

## ET-PLUS NOTES

1. The ET-PLUS is a proprietary design by Trinity Industries, Inc. Any infringement on the rights of the designer shall be the sole responsibility of the user.
2. This Qualified Products List (QPL) drawing is provided by the Florida Department Of Transportation solely for the use by the Department and its assignees.
3. The ET-PLUS shall be assembled in accordance with the details, procedures and specifications called for in these drawings.
4. The ET-PLUS is applicable to all design speeds.
5. The ET-PLUS is intended for use as an approach end guardrail anchorage for shoulder guardrail located parallel to traffic lanes. The effective length of the ET-PLUS is 50' including two 25' or four 12'-6" W-Beam guardrail panels. The effective length is outside of any standard guardrail, guardrail transitions or other special treatments. The ET-PLUS alignment is an extension of the normal guardrail alignment, except when constructed with curb the alignment of the ET-PLUS will be flared over the first 25' at a rate of 1 : 25.
6. The beginning of length of need is at Post No. 3.
7. The ET-PLUS can not be used in medians where horizontal clearance requires the use of a backrail.
8. The cable anchor assembly requires jam nuts on each end of the cable.
9. Apply 12" x 12" (min.) amber retroreflective adhesive sheeting to the extruder face plate.
10. See the Design Standards Index No. 400 for galvanizing requirements of metallic component.
11. If the plans call for the ET-PLUS at a specific location, substitutions with other end anchorage assemblies will not be permitted unless approved by the Engineer. If the plans call for end anchorage assembly 'parallel' at a specific location the contractor has the option to construct any FDOT approved parallel assembly. Where a flared end anchorage is called for in the plans, any approved substitution with a parallel end anchorage will not be eligible for VECP consideration.
12. The ET-PLUS shall be paid for under the contract unit price for Guardrail, End Anchorage Assembly (Parallel), EA and shall be full compensation for furnishing and installing all components in accordance with the plans; the manufacturer's detail drawings, procedures and specifications; and, this Index.

## DESIGN NOTES

1. A special site evaluation should be considered prior to using the ET-PLUS where there is less than 25' clear area on the extrusion side (back side) of the ET-PLUS.

## CONTENTS

DESCRIPTION	DRAWING NUMBER
50'-0" WITH 25' PANELS, POST SLEEVES 1-4 WITHOUT SOIL PLATE	SS 330
50'-0" WITH 25' PANELS, 7 SYT POSTS & 1HBA POST	SS 373
50'-0" WITH 12'-6" PANELS, 7 SYT POSTS & 1HBA POST	SS 378

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

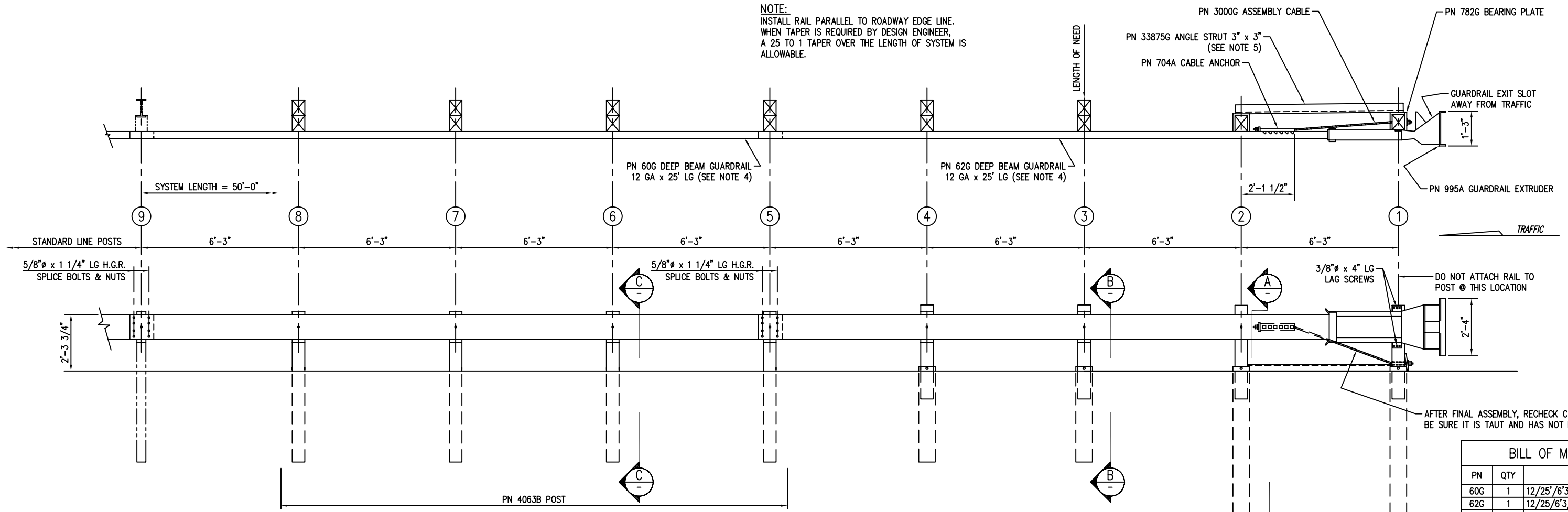
ET-PLUS

DATE:

04/17/06

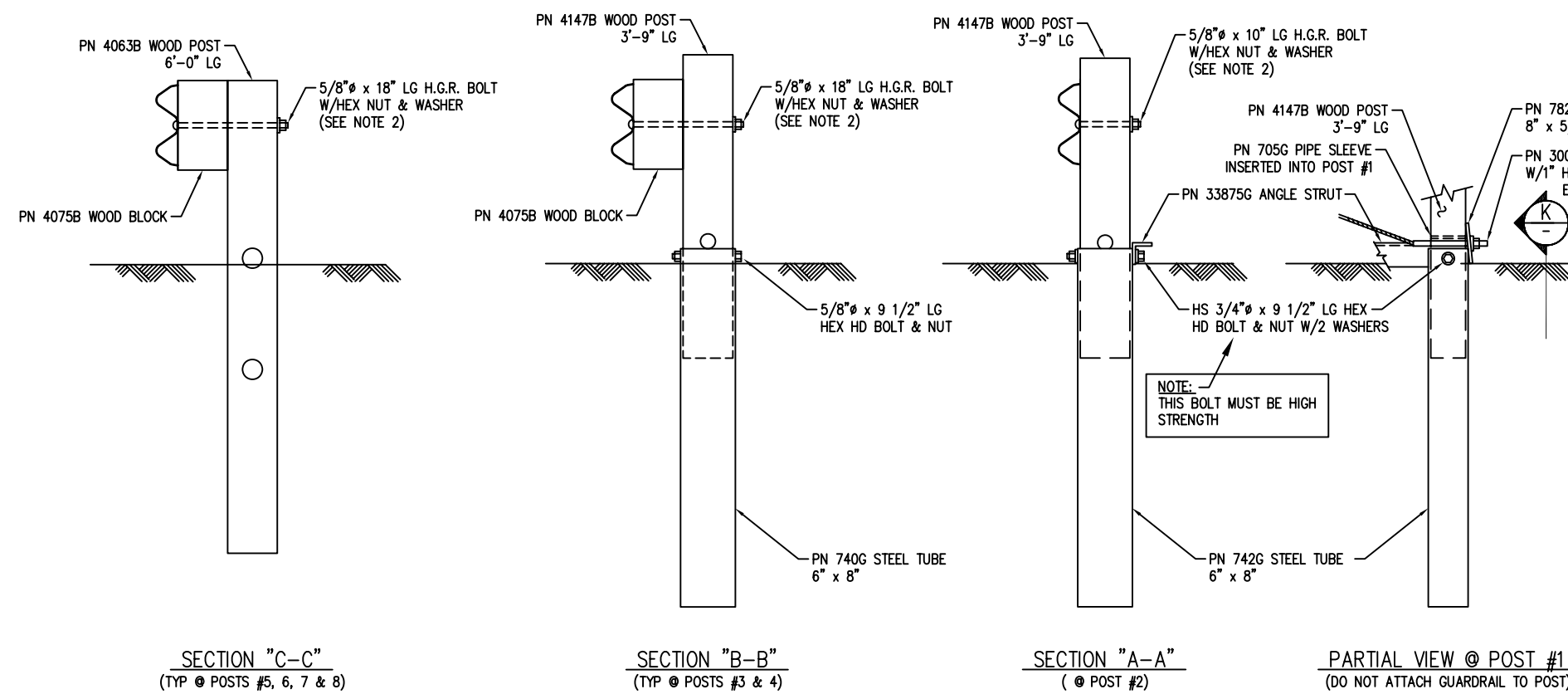
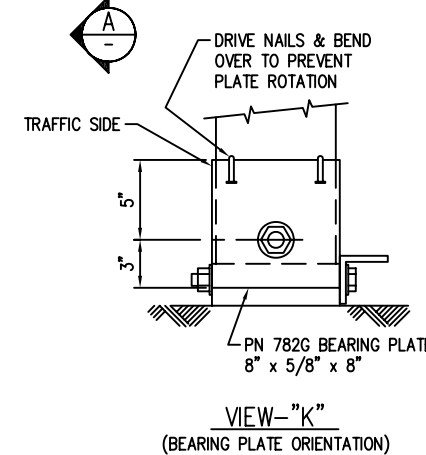
QPL No. 536-0210

NOTE:  
INSTALL RAIL PARALLEL TO ROADWAY EDGE LINE.  
WHEN TAPER IS REQUIRED BY DESIGN ENGINEER,  
A 25 TO 1 TAPER OVER THE LENGTH OF SYSTEM IS  
ALLOWABLE.



AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

BILL OF MATERIAL		
PN	QTY	DESCRIPTION
60G	1	12/25/6'3/S (GUARDRAIL)
62G	1	12/25/6'3/S ANC (GUARDRAIL)
704A	1	CABLE ANCHOR BRACKET
705G	1	2" x 5 1/2" PIPE
740G	2	4'-6" TUBE SLEEVE
742G	2	6'-0" TUBE SLEEVE
782G	1	5/8" x 8" x 8" BEARING PLATE
995A	1	ET-PLUS EXTRUDER
3000G	1	CABLE 3/4 x 6'6"
3300G	7	5/8" WASHER
3340G	25	5/8" HEX NUT
3360G	16	5/8" x 1 1/4" SPLICE BOLT
3497G	2	5/8" x 9 1/2" HEX HD BOLT
3500G	1	5/8" x 10" POST BOLT
3580G	6	5/8" x 18" POST BOLT
3700G	4	3/4" WASHER
3704G	2	3/4" HEX NUT
3900G	2	1" WASHER
3910G	2	1" HEX NUT
4063B	4	WD 6'0 POST 6 x 8
4075B	6	WD BLOCK 1'2 x 6 x 8 DR
4147B	4	WD 3'9 POST 5 1/2 x 7 1/2
4228G	2	3/8" x 4" LAG SCREW
5148G	2	3/4" x 9 1/2" HEX HD BOLT
33875G	1	ANGLE STRUT



- NOTES:
- DO NOT ATTACH GUARDRAIL TO POST # 1.
  - THE 5/8" FLAT WASHER IS USED UNDER THE NUT BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
  - MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF TERMINAL.
  - 25' GUARDRAIL PANELS ARE SHOWN, 12'-6" GUARDRAIL PANELS ARE ACCEPTABLE ALTERNATES.
  - ANGLE STRUT MUST BE ATTACHED USING 3/4" DIA HIGH STRENGTH BOLTS.

REV.	CHK'D	BY	DATE	REMARKS
2	BT	L.H.	2/21/05	ATTACHED G-RAIL TO POST #5; CHANGED TAPER NOTE
1	BT	E.A.S.	10/24/01	UPDATED VIEWS & ADDED VIEW-"K"

**ET-PLUS**

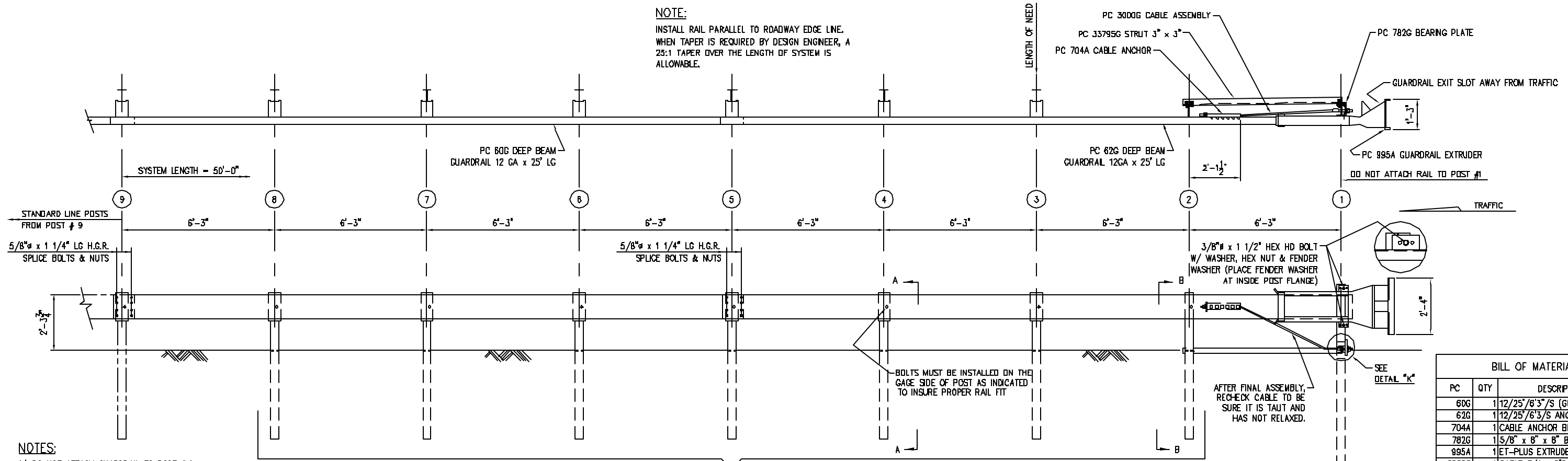
ET-PLUS  
PLAN, ELEVATION & SECTION  
50' LG WITH 25' PANELS, HBA STRUT  
POST SLEEVES 1-4 WITHOUT SOIL PL

TRINITY INDUSTRIES, INC.  
HIGHWAY SAFETY PRODUCTS  
2525 STEMMONS FREEWAY, DALLAS, TX 75207

DRAWN	BT
CHECKED	
SCALE	N.T.S.
DATE	08/09/01
ENG. FILE #	SS330-01E
SHT.No.	E1 OF 1
DRAWING NO.	SS-330
REV.	2

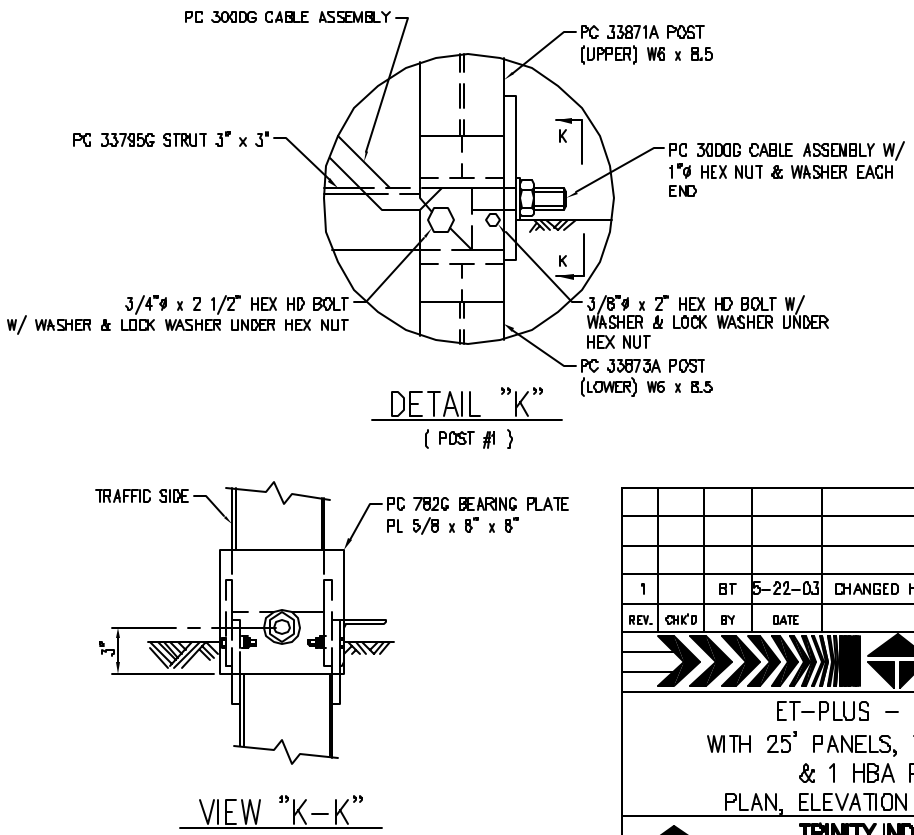
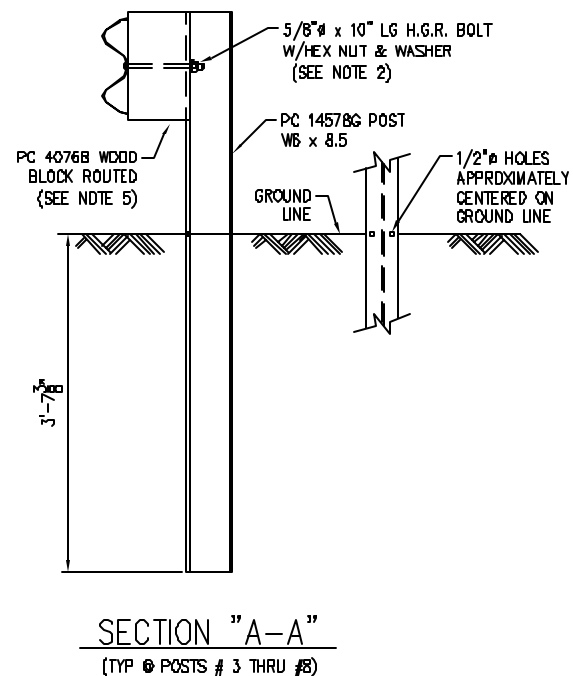
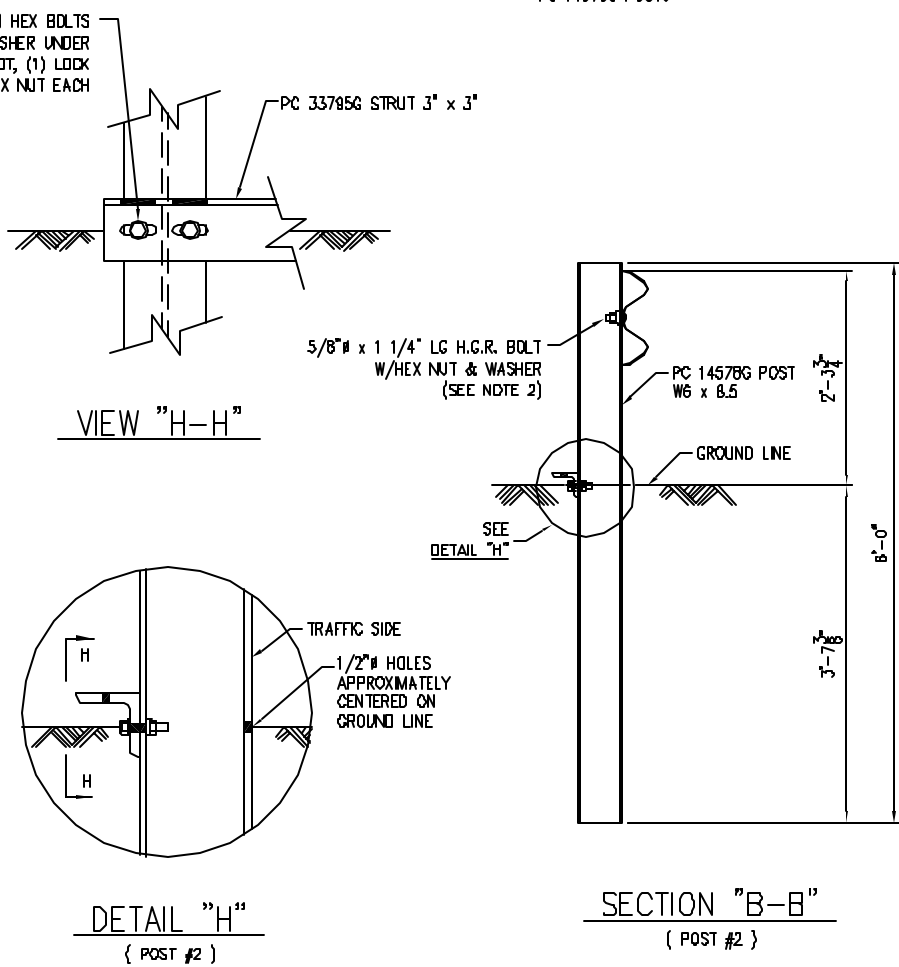
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**NOTE:**  
 INSTALL RAIL PARALLEL TO ROADWAY EDGE LINE.  
 WHEN TAPER IS REQUIRED BY DESIGN ENGINEER, A  
 25:1 TAPER OVER THE LENGTH OF SYSTEM IS  
 ALLOWABLE.



- NOTES:**
- DO NOT ATTACH GUARDRAIL TO POST # 1.
  - THE 5/8" FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
  - MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF TERMINAL.
  - 25' GUARDRAIL PANELS ARE SHOWN, 12.5' GUARDRAIL PANELS ARE ACCEPTABLE ALTERNATES. WHEN 12.5' PANELS ARE USED, DO NOT ATTACH GUARDRAIL TO POST #1.
  - PLASTIC OFFSET BLOCKS (ROUTED) ARE ACCEPTABLE ALTERNATES.

7/16" x 1 1/2" (2) HEX BOLTS  
 W/ (1) FLAT WASHER UNDER  
 BOLT HEAD OVER SLOT, (1) LOCK  
 WASHER & (1) HEX NUT EACH

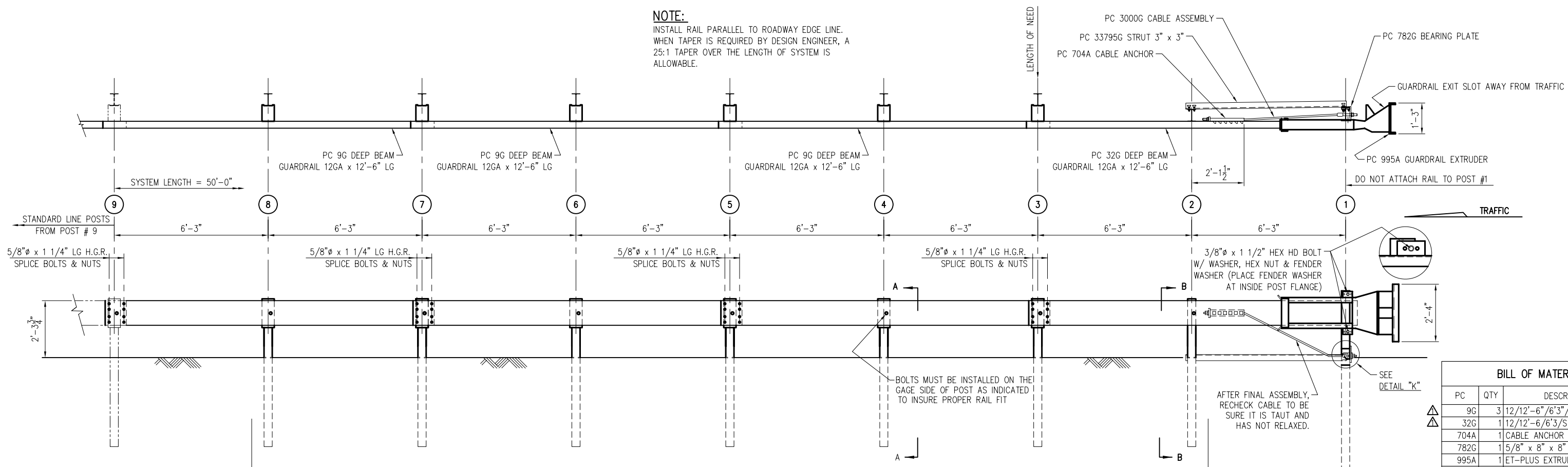


BILL OF MATERIAL		
PC	QTY	DESCRIPTION
60G	1	12/25/6'3"/5 (GUARDRAIL)
62G	1	12/25/6'3"/5 ANC (GUARDRAIL)
704A	1	CABLE ANCHOR BRACKET
782G	1	5/8" x 8" x 8" BEARING PLATE
995A	1	ET-PLUS EXTRUDER
3000G	1	CABLE 3/4 x 6'6"
3300G	7	5/8" FLAT WASHER
3340G	23	5/8" HEX NUT
3360G	17	5/8" x 1 1/4" SPLICE BOLT
3500G	6	5/8" x 10" POST BOLT
3701G	2	3/4" FLAT WASHER
3704G	2	3/4" HEX NUT
3717G	2	3/4" x 2 1/2" HEX HD BOLT
3900G	2	1" FLAT WASHER
3910G	2	1" HEX NUT
4076B	6	WD BLOCK 1 1/2 x 5 x 8 DR
4254G	4	3/8" FLAT WASHER
4255G	2	3/8" FENDER WASHER (1 1/2 OD)
4258G	2	3/8" LOCKWASHER
4261G	2	3/8" x 1 1/2" HEX HD BOLT
4388G	2	7/16" HEX NUT
4388G	2	7/16" FLAT WASHER
4390G	2	7/16" x 1 1/2" HEX HD BOLT
4393G	2	7/16" LOCK WASHER
4698G	2	3/4" LOCK WASHER
6321G	2	3/8" x 2" HEX HD BOLT
6405G	4	3/8" HEX NUT
14578G	7	POST SYT #2-#8
33795G	1	ANGLE STRUT (ET/SYTP/HBA)
33871A	1	POST ET2000 HBA #1 TOP
33873A	1	POST ET2000 HBA #1 BOTTOM

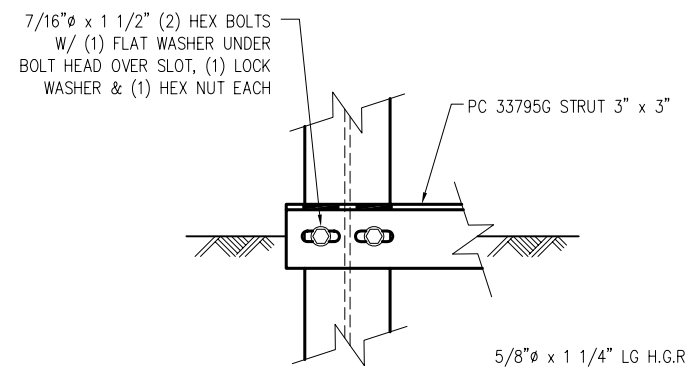
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REV.	CHK'D	BY	DATE
<b>ET-PLUS</b>			
ET-PLUS - 50'-0" WITH 25' PANELS, 7 SYT POSTS & 1 HBA POST PLAN, ELEVATION & SECTION			
DRAWN E.A.S.		CHECKED BT	
SCALE N.T.S.		DATE 05/20/03	
ENB. FILE # SS373-DIE		SRTN# E1 OF 1	
TRINITY INDUSTRIES, INC.		HIGHWAY SAFETY PRODUCTS	
2525 STENMONS FREEWAY, DALLAS, TX 75207		DRAWING NO. SS-373	

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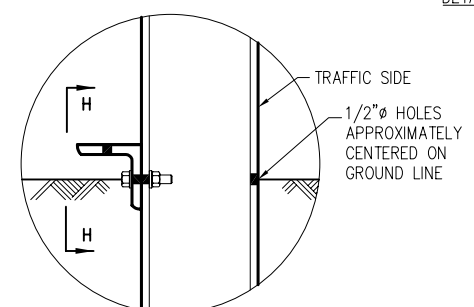
**NOTE:**  
 INSTALL RAIL PARALLEL TO ROADWAY EDGE LINE.  
 WHEN TAPER IS REQUIRED BY DESIGN ENGINEER, A  
 25:1 TAPER OVER THE LENGTH OF SYSTEM IS  
 ALLOWABLE.



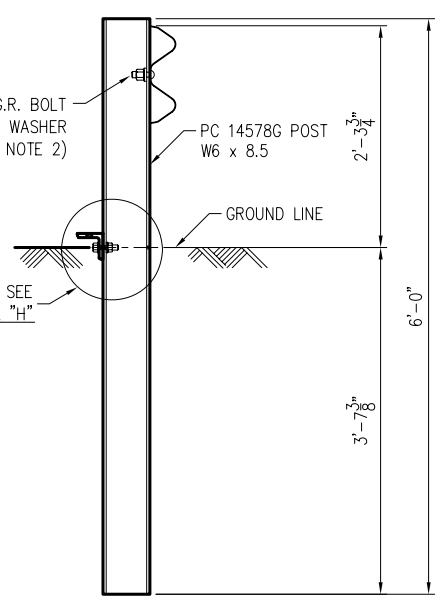
- NOTES:**
- DO NOT ATTACH GUARDRAIL TO POST # 1.
  - THE 5/8" FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
  - MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF TERMINAL.
  - PLASTIC OFFSET BLOCKS (ROUTED) ARE ACCEPTABLE ALTERNATES.



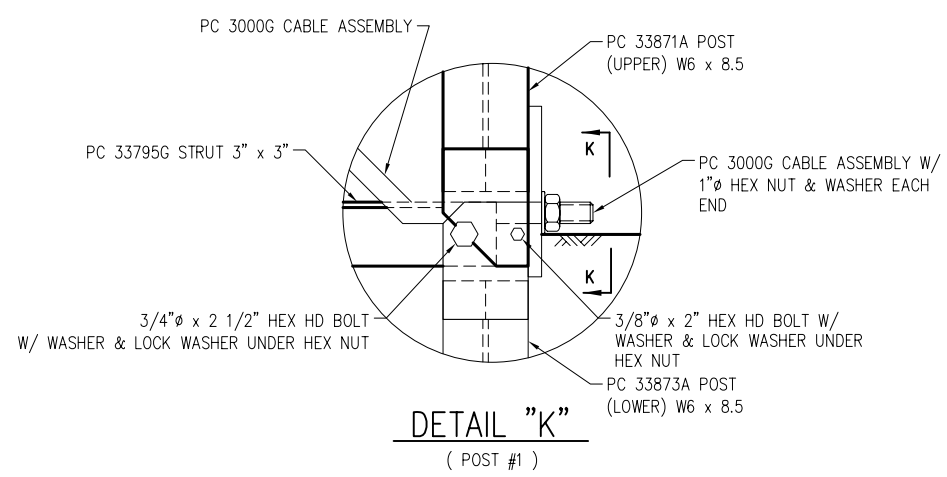
VIEW "H-H"



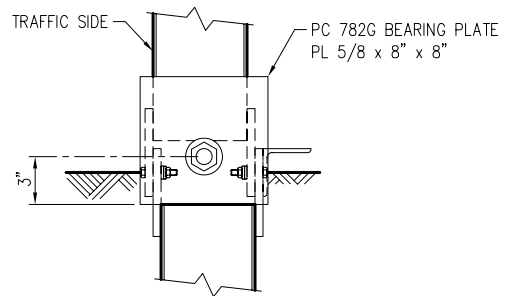
DETAIL "H" (POST #2)



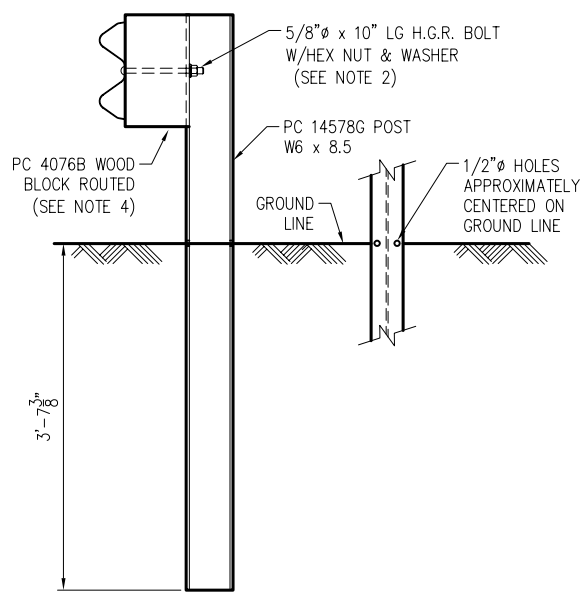
SECTION "B-B" (POST #2)



VIEW "K-K"



BILL OF MATERIAL		
PC	QTY	DESCRIPTION
9G	3	12/12'-6"/6'3"/S (GUARDRAIL)
32G	1	12/12'-6"/6'3"/S ANC (GUARDRAIL)
704A	1	CABLE ANCHOR BRACKET
782G	1	5/8" x 8" x 8" BEARING PLATE
995A	1	ET-PLUS EXTRUDER
3000G	1	CABLE 3/4 x 6'6"
3300G	7	5/8" FLAT WASHER
3340G	39	5/8" HEX NUT
3360G	33	5/8" x 1 1/4" SPLICE BOLT
3500G	6	5/8" x 10" POST BOLT
3701G	2	3/4" FLAT WASHER
3704G	2	3/4" HEX NUT
3717G	2	3/4" x 2 1/2" HEX HD BOLT
3900G	2	1" FLAT WASHER
3910G	2	1" HEX NUT
4076B	6	WD BLOCK 1'2 x 6 x 8 DR
4254G	4	3/8" FLAT WASHER
4255G	2	3/8" FENDER WASHER (1 1/2 OD)
4258G	2	3/8" LOCKWASHER
4261G	2	3/8" x 1 1/2" HEX HD BOLT
4389G	2	7/16" FLAT WASHER
4390G	2	7/16" x 1 1/2" HEX HD BOLT
4393G	2	7/16" LOCK WASHER
4396G	2	7/16" HEX NUT
4699G	2	3/4" LOCK WASHER
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6405G	4	3/8" HEX NUT
14578G	7	POST SYT #2-#8
33795G	1	ANGLE STRUT (ET/SYTP/HBA)
33871A	1	POST ET2000 HBA #1 TOP
33873A	1	POST ET2000 HBA #1 BOTTOM



SECTION "A-A" (TYP @ POSTS # 3 THRU #8)

2	LH	10/7/03	REVISED PC NUMBER	
1	LH	5/29/03	CHANGED QUANTITIES OF PANELS	
REV.	CHK'D	BY	DATE	REMARKS

**ET-PLUS**  
 ET-PLUS - 50'-0"  
 WITH 12'-6" PANELS, 7 SYT POSTS  
 & 1 HBA POST  
 PLAN, ELEVATION & SECTION  
 TRINITY INDUSTRIES, INC.  
 HIGHWAY SAFETY PRODUCTS  
 2525 STEMMONS FREEWAY, DALLAS, TX 75207

DRAWN	L.H.
CHECKED	BT
SCALE	N.T.S.
DATE	05/22/03
ENG. FILE #	SS378-01E
SHT.No.	E1 OF 1
DRAWING NO.	SS-378
REV.	2

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