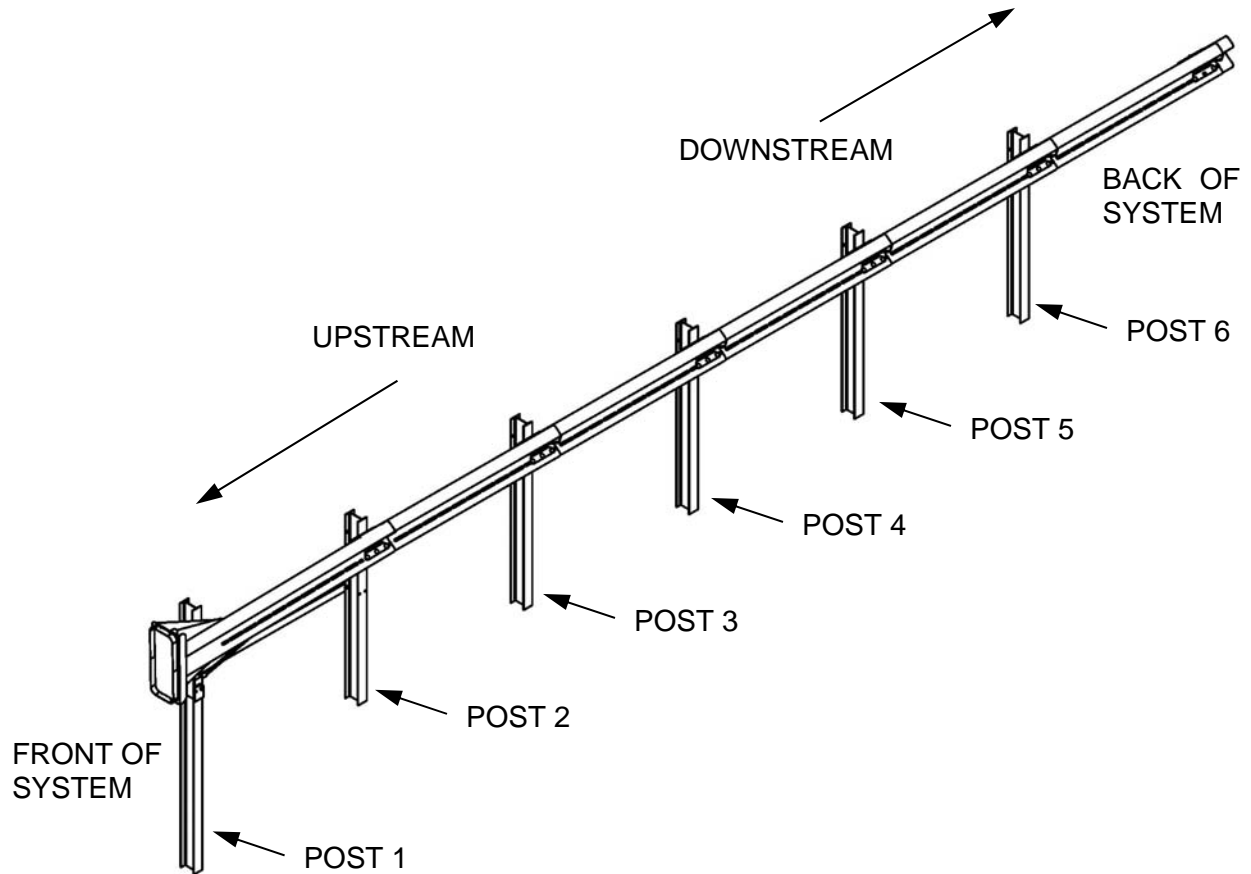


Figure 1 - Post Positioning

1.0 Determine Post Locations

For 4'-0" Flare Offset

Complete the following steps for assembling the TREND™ 350 End Terminal with a 4'-0" flare offset. For alternate flare offsets see Page 17.

Note: Posts 7, 8, and 9 are not included with the TREND™ 350 End Terminal.

- 1.1 Start at line Post 9 of the guardrail run and etc.
- 1.2 Extend the post centerline 12'-6" from Post 9 to establish Point 7T (See Figure 2).

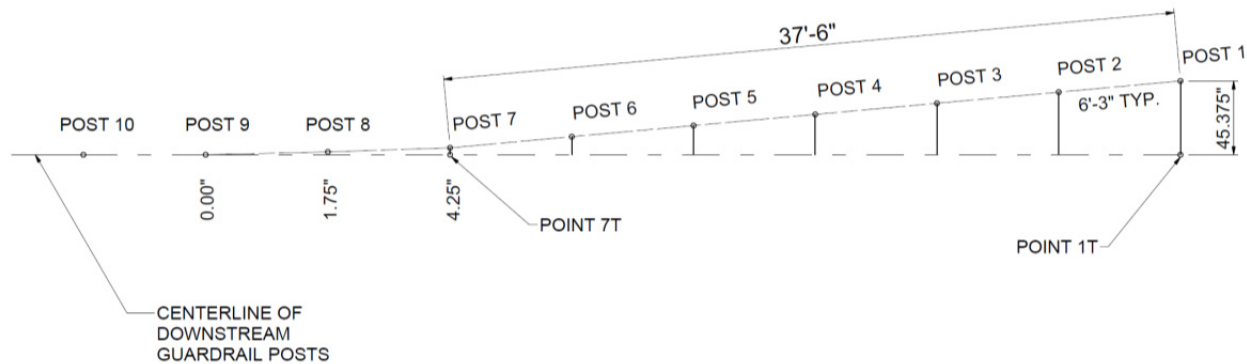


Figure 2 - Post Locations (4'-0" Flare Offset)

- 1.3 Extend the post centerline from Point 7T to establish Point 1T (See Figure 2).
- 1.4 Measure from Point 1T an offset of 45 3/8" perpendicular to the road to establish the location for Post 1 (See Figure 2).
- 1.5 Measure the offsets of Posts 8 and 7 (See Figure 2).
- 1.6 Establish a straight line between Post 1 and Post 7. This line represents the post centerline of the system.
Note: This line must measure 37'-6", if not, adjust Post 1 accordingly.
- 1.7 Between Posts 1 and 7 mark Posts 2 through 6 at 6'-3" intervals (See Figure 2).

For Flare Offsets less than 4'-0"

For system flare offsets less than 4'-0" follow the steps on Page 16; however, use Chart 1 for the offset values for Posts 1, 7, and 8 (See Figure 3).

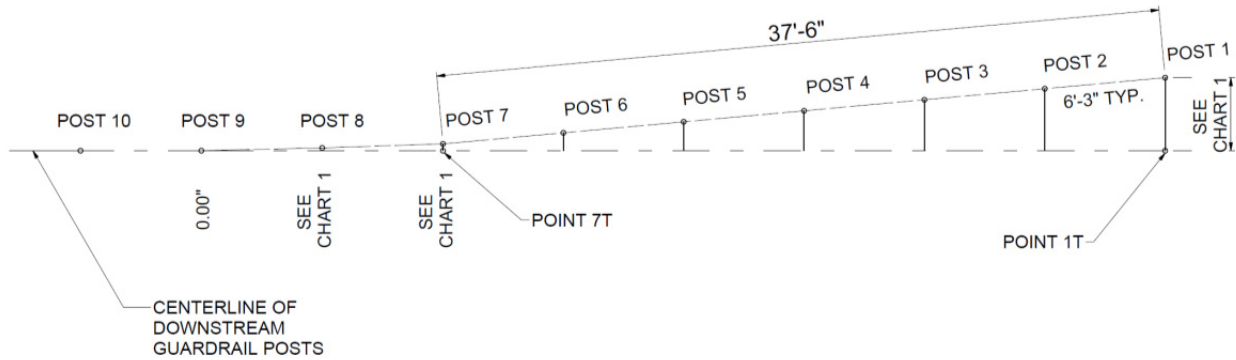


Figure 3 – Post Locations (Flare Offsets Less than 4'-0")

Chart 1 – Post Offsets

		Post Offset (inches)		
		Post 1	Post 7	Post 8
System Flare (inches)	12"	11 3/8	1 1/16	7/16
	24"	22 11/16	2 1/8	7/8
	36"	34 1/16	3 3/16	1 5/16
	48"	45 3/8	4 1/4	1 3/4

2.0 Post Assembly

- 2.1 Starting with the post location closest to the existing guardrail (i.e., Post 6), place (1) W6x8.5 Line Post. The top of the post should be approximately 28 5/8" above the ground.

Note: Post spacing is 6'-3".

- 2.2 Repeat step 2.1 for the remaining three W6x8.5 System Line Posts (i.e., Posts 5, 4, and 3).

- 2.3 Next, place the SYTP Post (i.e., Post 2). The top of the post should be approximately 28 5/8" above the ground and the 1/2" diameter holes should be approximately centered on ground line (See Figure 4).

Note: Post spacing is 6'-3".

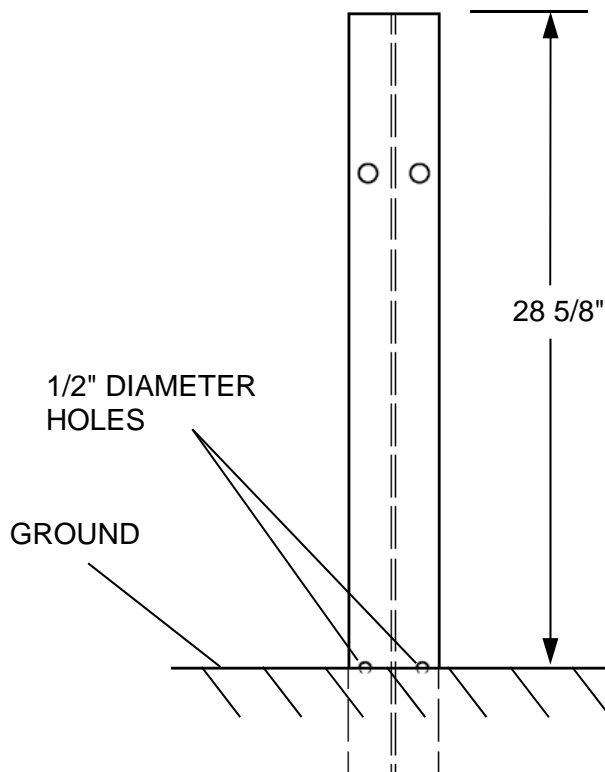


Figure 4 - SYTP Post (Post 2) Placement

- 2.4 Place the HBA Bottom Post (i.e., Post 1) at the end post location (i.e., farthest from the existing guardrail). The bottom of the 13/16" diameter hole in the ears should be even with the ground (See Figure 5).

Note: Post spacing is 6'-3".

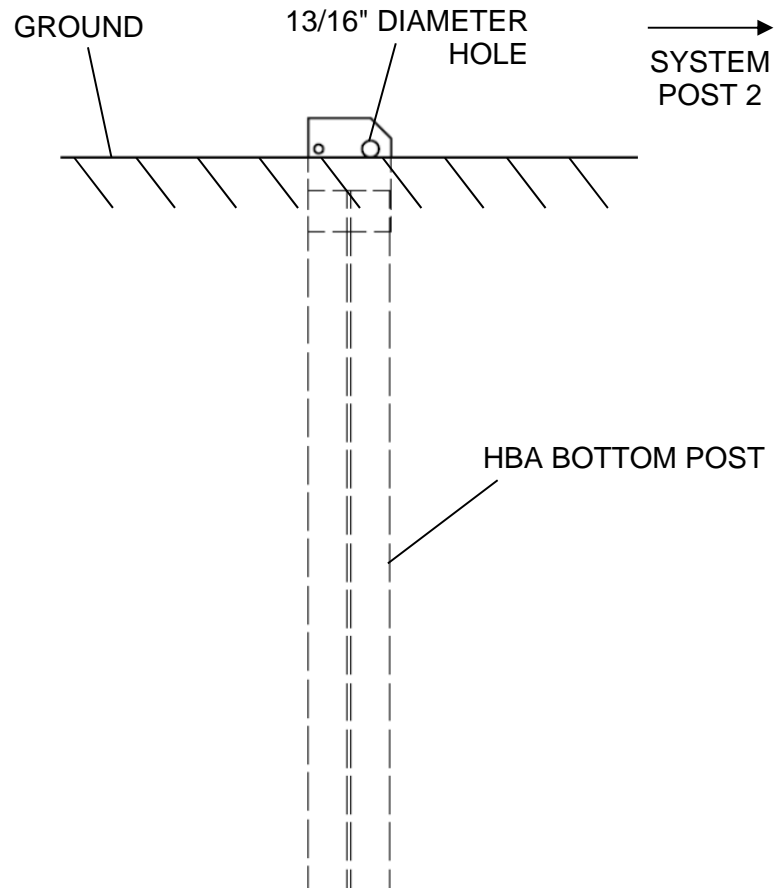


Figure 5 - HBA Post (Post 1) Placement

- 2.5 Insert the HBA Top Post into the HBA Bottom Post. Bolt these Posts together first using (1) 3/4" x 2 1/2" hex bolt, (1) 3/4" flat washer, (1) 3/4" lock washer and (1) 3/4" hex nut, then using (2) 3/8" x 2" hex bolts, (2) 3/8" flat washers, (2) 3/8" lock washers and (2) 3/8" hex nuts as shown in Figure 6. The 3/4" x 2 1/2" hex bolt must be fastened through the HBA Top Post and HBA Bottom Post on the side opposite the Angle Strut (refer to Section 3.0 Angle Strut Assembly).

Note: The HBA Top Post Plates (Ears) can be placed on either side of the HBA Bottom Post Plates (Ears).

There is no torque requirement for these bolts. They should be tightened to a snug position (do not over tighten).

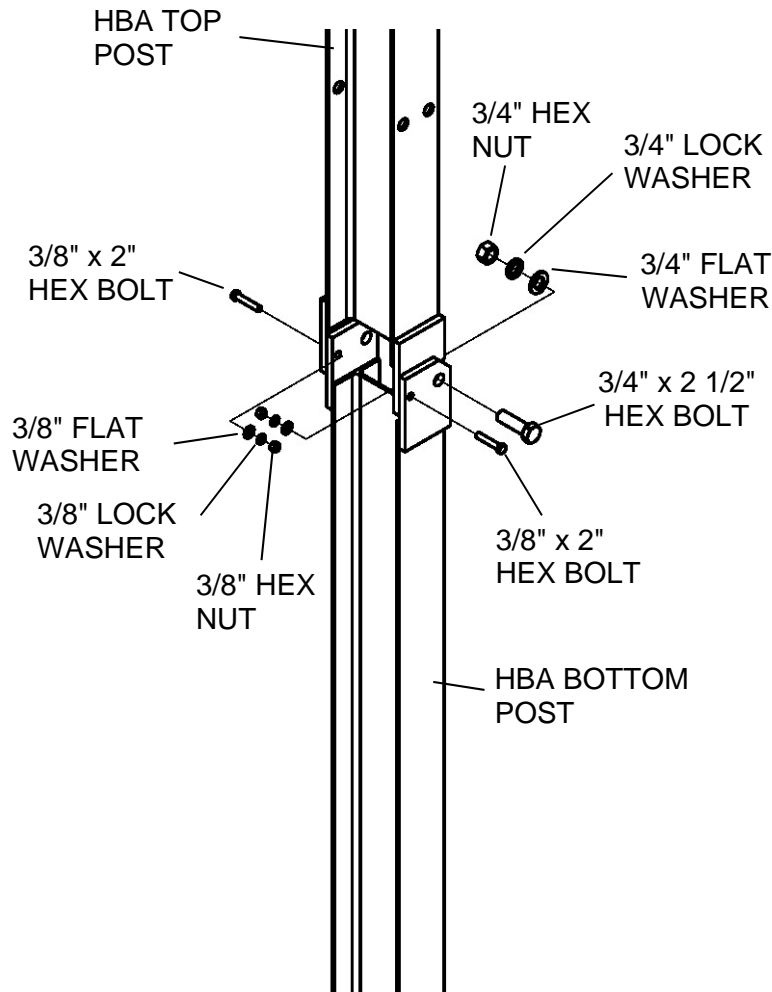


Figure 6 - Post 1 Assembly

3.0 Angle Strut Assembly

- 3.1 Attach the Angle Strut to the HBA Post using (1) 3/4" x 2 1/2" hex bolt, (1) 3/4" flat washer, (1) 3/4" lock washer and (1) 3/4" hex nut. The flat washer and lock washers are placed under the hex nut as shown in Figure 7.

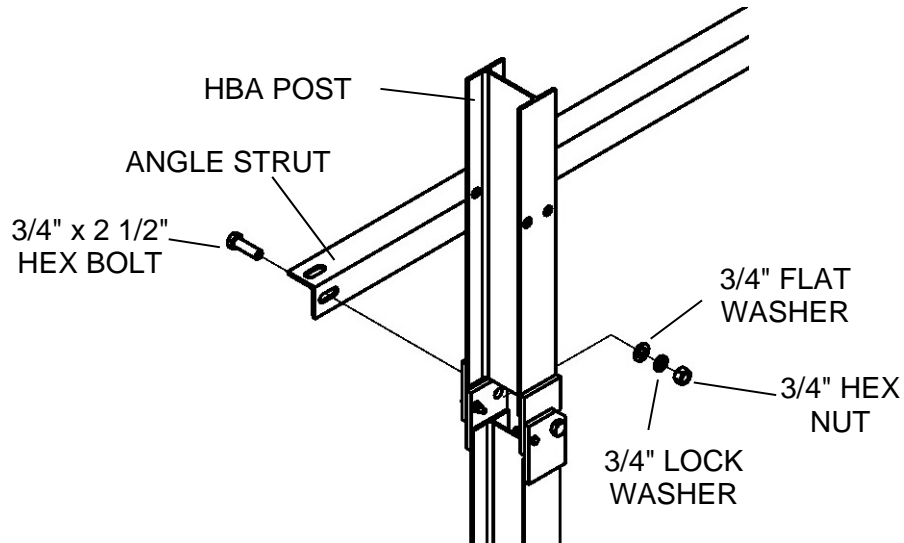


Figure 7 - Angle Strut Assembly

- 3.2 Attach the other end of the Angle Strut to the SYTP Post using (2) 7/16" x 1 1/2" hex bolts, (2) 7/16" flat washers, (2) 7/16" lock washers and (2) 7/16" hex nuts. Place the flat washers between the bolt heads and the Angle Strut and the lock washers under the hex nuts as shown in Figure 8.

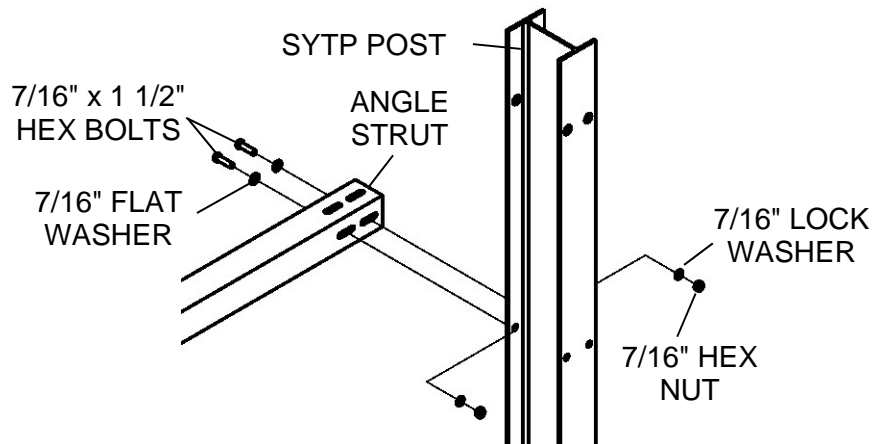


Figure 8 - Angle Strut Assembly

Note: There is no torque requirement for these bolts. They should be tightened to a snug position (do not over tighten).

4.0 Spacer Assembly

- 4.1 Refer to system drawings on Page 30 and 31 of this Manual for assistance in locating parts.
- 4.2 Use (1) 5/8" x 2" hex bolt, (1) Washer Bar and (1) 5/8" rail nut to attach the Spacer to the first Guardrail Post. All of the Spacers have two slots on the inside for mounting. Orient as shown in Figure 9 (Guardrail Panel not shown for clarity).

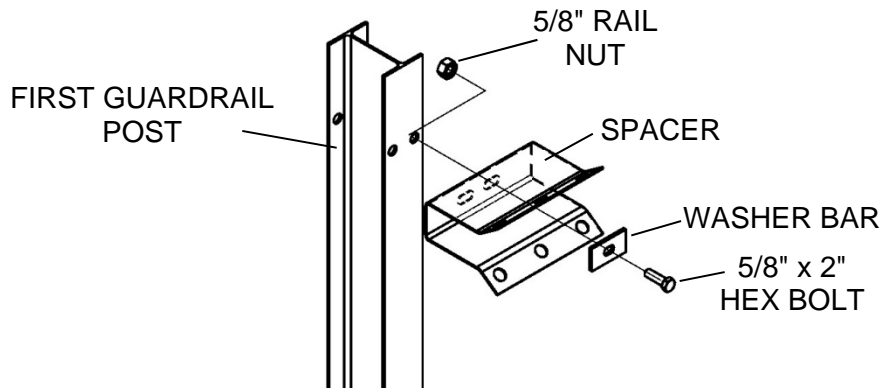


Figure 9 - Spacer Attachment

- 4.3 Working from the guardrail to the front of the TREND™ 350 End Terminal, use (1) 5/8" x 2" hex bolt, (1) Washer Bar and (1) 5/8" rail nut to attach the Spacer to the W6x8.5 Line Post – Posts 6, 5, 4 and 3. All of the Spacers have two slots on the inside for mounting, orient as shown.

Note: The Washer Bar needs to lie between the 5/8" x 2" hex bolt head and the Spacer.

- 4.4 Next use (1) 5/8" x 2" hex bolt, (1) Washer Bar and (1) 5/8" rail nut to attach the Spacer with Cable Anchor to the SYTP Post (i.e., Post 2). All of the Spacers have two slots on the inside for mounting, orient as shown in Figure 10.

Note: Post 1 does NOT receive a Spacer (See Figure 13 on Page 25).

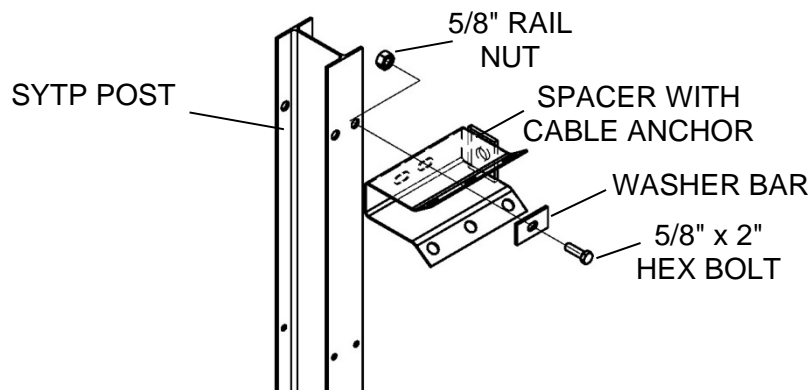


Figure 10 - Spacer with Cable Anchor Attachment

5.0 Rail Assembly

- 5.1 Begin with the End Rail with Fin and the rear Intermediate Rail with Fin. Attach the End Rail with Fin over the existing guardrail panel and the rear Intermediate Rail with Fin over the End Rail with Fin (i.e., the End Rail with Fin is located in between the existing guardrail panel and the rear Intermediate Rail with Fin). You may have to use alignment tools to aid in aligning the holes. Attach using (4) 5/8" x 2" rail bolts [grade 5], (4) 5/8" flat washers [thick], (4) 5/8" hex nuts [grade 5] and (1) Backing Plate as shown.

Note: The Backing Plate needs to lie between the rail bolt heads and the Intermediate Rail with Fin (See Figure 11).

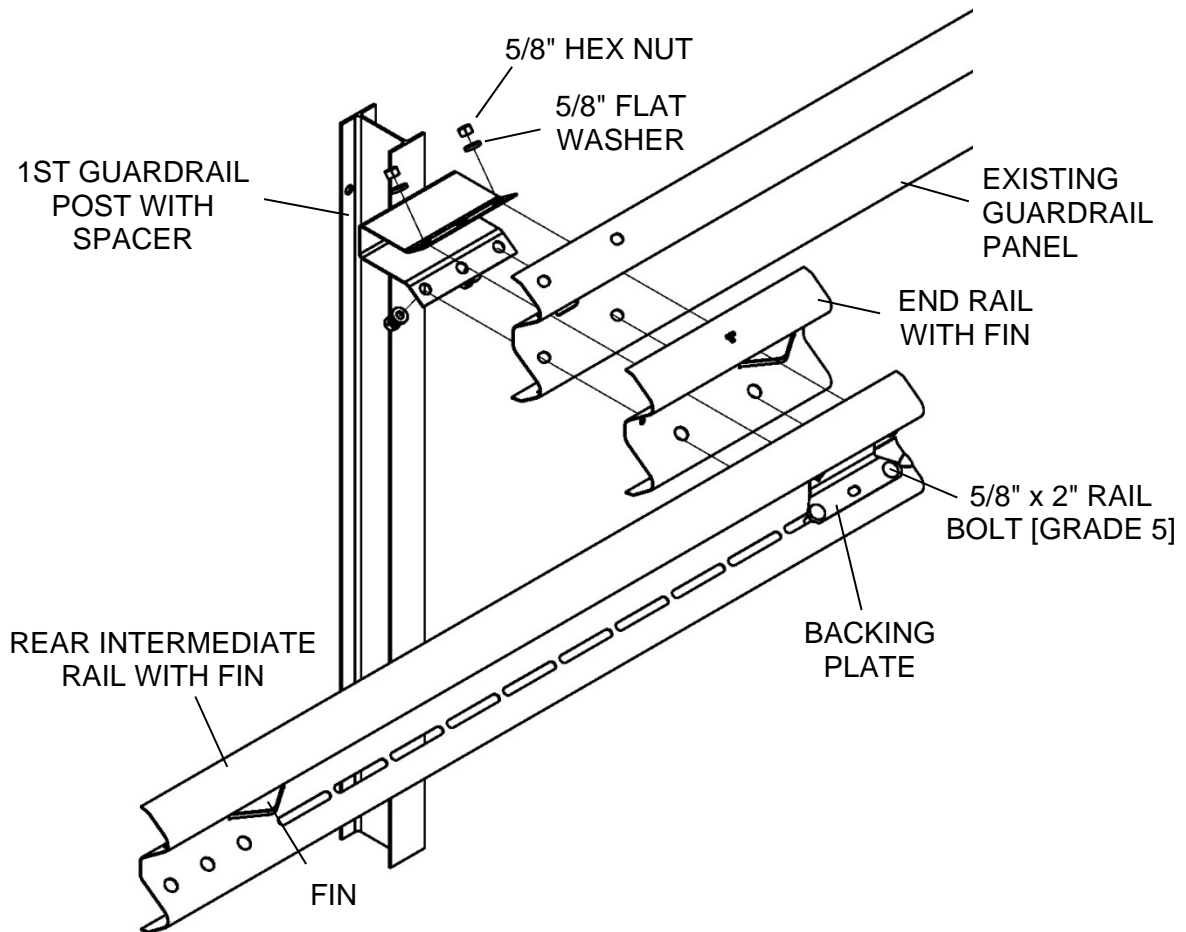


Figure 11 - Rail Attachment

- 5.2 Working from the rear Intermediate Rail, attach the next Intermediate Rail to the system using (6) 5/8" x 2" rail bolts [grade 5], (6) 5/8" flat washers [thick], (6) 5/8" hex nuts [grade 5] and (1) Backing Plate as shown. Be sure to overlap the panels as shown; the upstream panel is on top of the downstream panel.

Note: The Backing Plate needs to lie between the rail bolt heads and the Intermediate Rail (See Figure 12).

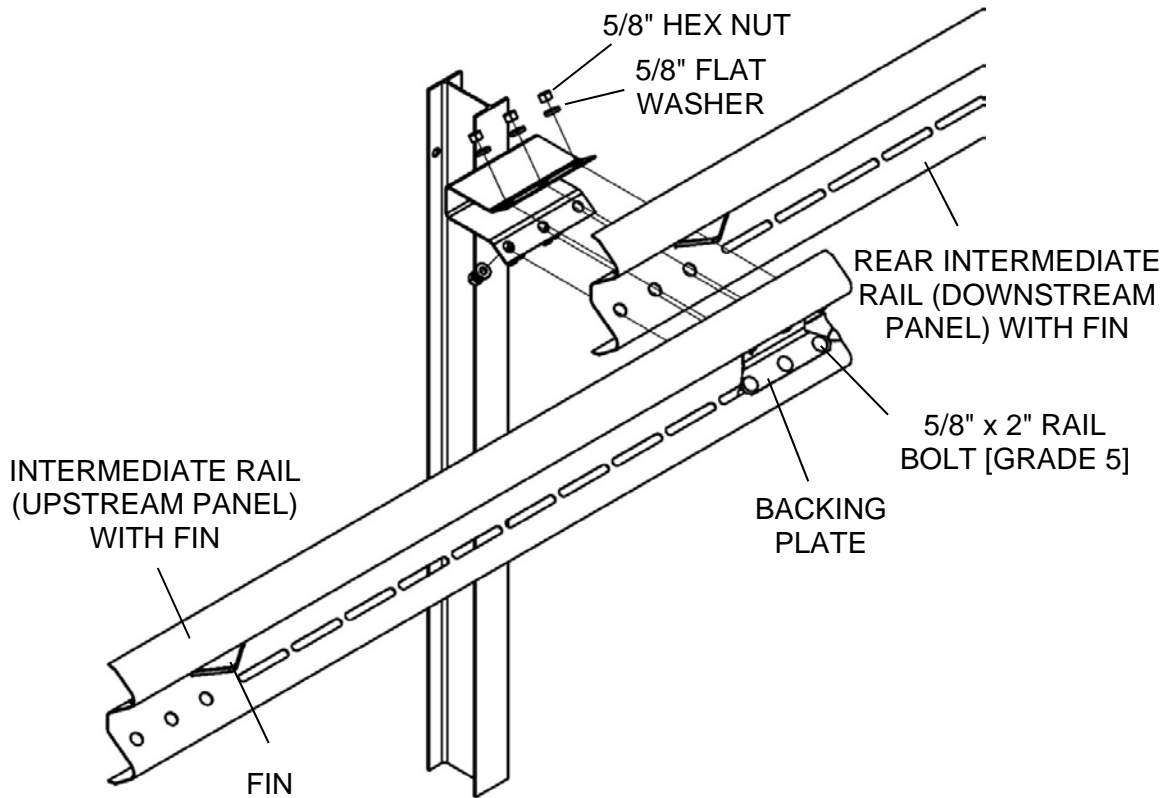


Figure 12 - Rail Attachment

- 5.3 Tighten all 5/8" rail bolts [grade 5] to a torque of 120 ft-lb using a calibrated torque wrench.



Important: The 5/8" rail bolts [grade 5] must be tightened to the correct torque for proper system operation. Failure to follow this warning could result in serious injury or death in the event of a collision.

- 5.4 Repeat steps 5.2 and 5.3 until all of the Intermediate Rails are attached.

Note: The final Intermediate Rail to be assembled (at the front of the system) does NOT have a fin.

6.0 Head Rail Assembly

- 6.1 Position the Head Rail Assembly onto the posts; attach using (6) 5/8" x 2" rail bolts [grade 5], (6) 5/8" flat washers [thick], (6) 5/8" hex nuts [grade 5] and (1) Backing Plate. Attach the Head Rail Assembly to Post 1 using (1) 5/8" x 2" hex bolt and (1) 5/8" rail nut (See Figure 13).

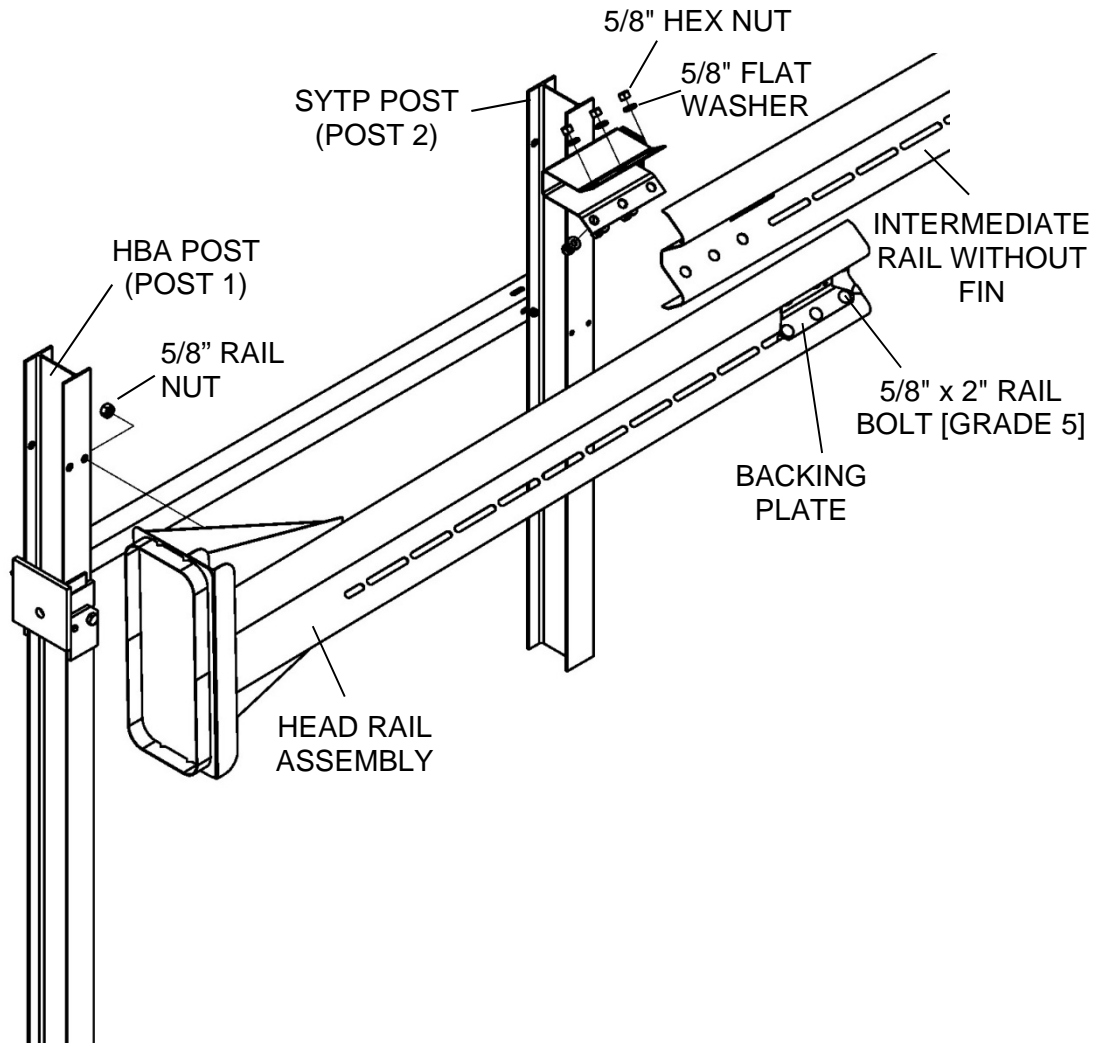


Figure 13 - Head Rail Attachment



Important: Verify the head height is 33" above grade.

- 6.2 Tighten all 5/8" rail bolts [grade 5] to a torque of 120 ft-lb using a calibrated torque wrench.



Important: The 5/8" rail bolts [grade 5] must be tightened to the correct torque for proper system operation. Failure to follow this warning could result in serious injury or death in the event of a collision.

7.0 Cable Routing

- 7.1 Feed one end of the Cable between the HBA Top Post and HBA Bottom Post and through the Bearing Plate. **Note: The tabs on the Bearing Plate rest on top of the HBA Top Post plates (ears).** Secure the Cable using (1) 1" flat washer and (1) 1" hex nut. Thread the nut approximately 3"- 4" onto the Cable end (See Figure 14).

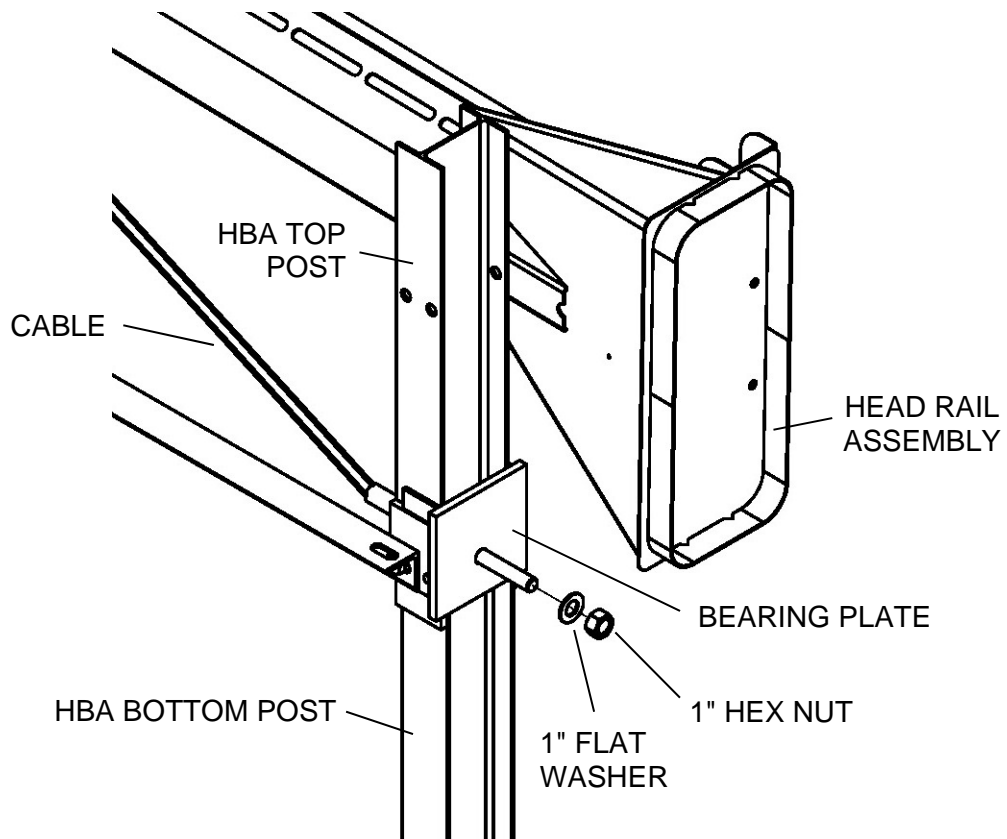


Figure 14 - Cable Attachment

- 7.2 Insert the other end of the Cable through the Spacer with Cable Anchor. Secure the Cable using (1) 1" flat washer and (1) 1" hex nut. Restrain the Cable with Vise Grip Pliers at the end being tightened to avoid twisting the Cable. Make sure the nuts are tight and the Cable is taut (See Figure 15; Post 2 not shown for clarity).

Note: The Cable is considered taut when it does not deflect more than 1" when pressure is applied by hand in an up or down direction.

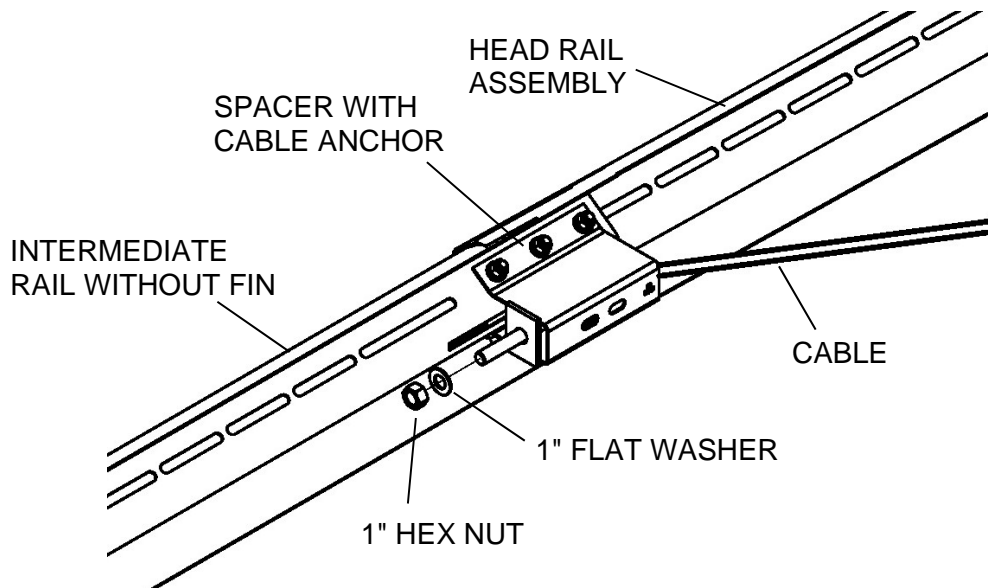


Figure 15 - Cable to Spacer Attachment

Maintenance



Warning: The system must be periodically inspected to ensure proper operation.

Inspections by the appropriate highway authority are recommended as needed based upon volume of traffic and impact history. Visual drive-by inspections are recommended at least once every month. Walk-up inspections are recommended at least twice a year.

Visual Drive-By Inspection

The purpose of the visual inspection is to spot any conditions that would prevent the system from functioning as intended.

1. Check for an unrecorded impact, misalignment, missing fasteners, corrosion, vandalism, etc.
2. Clear any buildup of trash or dirt around the system that could interfere with intended performance.

Walk-Up Inspection

1. Clear and dispose of any debris on the site.
2. Be sure all fasteners are tight.
3. Verify that all the 5/8" rail bolts [grade 5] are torqued to 120 ft-lb.
4. Check to see that slack is removed from the Cable (tighten nut on threaded Cable end if necessary).

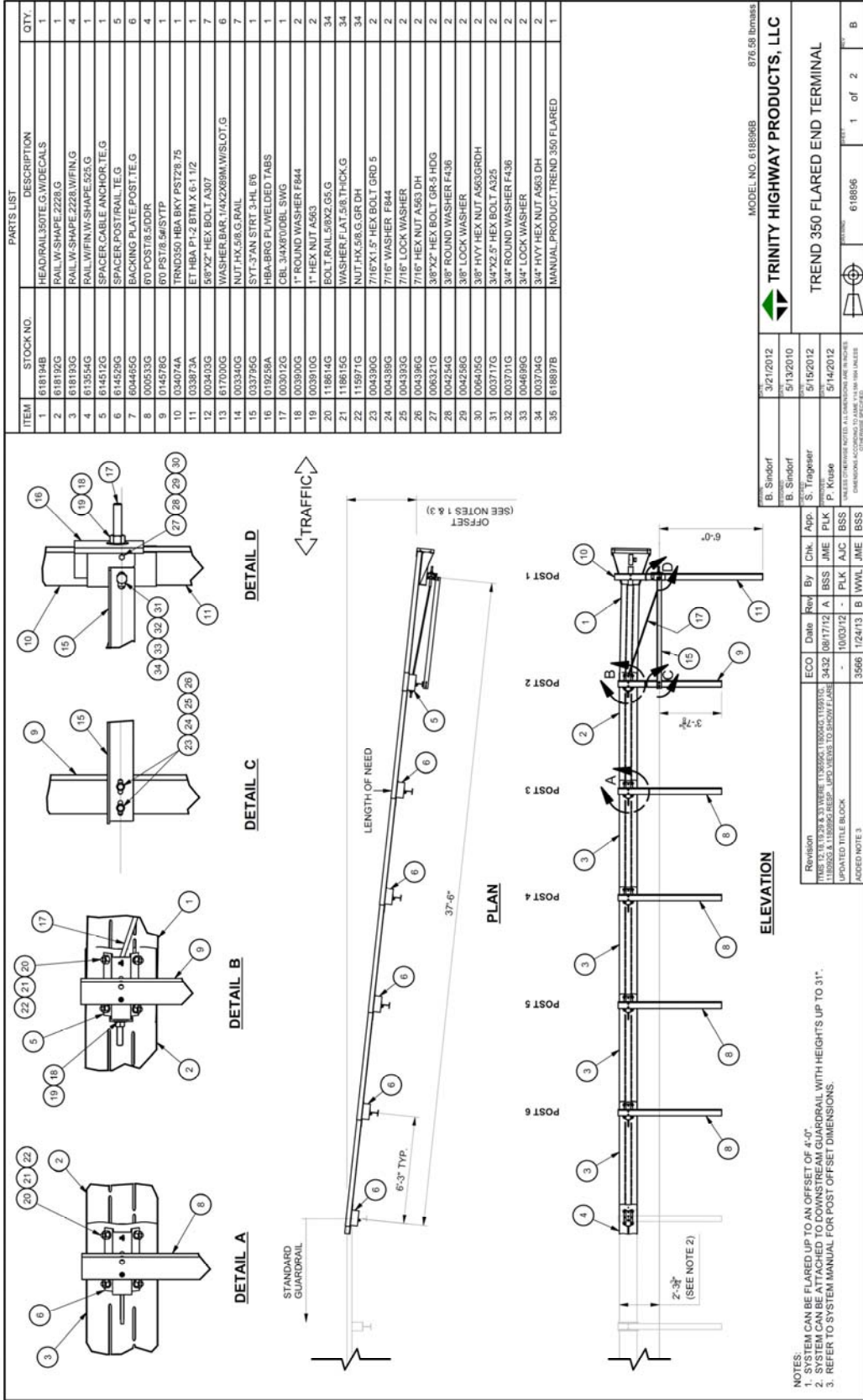
Assembly Checklist

Assembly performed by: _____

Assembly date: _____

Assembly location: _____

- Verify the Rail height is 27 3/4" above grade.
- Verify the Head height is 33" above grade (refer to Section 6.0).
- Verify that all 5/8" rail bolts [grade 5] are torqued to 120 ft-lb. Also verify that all 5/8" rail bolt heads are seated flat against each Backing Plate (refer to Sections 5.0 and 6.0).
- Verify that the slack has been removed from the Cable; tighten nuts on Cable ends as necessary (refer to Section 7.0).
- Verify that each Spacer has a Washer Bar seated between the inside of the Spacer and the bolt head that attaches the Spacer to the Post (refer to Section 4.0).
- Verify that all rails are lapped correctly along the length of the system (refer to Sections 5.0 and 6.0).
- Verify that the Head Rail Assembly is oriented with a downward slope towards the front of the system (refer to Section 6.0).



DWG 618896 (Sheet 1)

TREND™ 350 Flared End Terminal Drawings

MODEL NO. 618896B 876.56 lbs/mass

TRINITY HIGHWAY PRODUCTS, LLC

TREND 350 FLARED END TERMINAL

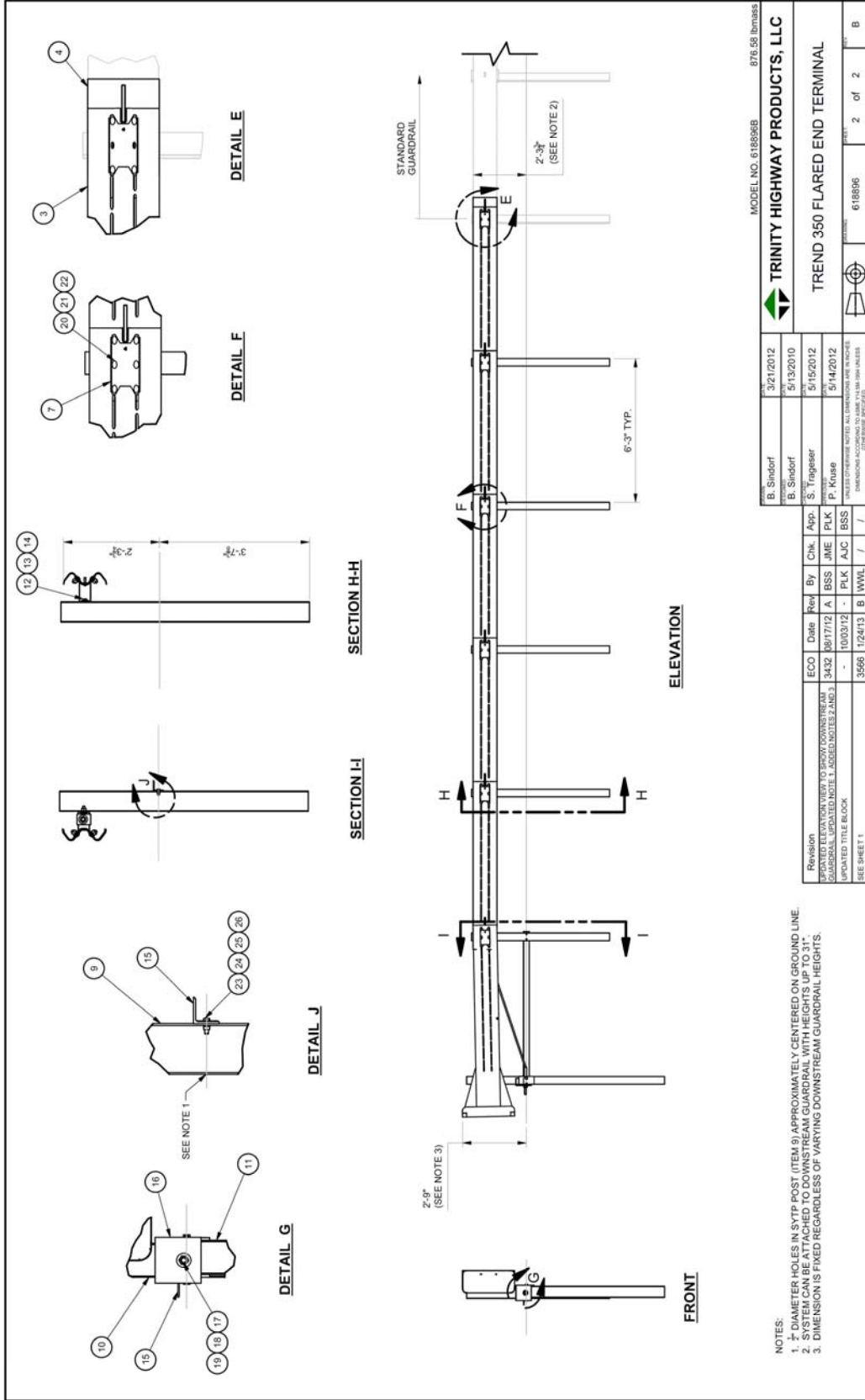
1 of 2

Revision	ECO	Date	Rev	By	Chk.	App.	PLK
1	118896A	11/20/12	A	S. Trappeser	S. Trappeser		5/14/2012
2	118896B	12/14/13	B	W. Wall	J. M. BSS		5/14/2012

ADDED NOTE 3

35661 124113 B | WWAL JME BSS

NOTES:
1. SYSTEM CAN BE FLARED UP TO AN OFFSET OF 4'-0".
2. SYSTEM CAN BE ATTACHED TO DOWNSTREAM GUARDRAIL WITH HEIGHTS UP TO 31".
3. REFER TO SYSTEM MANUAL FOR POST OFFSET DIMENSIONS.



MODEL NO. 618896B 876.56 lbs/mass

TRINITY HIGHWAY PRODUCTS, LLC

TREND 350 FLARED END TERMINAL

DATE	3/21/2012	BY	B. Sindorf
DATE	5/13/2010	BY	B. Sindorf
DATE	5/15/2012	CHK.	S. Trappesser
DATE	5/14/2012	APP.	P. Kruse

REVISIONS:

ECO	Date	Rev	By	Chk.	App.
1	10/03/12	A	BSS	JME	PLK
2	1/24/13	B	WWIL	/	/

UPDATED ELEVATION VIEW TO SHOW DOWNSTREAM GUARDRAIL. UPDATED NOTE 1. ADDED NOTES 2 AND 3.

UPDATED TITLE BLOCK

SEE SHEET 1

3566

1003712

124413

PLK

AJC

BSS

618896

2 of 2

DATE PLOTTED: 10/27/13 10:07:01 AM

NOTES:

- 3" DIAMETER HOLES IN SYTP POST (ITEM 9) APPROXIMATELY CENTERED ON GROUND LINE.
- SYSTEM CAN BE ATTACHED TO DOWNSTREAM GUARDRAIL WITH HEIGHTS UP TO 31".
- DIMENSION IS FIXED REGARDLESS OF VARYING DOWNSTREAM GUARDRAIL HEIGHTS.

DWG 618896 (Sheet 2)

Notes:

Notes:

Notes:



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www.energyabsorption.com

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