U.S. Department of Transportation
Federal Highway Administration

1200 New Jersey Avenue, SE.
Washington, DC 20590

March 19, 2009

In Reply Refer To: HSSD/B-141D

Mr. Brian Smith
Trinity Highway Products, LLC
P.O. Box 568887
Dallas, TX 75356-8887

Dear Mr. Smith:

This letter is in response to your request for the Federal Highway Administration (FHWA) acceptance of modifications to your CASS cable barrier roadside safety system for use on the National Highway System (NHS).

Name of system:	Trinity's CASS 3-Cable Barrier
Variations:	Test Level 4 on 1:6 slopes or flatter, 3 Cables
	Test Level 3 on 1:4 slopes, 4 Cables
	Test Level 4 on 1:6 slopes or flatter, 4 Cables
Type of system:	Three or four cable barrier system
Test Levels:	NCHRP Report 350 TL-3 and TL-4
Testing conducted by:	Texas Transportation Institute
Date of requests:	October 20 and December 11, 2008

You requested that we find these systems acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features."

Requirements
Roadside safety systems should meet the guidelines contained in the NCHRP Report 350. The FHWA Memorandum "Identifying Acceptable Highway Safety Features" of July 25, 1997, provides further guidance on crash testing requirements of longitudinal barriers.

Description
The FHWA has accepted the CASS 3-cable system to test level 3 (TL-3) criteria in the following FHWA Acceptance Letters:

B-119 (3m / 8 ft post spacing), dated May 13, 2003
B-119A (5m / 16.5 ft post spacing), dated May 13, 2003
B-119B (2m / 6.5 ft post spacing), dated August 28, 2003

The FHWA acceptance letter B-141C Revised (dated November 14, 2008) found the Trinity CASS 3-cable barrier system acceptable for use on a 1:4 slope per NCHRP Report 350 TL-3 conditions. The 19 mm (3/4-inch) diameter standard cables were set at heights of 445 mm, 745 mm, and 1060 mm (17.5, 29.3, and 41.7 inches) above the ground surface, measured to the center of each cable. Tension of the cables was set at 24.9 kN (5600 pounds force) for the tests.

Your first request is for this TL-3 barrier to be used as a TL-4 barrier on slopes of 1:6 or flatter. This system differs from the previously accepted TL-4 system (see FHWA Acceptance Letter B-157 dated April 23, 2007) only in the heights of the cables and how the bottom cable is attached to the post. As the proposed spread of the three cables is wider than the previously accepted system we concur that these changes should have no adverse affect on the crashworthiness of the barrier system.

Your second request is to add a fourth cable (between the top and middle cables) to the TL-3 barrier accepted in B-141C. Because the addition of the fourth cable at a height of 949 mm (37.375") above the ground surface, measured to the center of the cable is not considered to be detrimental to the performance of the crash tested system, and is indeed likely to increase the capacity and improve the performance, the CASS system described in Letter B-141C with the added cable is acceptable. It is understood that the added cable will have its own anchorage just like the other cables.

Your third request is to add a fourth cable (between the top and middle cables) to the TL-4 barrier on 1:6 or flatter slopes discussed above. Because the addition of the fourth cable at a height of 949 mm (37.375") above the ground surface, measured to the center of the cable is not considered to be detrimental to the performance of the crash tested system, and is indeed likely to increase the capacity and improve the performance, this CASS system with the added cable is acceptable. It is understood that the added cable will have its own anchorage just like the other cables.

Finally you requested that these CASS Systems be acceptable with post spacings from 2.0 m (6.5 feet) to 5.0 m (16.5 feet) and with the same range of post embedment types (direct driven, set in driven tube, set in tube sleeve in concrete foundation). These variations have been shown to be crashworthy in earlier testing and will be acceptable for these systems. The end terminal acceptance for these systems was included in acceptance letter B-157, dated April 23, 2007.

CASS System Variations

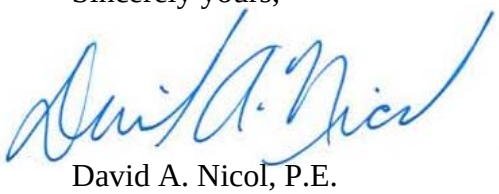
Date	**FHWA Letter**	**CASS System Description**		**Cable Heights inches**	**Drawing**
November 17, 2005	B-141	3-Cable	TL-4 on 1V:6H Slopes	20.9", 30.5", 38.1	SS-740
April 23, 2007	B-157	4-Cable	TL-4 on 1V:6H Slopes	20.9", 26.2", 30.5", 38.1"	SS-740-740-4
November 14, 2008	B-141C (Revised)	3-Cable	TL-3 on 1V:4H Slopes	17.5", 29.5", 41.7"	SS-730-4:1-3C
This letter	B-141D	3-Cable	TL-4 on 1V:6H Slopes	17.5", 29.5", 41.7"	SS-730-4:1-3C
This letter	B-141D	4-Cable	TL3 on 1V:4H Slopes	17.5", 29.5", 37.4", 41.7"	SS-730-4:1-4C
			TL4 on 1V:6H Slopes		

Findings
The 3- and 4-cable barrier systems described above are acceptable for use on the designated or flatter slopes under NCHRP Report 350 TL-3 or 4 conditions as noted. The systems are detailed in the enclosed drawings and are acceptable for use on the NHS when such use is acceptable to a highway agency.

Please note the following standard provisions that apply to FHWA letters of acceptance:

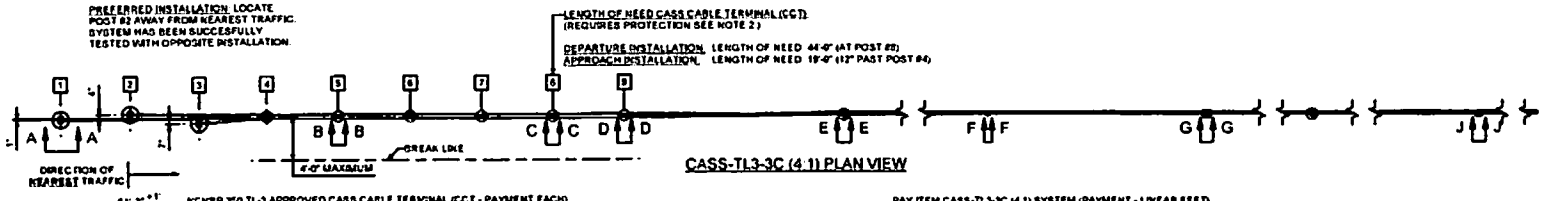
- This acceptance is limited to the crashworthiness characteristics of the systems and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the system will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the system being marketed is significantly different from the version that was crash tested, we reserve the right to modify or revoke our acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that it will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance is designated as number B-141D and shall not be reproduced except in full. This letter and the test documentation upon which it is based are public information. All such letters and documentation may be reviewed at our office upon request.
- The CASS barriers are patented products and considered proprietary. If proprietary systems are specified by a highway agency for use on Federal-aid projects, except exempt, non-NHS projects, (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with the existing highway facilities or that no equally suitable alternative exists; or (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented system for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate system, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,

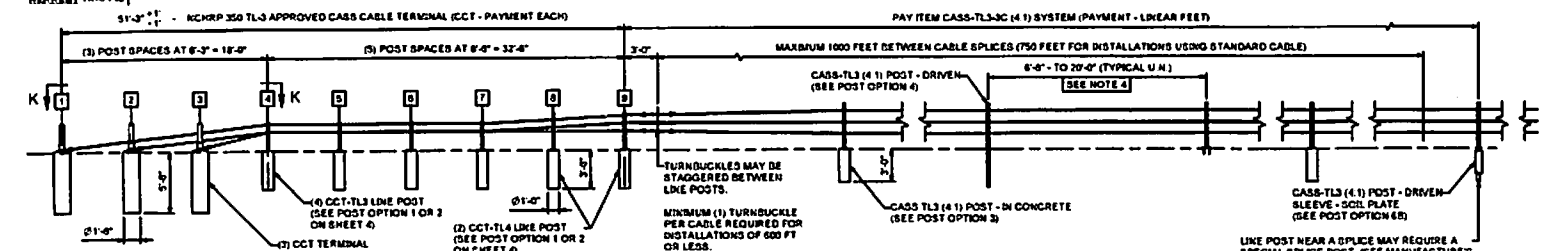


David A. Nicol, P.E.
Director, Office of Safety Design
Office of Safety

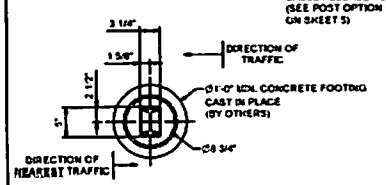
Enclosures



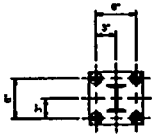
CASS-TL3-3C (4:1) PLAN VIEW



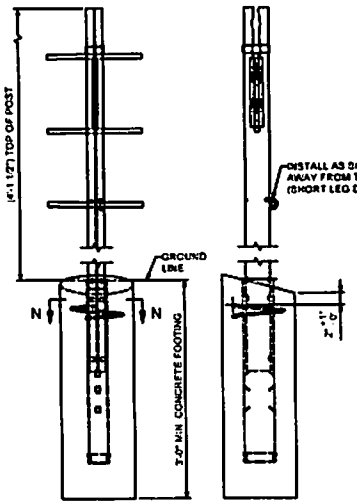
CASS-TL3-3C (4:1) ELEVATION
(TYPICAL LAY-OUT)



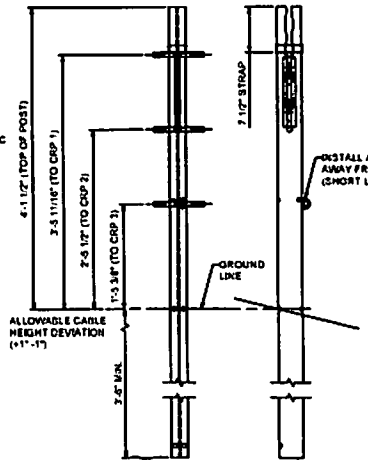
SECTION N-N



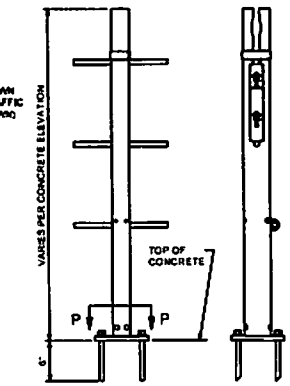
SECTION P-P



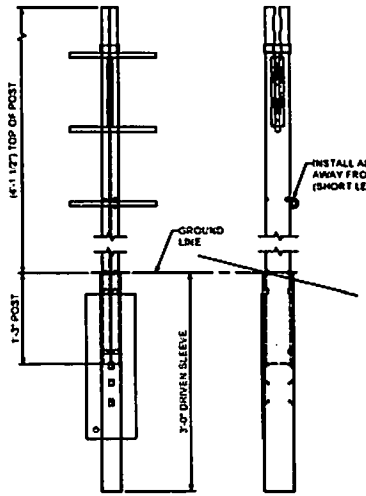
VIEW E-E
(CASS-TL3 (4:1) POST - IN CONCRETE)
(POST OPTION #3)



VIEW F-F
(CASS-TL3 (4:1) POST- DRIVEN
POST OPTION #4)



VIEW G-G
(CASS-TL3 (4:1) POST- BASE-PLATED
POST OPTION #5)



VIEW J-J
(CASS-TL3 (4:1) POST- DRIVEN SLEEVE - SOIL PLATE
POST OPTION #6B)

NOTES:

1. CASS-TL3 (4:1) HAS BEEN SUCCESSFULLY TESTED TO NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 TEST LEVEL 3 (NCHRP 350 TL3) AND ACCEPTED BY FHWA FOR VARIOUS POST SPACINGS. CASS CABLE TERMINAL (CCT) HAS BEEN SUCCESSFULLY TESTED AND APPROVED TO NCHRP 350 TL3.

2. AN NCHRP 350 TL3 APPROVED TERMINAL (CCT) OR CASS-TL3 3-CABLE (4:1) TRANSITION (VARIOUS) SHALL BE USED ON APPROACH AND DEPARTURE TERMINATIONS WHEN CASS-TL3 3-CABLE (4:1) IS INSTALLED ON THE NATIONAL HIGHWAY SYSTEM (NHS). IF THE TERMINATION POINT IS LOCATED OUTSIDE THE CLEAR ZONE AND/OR PROTECTED BY OTHER MEANS (CRASHWORTHY BARRIER TERMINALS, ETC.), A NON-NCHRP 350 TL3 ANCHOR (CCA) MAY BE USED ON APPROACH AND DEPARTURE TERMINATIONS.

3. CASS-TL3 3-CABLE (4:1) SHALL BE INSTALLED ON SHOULDERS OR MEDIANS WITH SLOPES OF 4:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC. THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE. CASS-TL3 3-CABLE (4:1) MUST BE INSTALLED A MAXIMUM OF FOUR (4) FEET FROM THE BREAK POINT. GRADING OF SITE AND/OR APPROPRIATE FILL MATERIALS MAY BE REQUIRED. THE DESIGNER/INSTALLER SHALL "FLATTEN" OR "ROUND" VARIOUS TOPOGRAPHICAL INCONSISTENCIES THAT COULD INTERFERE WITH THE ABILITY OF THE INSTALLER TO CONSISTENTLY MAINTAIN THE DESIGN HEIGHT (IN RELATION TO THE TERRAIN) OF THE CABLES. PLEASE CONSULT THE CASS MANUAL(S) FOR INSTALLATIONS IN "DITCH SECTIONS".

4. CASS-TL3 3-CABLE (4:1) POST SPACING MAY BE MODIFIED TO AVOID OBSTACLES THAT CONFLICT WITH THE INSTALLATION OF CASS-TL3 3-CABLE (4:1) LINE POSTS. NO POST SPACE CAN EXCEED THE MAXIMUM POST SPACE LIMIT OF 20'-0", OR MAXIMUM POST SPACING ALLOWED BY PROJECT ENGINEER - WHICHEVER IS LESS. REDUCING OR INCREASING POST SPACING AFFECTS DEFLECTION. CASS-TL3 3-CABLE (4:1) MAY BE LATERALLY TRANSFERRED AT A RATE NOT TO EXCEED 30:1.

5. POST FOUNDATIONS MAY BE DRILLED THROUGH EXISTING PAVEMENT. TRINITY MAY ALLOW THE USE OF ALTERNATE LINE POST FOOTINGS IF SYSTEM IS INSTALLED WITH AN ACCEPTABLE MOWSTRIP APPLICATION - PLEASE CONTACT TRINITY.

6. FOR AESTHETIC PURPOSES TRINITY RECOMMENDS ALL SLEEVES, DRIVEN POSTS, AND LOWER CABLE RELEASE POSTS TO BE INSTALLED REASONABLY PLUMB (APPROXIMATELY 1/8" PER FOOT).

7. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. PRIOR TO TENSIONING THE SYSTEM. TRINITY RECOMMENDS THE CONCRETE TO BE VIBRATED IN ACCORDANCE WITH THE LATEST APPLICABLE AGENCY SPECIFICATION.

8. CASS-TL3 3-CABLE (4:1) SHALL BE INSTALLED IN WELL-DRAINED, COMPACTED NCHRP REPORT 350 STANDARD SOILS. IF SOIL DOESN'T MEET THIS CLASSIFICATION, IF SOLID ROCK/CONCRETE IS ENCOUNTERED BELOW GRADE OR IF SOIL IS SUSCEPTABLE TO SEVERE FREEZE/THAW CYCLES, PLEASE CONTACT TRINITY ABOUT ALTERNATE FOOTING DESIGN(S). TRINITY SUGGESTS THE USE OF "MOW STRIPS" FOR EROSION PREVENTION AND EASE OF MAINTENANCE / INSTALLATION.

9. PLEASE SEE SPECIFYING AGENCY (OR MUTCD) FOR PROPER "BARRIER" DELINEATION.

10. PLEASE CONTACT TRINITY OR CONSULT THE DESIGN, INSTALLATION OR REPAIR MANUAL(S) FOR ADDITIONAL INFORMATION.

TRINITY HIGHWAY PRODUCTS, LLC.
2525 STEMMONS FREEWAY
DALLAS, TX 75207
EMAIL: PRODUCT.INFO@TRIN.NET
PHONE: (800) 644-7976

No.	CASS-TL3 4:1 POST OPTIONS
1	CCT - TERMINAL POST 1 - 3 - IN CONCRETE
2	CCT - TERMINAL POST 1 - 3 - WITH SOIL PLATE
3	CASS-TL3 4:1 POST - IN CONCRETE
4	CASS-TL3 4:1 POST - DRIVEN
5	CASS-TL3 4:1 POST - BASE-PLATED
6	CASS-TL3 4:1 POST - IN DRIVEN SLEEVE
	6B - DRIVEN SLEEVE - WITH SOIL PLATE

CASS-TL3 ON (4:1 SLOPE)
3-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

QUALITY SPEC	
SHEET PATH	
DRAWN	E A S 8/9/2005
CHKD	G N 8/9/2005
APVD	T O P S 8/9/2005
PROJ	CASS-TL3-3C (4:1)
DWG NO	SS730-4 1-3C
REV	2

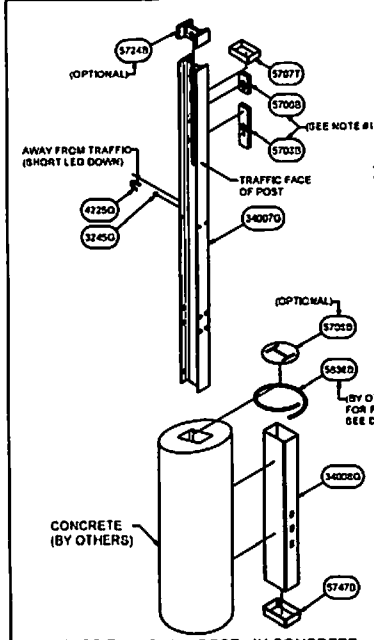
PARTS LIST - CASS POST IN CONCRETE - POST OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	32450	5/16 DIA. HEX NUT (A563)	0.01
1	42250	CABLE LOCK BOLT (A307)	0.09
1	57008	CASS & TL3 CABLE SPACER	0.11
1	57035	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57098	SLEEVE COVER - CASS-TL POST	0.11
1	57246	CASS-TL POST CAP	0.17
1	57478	SLEEVE CAP - CASS-TL POST	0.15
1	58360	CONCRETE REINFORCING RING	0.88
1	340070	CASS-TL3 (4:1) POST - SHORT	39.88
1	340090	30" POST SLEEVE - IN CONCRETE	16.06

PARTS LIST - CASS POST - DRIVEN - OPTION #4			
QTY	PART No	TITLE	Lbs / Each
1	32450	5/16 HEX NUT (A563)	0.01
1	42250	CABLE LOCK BOLT (A307)	0.09
1	57008	CASS & TL3 CABLE SPACER	0.11
1	57035	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57246	CASS-TL POST CAP	0.17
1	340120	CASS-TL3 (4:1) POST - LONG	57.32

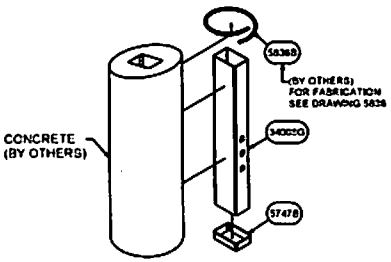
PARTS LIST - CASS POST BASE-PLATED - OPTION #5			
QTY	PART No	TITLE	Lbs / Each
1	32450	5/16 DIA. HEX NUT (A563)	0.01
4	33000	5/8" PLAIN WASHER - TYPE B - R - (F844)	0.06
4	33100	5/8 LOCK WASHER	0.09
4	33610	5/8" HEX NUT (A563 Gr DH)	0.01
1	42250	CABLE LOCK BOLT (A307)	0.09
4	42350	5/8 x 7 1/2" HAS SUPER ROD CMSL PT (A193 B7)	0.62
0.6	64488	HIT HY 150 MAX EPOXY (HILTI - 00269542)	
1	57008	CASS & TL3 CABLE SPACER	0.11
1	57035	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57246	CASS-TL POST CAP	0.17
1	34013A	POST-TL3 (4:1) - BASE PLATED	41.06

PARTS LIST - CASS POST - IN DRIVEN SLEEVE - POST OPTION #6B			
QTY	PART No	TITLE	Lbs / Each
1	32450	5/16 HEX NUT (A563)	0.01
1	42250	CABLE LOCK BOLT (A307)	0.09
1	57008	CASS & TL3 CABLE SPACER	0.11
1	57035	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57098	SLEEVE COVER - CASS-TL POST	0.11
1	57246	CASS-TL POST CAP	0.17
1	34001A	30.75" CASS-TL3 POST SLEEVE w/ SOIL PLATE	32.88
1	340070	CASS-TL3 (4:1) POST - SHORT	39.88

PARTS LIST - PRE-STRETCHED CABLE ASSEMBLIES					
QTY	PART No	TITLE	LENGTH	TERMINAL TYPE (QTY)	Lbs / Each
1	5417	CCT CABLE ASSEMBLY-TOP	54'-4"	R H Y (1) L H Y (1)	54.3
1	5418	CCT CABLE ASSEMBLY-MID	46'-1"	R H Y (1) L H Y (1)	46.1
1	5419	CCT CABLE ASSEMBLY-BOT	41'-10"	R H Y (1) L H Y (1)	41.8
1	5467	CCA CABLE ASSEMBLY	29'-0"	R H Y (1) L H Y (1)	30.0
1	5418	CABLE ASSEMBLY-MID-WEB	1500'	R H Y (1) L H Y (1)	847.8
1	5783	CABLE FIELD SPLICE SECTION	1575'	R H Y (1) NONE	889.0
1	5782	CABLE FIELD SPLICE SECTION	1500'	R H Y (1) NONE	847.8
1	5798	CABLE FIELD SPLICE SECTION	975'	R H Y (1) NONE	540.8
1	5797	CABLE FIELD SPLICE SECTION	950'	R H Y (1) NONE	518.2
1	5796	CABLE FIELD SPLICE SECTION	925'	R H Y (1) NONE	497.7
1	5795	CABLE FIELD SPLICE SECTION	900'	R H Y (1) NONE	484.3
1	5794	CABLE FIELD SPLICE SECTION	875'	R H Y (1) NONE	464.7
1	5793	CABLE FIELD SPLICE SECTION	850'	R H Y (1) NONE	450.7
1	5792	CABLE FIELD SPLICE SECTION	825'	R H Y (1) NONE	436.8
1	5791	CABLE FIELD SPLICE SECTION	800'	R H Y (1) NONE	422.8
1	5790	CABLE FIELD SPLICE SECTION	775'	R H Y (1) NONE	408.9
1	5789	CABLE FIELD SPLICE SECTION	750'	R H Y (1) NONE	394.9
1	5788	CABLE FIELD SPLICE SECTION	725'	R H Y (1) NONE	381.0
1	5787	CABLE FIELD SPLICE SECTION	700'	R H Y (1) NONE	367.0
1	5786	CABLE FIELD SPLICE SECTION	675'	R H Y (1) NONE	353.1
1	5785	CABLE FIELD SPLICE SECTION	650'	R H Y (1) NONE	339.1
1	5784	CABLE FIELD SPLICE SECTION	625'	R H Y (1) NONE	325.2
1	5783	CABLE FIELD SPLICE SECTION	600'	R H Y (1) NONE	311.2
1	5782	CABLE FIELD SPLICE SECTION	575'	R H Y (1) NONE	297.3
1	5781	CABLE FIELD SPLICE SECTION	550'	R H Y (1) NONE	283.3
1	5780	CABLE FIELD SPLICE SECTION	525'	R H Y (1) NONE	269.4
1	5779	CABLE FIELD SPLICE SECTION	500'	R H Y (1) NONE	255.4
1	5778	CABLE FIELD SPLICE SECTION	475'	R H Y (1) NONE	241.5
1	5776	CABLE FIELD SPLICE SECTION	450'	R H Y (1) NONE	227.5
1	5775	CABLE FIELD SPLICE SECTION	425'	R H Y (1) NONE	213.6
1	5760	CABLE FIELD SPLICE SECTION	400'	R H Y (1) NONE	199.6
1	5759	CABLE FIELD SPLICE SECTION	375'	R H Y (1) NONE	185.7
1	5758	CABLE FIELD SPLICE SECTION	350'	R H Y (1) NONE	171.7
1	5757	CABLE FIELD SPLICE SECTION	325'	R H Y (1) NONE	157.8
1	5756	CABLE FIELD SPLICE SECTION	300'	R H Y (1) NONE	143.8
1	5755	CABLE FIELD SPLICE SECTION	275'	R H Y (1) NONE	129.9
1	5754	CABLE FIELD SPLICE SECTION	250'	R H Y (1) NONE	115.9
1	5753	CABLE FIELD SPLICE SECTION	225'	R H Y (1) NONE	102.0
1	5752	CABLE FIELD SPLICE SECTION	200'	R H Y (1) NONE	88.0
1	5751	CABLE FIELD SPLICE SECTION	175'	R H Y (1) NONE	74.1
1	5750	CABLE FIELD SPLICE SECTION	150'	R H Y (1) NONE	60.1
1	5749	CABLE FIELD SPLICE SECTION	125'	R H Y (1) NONE	46.2
1	5747	CABLE FIELD SPLICE SECTION	100'	R H Y (1) NONE	32.2
1	5746	CABLE FIELD SPLICE SECTION	75'	R H Y (1) NONE	18.3
1	5745	CABLE FIELD SPLICE SECTION	50'	R H Y (1) NONE	11.1
1	5744	CABLE FIELD SPLICE SECTION	25'	R H Y (1) NONE	7.1
1	5743	CABLE FIELD SPLICE SECTION	5'	R H Y (1) L H Y (1)	10.1

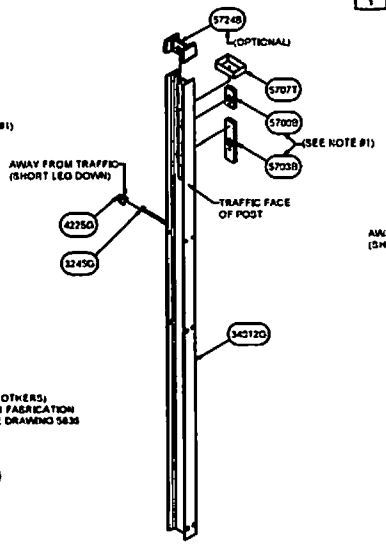


CASS-TL3-3C (4:1) POST - IN CONCRETE
(POST OPTION #3 - CAST IN PLACE)

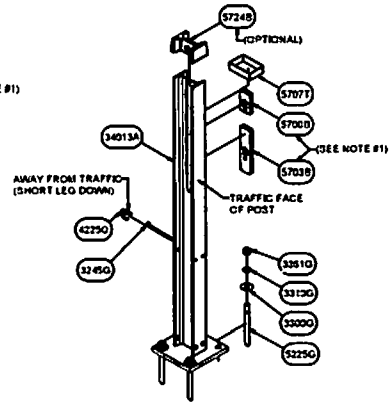


CONCRETE FOOTING ASSEMBLY
(POST OPTION #3 - PRE-CAST OPTION)

PARTS LIST - PRE-CAST CONCRETE FOOTING - OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	57478	SLEEVE CAP - CASS-TL POST	0.15
1	58360	CONCRETE REINFORCING RING	0.88
1	340090	30" POST SLEEVE - IN CONCRETE	16.06



CASS-TL3-3C (4:1) POST - DRIVEN
(POST OPTION #4 - DRIVEN)



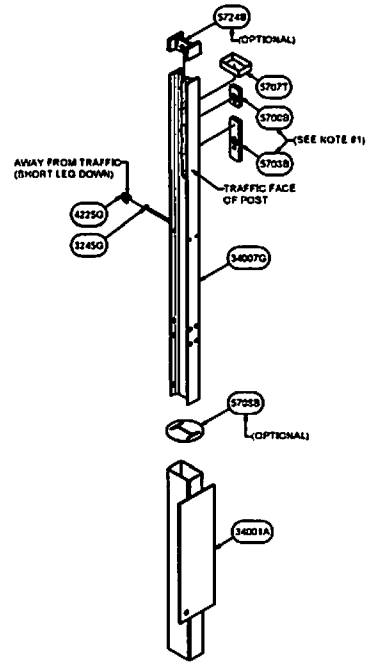
CASS-TL3-3C (4:1) POST - BASE-PLATED
(POST OPTION #5 - BASE-PLATED)

ANCHOR OPTIONS
MIN. EMBEDMENT IN 3,000 P.S.I. CONCRETE = 6".
MIN. PULLOUT STRENGTH = 10,000 lbs.

1 5/8 ADHESIVE ANCHORING SYSTEM.
(4 EACH 33000, 33100, 33610 & 32250) & 0.6 EACH 64488

2 5/8 x 8" ALL THREADED ROD (A449) WITH EPOXY.
(4 EACH 33000, 33130, 33610 & 87220) & 0.6 EACH 64488

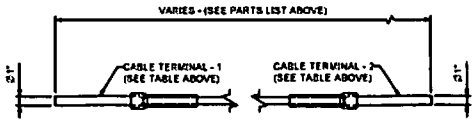
3 5/8 MECHANICAL ANCHOR. (BY OTHERS)



CASS-TL3-3C (4:1) POST - IN DRIVEN SLEEVE
(POST OPTION #6B - DRIVEN SLEEVE - SOIL PLATE)

NOTE

FOR THE STANDARD FIELD SPLICE SECTIONS ABOVE, SUPPLY (1) RIGHT HAND THREADED STUD ASSEMBLY 58100 EACH



PRE-STRETCHED CABLE ASSEMBLY

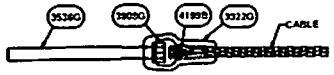
NOTES

1. IN LIEU OF BLACK SPACERS 57008 & 57335 SUPPLY YELLOW REFLECTIVE SPACERS 57018 & 57058 OR WHITE REFLECTIVE SPACER 5702 & 57060. (AS REQUIRED PER PROJECT PLANS)
2. IF INTERFERENCE OCCURS BETWEEN THE CABLE SPLICE AND CASS-TL3 POST, SUPPLY A SPLICE INTERFERENCE POST AND SUPPORT THE TURNBUCKLE ASSEMBLY TO THE CASS-TL3 POST BY USE OF A MODIFIED STRAP (57071) AND 5/16" HARDWARE (42110 BOLT, 32450 NUT). CONTACT TRINITY FOR DETAILS. LONG SPLICE POST 340410 IN LIEU OF LONG CASS-TL3 (4:1) POST 340120 SHORT SPLICE POST 340400 IN LIEU OF SHORT CASS-TL3 (4:1) POST 340070
3. IF REQUIRED PER PROJECT PLANS SUPPLY
   CABLE PULLING TOOL 58520
   CABLE TENSION METER 58760
   CABLE THERMOMETER 57035

CASS-TL3 ON (4:1 SLOPE)
3-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

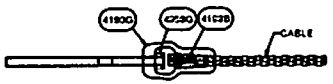
DRAWN BY: EAS 9/9/2009
CHK'D BY: GN 9/9/2009
SHT 2 OF 5 REV D
DWG NO SS730-4 1-3C REV 2
PROJ CASS-TL3-3C (4:1)



1" CABLE FIELD SPLICE - 5909G & 5910G

(5910G SHOWN, 5909G SIMILAR)

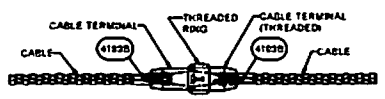
PARTS LIST - 5910G			
QTY	PART No.	TITLE	Lbs / Each
1	30220	1" CABLE END CASTING	0.56
1	35390	1" STUD FLATTENED - R.H.T.	2.88
1	39080	1" HEAVY HEX NUT (A563 DH)	0.47
1	41828	3/4" CABLE WEDGE (3 x 7)	0.08



3/4" CABLE FIELD SPLICE - 5634G & 5635G

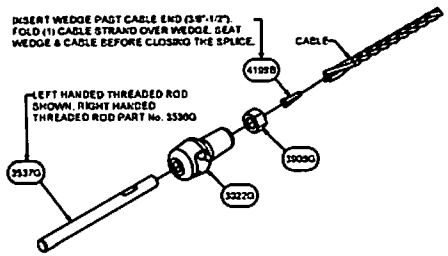
(5634G SHOWN 5635G SIMILAR)

PARTS LIST - 5634G			
QTY	PART No.	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - L.H.T.	1.83
1	41800	CABLE END CASTING	3.78
1	41828	3/4" CABLE WEDGE (3 x 7)	0.08
1	42590	3/4" HEAVY SQUARE NUT (A563)	0.26



TORPEDO CABLE SPLICE - 4099G

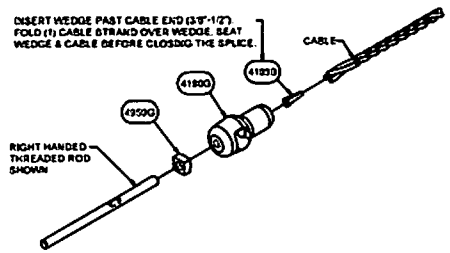
PARTS LIST - 4099G			
QTY	PART No.	TITLE	Lbs / Each
1		CABLE TERMINAL - THREADED	1.79
1		CABLE TERMINAL	1.83
1		ROD - THREADED	-0.06
2	41801	3/4" CABLE WEDGE (3 x 7)	0.08



ASSEMBLY - 1" CABLE FIELD SPLICE - 5909G

(5909G SHOWN, 5910G SIMILAR)

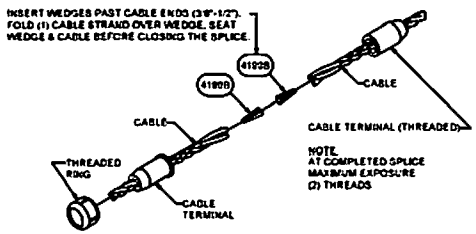
PARTS LIST - 5909G			
QTY	PART No.	TITLE	Lbs / Each
1	30220	1" CABLE END CASTING	0.56
1	35370	1" STUD FLATTENED - L.H.T.	2.88
1	39080	1" HEAVY HEX NUT (A563 DH)	0.47
1	41828	3/4" CABLE WEDGE (3 x 7)	0.08



ASSEMBLY - 3/4" CABLE FIELD SPLICE - 5635G

(5635G SHOWN 5634G SIMILAR)

PARTS LIST - 5635G			
QTY	PART No.	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - R.H.T.	1.83
1	41800	CABLE END CASTING	3.78
1	41828	3/4" CABLE WEDGE (3 x 7)	0.08
1	42590	3/4" HEAVY SQUARE NUT (A563)	0.26

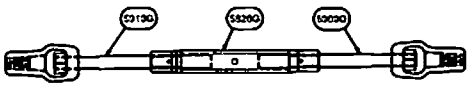


ASSEMBLY - TORPEDO CABLE SPLICE 4099G

CASS TEMPERATURE & TENSION CHART (NEAREST 100 lb/F)		
FAHRENHEIT DEGREES	STD. CABLE LBS/FORCE	PRE-STRETCHED LBS/FORCE
< 0 -15	8900	7500
-10	8600	7300
-5	8400	7100
0	8200	7000
5	8000	6800
10	7800	6600
15	7600	6500
20	7400	6300
25	7200	6100
30	7000	6000
35	6800	5800
40	6600	5600
45	6400	5500
50	6200	5300
55	6000	5100
60	5800	5000
65	5600	4800
70	5400	4600
75	5200	4500
80	5000	4300
85	4800	4100
90	4600	4000
95	4400	3800
100	4200	3600
105	4000	3500
110	3800	3300
115	3600	3100
120	3400	3000
125	3200	2800
130	3000	2700
135	2800	2500
140	2700	2300
145	2500	2200
150	2400	2100
160	2200	1900
170	2000	1800
180	1800	1700
190	1600	1500
200	1400	1300

ALLOWABLE DEVIATION FROM CHART IN TANGENT SECTIONS: +500, -200 POUNDS/FORCE.

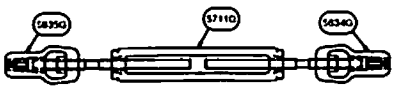
CABLE TENSION READINGS ARE TYPICALLY HIGHER IN CURVED CABLE SECTIONS.



1" CABLE SPLICE - 5633G

(CLOSED BODY STYLE)

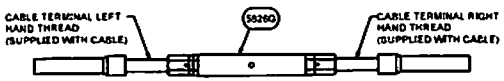
PARTS LIST - 5633G				
QTY	PART No.	ITEM	TITLE	Lbs / Each
1	5626G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81
1	5903G	2	1" STUD ASSEMBLY L.H.T.	3.89
1	5910G	3	1" STUD ASSEMBLY R.H.T.	3.89



3/4" CABLE SPLICE - 5698G

(OPEN BODY STYLE)

PARTS LIST - 5698G			
QTY	PART No.	TITLE	Lbs / Each
1	5834G	3/4" STUD ASSEMBLY L.H.T.	5.74
1	5835G	3/4" STUD ASSEMBLY R.H.T.	5.74
1	5711G	3/4" TURNBUCKLE OPEN BODY STYLE	10.89



1" TURNBUCKLE - 5826G

(CLOSED BODY STYLE)

PARTS LIST - 5826G				
QTY	PART No.	ITEM	TITLE	Lbs / Each
1	5826G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81

NOTE

1. TURNBUCKLES SHALL BE INSTALLED WITH A MINIMUM OF 1-1/2" THREAD ENGAGEMENT. TO ALLOW FOR MAINTENANCE/REPAIR ADJUSTMENTS AT A LATER DATE, TRINITY SUGGESTS INSTALLER UTILIZE NO MORE THAN 4" THREAD ENGAGEMENT.

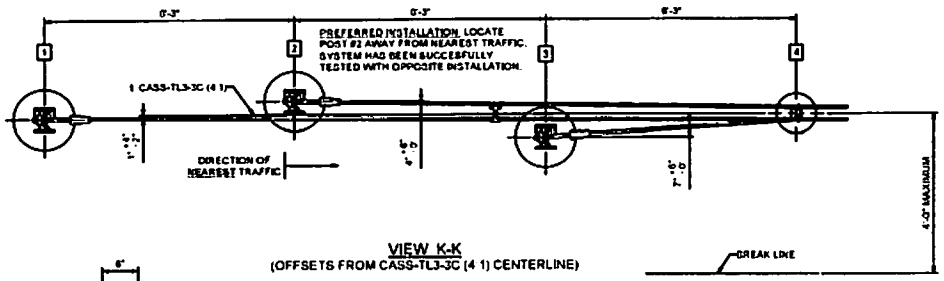
2. WHEN CUTTING CABLE LENGTHS IN THE FIELD FROM CABLE REELS, IT MAY BE PERMISSIBLE TO UTILIZE A CABLE TORPEDO SPLICE (4099G) BETWEEN TURNBUCKLES. DO NOT USE FOR CABLE LENGTH SHORTER THAN 10'. PLEASE CONTACT TRINITY. CONSULT TRINITY'S MANUAL OR SPECIFYING AGENCY TO DETERMINE IF APPROPRIATE FOR SPECIFIC APPLICATION.

CASS-TL3 ON (4:1 SLOPE)
3-CABLE GUARDRAIL
SAFETY SYSTEM

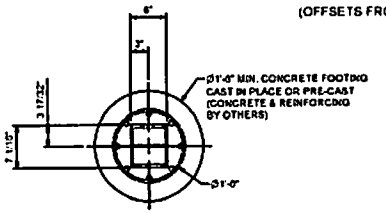
TRINITY HIGHWAY PRODUCTS, LLC

GALV SPEC
SHIPPING WT
DRW E.A.S 8/8/2008
CHK O.N 8/8/2008
SHT 3 OF 5 SIZE D
DWG NO SS730-4 1-3C REV 2

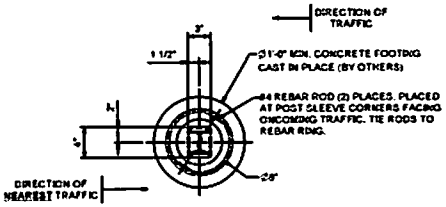
PROJ CASS-TL3-3C (4:1)



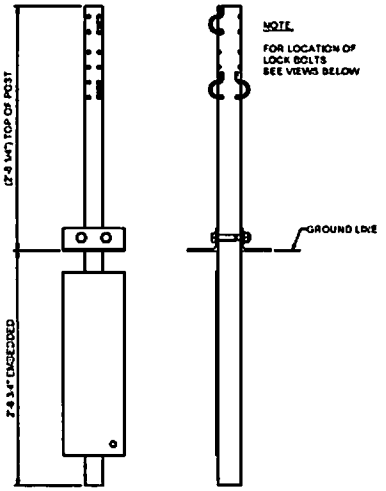
VIEW K-K
(OFFSETS FROM CASS-TL3-3C (4:1) CENTERLINE)



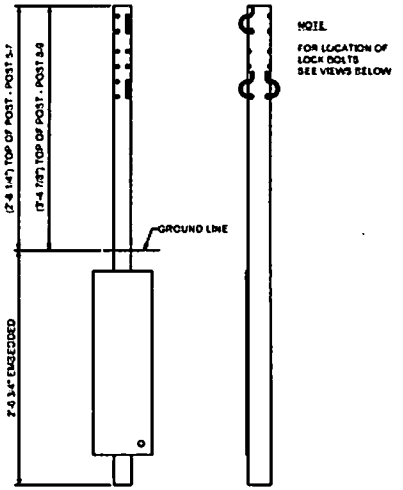
SECTION L-L



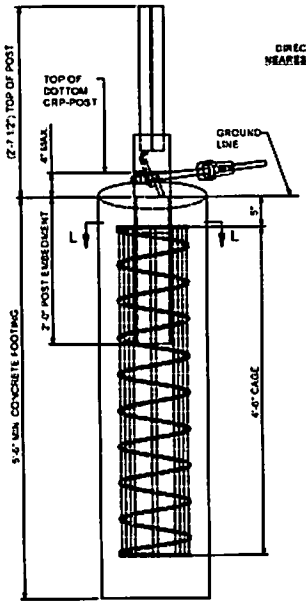
SECTION M-M



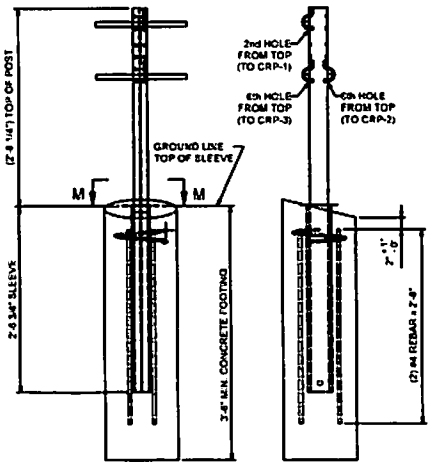
CCT TERMINAL POST
(CCT POST 4)
(POST OPTION 2 SHOWN)



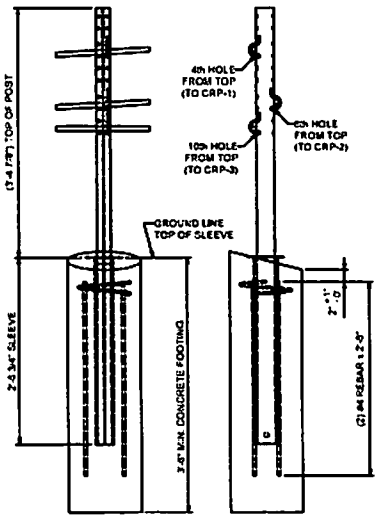
CCT TERMINAL POST
(CCT - POST 5 - 9)
(POST OPTION #2 SHOWN)



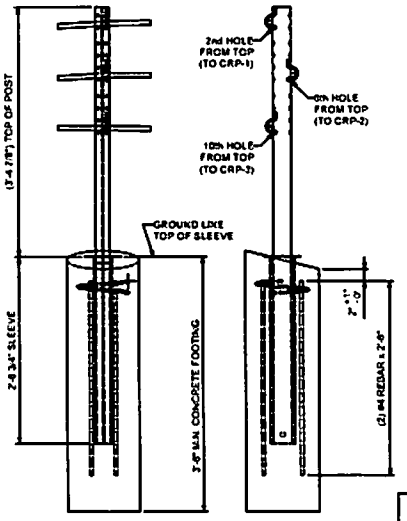
VIEW A-A
(CABLE RELEASE POST 1-3)



VIEW B-B
(POST 4-7)
(POST OPTION #1 SHOWN)



VIEW C-C
(POST 8)
(POST OPTION #1 SHOWN)



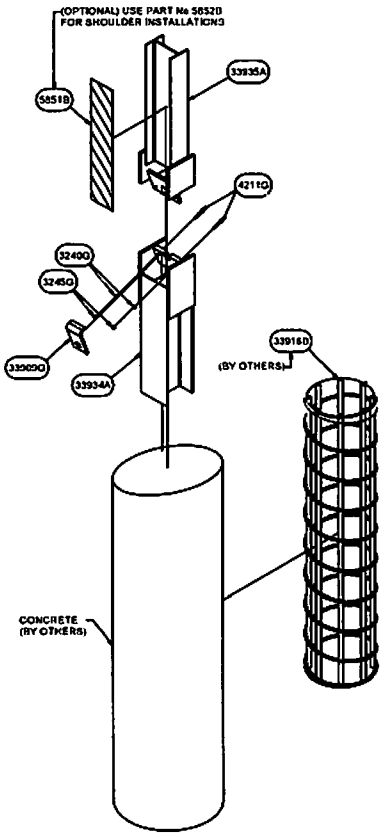
VIEW D-D
(POST 9)
(POST OPTION #1 SHOWN)

CASS-TL3 ON (4:1 SLOPE) 3-CABLE GUARDRAIL SAFETY SYSTEM	
TRINITY HIGHWAY PRODUCTS, LLC	SS730-4 1-3C
PROJ CASS-TL3-3C (4:1)	SHT 2

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
2	3240G	5/16 FLAT WASHER (F844)	0.00
2	3245G	5/16 HEX NUT (A563)	0.01
2	4211G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	5851B	REFLECTOR - MEDIAN - YELLOW	0.10
1	33909G	CASS CABLE BRACKET	1.92
1	33916R	REINFORCING CAGE - CRP POST	68.07
1	33934A	CRP - LOWER POST	51.80
1	33935A	CRP - UPPER POST	31.57

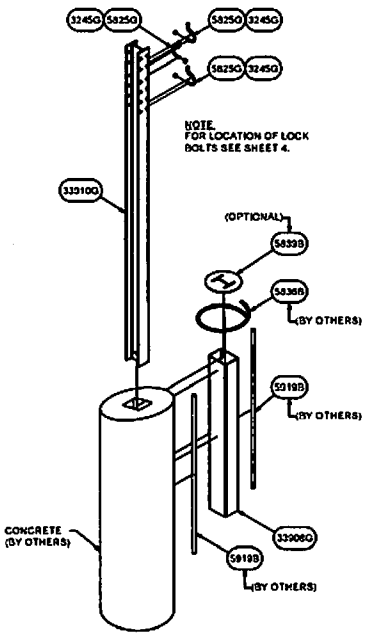
ALL HARDWARE FOR THE CCT CAN BE ORDERED AS ONE PACKAGE.

PART No. 33570G (1) SET OF TERMINAL HARDWARE FOR 1" CABLE FITTINGS
PART No. 33566G (2) SETS OF TERMINAL HARDWARE FOR 1" CABLE FITTINGS
PART No. 33547G (1) SET OF TERMINAL HARDWARE FOR 3/4" CABLE FITTINGS
PART No. 33568G (2) SETS OF TERMINAL HARDWARE FOR 3/4" CABLE FITTINGS



CCT - CABLE RELEASE POST - IN CONCRETE
(CCT TERMINAL POST 1 - 3)
(POST OPTION #1 SHOWN)

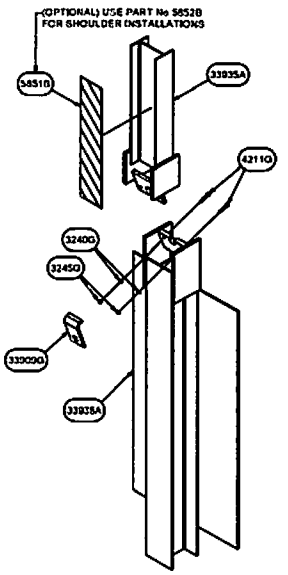
PARTS LIST - CCT TERMINAL POST No. 4-7 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
3	3245G	5/16 DIA. HEX NUT (A563)	0.01
3	5825G	CABLE LOCK BOLT (A307)	0.12
1	5836B	CONCRETE REINFORCING RING	0.85
1	5839B	SLEEVE COVER - 53 ANCHOR POST	0.11
2	5919B	#4 REBAR - TERMINAL POST	1.78
1	33909G	SLEEVE - TERMINAL LINK POST	13.80
1	33910G	350-TL3 TERMINAL POST	28.63



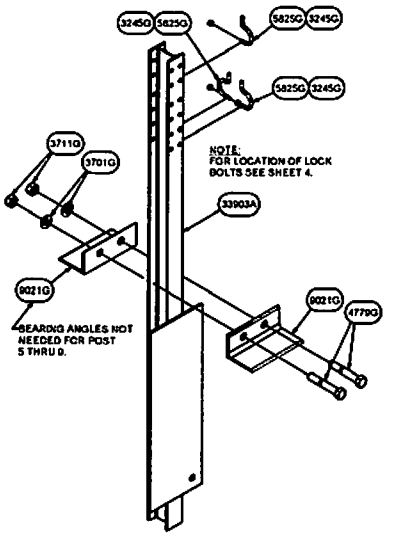
TERMINAL LINE POST - IN CONCRETE
(CCT TERMINAL POST 4 - 7)
(POST OPTION #1 SHOWN)

PARTS LIST - CCT TERMINAL POST No. 8-9 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
3	3245G	5/16 DIA. HEX NUT (A563)	0.01
3	5825G	CABLE LOCK BOLT (A307)	0.12
1	5836B	CONCRETE REINFORCING RING	0.85
1	5839B	SLEEVE COVER - 53 ANCHOR POST	0.11
2	5919B	#4 REBAR - TERMINAL POST	1.78
1	33909G	SLEEVE - TERMINAL LINK POST	13.80
1	33955G	350-TL4 TERMINAL POST	32.42

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - DRIVEN			
QTY	PART No	TITLE	Lbs / Each
2	3240G	5/16 FLAT WASHER (F844)	0.00
2	3245G	5/16 HEX NUT (A563)	0.01
2	4211G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	5851B	REFLECTOR - MEDIAN - YELLOW	0.10
1	33909G	CASS CABLE BRACKET	1.92
1	33935A	CRP - UPPER POST	31.57
1	33936A	CRP - LOWER POST	178.57



CCT - CABLE RELEASE POST - DRIVEN
(CCT TERMINAL POST 1 - 3)
(POST OPTION #2 SHOWN)

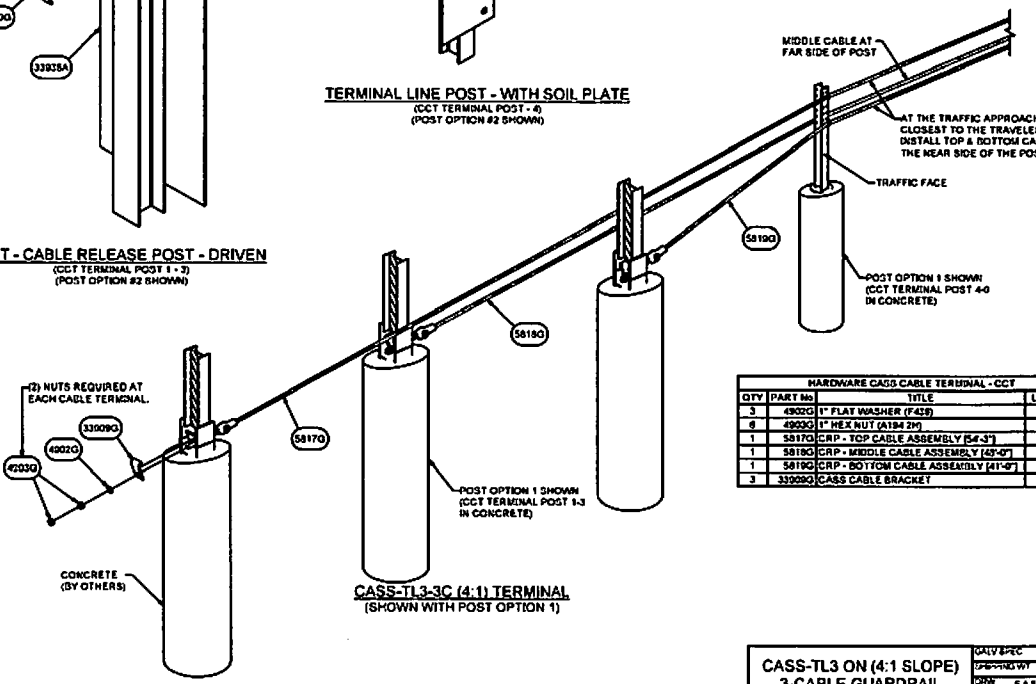


TERMINAL LINE POST - WITH SOIL PLATE
(CCT TERMINAL POST - 4)
(POST OPTION #2 SHOWN)

PARTS LIST - CCT TERMINAL POST No. 4 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
3	3245G	5/16 DIA. HEX NUT (A563)	0.01
2	3701G	3/4 FLAT WASHER (F436)	0.01
2	3711G	3/4 HEX NUT (A194 2H)	0.02
2	4770G	3/4 HEX BOLT x 4 1/2" (A325)	0.09
3	5825G	CABLE LOCK BOLT (A307)	0.12
2	9021G	BEARING ANGLE (A36)	3.81
1	33903A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

PARTS LIST - CCT TERMINAL POST No. 5-7 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
3	3245G	5/16 DIA. HEX NUT (A563)	0.01
3	5825G	CABLE LOCK BOLT (A307)	0.12
1	33903A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

PARTS LIST - CCT TERMINAL POST No. 8-9 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
3	3245G	5/16 DIA. HEX NUT (A563)	0.01
3	5825G	CABLE LOCK BOLT (A307)	0.12
1	33955A	350-TL4 TERMINAL POST w/ SOIL PLATE	46.02



CASS-TL3-3C (4:1) TERMINAL
(SHOWN WITH POST OPTION 1)

HARDWARE CASS CABLE TERMINAL - CCT			
QTY	PART No	TITLE	Lbs / Each
3	4902G	1" FLAT WASHER (F436)	0.11
6	4909G	1" HEX NUT (A194 2H)	0.33
1	5817G	CRP - TOP CABLE ASSEMBLY (54'-3")	106.06
1	5818G	CRP - MIDDLE CABLE ASSEMBLY (43'-0")	96.56
1	5819G	CRP - BOTTOM CABLE ASSEMBLY (41'-9")	87.39
3	33909G	CASS CABLE BRACKET	1.92

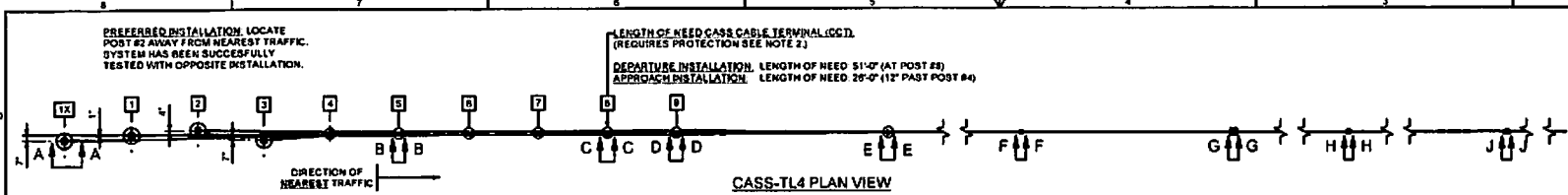
CASS-TL3 ON (4:1 SLOPE)
3-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

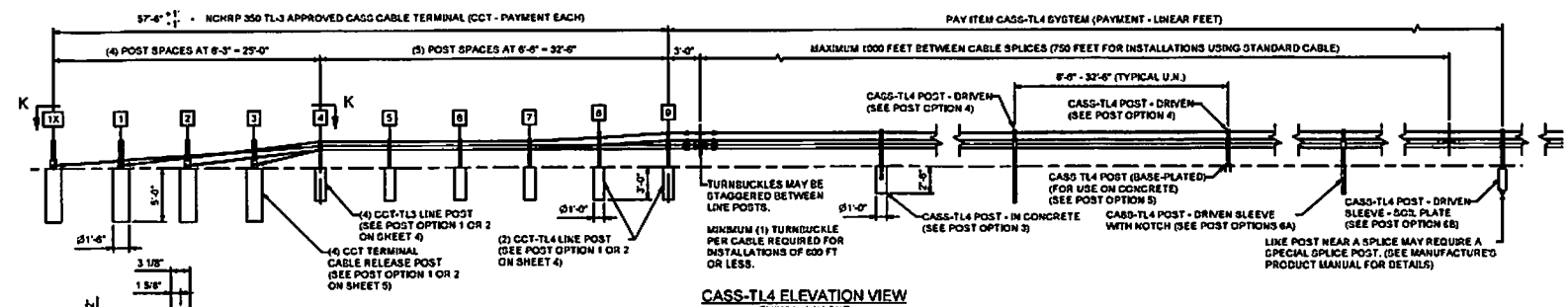
DRAWN	E.A.S	9/9/2009
CHK	G.N	9/9/2009
UNIT	5 OF 5	SIZE D
DWG NO	SS730-4 1-3C	REV 2

PROJ CASS-TL3-3C (4:1)

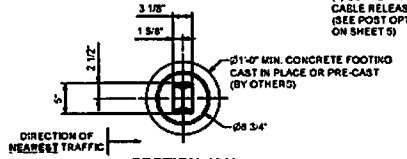
Re: SS-730_4T1_3C.dgn



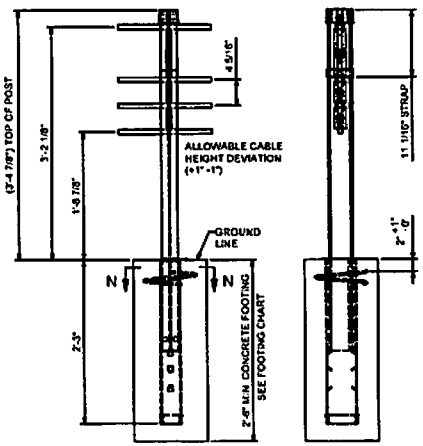
CASS-TL4 PLAN VIEW



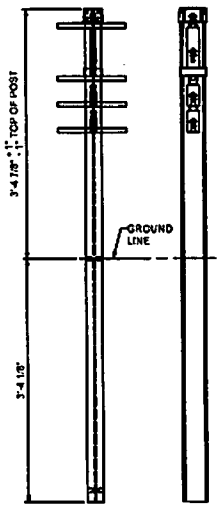
CASS-TL4 ELEVATION VIEW
(TYPICAL LAY-OUT)



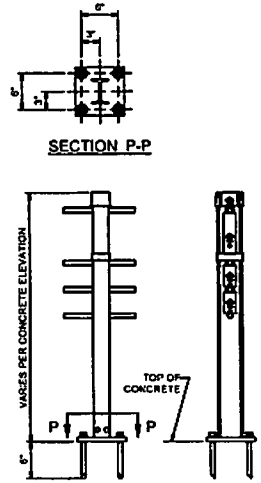
SECTION N-N



VIEW E-E
(CASS-TL4 POST - IN CONCRETE)
(POST OPTION #3)

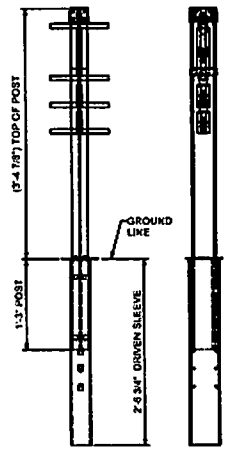


VIEW F-F
(CASS-TL4 POST- DRIVEN
POST OPTION #4)

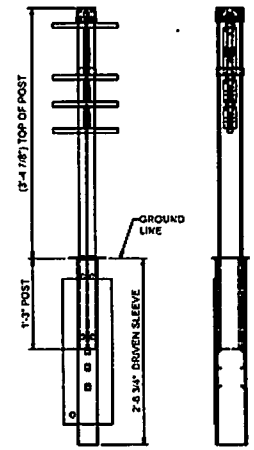


SECTION P-P

VIEW G-G
(CASS-TL4 POST- BASE-PLATED
POST OPTION #5)



VIEW H-H
(CASS-TL4 POST- DRIVEN SLEEVE
POST OPTION #6A)



VIEW J-J
(CASS-TL4 POST- DRIVEN SLEEVE - SOIL PLATE
POST OPTION #6B)

NOTES:

1. CASS-TL4 HAS BEEN SUCCESSFULLY TESTED TO NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 TEST LEVEL 4 (NCHRP 350 TL4) AND ACCEPTED BY FHWA FOR VARIOUS POST SPACINGS. CASS CABLE TERMINAL (CCT) HAS BEEN SUCCESSFULLY TESTED AND APPROVED TO NCHRP TL3.

2. AN NCHRP 350 TL3 APPROVED TERMINAL (CCT) OR CASS-TL4 TRANSITION (VARIOUS) SHALL BE USED ON APPROACH AND DEPARTURE TERMINATIONS WHEN CASS-TL4 IS INSTALLED ON THE NATIONAL HIGHWAY SYSTEM (NHS). IF THE TERMINATION POINT IS LOCATED OUTSIDE THE CLEAR ZONE AND/OR PROTECTED BY OTHER MEANS (CRASHWORTHY BARRIER, TERMINALS, ETC.). A NON-NCHRP 350 TL3 ANCHOR (CCA) MAY BE USED ON APPROACH AND DEPARTURE TERMINATIONS.

3. CASS-TL4 SHALL BE INSTALLED ON SHOULDERS OR MEDIANS WITH SLOPES OF 6:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC. THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE. GRADING OF SITE AND/OR APPROPRIATE FILL MATERIALS MAY BE REQUIRED. THE DESIGNER/INSTALLER SHALL "FLATTEN" OR "ROUND" VARIOUS TOPOGRAPHICAL INCONSISTENCIES THAT COULD INTERFERE WITH THE ABILITY OF THE INSTALLER TO CONSISTENTLY MAINTAIN THE DESIGN HEIGHT (IN RELATION TO THE TERRAIN) OF THE CABLES. PLEASE CONSULT THE CASS MANUAL(S) FOR INSTALLATIONS IN "DITCH SECTIONS".

4. CASS-TL4 POST SPACING MAY BE MODIFIED TO AVOID OBSTACLES THAT CONFLICT WITH THE INSTALLATION OF CASS-TL4 LINE POSTS. NO POST SPACE CAN EXCEED THE MAXIMUM POST SPACE LIMIT OF 32'-6". OR MAXIMUM POST SPACING ALLOWED BY PROJECT ENGINEER - WHICHEVER IS LESS. REDUCING OR INCREASING POST SPACING AFFECTS DEFLECTION. CASS-TL4 MAY BE LATERALLY TRANSFERRED AT A RATE NOT TO EXCEED 30:1.

5. POST FOUNDATIONS MAY BE DRILLED THROUGH EXISTING PAVEMENT, TRINITY MAY ALLOW THE USE OF ALTERNATE LINE POST FOOTINGS IF SYSTEM IS INSTALLED WITH AN ACCEPTABLE MOWSTRIP APPLICATION - PLEASE CONTACT TRINITY. FOR AESTHETIC PURPOSES TRINITY RECOMMENDS ALL SLEEVES, DRIVEN POSTS, AND LOWER CABLE RELEASE POSTS TO BE INSTALLED REASONABLY PLUMB (APPROXIMATELY 1/8" PER FOOT).

6. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. PRIOR TO TENSIONING THE SYSTEM. TRINITY RECOMMENDS THE CONCRETE TO BE VIBRATED IN ACCORDANCE WITH THE LATEST APPLICABLE AGENCY SPECIFICATION.

7. CASS-TL4 SHALL BE INSTALLED IN WELL-DRAINED, COMPACTED, NCHRP REPORT 350 STANDARD SOILS. IF SOIL DOESN'T MEET THIS CLASSIFICATION, IF SOLID ROCK/CONCRETE IS ENCOUNTERED BELOW GRADE OR IF SOIL IS SUSCEPTABLE TO SEVERE FREEZE/THAW CYCLES, PLEASE CONTACT TRINITY ABOUT ALTERNATE FOOTING DESIGN(S). TRINITY SUGGESTS THE USE OF "MOW STRIPS" FOR EROSION PREVENTION AND EASE OF MAINTENANCE / INSTALLATION.

8. PLEASE SEE SPECIFYING AGENCY (OR MUTCD) FOR PROPER "BARRIER" DELINEATION.

9. PLEASE CONTACT TRINITY OR CONSULT THE DESIGN, INSTALLATION, OR REPAIR MANUAL(S) FOR ADDITIONAL INFORMATION.

TRINITY HIGHWAY PRODUCTS, LLC. EMAIL:
2525 STEMMONS FREEWAY PRODUCT.INFO@TRIN.NET
DALLAS, TX 75207 PHONE (800) 644-7976

MOW STRIP DETAIL*			CONCRETE FOOTING CHART		
MOW STRIP	DEPTH	WIDTH	FOOTING	TUBE SLEEVE	REBAR HING
NONE			30" MIN.	21" MIN.	YES
HMA	6" MIN.	3" MIN.	21" MIN.	15" MIN.	NO
HMA	8" MIN.	3" MIN.	24" MIN.	15" MIN.	NO
RC	3" MIN.	3" MIN.	24" MIN.	15" MIN.	NO

CHART DOES NOT APPLY TO TERMINAL POSTS 1 THRU 9
* MOW STRIP OR PAVEMENT
HMA = HOT MIX ASPHALT (NOT RECYCLED ASPHALT PAVEMENT)
RC = REINFORCED CONCRETE (3,000 P.S.I. MINIMUM)

No.	CASS-TL4 POST OPTIONS
1	CCT - TERMINAL POST 1 - 9 - IN CONCRETE
2	CCT -TERMINAL POST 1 - 9 - WITH SOIL PLATE
3	CASS-TL4 POST - IN CONCRETE
4	CASS-TL4 POST - DRIVEN
5	CASS-TL4 POST - BASE-PLATED
6	CASS-TL4 POST - IN DRIVEN SLEEVE
	6A - DRIVEN SLEEVE - WITH NOTCH
	6B - DRIVEN SLEEVE - WITH SOIL PLATE

CASS-TL4 4-CABLE GUARDRAIL SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

DRAWN	E.A.S	4/21/2008
CHK	G.N	4/21/2008
SHT 1 OF 1	SIZE	D
DWG NO		REV
SS-740-4		1

PROJ CASS-TL4-4

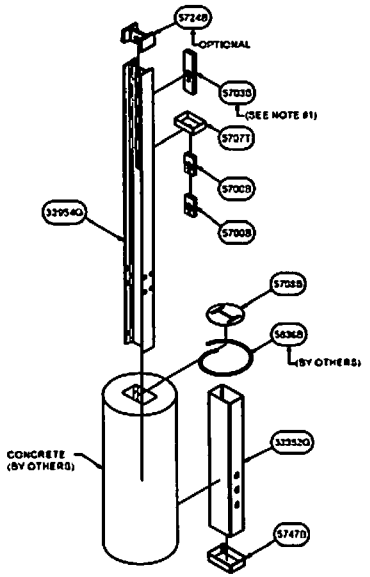
PARTS LIST - CASS-TL4 POST - IN CONCRETE - POST OPTION #3			
QTY	PART No	TITLE	Lbs / Each
2	57009	CASS & TL3 CABLE SPACER	0.11
1	57038	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57068	SLEEVE COVER - CASS-TL POST	0.11
1	57248	CASS-TL POST CAP	0.17
1	57478	SLEEVE CAP - CASS-TL POST	0.15
1	58368	CONCRETE REINFORCING RING	0.82
1	339820	27" POST SLEEVE - IN CONCRETE	14.45
1	339540	CASS-TL4 POST - SHORT	34.35

PARTS LIST - CASS-TL4 POST DRIVEN - OPTION #4			
QTY	PART No	TITLE	Lbs / Each
2	57009	CASS & TL3 CABLE SPACER	0.11
1	57038	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57248	CASS-TL POST CAP	0.17
1	339570	CASS-TL4 POST - LONG	50.62

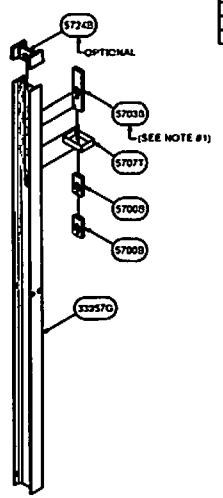
PARTS LIST - CASS-TL4 POST BASE-PLATED - OPTION #5			
QTY	PART No	TITLE	Lbs / Each
4	33000	5/8" PLAIN WASHER - TYPE B - R - (F844)	0.06
4	33100	5/8 LOCK WASHER	0.00
4	33610	5/8" HEX NUT (A563 Gr DH)	0.01
4	52250	5/8 x 7 1/2" HAS SUPER ROD CHGL PT (A193 B7)	0.82
0.a	54468	HIT HY 150 MAX EPOXY (HILTI - 00283548)	
2	57009	CASS & TL3 CABLE SPACER	0.11
1	57038	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57248	CASS-TL POST CAP	0.17
1	339944	POST-TL4 - BASE PLATED	35.56

PARTS LIST - CASS-TL4 POST - IN DRIVEN SLEEVE - POST OPTION #6A			
QTY	PART No	TITLE	Lbs / Each
2	57009	CASS & TL3 CABLE SPACER	0.11
1	57038	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57068	SLEEVE COVER - CASS-TL POST	0.11
1	57248	CASS-TL POST CAP	0.17
1	339540	CASS-TL4 POST - SHORT	34.35
1	339750	30.75" POST SLEEVE - DRIVEN SHORT POST	18.43

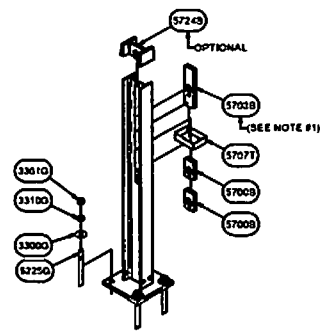
PARTS LIST - PRE-STRETCHED CABLE ASSEMBLIES						
QTY	PART No	TITLE	LENGTH	TYPE-1	TYPE-2	Lbs / Each
1	58317	CCT CABLE ASSEMBLY-TOP	54'-1"	H.H.Y.	L.H.Y.	54.0
1	58318	CCT CABLE ASSEMBLY-MID	42'-1"	H.H.Y.	L.H.Y.	42.0
1	58319	CCT CABLE ASSEMBLY-BOT	41'-10"	H.H.Y.	L.H.Y.	41.8
1	58167	CCA CABLE ASSEMBLY	25'-0"	H.H.Y.	L.H.Y.	25.0
1	58316	CABLE ASSEMBLY-INTERIOR	1000'	H.H.Y.	L.H.Y.	997.0
1	57251	CABLE FIELD SPLICE SECTION	1025'	H.H.Y.	NONE	999.0
1	57252	CABLE FIELD SPLICE SECTION	1000'	H.H.Y.	NONE	997.0
1	57253	CABLE FIELD SPLICE SECTION	975'	H.H.Y.	NONE	945.0
1	57797	CABLE FIELD SPLICE SECTION	950'	H.H.Y.	NONE	918.0
1	57798	CABLE FIELD SPLICE SECTION	925'	H.H.Y.	NONE	897.0
1	57799	CABLE FIELD SPLICE SECTION	900'	H.H.Y.	NONE	868.0
1	57784	CABLE FIELD SPLICE SECTION	875'	H.H.Y.	NONE	844.0
1	57783	CABLE FIELD SPLICE SECTION	850'	H.H.Y.	NONE	820.0
1	57782	CABLE FIELD SPLICE SECTION	825'	H.H.Y.	NONE	796.0
1	57781	CABLE FIELD SPLICE SECTION	800'	H.H.Y.	NONE	772.0
1	57780	CABLE FIELD SPLICE SECTION	775'	H.H.Y.	NONE	748.0
1	57788	CABLE FIELD SPLICE SECTION	750'	H.H.Y.	NONE	724.0
1	57789	CABLE FIELD SPLICE SECTION	725'	H.H.Y.	NONE	700.0
1	57787	CABLE FIELD SPLICE SECTION	700'	H.H.Y.	NONE	676.0
1	57786	CABLE FIELD SPLICE SECTION	675'	H.H.Y.	NONE	652.0
1	57785	CABLE FIELD SPLICE SECTION	650'	H.H.Y.	NONE	628.0
1	57744	CABLE FIELD SPLICE SECTION	625'	H.H.Y.	NONE	604.0
1	57743	CABLE FIELD SPLICE SECTION	600'	H.H.Y.	NONE	580.0
1	57742	CABLE FIELD SPLICE SECTION	575'	H.H.Y.	NONE	556.0
1	57741	CABLE FIELD SPLICE SECTION	550'	H.H.Y.	NONE	532.0
1	57740	CABLE FIELD SPLICE SECTION	525'	H.H.Y.	NONE	508.0
1	57776	CABLE FIELD SPLICE SECTION	500'	H.H.Y.	NONE	484.0
1	57775	CABLE FIELD SPLICE SECTION	475'	H.H.Y.	NONE	460.0
1	57774	CABLE FIELD SPLICE SECTION	450'	H.H.Y.	NONE	436.0
1	57773	CABLE FIELD SPLICE SECTION	425'	H.H.Y.	NONE	412.0
1	57769	CABLE FIELD SPLICE SECTION	400'	H.H.Y.	NONE	387.0
1	57768	CABLE FIELD SPLICE SECTION	375'	H.H.Y.	NONE	363.0
1	57767	CABLE FIELD SPLICE SECTION	350'	H.H.Y.	NONE	339.0
1	57765	CABLE FIELD SPLICE SECTION	325'	H.H.Y.	NONE	315.0
1	57764	CABLE FIELD SPLICE SECTION	300'	H.H.Y.	NONE	291.0
1	57763	CABLE FIELD SPLICE SECTION	275'	H.H.Y.	NONE	267.0
1	57762	CABLE FIELD SPLICE SECTION	250'	H.H.Y.	NONE	243.0
1	57761	CABLE FIELD SPLICE SECTION	225'	H.H.Y.	NONE	219.0
1	57760	CABLE FIELD SPLICE SECTION	200'	H.H.Y.	NONE	196.0
1	57749	CABLE FIELD SPLICE SECTION	175'	H.H.Y.	NONE	172.0
1	57748	CABLE FIELD SPLICE SECTION	150'	H.H.Y.	NONE	148.0
1	57747	CABLE FIELD SPLICE SECTION	125'	H.H.Y.	NONE	123.0
1	57746	CABLE FIELD SPLICE SECTION	100'	H.H.Y.	NONE	99.0
1	57745	CABLE FIELD SPLICE SECTION	75'	H.H.Y.	NONE	75.0
1	57750	CABLE FIELD SPLICE SECTION	50'	H.H.Y.	NONE	51.1
1	57751	CABLE FIELD SPLICE SECTION	25'	H.H.Y.	NONE	27.1
1	58430	CABLE FIELD REPAIR SECTION	3'	H.H.Y.	L.H.Y.	19.0



CASS-TL4 POST - IN CONCRETE



CASS-TL4 POST - DRIVEN
(POST OPTION #4 - DRIVEN)



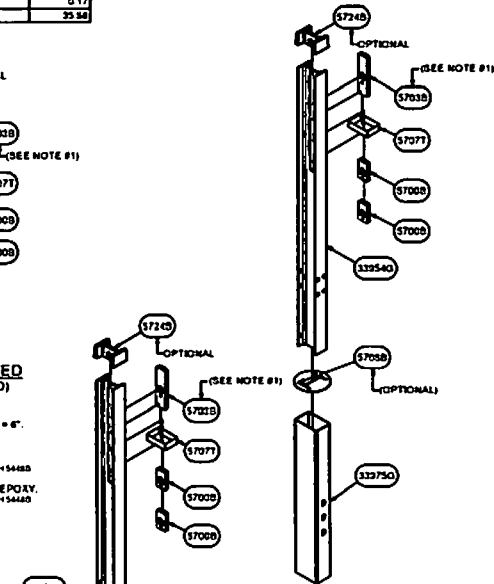
CASS-TL4 POST - BASE-PLATED
(POST OPTION #5 - BASE-PLATED)

ANCHOR OPTIONS
MIN. EMBEDMENT IN 3,000 P.S.I. CONCRETE = 6".
MIN. PULLOUT STRENGTH = 10,000 lbs.

1 5/8 ADHESIVE ANCHORING SYSTEM.
(4 EACH 33000, 33100, 33610 & 52250 @ 8.0 6 EACH 54468

2 5/8 x 8" ALL THREADED ROD (A449) WITH EPOXY.
(4 EACH 33000, 33100, 33610 & 87220 @ 8.0 6 EACH 54468

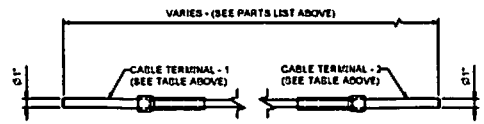
3 5/8 MECHANICAL ANCHOR, (BY OTHERS)



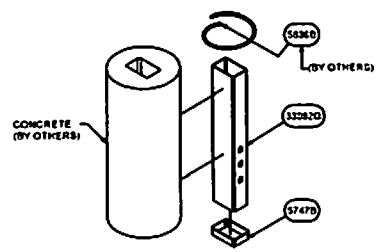
CASS-TL4 POST - IN DRIVEN SLEEVE
(POST OPTION #6A - DRIVEN SLEEVE - NOTCH)

NOTE

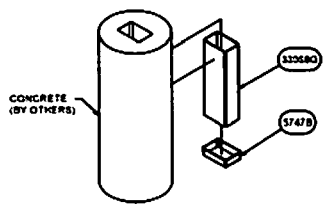
FOR THE STANDARD FIELD SPLICE SECTIONS ABOVE, SUPPLY (1) RIGHT HAND THREADED STUD ASSEMBLY 59190 EACH



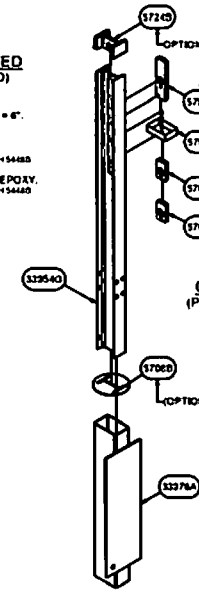
PRE-STRETCHED CABLE ASSEMBLY



CONCRETE FOOTING ASSEMBLY
(POST OPTION #3 - PRE-CAST OPTION)



CONCRETE FOOTING ASSEMBLY
(INSTALLED IN QUALIFYING MOW STRIP SEE CHART SHEET 1)



CASS-TL4 POST - IN DRIVEN SLEEVE
(POST OPTION #6B - DRIVEN SLEEVE - SOIL PLATE)

NOTES

1. IN LIEU OF BLACK SPACER 57038 SUPPLY YELLOW REFLECTIVE SPACER 57058 OR WHITE REFLECTIVE SPACER 57068. (AS REQUIRED PER PROJECT PLANS)
2. AT CASS-TL4 POST LOCATION NEAREST TO A CABLE SPLICE, SUPPLY A SPLICE INTERFERENCE POST.
   LONG SPLICE POST 339340 IN LIEU OF LONG CASS-TL4 POST 339570
   SHORT SPLICE POST 339740 IN LIEU OF SHORT CASS-TL4 POST 339540
3. IF REQUIRED PER PROJECT PLANS SUPPLY
   CABLE PULLING TOOL 58509
   CABLE TENSION METER 58763
   CABLE THERMOMETER 57028

PARTS LIST - PRE-CAST CONCRETE FOOTING - OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	57478	SLEEVE CAP - CASS-TL POST	0.15
1	58368	CONCRETE REINFORCING RING	0.82
1	339820	27" POST SLEEVE - IN CONCRETE	14.45

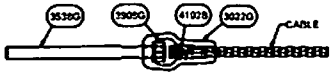
PARTS LIST - CONCRETE FOOTING IN MOW STRIP OR PAVEMENT			
QTY	PART No	TITLE	Lbs / Each
1	57478	SLEEVE CAP - CASS-TL POST	0.15
1	339580	15" POST SLEEVE - CONCRETE POST	8.00

PARTS LIST - CASS-TL4 POST - IN DRIVEN SLEEVE - POST OPTION #6B			
QTY	PART No	TITLE	Lbs / Each
2	57009	CASS & TL3 CABLE SPACER	0.11
1	57038	CASS-TL4 CABLE SPACER	0.24
1	57071	CASS-TL - POST STRAP	0.23
1	57068	SLEEVE COVER - CASS-TL POST	0.11
1	57248	CASS-TL POST CAP	0.17
1	339540	CASS-TL4 POST - SHORT	34.35
1	339764	30.75" CASS-TL3 POST SLEEVE w/ SOIL PLATE	30.09

CASS-TL4
4-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

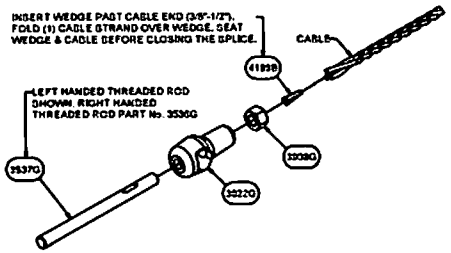
DRAWN	E.A.S. 8/21/2008
CHK	G.H. 8/21/2008
SHT	2 OF 5
SIZE	D
DWG NO	SS-740-4
REV	1
PROJ	CASS-TL4-4



1" CABLE FIELD SPLICE - 5909G & 5910G

(5910G SHOWN, 5909G SIMILAR)

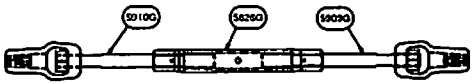
PARTS LIST - 5910G			
QTY	PART No	TITLE	Lbs / Each
1	3022G	1" CABLE END CASTING	0.56
1	3539G	1" STUD FLATTENED - R.H.T.	2.88
1	3308G	1" HEAVY HEX NUT (A563 DH)	0.47
1	41928	3/4" CABLE WEDGE (3 x 7)	0.09



ASSEMBLY - 1" CABLE FIELD SPLICE - 5909G

(5909G SHOWN, 5910G SIMILAR)

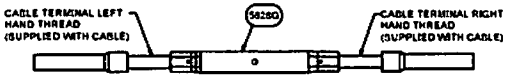
PARTS LIST - 5909G			
QTY	PART No	TITLE	Lbs / Each
1	3022G	1" CABLE END CASTING	0.56
1	3537G	1" STUD FLATTENED - L.H.T.	2.88
1	3905G	1" HEAVY HEX NUT (A563 DH)	0.47
1	41928	3/4" CABLE WEDGE (3 x 7)	0.09



1" CABLE SPLICE - 5633G

(CLOSED BODY STYLE)

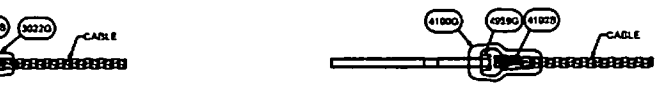
PARTS LIST - 5633G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	5626G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81
1	5909G	2	1" STUD ASSEMBLY L.H.T.	3.97
1	5910G	3	1" STUD ASSEMBLY R.H.T.	3.93



1" TURNBUCKLE - 5826G

(CLOSED BODY STYLE)

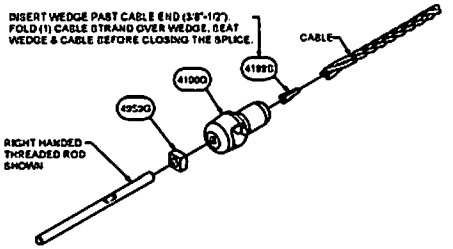
PARTS LIST - 5826G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	5826G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81



3/4" CABLE FIELD SPLICE - 5634G & 5635G

(5634G SHOWN, 5635G SIMILAR)

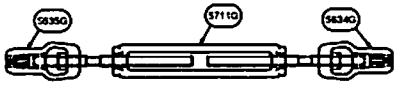
PARTS LIST - 5634G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - L.H.T.	1.82
1	41800	CABLE END CASTING	3.78
1	41928	3/4" CABLE WEDGE (3 x 7)	0.09
1	4059G	3/4" HEAVY SQUARE NUT (A563)	0.26



ASSEMBLY - 3/4" CABLE FIELD SPLICE - 5635G

(5635G SHOWN, 5634G SIMILAR)

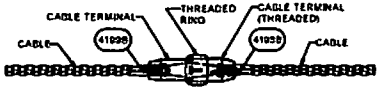
PARTS LIST - 5635G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - R.H.T.	1.82
1	41000	CABLE END CASTING	3.78
1	41928	3/4" CABLE WEDGE (3 x 7)	0.09
1	4059G	3/4" HEAVY SQUARE NUT (A563)	0.26



3/4" CABLE SPLICE - 5668G

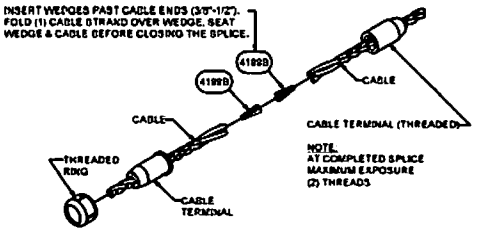
(OPEN BODY STYLE)

PARTS LIST - 5668G			
QTY	PART No	TITLE	Lbs / Each
1	5634G	3/4" STUD ASSEMBLY L.H.T.	5.74
1	5635G	3/4" STUD ASSEMBLY R.H.T.	5.74
1	5711G	3/4" TURNBUCKLE OPEN BODY STYLE	10.65



TORPEDO CABLE SPLICE - 4099G

PARTS LIST - 4099G			
QTY	PART No	TITLE	Lbs / Each
1		CABLE TERMINAL - THREADED	1.78
1		CABLE TERMINAL	1.53
1		ROD - THREADED	0.08
2	41928	3/4" CABLE WEDGE (3 x 7)	0.09



ASSEMBLY - TORPEDO CABLE SPLICE 4099G

CASS TEMPERATURE & TENSION CHART (NEAREST 100 LB/F)

FAHRENHEIT DEGREES	STD. CABLE LBS-FORCE	PRE-STRETCHED LBS-FORCE
< = -15	8800	7500
-10	8600	7400
-5	8400	7100
0	8200	7000
5	8000	6900
10	7800	6700
15	7600	6500
20	7400	6300
25	7200	6100
30	7000	6000
35	6800	5800
40	6600	5600
45	6400	5500
50	6200	5300
55	6000	5100
60	5800	5000
65	5600	4800
70	5400	4600
75	5200	4500
80	5000	4300
85	4800	4100
90	4600	4000
95	4400	3800
100	4200	3600
105	4000	3500
110	3800	3300
115	3600	3100
120	3400	3000
125	3200	2800
130	3000	2700
135	2800	2500
140	2700	2300
145	2500	2200
150	2400	2100
160	2200	2100
170	2000	1900
180	1800	1700
190	1600	1500
200	1400	1300

ALLOWABLE DEVIATION FROM CHART IN TANGENT SECTIONS +800, -200 POUNDS-FORCE.

CABLE TENSION READINGS ARE TYPICALLY HIGHER IN CURVED CABLE SECTIONS.

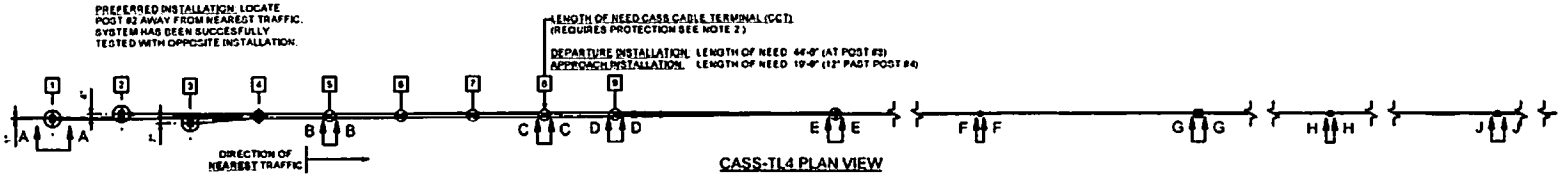
NOTE

1. TURNBUCKLES SHALL BE INSTALLED WITH A MINIMUM OF 1-1/2" THREAD ENGAGEMENT. TO ALLOW FOR MAINTENANCE/REPAIR ADJUSTMENTS AT A LATER DATE, TRINITY SUGGESTS INSTALLER UTILIZE NO MORE THAN 4" THREAD ENGAGEMENT.

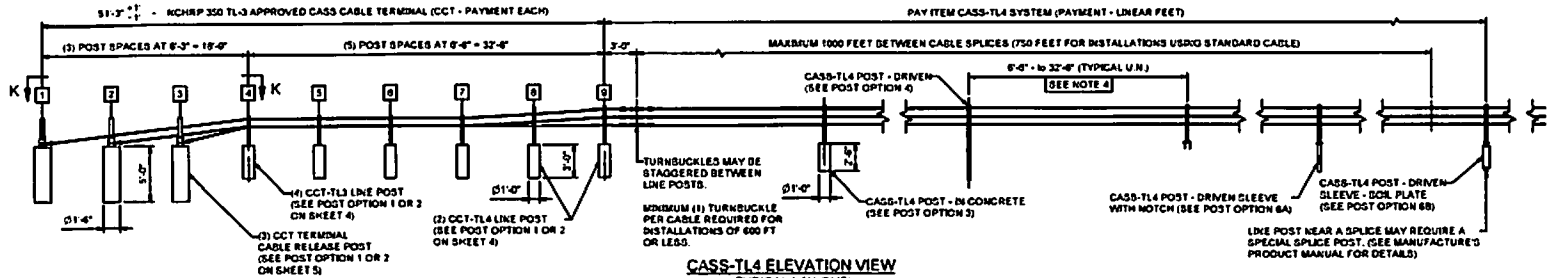
2. WHEN CUTTING CABLE LENGTHS IN THE FIELD FROM CABLE REELS, IT MAY BE PERMISSIBLE TO UTILIZE A CABLE TORPEDO SPLICE (4099G) BETWEEN TURNBUCKLES. DO NOT USE FOR CABLE LENGTH SHORTER THAN 150'. PLEASE CONTACT TRINITY, CONSULT TRINITY'S MANUAL OR SPECIFYING AGENCY TO DETERMINE IF APPROPRIATE FOR SPECIFIC APPLICATION.

CASS-TL4 4-CABLE GUARDRAIL SAFETY SYSTEM	DRAWN: E.A.S. 8/21/2008 CHK: G.N. 8/21/2008 SHT 3 OF 5 REV 0
TRINITY HIGHWAY PRODUCTS, LLC	DWG NO SS-740-4 REV 1

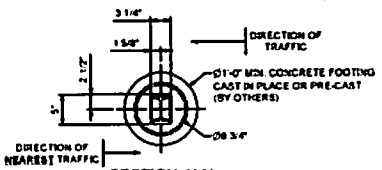
PROJ CASS-TL4-4



CASS-TL4 PLAN VIEW



CASS-TL4 ELEVATION VIEW
(TYPICAL LAY-OUT)



SECTION N-N

NOTES:

1. CASS-TL4 HAS BEEN SUCCESSFULLY TESTED TO NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 TEST LEVEL 4 (NCHRP 350 TL4) AND ACCEPTED BY FHWA FOR VARIOUS POST SPACINGS. CASS CABLE TERMINAL (CCT) HAS BEEN SUCCESSFULLY TESTED AND APPROVED TO NCHRP TL3.

2. AN NCHRP 350 TL3 APPROVED TERMINAL (CCT) OR CASS-TL4 TRANSITION (VARIOUS) SHALL BE USED ON APPROACH AND DEPARTURE TERMINATIONS WHEN CASS-TL4 IS INSTALLED ON THE NATIONAL HIGHWAY SYSTEM (NHS). IF THE TERMINATION POINT IS LOCATED OUTSIDE THE CLEAR ZONE AND/OR PROTECTED BY OTHER MEANS (CRASHWORTHY BARRIER, TERMINALS, ETC.), A NON-NCHRP 350 TL3 ANCHOR (CCA) MAY BE USED ON APPROACH AND DEPARTURE TERMINATIONS.

3. CASS-TL4 SHALL BE INSTALLED ON SHOULDERS OR MEDIANS WITH SLOPES OF 6:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC. THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE. GRADING OF SITE AND/OR APPROPRIATE FILL MATERIALS MAY BE REQUIRED. THE DESIGNER/INSTALLER SHALL "FLATTEN" OR "ROUND" VARIOUS TOPOGRAPHICAL INCONSISTENCIES THAT COULD INTERFERE WITH THE ABILITY OF THE INSTALLER TO CONSISTENTLY MAINTAIN THE DESIGN HEIGHT (IN RELATION TO THE TERRAIN) OF THE CABLES. PLEASE CONSULT THE CASS MANUAL(S) FOR INSTALLATIONS IN "DITCH SECTIONS".

4. CASS-TL4 POST SPACING MAY BE MODIFIED TO AVOID OBSTACLES THAT CONFLICT WITH THE INSTALLATION OF CASS-TL4 LINE POSTS. NO POST SPACE CAN EXCEED THE MAXIMUM POST SPACE LIMIT OF 32'-6", OR MAXIMUM POST SPACING ALLOWED BY PROJECT ENGINEER - WHICHEVER IS LESS. REDUCING OR INCREASING POST SPACING AFFECTS DEFLECTION. CASS-TL4 MAY BE LATERALLY TRANSFERRED AT A RATE NOT TO EXCEED 30:1.

5. POST FOUNDATIONS MAY BE DRILLED THROUGH EXISTING PAVEMENT. TRINITY MAY ALLOW THE USE OF ALTERNATE LINE POST FOOTINGS IF SYSTEM IS INSTALLED WITH AN ACCEPTABLE MOWSTRIP APPLICATION - PLEASE CONTACT TRINITY.

6. FOR AESTHETIC PURPOSES TRINITY RECOMMENDS ALL SLEEVES, DRIVEN POSTS, AND LOWER CABLE RELEASE POSTS TO BE INSTALLED REASONABLY PLUMB (APPROXIMATELY 1/8" PER FOOT).

7. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3 000 P.S.I. PRIOR TO TENSIONING THE SYSTEM. TRINITY RECOMMENDS THE CONCRETE TO BE VIBRATED IN ACCORDANCE WITH THE LATEST APPLICABLE AGENCY SPECIFICATION.

8. CASS-TL4 SHALL BE INSTALLED IN WELL-DRAINED, COMPACTED, NCHRP REPORT 350 STANDARD SOILS. IF SOIL DOESN'T MEET THIS CLASSIFICATION, IF SOLID ROCK/CONCRETE IS ENCOUNTERED BELOW GRADE OR IF SOIL IS SUSCEPTABLE TO SEVERE FREEZE/THAW CYCLES, PLEASE CONTACT TRINITY ABOUT ALTERNATE FOOTING DESIGN(S). TRINITY SUGGESTS THE USE OF "MOW STRIPS" FOR EROSION PREVENTION AND EASE OF MAINTENANCE / INSTALLATION.

9. PLEASE SEE SPECIFYING AGENCY (OR MUTCD) FOR PROPER "BARRIER" DELINEATION.

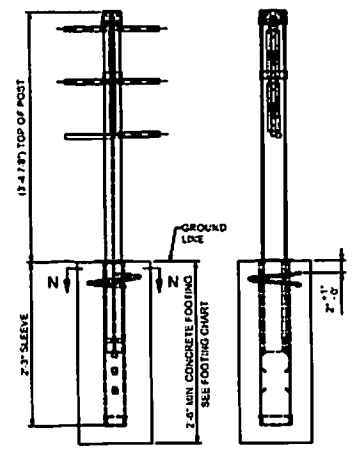
10. PLEASE CONTACT TRINITY OR CONSULT THE DESIGN, INSTALLATION, OR REPAIR MANUAL(S) FOR ADDITIONAL INFORMATION.

TRINITY HIGHWAY PRODUCTS, LLC.
2525 STEMMONS FREEWAY
DALLAS, TX 75207
EMAIL
PRODUCT.INFO@TRIN.NET
PHONE: (800) 644-7976

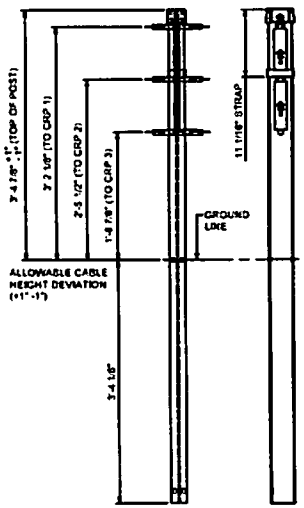
MOW STRIP* DETAIL*			CONCRETE FOOTING CHART		
MOW STRIP	DEPTH	WIDTH	FOOTING	TUBE SLEEVE	REBAR RING
NONE			30" MIN	27" MIN	YES
HMA	6" MIN	3' MIN	27" MIN	15" MIN	NO
HMA	8" MIN	3' MIN	24" MIN	15" MIN	NO
RC	5" MIN	3' MIN	24" MIN	15" MIN	NO

CHART DOES NOT APPLY TO TERMINAL POSTS 1 THRU 8
* MOW STRIP OR PAVEMENT
HMA = HOT MIX ASPHALT (NOT RECYCLED ASPHALT PAVEMENT)
RC = REINFORCED CONCRETE (3 000 P.S.I. MINIMUM)

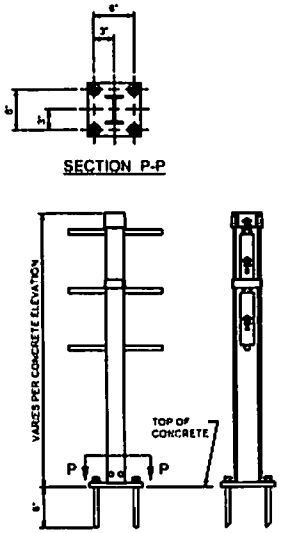
No.	CASS-TL4 POST OPTIONS
1	CCT - TERMINAL POST 1 - 9 - IN CONCRETE
2	CCT - TERMINAL POST 1 - 9 - WITH SOIL PLATE
3	CASS-TL4 POST - IN CONCRETE
4	CASS-TL4 POST - DRIVEN
5	CASS-TL4 POST - BASE-PLATED
6	CASS-TL4 POST - IN DRIVEN SLEEVE
	6A - DRIVEN SLEEVE - WITH NOTCH
	6B - DRIVEN SLEEVE - WITH SOIL PLATE



VIEW E-E
(CASS-TL4 POST - IN CONCRETE)
(POST OPTION #3)

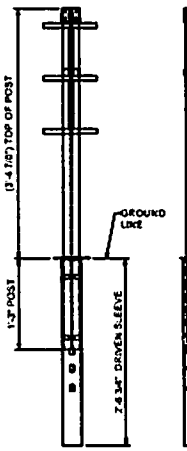


VIEW F-F
(CASS-TL4 POST- DRIVEN
POST OPTION #4)

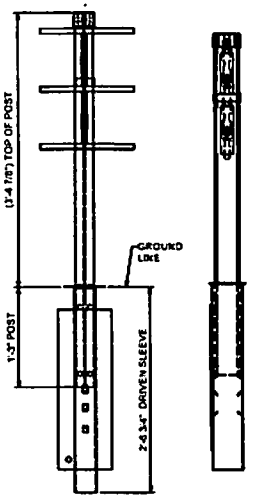


SECTION P-P

VIEW G-G
(CASS-TL4 POST- BASE-PLATED
POST OPTION #5)



VIEW H-H
(CASS-TL4 POST- DRIVEN SLEEVE
POST OPTION #6A)



VIEW J-J
(CASS-TL4 POST- DRIVEN SLEEVE - SOIL PLATE
POST OPTION #6B)

CASS-TL4 3-CABLE GUARDRAIL SAFETY SYSTEM	TYPE: C
	LENGTH: VAR
	DRWN: E.A.S. 8/21/2008
	CHK'D: G.H. 8/21/2008
TRINITY HIGHWAY PRODUCTS, LLC	SHT: 1 OF 5 REV: 0
PROJ: CASS-TL4	DWG NO: SS-740 REV: 7

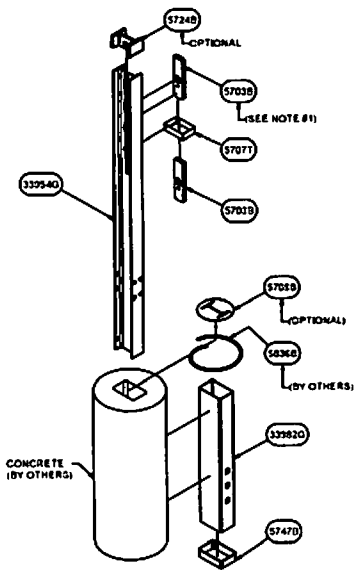
PARTS LIST - CASS-TL4 POST - IN CONCRETE - POST OPTION #3			
QTY	PART No	TITLE	Lbs / Each
2	57035B	CASS-TL4 CABLE SPACER	0.24
1	57077	CASS-TL - POST STRAP	0.23
1	57055B	SLEEVE COVER - CASS-TL POST	0.11
1	57240	CASS-TL POST CAP	0.17
1	57475	SLEEVE CAP - CASS-TL POST	0.15
1	58368	CONCRETE REINFORCING RING	0.88
1	339820	27" POST SLEEVE - IN CONCRETE	14.48
1	339540	CASS-TL4 POST - SHORT	34.38

PARTS LIST - CASS-TL4 POST DRIVEN - OPTION #4			
QTY	PART No	TITLE	Lbs / Each
2	57035B	CASS-TL4 CABLE SPACER	0.24
1	57077	CASS-TL - POST STRAP	0.23
1	57240	CASS-TL POST CAP	0.17
1	339570	CASS-TL4 POST - LONG	20.62

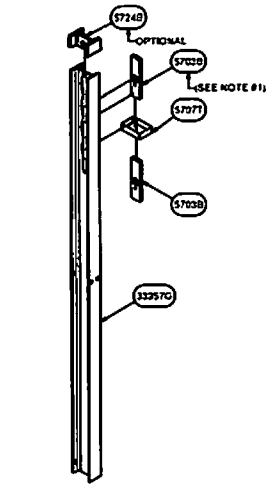
PARTS LIST - CASS-TL4 POST BASE-PLATED - OPTION #5			
QTY	PART No	TITLE	Lbs / Each
4	33000	5/8" PLAIN WASHER - TYPE B - R - (F844)	0.06
4	33100	5/8 LOCK WASHER	0.00
4	33610	5/8" HEX NUT (A563 Gr DH)	0.01
4	52250	5/8 x 7 1/2" HAS SUPER ROD CHSL PT (A193 B7)	0.62
0.6	54468	KIT HY 150 MAX EPOXY (KIT TI - 00283548)	
2	57035B	CASS-TL4 CABLE SPACER	0.24
1	57077	CASS-TL - POST STRAP	0.23
1	57240	CASS-TL POST CAP	0.17
1	339564	POST-TL4 - BASE PLATED	35.58

PARTS LIST - CASS-TL4 POST - IN DRIVEN SLEEVE - POST OPTION #6A			
QTY	PART No	TITLE	Lbs / Each
2	57035B	CASS-TL4 CABLE SPACER	0.24
1	57077	CASS-TL - POST STRAP	0.23
1	57055B	SLEEVE COVER - CASS-TL POST	0.11
1	57240	CASS-TL POST CAP	0.17
1	339540	CASS-TL4 POST - SHORT	34.38
1	339750	30 75" POST SLEEVE - DRIVEN SHORT POST	18.43

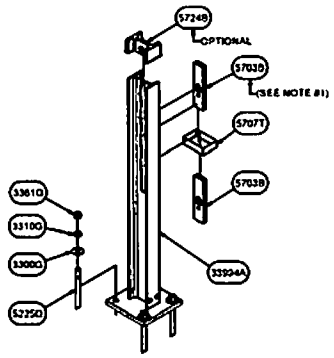
PARTS LIST - PRE-STRETCHED CABLE ASSEMBLIES						
QTY	PART No	TITLE	LENGTH	TERM-1	TERM-2	Lbs / Each
1	5817	CCT CABLE ASSEMBLY-TOP	54'-4"	R-H-Y	L-H-Y	58.3
1	5816	CCT CABLE ASSEMBLY-MID	46'-1"	R-H-Y	L-H-Y	49.3
1	5818	CCT CABLE ASSEMBLY-BOT	41'-10"	R-H-Y	L-H-Y	44.3
1	5887	CCA CABLE ASSEMBLY	23'-0"	R-H-Y	L-H-Y	25.0
1	5815	CABLE ASSEMBLY-INTERMIX	1000'	R-H-Y	L-H-Y	1073.0
1	5793	CABLE FIELD SPLICE SECTION	1000'	R-H-Y	NONE	1073.0
1	5792	CABLE FIELD SPLICE SECTION	1000'	R-H-Y	NONE	1073.0
1	5789	CABLE FIELD SPLICE SECTION	975'	R-H-Y	NONE	1046.8
1	5787	CABLE FIELD SPLICE SECTION	950'	R-H-Y	NONE	1019.8
1	5786	CABLE FIELD SPLICE SECTION	925'	R-H-Y	NONE	992.6
1	5785	CABLE FIELD SPLICE SECTION	900'	R-H-Y	NONE	965.6
1	5784	CABLE FIELD SPLICE SECTION	875'	R-H-Y	NONE	938.7
1	5783	CABLE FIELD SPLICE SECTION	850'	R-H-Y	NONE	911.7
1	5782	CABLE FIELD SPLICE SECTION	825'	R-H-Y	NONE	884.7
1	5781	CABLE FIELD SPLICE SECTION	800'	R-H-Y	NONE	857.8
1	5780	CABLE FIELD SPLICE SECTION	775'	R-H-Y	NONE	830.8
1	5779	CABLE FIELD SPLICE SECTION	750'	R-H-Y	NONE	803.8
1	5778	CABLE FIELD SPLICE SECTION	725'	R-H-Y	NONE	776.9
1	5777	CABLE FIELD SPLICE SECTION	700'	R-H-Y	NONE	749.9
1	5776	CABLE FIELD SPLICE SECTION	675'	R-H-Y	NONE	722.9
1	5775	CABLE FIELD SPLICE SECTION	650'	R-H-Y	NONE	696.0
1	5774	CABLE FIELD SPLICE SECTION	625'	R-H-Y	NONE	669.0
1	5773	CABLE FIELD SPLICE SECTION	600'	R-H-Y	NONE	642.0
1	5772	CABLE FIELD SPLICE SECTION	575'	R-H-Y	NONE	615.1
1	5771	CABLE FIELD SPLICE SECTION	550'	R-H-Y	NONE	588.1
1	5770	CABLE FIELD SPLICE SECTION	525'	R-H-Y	NONE	561.1
1	5769	CABLE FIELD SPLICE SECTION	500'	R-H-Y	NONE	534.1
1	5768	CABLE FIELD SPLICE SECTION	475'	R-H-Y	NONE	507.2
1	5767	CABLE FIELD SPLICE SECTION	450'	R-H-Y	NONE	480.2
1	5766	CABLE FIELD SPLICE SECTION	425'	R-H-Y	NONE	453.2
1	5765	CABLE FIELD SPLICE SECTION	400'	R-H-Y	NONE	426.2
1	5764	CABLE FIELD SPLICE SECTION	375'	R-H-Y	NONE	399.3
1	5763	CABLE FIELD SPLICE SECTION	350'	R-H-Y	NONE	372.3
1	5762	CABLE FIELD SPLICE SECTION	325'	R-H-Y	NONE	345.3
1	5761	CABLE FIELD SPLICE SECTION	300'	R-H-Y	NONE	318.4
1	5760	CABLE FIELD SPLICE SECTION	275'	R-H-Y	NONE	291.4
1	5759	CABLE FIELD SPLICE SECTION	250'	R-H-Y	NONE	264.4
1	5758	CABLE FIELD SPLICE SECTION	225'	R-H-Y	NONE	237.5
1	5757	CABLE FIELD SPLICE SECTION	200'	R-H-Y	NONE	210.5
1	5756	CABLE FIELD SPLICE SECTION	175'	R-H-Y	NONE	183.5
1	5755	CABLE FIELD SPLICE SECTION	150'	R-H-Y	NONE	156.6
1	5754	CABLE FIELD SPLICE SECTION	125'	R-H-Y	NONE	129.6
1	5753	CABLE FIELD SPLICE SECTION	100'	R-H-Y	NONE	102.6
1	5752	CABLE FIELD SPLICE SECTION	75'	R-H-Y	NONE	75.7
1	5751	CABLE FIELD SPLICE SECTION	50'	R-H-Y	NONE	48.7
1	5750	CABLE FIELD SPLICE SECTION	25'	R-H-Y	NONE	21.7
1	5443	CABLE FIELD REPAIR SECTION	5'	R-H-Y	L-H-Y	9.3



CASS-TL4 POST - IN CONCRETE
(POST OPTION #3 - CAST IN PLACE)



CASS-TL4 POST - DRIVEN
(POST OPTION #4 - DRIVEN)



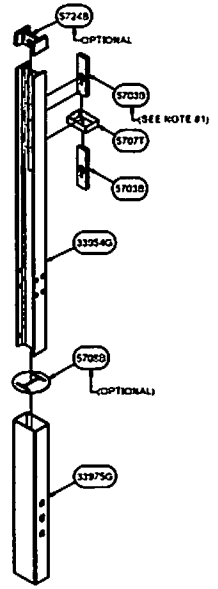
CASS-TL4 POST - BASE-PLATED
(POST OPTION #5 - BASE-PLATED)

ANCHOR OPTIONS.
MIN. EMBEDMENT IN 3,000 P.S.I. CONCRETE = 6".
MIN. PULLOUT STRENGTH = 13,000 lbs.

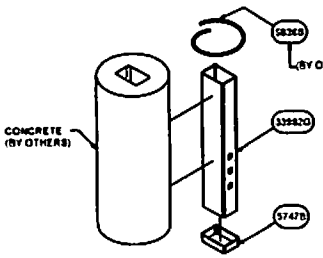
1 5/8 ADHESIVE ANCHORING SYSTEM.
(4 EACH 33000, 33100, 33610 & 52250 @ 0.6 EACH 54468

2 5/8 x 6" ALL THREADED ROD (A442) WITH EPOXY.
(4 EACH 33000, 33100, 33610 & 57720 @ 0.6 EACH 54468

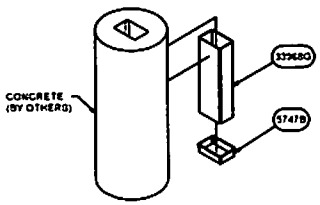
3 5/8 MECHANICAL ANCHOR. (BY OTHERS)



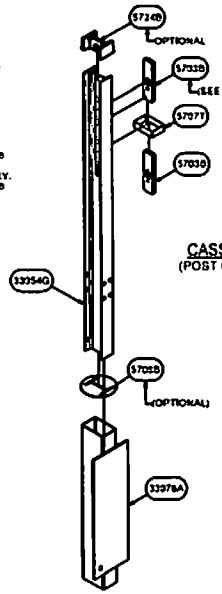
CASS-TL4 POST - IN DRIVEN SLEEVE
(POST OPTION #6A - DRIVEN SLEEVE - NOTCH)



CONCRETE FOOTING ASSEMBLY
(POST OPTION #3 - PRE-CAST OPTION)



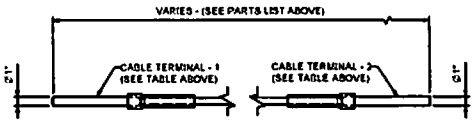
CONCRETE FOOTING ASSEMBLY
(INSTALLED IN QUALIFYING MOW STRIP SEE CHART SHEET 1)



CASS-TL4 POST - IN DRIVEN SLEEVE
(POST OPTION #6B - DRIVEN SLEEVE - SOIL PLATE)

NOTE.

FOR THE STANDARD FIELD SPLICE SECTIONS ABOVE,
SUPPLY (1) RIGHT HAND THREADED STUD ASSEMBLY
58100 EACH.



PRE-STRETCHED CABLE ASSEMBLY

NOTES.

1. IN LIEU OF BLACK SPACER 57035B SUPPLY YELLOW REFLECTIVE SPACER 57058 OR WHITE REFLECTIVE SPACER 57058. (AS REQUIRED PER PROJECT PLANS)
2. AT CASS-TL4 POST LOCATION NEAREST TO A CABLE SPLICE, SUPPLY A SPLICE INTERFERENCE POST.
   LONG SPLICE POST 339540 IN LIEU OF LONG CASS-TL4 POST 339570
   SHORT SPLICE POST 339740 IN LIEU OF SHORT CASS-TL4 POST 339540
3. IF REQUIRED PER PROJECT PLANS SUPPLY
   CABLE PULLING TOOL 58508
   CABLE TENSION METER 58788
   CABLE THERMOMETER 57088

PARTS LIST - PRE-CAST CONCRETE FOOTING - OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	57475	SLEEVE CAP - CASS-TL POST	0.15
1	58368	CONCRETE REINFORCING RING	0.88
1	339820	27" POST SLEEVE - IN CONCRETE	14.48

PARTS LIST - CONCRETE FOOTING IN MOW STRIP OR PAVEMENT			
QTY	PART No	TITLE	Lbs / Each
1	57475	SLEEVE CAP - CASS-TL POST	0.15
1	339480	15" POST SLEEVE - CONCRETE POST	8.00

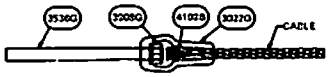
PARTS LIST - CASS-TL4 POST - IN DRIVEN SLEEVE - POST OPTION #6B			
QTY	PART No	TITLE	Lbs / Each
2	57035B	CASS-TL4 CABLE SPACER	0.24
1	57077	CASS-TL - POST STRAP	0.23
1	57055B	SLEEVE COVER - CASS-TL POST	0.11
1	57240	CASS-TL POST CAP	0.17
1	339540	CASS-TL4 POST - SHORT	34.38
1	339764	30 75" CASS-TL3 POST SLEEVE w/ BOX PLATE	30.00

CASS-TL4
3-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

SS-740 2

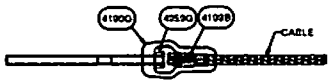
PROJ CASS-TL4



1" CABLE FIELD SPLICE - 5909G & 5910G

(5910G SHOWN 5909G SIMILAR)

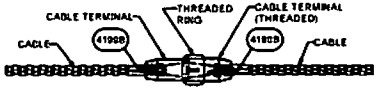
PARTS LIST - 5910G			
QTY	PART No	TITLE	Lbs / Each
1	3027G	1" CABLE END CASTING	0.56
1	3535G	1" STUD FLATTENED - R.H.T.	2.88
1	3508G	1" HEAVY HEX NUT (A563 DH)	0.47
1	41099B	3/4" CABLE WEDGE (3 x 7)	0.08



3/4" CABLE FIELD SPLICE - 5634G & 5635G

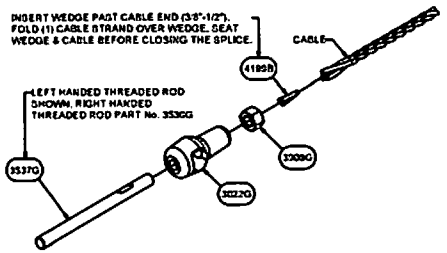
(5634G SHOWN 5635G SIMILAR)

PARTS LIST - 5634G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - L.H.T.	1.82
1	41000G	CABLE END CASTING	3.76
1	41883B	3/4" CABLE WEDGE (3 x 7)	0.08
1	4259G	3/4" HEAVY SQUARE NUT (A563)	0.26



TORPEDO CABLE SPLICE - 4099G

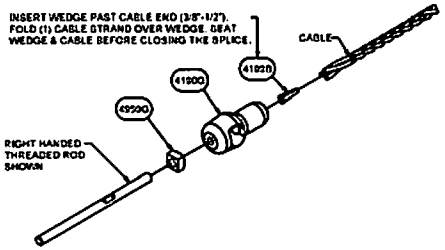
PARTS LIST - 4099G			
QTY	PART No	TITLE	Lbs / Each
1		CABLE TERMINAL - THREADED	1.78
1		CABLE TERMINAL	1.52
1		ROD - THREADED	-0.00
2	41088	3/4" CABLE WEDGE (3 x 7)	0.08



ASSEMBLY - 1" CABLE FIELD SPLICE - 5909G

(5909G SHOWN 5910G SIMILAR)

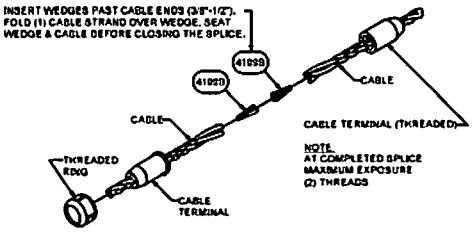
PARTS LIST - 5909G			
QTY	PART No	TITLE	Lbs / Each
1	3027G	1" CABLE END CASTING	0.56
1	3537G	1" STUD FLATTENED - L.H.T.	2.88
1	3508G	1" HEAVY HEX NUT (A563 DH)	0.47
1	41099B	3/4" CABLE WEDGE (3 x 7)	0.08



ASSEMBLY - 3/4" CABLE FIELD SPLICE - 5635G

(5635G SHOWN 5634G SIMILAR)

PARTS LIST - 5635G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - R.H.T.	1.82
1	41800	CABLE END CASTING	3.76
1	41883B	3/4" CABLE WEDGE (3 x 7)	0.08
1	4259G	3/4" HEAVY SQUARE NUT (A563)	0.26

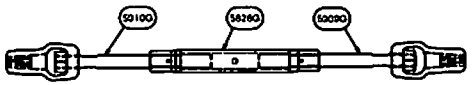


ASSEMBLY - TORPEDO CABLE SPLICE 4099G

CASS TEMPERATURE & TENSION CHART (NEAREST 100 LBF)		
FAHRENHEIT DEGREES	STD CABLE LBF/FORCE	PRE-STRETCHED LBF/FORCE
<= -15	8400	7500
-10	8300	7400
-5	8400	7100
0	8200	7000
5	8000	6800
10	7800	6600
15	7600	6400
20	7400	6300
25	7200	6100
30	7000	6000
35	6800	5800
40	6600	5600
45	6400	5500
50	6200	5300
55	6000	5100
60	5800	5000
65	5600	4800
70	5400	4600
75	5200	4500
80	5000	4300
85	4800	4100
90	4600	4000
95	4400	3800
100	4200	3600
105	4000	3500
110	3800	3300
115	3600	3100
120	3400	3000
125	3200	2800
130	3000	2700
135	2900	2500
140	2700	2400
145	2500	2200
150	2400	2100
160	2200	1900
170	2000	1800
180	1800	1700
190	1600	1500
200	1400	1300

ALLOWABLE DEVIATION FROM CHART IN TANGENT SECTIONS +800 -200 POUNDS/FORCE.

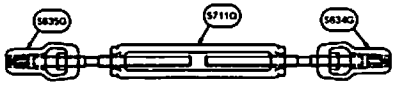
CABLE TENSION READINGS ARE TYPICALLY HIGHER IN CURVED CABLE SECTIONS.



1" CABLE SPLICE - 5633G

(CLOSED BODY STYLE)

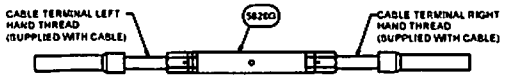
PARTS LIST - 5633G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	5626G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81
1	5009G	2	1" STUD ASSEMBLY L.H.T.	3.88
1	5010G	3	1" STUD ASSEMBLY R.H.T.	3.88



3/4" CABLE SPLICE - 5698G

(OPEN BODY STYLE)

PARTS LIST - 5698G			
QTY	PART No	TITLE	Lbs / Each
1	5634G	3/4" STUD ASSEMBLY L.H.T.	5.74
1	5635G	3/4" STUD ASSEMBLY R.H.T.	5.74
1	5711G	3/4" TURNBUCKLE OPEN BODY STYLE	10.66



1" TURNBUCKLE - 5626G

(CLOSED BODY STYLE)

PARTS LIST - 5626G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	5626G	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81

NOTE.

1. TURNBUCKLES SHALL BE INSTALLED WITH A MINIMUM OF 1-1/2" THREAD ENGAGEMENT. TO ALLOW FOR MAINTENANCE/REPAIR ADJUSTMENTS AT A LATER DATE, TRINITY SUGGESTS INSTALLER UTILIZE NO MORE THAN 4" THREAD ENGAGEMENT.

2. WHEN CUTTING CABLE LENGTHS IN THE FIELD FROM CABLE REELS, IT MAY BE PERMISSIBLE TO UTILIZE A CABLE TORPEDO SPLICE (4099G) BETWEEN TURNBUCKLES. DO NOT USE FOR CABLE LENGTH SHORTER THAN 100'. PLEASE CONTACT TRINITY. CONSULT TRINITY'S MANUAL OR SPECIFYING AGENCY TO DETERMINE IF APPROPRIATE FOR SPECIFIC APPLICATION.

CASS-TL4
3-CABLE GUARDRAIL SAFETY SYSTEM

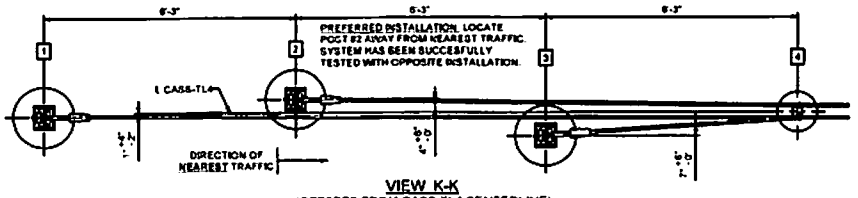
TRINITY HIGHWAY PRODUCTS, LLC

SS-740

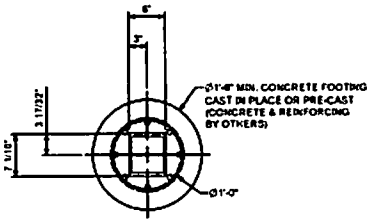
PROJ CASS-TL4

SHT 3 OF 5

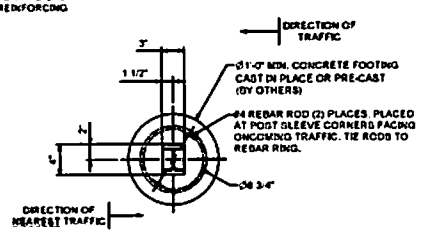
REV 2



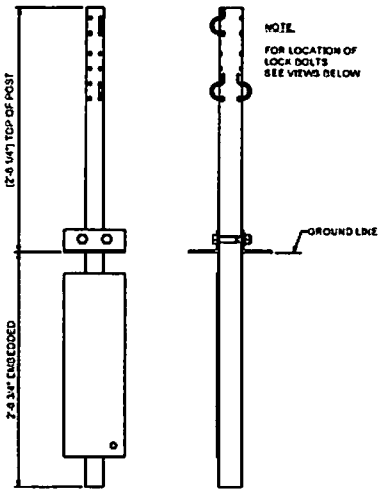
VIEW K-K
(OFFSETS FROM CASS-TL4 CENTERLINE)



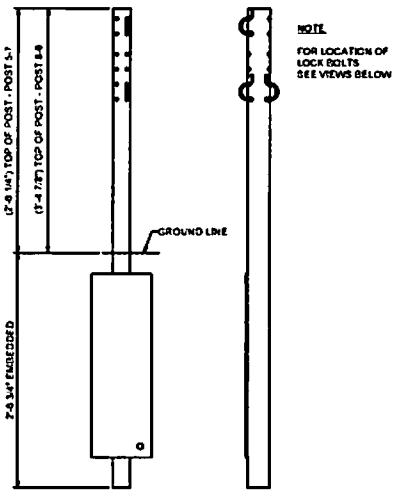
SECTION L-L



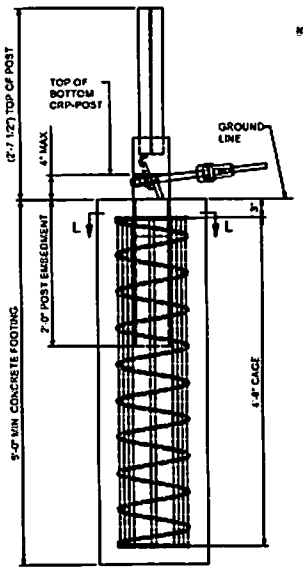
SECTION M-M



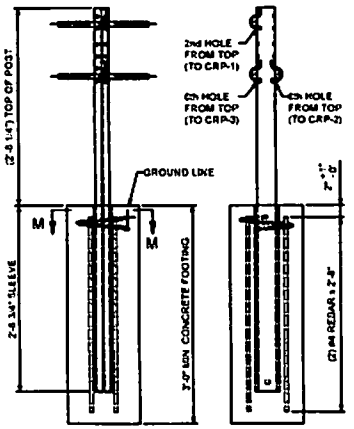
CCT TERMINAL POST
(CCT POST 4)
(POST OPTION 2 SHOWN)



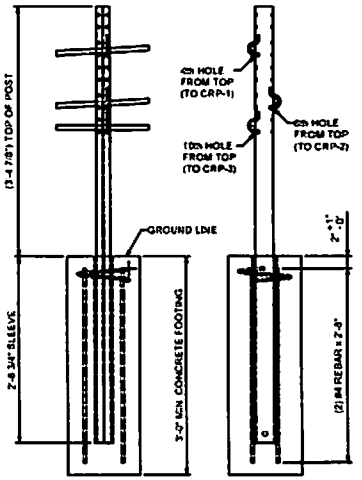
CCT TERMINAL POST
(CCT - POST 5 - 9)
(POST OPTION #2 SHOWN)



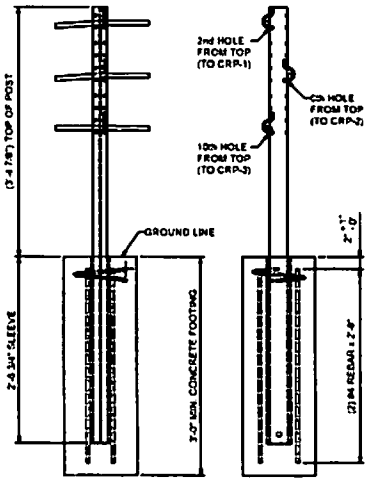
VIEW A-A
(CABLE RELEASE POST 1-3)



VIEW B-B
(POST 4-7)
(POST OPTION #1 SHOWN)



VIEW C-C
(POST 8)
(POST OPTION #1 SHOWN)



VIEW D-D
(POST 9)
(POST OPTION #1 SHOWN)

CASS-TL4 3-CABLE GUARDRAIL SAFETY SYSTEM	
TRINITY HIGHWAY PRODUCTS, LLC	DWG NO SS-740 REV 2
PROJ CASS-TL4	SHT 4 OF 5 SIZE D
DSGN E.A.S. 4/21/2009	CHK G.N. 4/21/2009

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - IN CONCRETE			
QTY	PART No.	TITLE	Lbs / Each
2	32400G	5/16 FLAT WASHER (F844)	0.00
2	32450G	5/16 HEX NUT (A563)	0.01
2	42110G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	58518E	REFLECTOR - MEDIAN - YELLOW	0.10
1	333000G	CASS CABLE BRACKET	1.82
1	339168E	REINFORCING CAGE - CRP POST	68.07
1	339364A	CRP - LOWER POST	51.85
1	339395A	CRP - UPPER POST	31.57

PARTS LIST - CCT TERMINAL POST No. 4-7 - IN CONCRETE			
QTY	PART No.	TITLE	Lbs / Each
3	32450G	5/16 DIA. HEX NUT (A563)	0.01
3	58259G	CABLE LOCK BOLT (A307)	0.12
1	58338E	CONCRETE REINFORCING RING	0.88
1	58339E	SLEEVE COVER - S3 ANCHOR POST	0.11
2	58188E	#4 REBAR - TERMINAL POST	1.76
1	333090G	SLEEVE - TERMINAL LINK POST	13.80
1	333100G	350-TL3 TERMINAL POST	76.63

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - DRIVEN			
QTY	PART No.	TITLE	Lbs / Each
2	32400G	5/16 FLAT WASHER (F844)	0.00
2	32450G	5/16 HEX NUT (A563)	0.01
2	42110G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	58518E	REFLECTOR - MEDIAN - YELLOW	0.10
1	333000G	CASS CABLE BRACKET	1.82
1	339395A	CRP - UPPER POST	31.57
1	339364A	CRP - LOWER POST	178.57

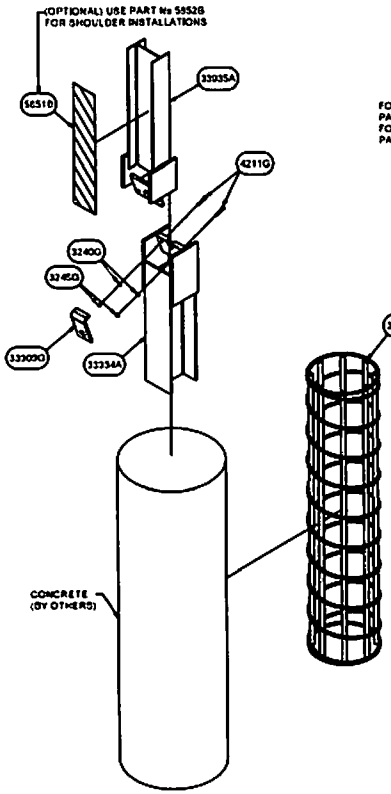
PARTS LIST - CCT TERMINAL POST No. 4 - WITH SOIL PLATE			
QTY	PART No.	TITLE	Lbs / Each
3	32450G	5/16 DIA. HEX NUT (A563)	0.01
2	37010G	3/4 FLAT WASHER (F436)	0.01
2	37110G	3/4 HEX NUT (A194 2H)	0.02
2	47790G	3/4 HEX BOLT x 4 1/2" (A325)	0.09
3	58259G	CABLE LOCK BOLT (A307)	0.12
2	90210G	BEARING ANGLE (A36)	3.81
1	333093A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

PARTS LIST - CCT TERMINAL POST No. 5-7 - WITH SOIL PLATE			
QTY	PART No.	TITLE	Lbs / Each
3	32450G	5/16 DIA. HEX NUT (A563)	0.01
3	58259G	CABLE LOCK BOLT (A307)	0.12
1	333093A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

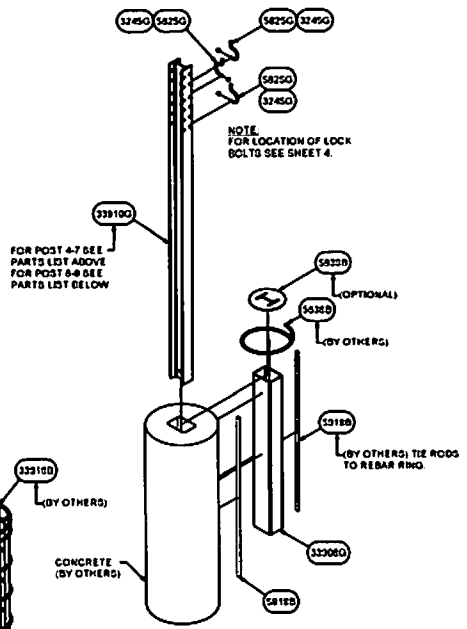
PARTS LIST - CCT TERMINAL POST No. 8-9 - WITH SOIL PLATE			
QTY	PART No.	TITLE	Lbs / Each
3	32450G	5/16 DIA. HEX NUT (A563)	0.01
3	58259G	CABLE LOCK BOLT (A307)	0.12
1	333093A	350-TL4 TERMINAL POST w/ SOIL PLATE	45.02

ALL HARDWARE FOR THIS CCT CAN BE ORDERED AS ONE PACKAGE.

PART No. 337703 (1) SET OF TERMINAL HARDWARE FOR 1" CABLE FITTINGS
PART No. 337486 (2) SETS OF TERMINAL HARDWARE FOR 1" CABLE FITTINGS
PART No. 336470 (1) SET OF TERMINAL HARDWARE FOR 3/4" CABLE FITTINGS
PART No. 337489 (2) SETS OF TERMINAL HARDWARE FOR 3/4" CABLE FITTINGS

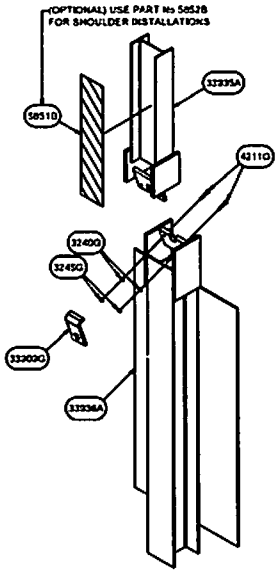


CRP TERMINAL POST - IN CONCRETE
(CCT TERMINAL POST 1 - 3)
(POST OPTION #1 SHOWN)

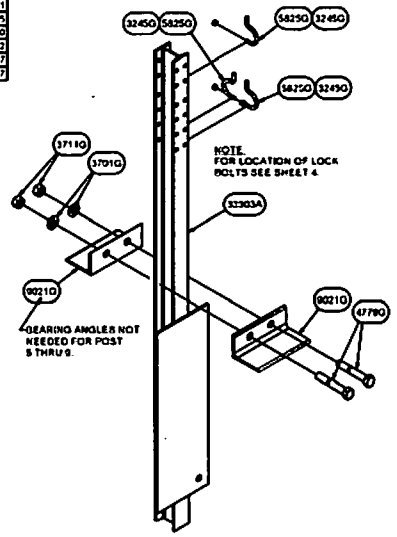


TERMINAL LINE POST - IN CONCRETE
(CCT TERMINAL POST 4 - 7)
(POST OPTION #1 SHOWN)

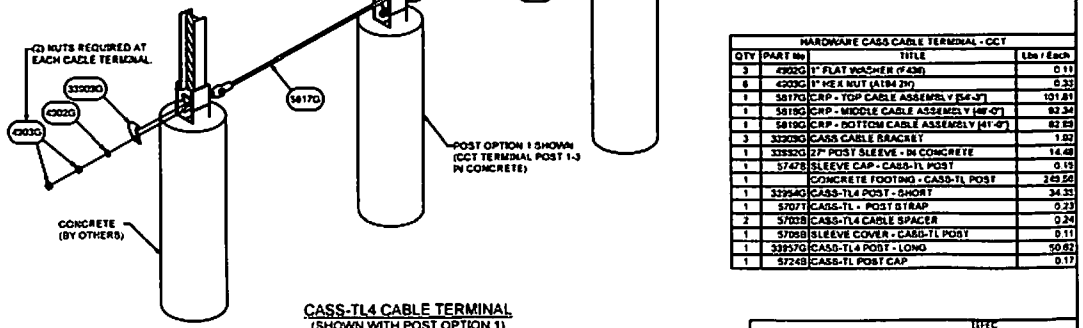
PARTS LIST - CCT TERMINAL POST No. 8-9 - IN CONCRETE			
QTY	PART No.	TITLE	Lbs / Each
3	32450G	5/16 DIA. HEX NUT (A563)	0.01
3	58259G	CABLE LOCK BOLT (A307)	0.12
1	58338E	CONCRETE REINFORCING RING	0.88
1	58339E	SLEEVE COVER - S3 ANCHOR POST	0.11
2	58188E	#4 REBAR - TERMINAL POST	1.76
1	333090G	SLEEVE - TERMINAL LINK POST	13.80
1	333095G	350-TL4 TERMINAL POST	32.43



CRP TERMINAL POST - DRIVEN
(CCT TERMINAL POST 1 - 3)
(POST OPTION #2 SHOWN)



TERMINAL LINE POST - WITH SOIL PLATE
(CCT TERMINAL POST - 4)
(POST OPTION #2 SHOWN)



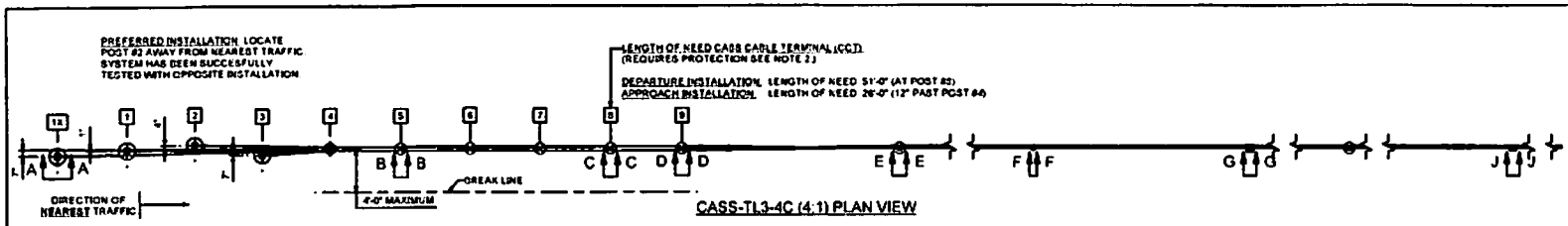
CASS-TL4 CABLE TERMINAL
(SHOWN WITH POST OPTION 1)

HARDWARE CASS CABLE TERMINAL - CCT			
QTY	PART No.	TITLE	Lbs / Each
3	49020G	1" FLAT WASHER (F436)	0.11
6	43020G	1" HEX NUT (A194 2H)	0.33
1	58170G	CRP - TOP CABLE ASSEMBLY (54'-3")	101.81
1	58180G	CRP - MIDDLE CABLE ASSEMBLY (48'-0")	92.34
1	58190G	CRP - BOTTOM CABLE ASSEMBLY (41'-9")	82.55
3	333090G	CASS CABLE BRACKET	1.82
1	335520G	27" POST SLEEVE - IN CONCRETE	14.48
1	57478E	SLEEVE CAP - CASS-TL POST	0.15
1		CONCRETE FOOTING - CASS-TL POST	245.50
1	339540G	CASS-TL4 POST - SHORT	34.35
1	57077E	CASS-TL - POST STRAP	0.23
2	57028E	CASS-TL4 CABLE SPACER	0.24
1	57058E	SLEEVE COVER - CASS-TL POST	0.11
1	339537G	CASS-TL4 POST - LONG	50.62
1	57248E	CASS-TL POST CAP	0.17

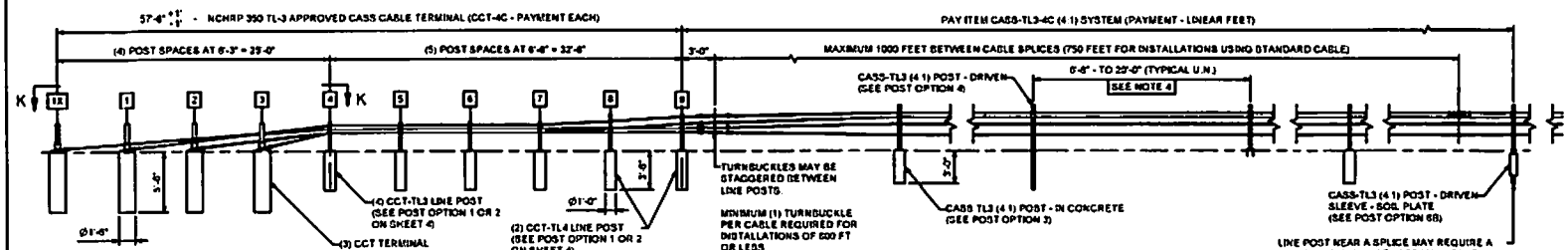
CASS-TL4
3-CABLE GUARDRAIL SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

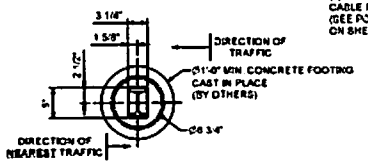
SPEC		
ENGINEER		
DRAWN	E.A.S.	6/21/2009
CHK	G.N.	6/21/2009
APP'D		
DWG NO	SS-740	REV 2
PROJ	CASS-TL4	



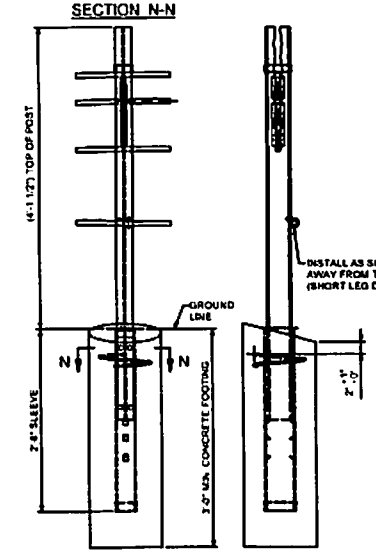
CASS-TL3-4C (4:1) PLAN VIEW



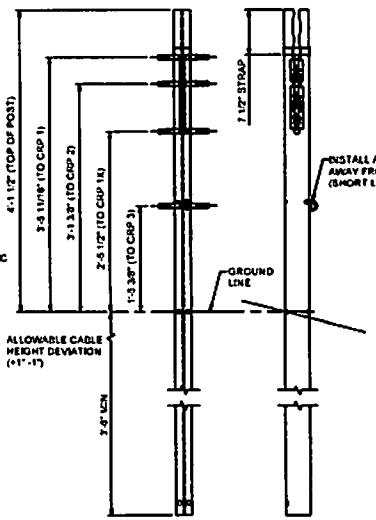
CASS-TL3-4C (4:1) ELEVATION
(TYPICAL LAY-OUT)



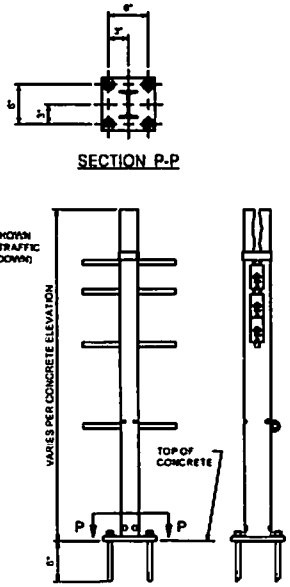
SECTION N-N



SECTION E-E
(CASS-TL3 (4:1) POST - IN CONCRETE)
(POST OPTION #3)

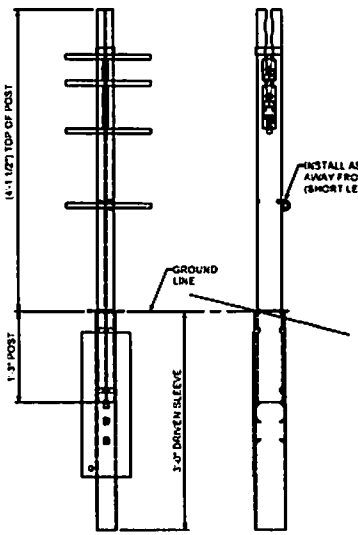


SECTION F-F
(CASS-TL3 (4:1) POST- DRIVEN
POST OPTION #4)



SECTION G-G
(CASS-TL3 (4:1) POST- BASE-PLATED
POST OPTION #5)

SECTION P-P



SECTION J-J
(CASS-TL3 (4:1) POST- DRIVEN SLEEVE - SOIL PLATE
POST OPTION #6B)

NOTES:

1. CASS-TL3 (4:1) HAS BEEN SUCCESSFULLY TESTED TO NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 TEST LEVEL 3 (NCHRP 350 TL3) AND ACCEPTED BY FHWA FOR VARIOUS POST SPACINGS. CASS CABLE TERMINAL (CCT) HAS BEEN SUCCESSFULLY TESTED AND APPROVED TO NCHRP 350 TL3.

2. AN NCHRP 350 TL3 APPROVED TERMINAL (CCT) OR CASS-TL3 4-CABLE (4:1) TRANSITION (VARIOUS) SHALL BE USED ON APPROACH AND DEPARTURE TERMINATIONS WHEN CASS-TL3 4-CABLE (4:1) IS INSTALLED ON THE NATIONAL HIGHWAY SYSTEM (NHS). IF THE TERMINATION POINT IS LOCATED OUTSIDE THE CLEAR ZONE AND/OR PROTECTED BY OTHER MEANS (CRASH/ENERGY BARRIER TERMINALS, ETC.), A NON-NCHRP 350 TL3 ANCHOR (CCA) MAY BE USED ON APPROACH AND DEPARTURE TERMINATIONS.

3. CASS-TL3 4-CABLE (4:1) SHALL BE INSTALLED ON SHOULDERS OR MEDIANS WITH SLOPES OF 4:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC. THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE. CASS-TL3 4-CABLE (4:1) MUST BE INSTALLED NO MORE THAN FOUR (4) FEET FROM THE BREAK POINT. GRADING OF SITE AND/OR APPROPRIATE FILL MATERIALS MAY BE REQUIRED. THE DESIGNER/INSTALLER SHALL "FLATTEN" OR "ROUND" VARIOUS TOPOGRAPHICAL INCONSISTENCIES THAT COULD INTERFERE WITH THE ABILITY OF THE INSTALLER TO CONSISTENTLY MAINTAIN THE DESIGN HEIGHT (IN RELATION TO THE TERRAIN) OF THE CABLES. PLEASE CONSULT THE CASS MANUAL(S) FOR INSTALLATIONS IN "DITCH SECTIONS".

4. CASS-TL3 4-CABLE (4:1) POST SPACING MAY BE MODIFIED TO AVOID OBSTACLES THAT CONFLICT WITH THE INSTALLATION OF CASS-TL3 4-CABLE (4:1) LINE POSTS. NO POST SPACE CAN EXCEED THE MAXIMUM POST SPACE LIMIT OF 20'-0", OR MAXIMUM POST SPACING ALLOWED BY PROJECT ENGINEER - WHICHEVER IS LESS. REDUCING OR INCREASING POST SPACING AFFECTS DEFLECTION. CASS-TL3 4-CABLE (4:1) MAY BE LATERALLY TRANSFERRED AT A RATE NOT TO EXCEED 30:1.

5. POST FOUNDATIONS MAY BE DRILLED THROUGH EXISTING PAVEMENT. TRINITY MAY ALLOW THE USE OF ALTERNATE LINE POST FOOTINGS IF SYSTEM IS INSTALLED WITH AN ACCEPTABLE MOWSTRIP APPLICATION - PLEASE CONTACT TRINITY.

6. FOR AESTHETIC PURPOSES TRINITY RECOMMENDS ALL SLEEVES, DRIVEN POSTS, AND LOWER CABLE RELEASE POSTS TO BE INSTALLED REASONABLY PLUMB (APPROXIMATELY 1/8" PER FOOT).

7. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3 000 P.S.I. PRIOR TO TENSIONING THE SYSTEM. TRINITY RECOMMENDS THE CONCRETE TO BE VIBRATED IN ACCORDANCE WITH THE LATEST APPLICABLE AGENCY SPECIFICATION.

8. CASS-TL3 4-CABLE (4:1) SHALL BE INSTALLED IN WELL-GRADED, COMPACTED NCHRP REPORT 350 STANDARD SOILS. IF SOIL DOESN'T MEET THIS CLASSIFICATION IF SOLID ROCK/CONCRETE IS ENCOUNTERED BELOW GRADE OR IF SOIL IS SUSCEPTABLE TO SEVERE FREEZE/THAW CYCLES, PLEASE CONTACT TRINITY ABOUT ALTERNATE FOOTING DESIGN(S). TRINITY SUGGESTS THE USE OF "MOW STRIPS" FOR EROSION PREVENTION AND EASE OF MAINTENANCE / INSTALLATION.

9. PLEASE SEE SPECIFYING AGENCY (OR MUTCD) FOR PROPER "BARRIER" DELINEATION.

10. PLEASE CONTACT TRINITY OR CONSULT THE DESIGN, INSTALLATION, OR REPAIR MANUAL(S) FOR ADDITIONAL INFORMATION.

TRINITY HIGHWAY PRODUCTS, LLC. EMAIL
2525 STEMMONS FREEWAY PRODUCT.INFO@TRIN.NET
DALLAS, TX 75207 PHONE (800) 644-7976

No	CASS-TL3 4:1 POST OPTIONS
1	CCT - TERMINAL POST 1 - 0 - IN CONCRETE
2	CCT - TERMINAL POST 1 - 0 - WITH SOIL PLATE
3	CASS-TL3 4:1 POST - IN CONCRETE
4	CASS-TL3 4:1 POST - DRIVEN
5	CASS-TL3 4:1 POST - BASE-PLATED
6	CASS-TL3 4:1 POST - IN DRIVEN SLEEVE
	6B - DRIVEN SLEEVE - WITH SOIL PLATE

CASS-TL3 ON (4:1 SLOPE)
4-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

SPEC
DRW EAS 9/9/2008
CHK DN 9/9/2008
SHT 1 OF 6
DWG SS730-4 1-4C
REV 1

PROJ TL3_S4_4T1_4C

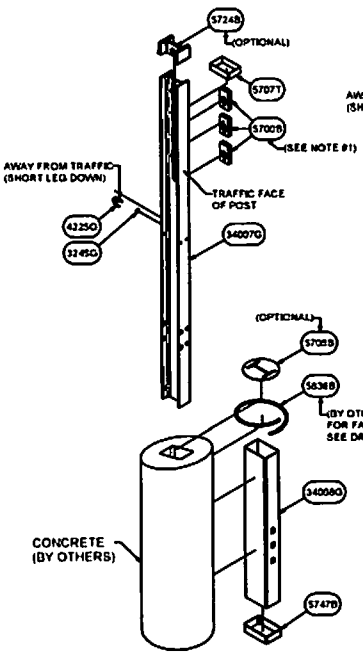
PARTS LIST - CASS POST IN CONCRETE - POST OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	3245G	5/16 DIA. HEX NUT (A563)	0.01
1	4225G	CABLE LOCK BOLT (A307)	0.09
3	5700B	CASS & TL3 CABLE SPACER	0.11
1	5707T	CASS-TL - POST STRAP	0.23
1	5708B	SLEEVE COVER - CASS-TL POST	0.11
1	5724B	CASS-TL POST CAP	0.17
1	5747B	SLEEVE CAP - CASS-TL POST	0.15
1	5838B	CONCRETE REINFORCING RING	0.88
1	340070	CASS-TL3 (4:1) POST - SHORT	39.88
1	34008G	30" POST SLEEVE - IN CONCRETE	16.06

PARTS LIST - CASS POST - DRIVEN - OPTION #4			
QTY	PART No	TITLE	Lbs / Each
1	3245G	5/16 HEX NUT (A563)	0.01
1	4225G	CABLE LOCK BOLT (A307)	0.09
3	5700B	CASS & TL3 CABLE SPACER	0.11
1	5707T	CASS-TL - POST STRAP	0.23
1	5724B	CASS-TL POST CAP	0.17
1	34012G	CASS-TL3 (4:1) POST - LONG	57.32

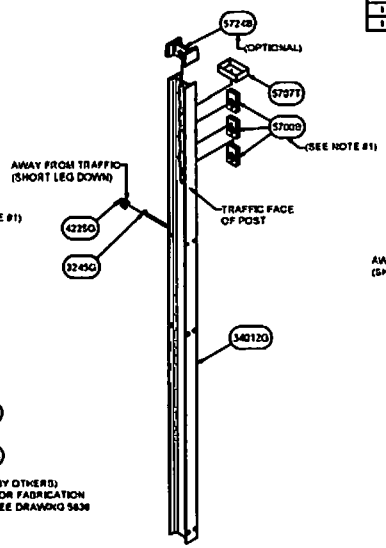
PARTS LIST - CASS POST BARE-PLATED - OPTION #5			
QTY	PART No	TITLE	Lbs / Each
1	3245G	5/16 DIA. HEX NUT (A563)	0.01
4	3300G	5/8" PLAIN WASHER - TYPE B - R - (F844)	0.06
4	3310G	5/8 LOCK WASHER	0.00
4	3361G	5/8" HEX NUT (A563 Gr DH)	0.01
1	4225G	CABLE LOCK BOLT (A307)	0.09
4	5275G	5/8 x 7" 1/2" MAS SUPER ROD CHSL PT (A193 B7)	0.62
0.6	5448G	HIT HY 150 MAX EPOXY (HILTI - 00283548)	
5	5700B	CASS & TL3 CABLE SPACER	0.11
1	5707T	CASS-TL - POST STRAP	0.23
1	5724B	CASS-TL POST CAP	0.17
1	34013A	POST-TL3 (4:1) - BASE PLATED	41.09

PARTS LIST - CASS POST - IN DRIVEN SLEEVE - POST OPTION #6B			
QTY	PART No	TITLE	Lbs / Each
1	3245G	5/16 HEX NUT (A563)	0.01
1	4225G	CABLE LOCK BOLT (A307)	0.09
3	5700B	CASS & TL3 CABLE SPACER	0.11
1	5707T	CASS-TL - POST STRAP	0.23
1	5708B	SLEEVE COVER - CASS-TL POST	0.11
1	5724B	CASS-TL POST CAP	0.17
1	34001A	30.75" CASS-TL3 POST SLEEVE w/ SOIL PLATE	32.88
1	340070	CASS-TL3 (4:1) POST - SHORT	39.88

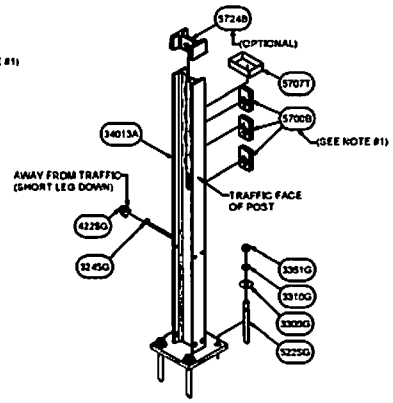
PARTS LIST - PRE-STRETCHED CABLE ASSEMBLIES						
QTY	PART No	TITLE	LENGTH	TERM-1	TERM-2	Lbs / Each
1	5817	CCT CABLE ASSEMBLY-TOP	54'-4"	H.H.Y.	L.H.Y.	54.3
1	5818	CCT CABLE ASSEMBLY-MID	49'-1"	H.H.Y.	L.H.Y.	52.3
1	5819	CCT CABLE ASSEMBLY-BOT	41'-10"	H.H.Y.	L.H.Y.	46.3
1	5847	CCA CABLE ASSEMBLY	29'-0"	H.H.Y.	L.H.Y.	30.8
1	5815	CABLE ANCHOR-INTERIOR	1300'	H.H.Y.	L.H.Y.	997.0
1	5753	CABLE FIELD SPLICE SECTION	1012'	H.H.Y.	NONE	950.0
1	5752	CABLE FIELD SPLICE SECTION	1000'	H.H.Y.	NONE	938.0
1	5750	CABLE FIELD SPLICE SECTION	975'	H.H.Y.	NONE	940.0
1	5797	CABLE FIELD SPLICE SECTION	950'	H.H.Y.	NONE	916.0
1	5796	CABLE FIELD SPLICE SECTION	925'	H.H.Y.	NONE	892.0
1	5795	CABLE FIELD SPLICE SECTION	900'	H.H.Y.	NONE	868.0
1	5794	CABLE FIELD SPLICE SECTION	875'	H.H.Y.	NONE	844.1
1	5793	CABLE FIELD SPLICE SECTION	850'	H.H.Y.	NONE	820.1
1	5792	CABLE FIELD SPLICE SECTION	825'	H.H.Y.	NONE	796.1
1	5791	CABLE FIELD SPLICE SECTION	800'	H.H.Y.	NONE	772.1
1	5790	CABLE FIELD SPLICE SECTION	775'	H.H.Y.	NONE	748.1
1	5789	CABLE FIELD SPLICE SECTION	750'	H.H.Y.	NONE	724.1
1	5788	CABLE FIELD SPLICE SECTION	725'	H.H.Y.	NONE	700.0
1	5787	CABLE FIELD SPLICE SECTION	700'	H.H.Y.	NONE	676.0
1	5786	CABLE FIELD SPLICE SECTION	675'	H.H.Y.	NONE	652.1
1	5785	CABLE FIELD SPLICE SECTION	650'	H.H.Y.	NONE	628.1
1	5784	CABLE FIELD SPLICE SECTION	625'	H.H.Y.	NONE	604.1
1	5783	CABLE FIELD SPLICE SECTION	600'	H.H.Y.	NONE	580.1
1	5782	CABLE FIELD SPLICE SECTION	575'	H.H.Y.	NONE	556.1
1	5781	CABLE FIELD SPLICE SECTION	550'	H.H.Y.	NONE	532.1
1	5780	CABLE FIELD SPLICE SECTION	525'	H.H.Y.	NONE	508.0
1	5779	CABLE FIELD SPLICE SECTION	500'	H.H.Y.	NONE	484.0
1	5778	CABLE FIELD SPLICE SECTION	475'	H.H.Y.	NONE	460.0
1	5777	CABLE FIELD SPLICE SECTION	450'	H.H.Y.	NONE	436.0
1	5776	CABLE FIELD SPLICE SECTION	425'	H.H.Y.	NONE	412.0
1	5775	CABLE FIELD SPLICE SECTION	400'	H.H.Y.	NONE	387.9
1	5768	CABLE FIELD SPLICE SECTION	375'	H.H.Y.	NONE	363.7
1	5767	CABLE FIELD SPLICE SECTION	350'	H.H.Y.	NONE	339.7
1	5766	CABLE FIELD SPLICE SECTION	325'	H.H.Y.	NONE	315.7
1	5765	CABLE FIELD SPLICE SECTION	300'	H.H.Y.	NONE	291.6
1	5764	CABLE FIELD SPLICE SECTION	275'	H.H.Y.	NONE	267.6
1	5763	CABLE FIELD SPLICE SECTION	250'	H.H.Y.	NONE	243.5
1	5762	CABLE FIELD SPLICE SECTION	225'	H.H.Y.	NONE	219.5
1	5761	CABLE FIELD SPLICE SECTION	200'	H.H.Y.	NONE	195.4
1	5760	CABLE FIELD SPLICE SECTION	175'	H.H.Y.	NONE	171.4
1	5759	CABLE FIELD SPLICE SECTION	150'	H.H.Y.	NONE	147.4
1	5758	CABLE FIELD SPLICE SECTION	125'	H.H.Y.	NONE	123.3
1	5757	CABLE FIELD SPLICE SECTION	100'	H.H.Y.	NONE	99.3
1	5756	CABLE FIELD SPLICE SECTION	75'	H.H.Y.	NONE	75.3
1	5755	CABLE FIELD SPLICE SECTION	50'	H.H.Y.	NONE	51.1
1	5754	CABLE FIELD SPLICE SECTION	25'	H.H.Y.	NONE	27.0
1	5840	CABLE FIELD REPAIR SECTION	9'	H.H.Y.	L.H.Y.	10.1



CASS-TL3-4C (4:1) POST - IN CONCRETE
(POST OPTION #3 - CAST IN PLACE)



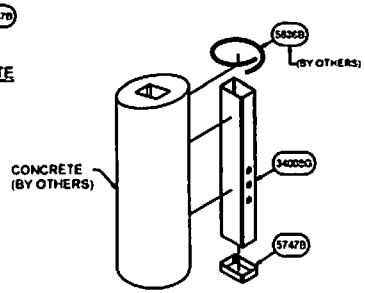
CASS-TL3-4C (4:1) POST - DRIVEN
(POST OPTION #4 - DRIVEN)



CASS-TL3-4C (4:1) POST - BASE-PLATED
(POST OPTION #5 - BASE-PLATED)

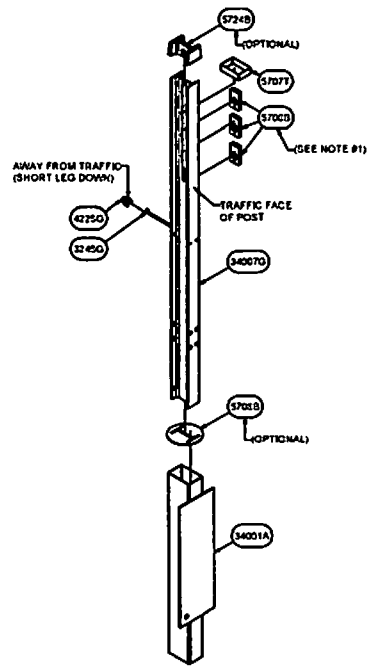
ANCHOR OPTIONS.
MIN. EMBEDMENT IN 3,000 P.S.I. CONCRETE = 6".
MIN. PULLOUT STRENGTH = 10,000 lbs.

1. 5/8 ADHESIVE ANCHORING SYSTEM.
(4 EACH 3300G 3310G 3361G & 5275G) & 0.6 EACH 5448G
2. 5/8 x 8" ALL THREADED ROD (A449) WITH EPOXY.
(4 EACH 3300G 3310G 3361G & 5772G) & 0.6 EACH 5448G
3. 5/8 MECHANICAL ANCHOR. (BY OTHERS)



CONCRETE FOOTING ASSEMBLY
(POST OPTION #3 - PRE-CAST OPTION)

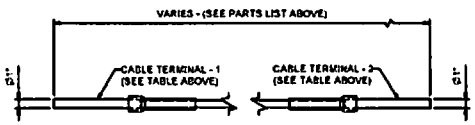
PARTS LIST - PRE-CAST CONCRETE FOOTING - OPTION #3			
QTY	PART No	TITLE	Lbs / Each
1	5747B	SLEEVE CAP - CASS-TL POST	0.15
1	5838B	CONCRETE REINFORCING RING	0.88
1	34008G	30" POST SLEEVE - IN CONCRETE	16.06



CASS-TL3-4C (4:1) POST - IN DRIVEN SLEEVE
(POST OPTION #6B - DRIVEN SLEEVE - SOIL PLATE)

NOTE.

FOR THE STANDARD FIELD SPLICE SECTIONS ABOVE, SUPPLY (1) RIGHT HAND THREADED STUD ASSEMBLY 5910G EACH.



PRE-STRETCHED CABLE ASSEMBLY

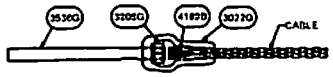
NOTES.

1. IN LIEU OF BLACK SPACER 5700B SUPPLY YELLOW REFLECTIVE SPACER 5701B OR WHITE REFLECTIVE SPACER 5702 (AS REQUIRED PER PROJECT PLANS)
2. IF INTERFERENCE OCCURS BETWEEN THE CABLE SPLICE AND CASS-TL3 POST SUPPLY A SPLICE INTERFERENCE POST AND SUPPORT THE TURNBUCKLE ASSEMBLY TO THE CASS-TL3 POST BY USE OF A MODIFIED STRAP (5707T) AND 5/16" HARDWARE (4211G BOLT, 3245G NUT). CONTACT TRINITY FOR DETAILS. LONG SPLICE POST 340410 IN LIEU OF LONG CASS-TL3 (4:1) POST 340120 SHORT SPLICE POST 340400 IN LIEU OF SHORT CASS-TL3 (4:1) POST 340070
3. IF REQUIRED PER PROJECT PLANS SUPPLY:
CABLE PULLING TOOL 5850B
CABLE TENSION METER 5878B
CABLE THERMOMETER 5702B

CASS-TL3 ON (4:1 SLOPE)
4-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

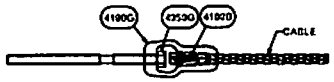
SPEC
DESIGNED BY
DRAWN T A B 8/8/2008
CHK D N 8/8/2008
SHT 1 OF 5 SIZE D
JOB NO SS730-4 1-4C REV 1
PROJ TL3_S4_4T1_4C



1" CABLE FIELD SPLICE - 5909G & 5910G

(5910G SHOWN, 5909G SIMILAR)

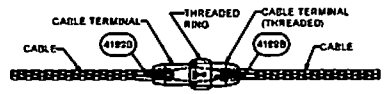
PARTS LIST - 5910G			
QTY	PART No	TITLE	Lbs / Each
1	30230	1" CABLE END CASTING	0.56
1	35386	1" STUD FLATTENED - R.H.T.	2.86
1	35080	1" HEAVY HEX NUT (A563 DH)	0.47
1	41896	3/4" CABLE WEDGE (3 x 7)	0.08



3/4" CABLE FIELD SPLICE - 5634G & 5635G

(5634G SHOWN, 5635G SIMILAR)

PARTS LIST - 5634G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - L.H.T.	1.62
1	41900	CABLE END CASTING	3.78
1	41892	3/4" CABLE WEDGE (3 x 7)	0.08
1	49536	3/4" HEAVY SQUARE NUT (A563)	0.26



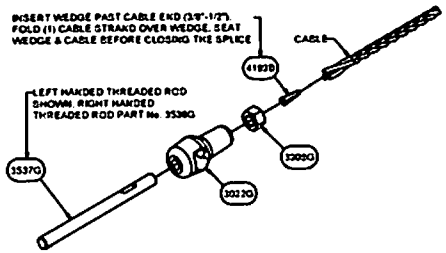
TORPEDO CABLE SPLICE - 4099G

PARTS LIST - 4099G			
QTY	PART No	TITLE	Lbs / Each
1		CABLE TERMINAL - THREADED	1.78
1		CABLE TERMINAL	1.53
1		RING - THREADED	-0.08
2	41928	3/4" CABLE WEDGE (3 x 7)	0.08

CASS TEMPERATURE & TENSION CHART (NEAREST 100 lb/F)		
FAHRENHEIT DEGREES	STD CABLE LB/FORCE	PRE-STRETCHED LB/FORCE
<= -15	8800	7500
-10	8600	7300
-5	8400	7100
0	8200	7000
5	8000	6800
10	7800	6600
15	7600	6500
20	7400	6300
25	7200	6100
30	7000	6000
35	6800	5800
40	6600	5600
45	6400	5500
50	6200	5300
55	6000	5100
60	5800	5000
65	5600	4800
70	5400	4600
75	5200	4500
80	5000	4300
85	4800	4100
90	4600	4000
95	4400	3800
100	4200	3600
105	4000	3500
110	3800	3300
115	3600	3100
120	3400	3000
125	3200	2800
130	3000	2700
135	2800	2500
140	2700	2400
145	2500	2200
150	2400	2300
160	2200	2100
170	2000	1900
180	1800	1700
190	1600	1500
200	1400	1300

ALLOWABLE DEVIATION FROM CHART IN TANGENT SECTIONS. +600 -200 POUNDS/FORCE.

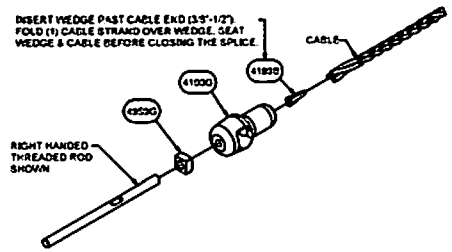
CABLE TENSION READINGS ARE TYPICALLY HIGHER IN CURVED CABLE SECTIONS.



ASSEMBLY - 1" CABLE FIELD SPLICE - 5909G

(5909G SHOWN, 5910G SIMILAR)

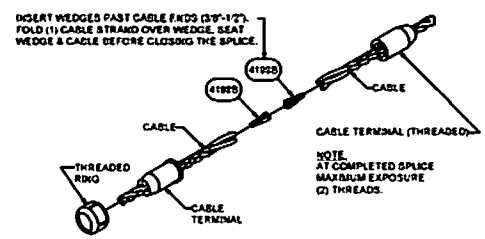
PARTS LIST - 5909G			
QTY	PART No	TITLE	Lbs / Each
1	30230	1" CABLE END CASTING	0.56
1	35370	1" STUD FLATTENED - L.H.T.	2.86
1	35080	1" HEAVY HEX NUT (A563 DH)	0.47
1	41928	3/4" CABLE WEDGE (3 x 7)	0.08



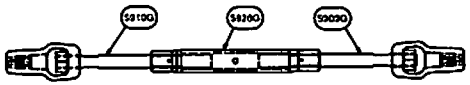
ASSEMBLY - 3/4" CABLE FIELD SPLICE - 5635G

(5635G SHOWN, 5634G SIMILAR)

PARTS LIST - 5635G			
QTY	PART No	TITLE	Lbs / Each
1		3/4" STUD FLATTENED - R.H.T.	1.62
1	41900	CABLE END CASTING	3.78
1	41892	3/4" CABLE WEDGE (3 x 7)	0.08
1	49536	3/4" HEAVY SQUARE NUT (A563)	0.26



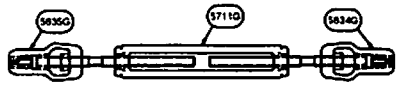
ASSEMBLY - TORPEDO CABLE SPLICE 4099G



1" CABLE SPLICE - 5633G

(CLOSED BODY STYLE)

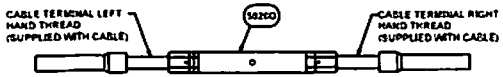
PARTS LIST - 5633G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	58260	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81
1	59090	2	1" STUD ASSEMBLY L.H.T.	3.95
1	59100	3	1" STUD ASSEMBLY R.H.T.	3.95



3/4" CABLE SPLICE - 5698G

(OPEN BODY STYLE)

PARTS LIST - 5698G			
QTY	PART No	TITLE	Lbs / Each
1	5634G	3/4" STUD ASSEMBLY L.H.T.	5.74
1	5635G	3/4" STUD ASSEMBLY R.H.T.	5.74
1	57110	3/4" TURNBUCKLE OPEN BODY STYLE	10.63



1" TURNBUCKLE - 5826G

(CLOSED BODY STYLE)

PARTS LIST - 5826G				
QTY	PART No	ITEM	TITLE	Lbs / Each
1	58260	1	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81

NOTE.

1. TURNBUCKLES SHALL BE INSTALLED WITH A MINIMUM OF 1-1/2" THREAD ENGAGEMENT. TO ALLOW FOR MAINTENANCE/REPAIR ADJUSTMENTS AT A LATER DATE, TRINITY SUGGESTS INSTALLER UTILIZE NO MORE THAN 4" THREAD ENGAGEMENT.

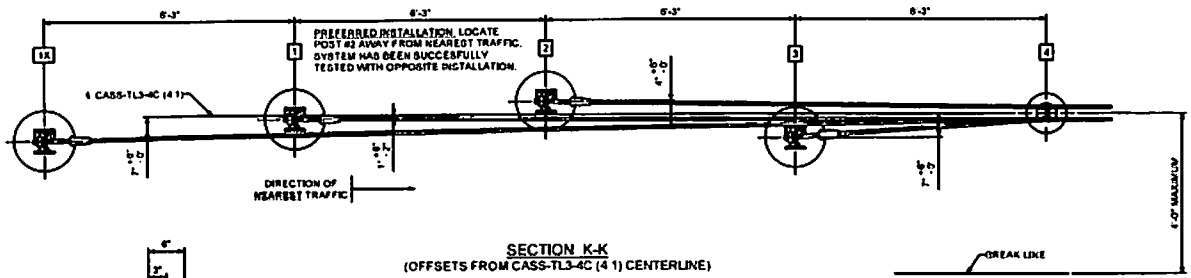
2. WHEN CUTTING CABLE LENGTHS IN THE FIELD FROM CABLE REELS, IT MAY BE PERMISSIBLE TO UTILIZE A CABLE TORPEDO SPLICE (4099G) BETWEEN TURNBUCKLES. DO NOT USE FOR CABLE LENGTH SHORTER THAN 100'. PLEASE CONTACT TRINITY, CONSULT TRINITY'S MANUAL OR SPECIFYING AGENCY TO DETERMINE IF APPROPRIATE FOR SPECIFIC APPLICATION.

PROJ TL3_54_4T1_4C

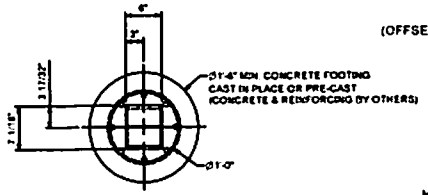
CASS-TL3 ON (4:1 SLOPE)
4-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

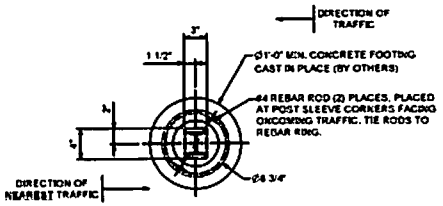
SPEC
SPECIFIED AT
DRN E.A.S 8/9/2005
CHK G.N 8/9/2005
SHT 3 OF 5 SCALE D
DWG NO SS730-4 1-4C REV 1



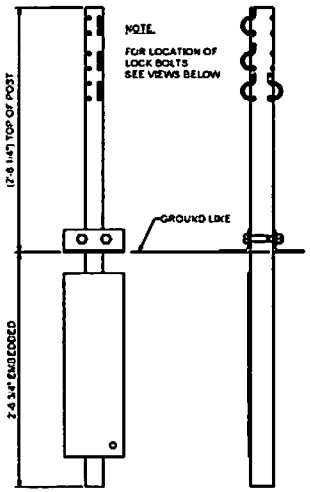
SECTION K-K
(OFFSETS FROM CASS-TL3-4C (4:1) CENTERLINE)



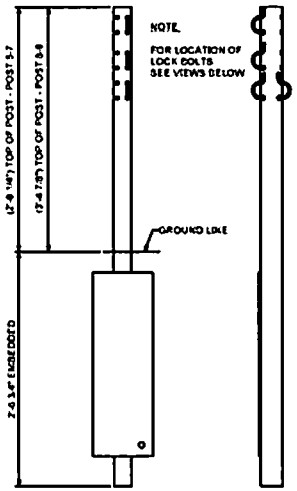
SECTION L-L



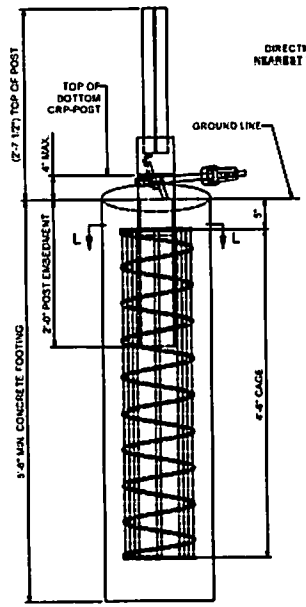
SECTION M-M



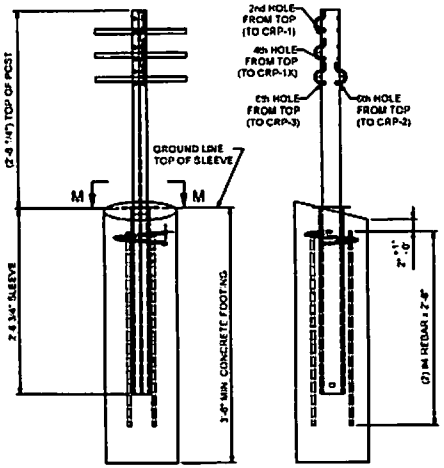
CCT TERMINAL POST
(CCT POST 4)
(POST OPTION 2 SHOWN)



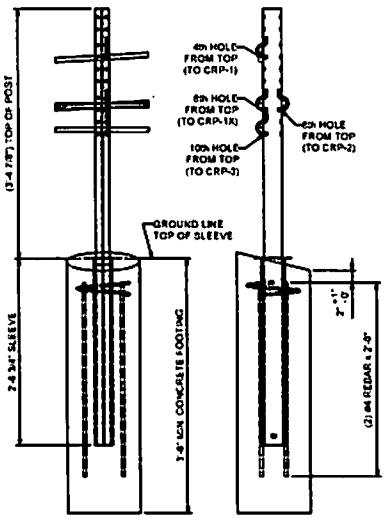
CCT TERMINAL POST
(CCT - POST 5 - 9)
(POST OPTION #2 SHOWN)



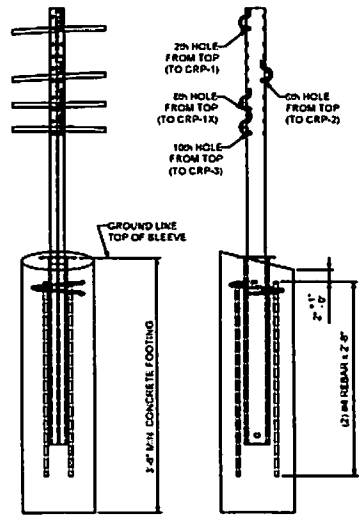
SECTION A-A
(CABLE RELEASE POST 1X-3)



SECTION B-B
(POST 4-7)
(POST OPTION #1 SHOWN)



SECTION C-C
(POST 8)
(POST OPTION #1 SHOWN)



SECTION D-D
(POST 9)
(POST OPTION #1 SHOWN)

CASS-TL3 ON (4:1 SLOPE)
4-CABLE GUARDRAIL
SAFETY SYSTEM

TRINITY HIGHWAY PRODUCTS, LLC

SHEET 4 OF 6
DRAWING NO. SS730-4 1-4C
REV 1
PROJ TL3_64_411_4C

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
2	3240G	5/16 FLAT WASHER (F844)	0.00
2	3245G	5/16 HEX NUT (A563)	0.01
2	4211G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	5851B	REFLECTOR - MEDIAN - YELLOW	0.10
1	33909G	CASS CABLE BRACKET	1.82
1	33916B	REINFORCING CAGE - CRP POST	68.07
1	33334A	CRP - LOWER POST	51.80
1	33935A	CRP - UPPER POST	31.57

ALL HARDWARE FOR THE CCT CAN BE ORDERED AS ONE PACKAGE.

PART No. 37880 (1) SET OF TERMINAL HARDWARE FOR 1" CABLE FITTINGS
PART No. 37880 (1) SET OF TERMINAL HARDWARE FOR 3/4" CABLE FITTINGS

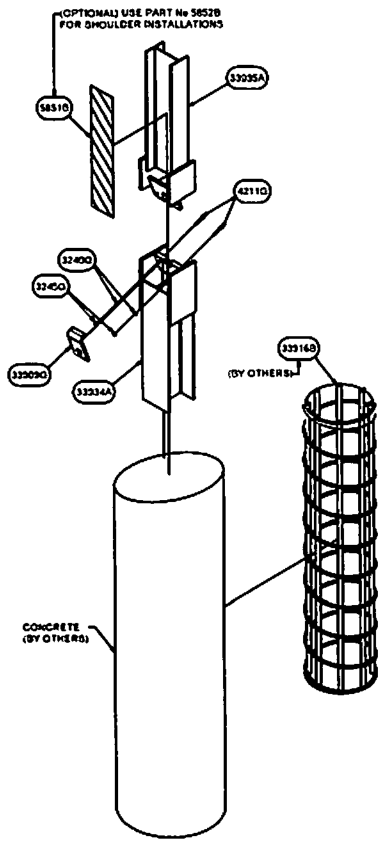
PARTS LIST - CCT TERMINAL POST No. 4-7 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
4	3245G	5/16 DIA. HEX NUT (A563)	0.01
4	5825G	CABLE LOCK BOLT (A307)	0.12
1	5836B	CONCRETE REINFORCING RING	0.68
1	5833B	SLEEVE COVER - S3 ANCHOR POST	0.11
2	5918B	#4 REBAR - TERMINAL POST	1.78
1	33909G	SLEEVE - TERMINAL LINE POST	13.80
1	33910G	350-TL3 TERMINAL POST	28.83

PARTS LIST - CCT CABLE RELEASE POST No. 1-3 - DRIVEN			
QTY	PART No	TITLE	Lbs / Each
2	3240G	5/16 FLAT WASHER (F844)	0.00
2	3245G	5/16 HEX NUT (A563)	0.01
2	4211G	5/16 HEX BOLT x 1 3/4" (A307)	0.05
1	5851B	REFLECTOR - MEDIAN - YELLOW	0.10
1	33909G	CASS CABLE BRACKET	1.83
1	33935A	CRP - UPPER POST	31.57
1	33336A	CRP - LOWER POST	178.57

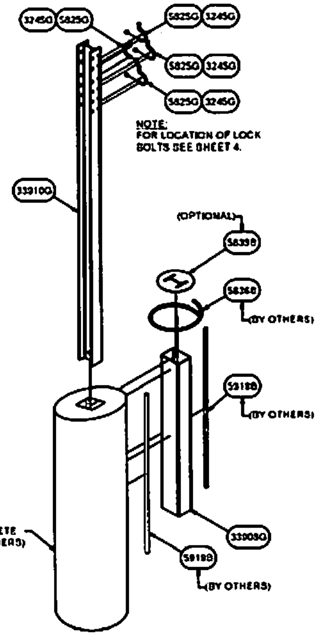
PARTS LIST - CCT TERMINAL POST No. 4 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
4	3245G	5/16 DIA. HEX NUT (A563)	0.01
2	3701G	3/4 FLAT WASHER (F436)	0.01
2	3711G	3/4 HEX NUT (A194 2H)	0.02
2	4770G	3/4 HEX BOLT x 4 1/2" (A325)	0.09
4	5825G	CABLE LOCK BOLT (A307)	0.12
2	9021G	BEARING ANGLE (A36)	3.81
1	33303A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

PARTS LIST - CCT TERMINAL POST No. 5-7 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
4	3245G	5/16 DIA. HEX NUT (A563)	0.01
4	5825G	CABLE LOCK BOLT (A307)	0.12
1	33303A	350-TL3 TERMINAL POST w/ SOIL PLATE	42.25

PARTS LIST - CCT TERMINAL POST No. 8-9 - WITH SOIL PLATE			
QTY	PART No	TITLE	Lbs / Each
4	3245G	5/16 DIA. HEX NUT (A563)	0.01
4	5825G	CABLE LOCK BOLT (A307)	0.12
1	33953A	350-TL4 TERMINAL POST w/ SOIL PLATE	48.02

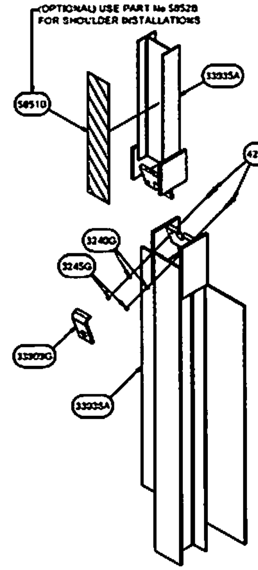


CCT - CABLE RELEASE POST - IN CONCRETE
(CCT TERMINAL POST 1 - 3)
(POST OPTION #1 SHOWN)

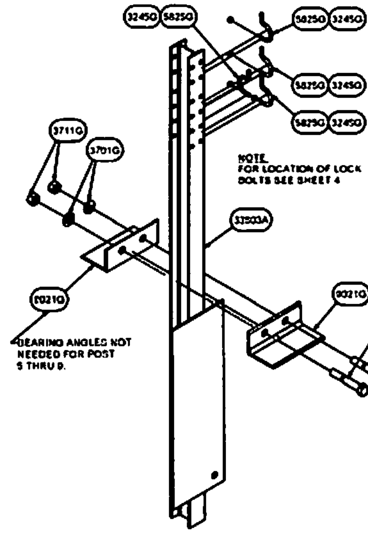


TERMINAL LINE POST - IN CONCRETE
(CCT TERMINAL POST 4 - 7)
(POST OPTION #1 SHOWN)

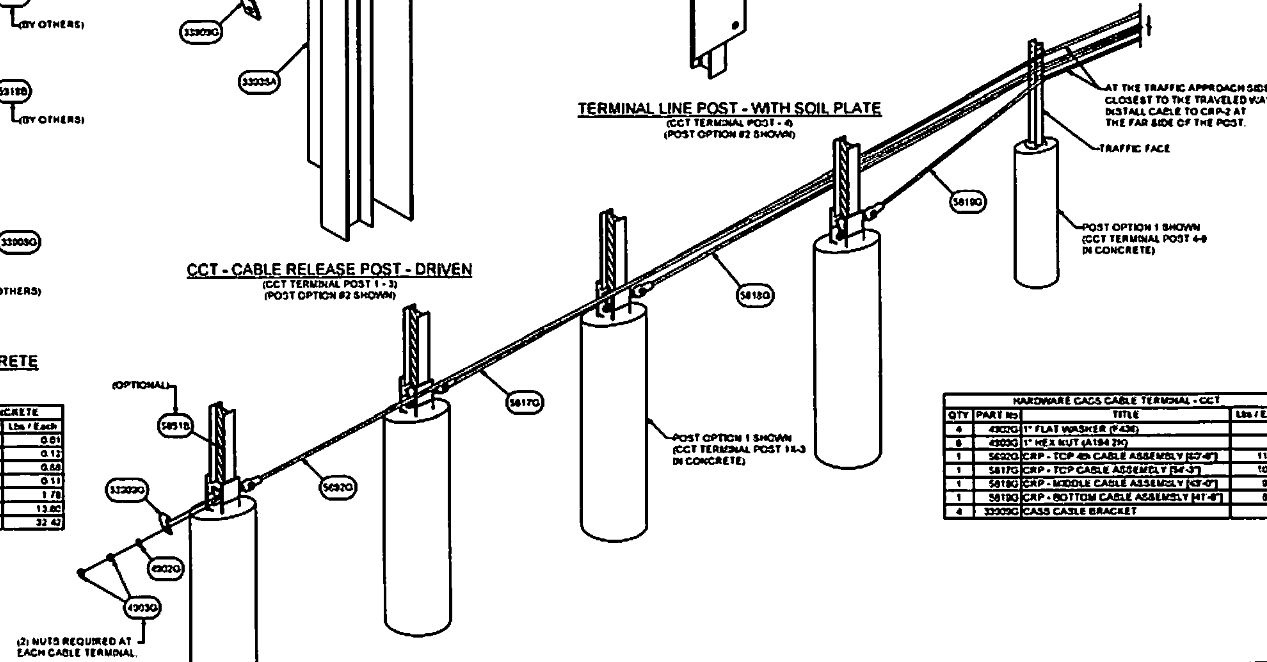
PARTS LIST - CCT TERMINAL POST No. 8-9 - IN CONCRETE			
QTY	PART No	TITLE	Lbs / Each
4	3245G	5/16 DIA. HEX NUT (A563)	0.01
4	5825G	CABLE LOCK BOLT (A307)	0.12
1	5836G	CONCRETE REINFORCING RING	0.68
1	5833G	SLEEVE COVER - S3 ANCHOR POST	0.11
2	5918B	#4 REBAR - TERMINAL POST	1.78
1	33909G	SLEEVE - TERMINAL LINE POST	13.80
1	33955G	350-TL4 TERMINAL POST	32.42



CCT - CABLE RELEASE POST - DRIVEN
(CCT TERMINAL POST 1 - 3)
(POST OPTION #2 SHOWN)



TERMINAL LINE POST - WITH SOIL PLATE
(CCT TERMINAL POST - 4)
(POST OPTION #2 SHOWN)



HARDWARE CASS CABLE TERMINAL - CCT			
QTY	PART No	TITLE	Lbs / Each
4	4902G	1" FLAT WASHER (F436)	0.11
8	4903G	1" HEX NUT (A194 2H)	0.33
1	5692G	CRP - TOP 4th CABLE ASSEMBLY [67'-8"]	115.33
1	5817G	CRP - TOP CABLE ASSEMBLY [54'-3"]	105.05
1	5818G	CRP - MIDDLE CABLE ASSEMBLY [47'-0"]	96.52
1	5819G	CRP - BOTTOM CABLE ASSEMBLY [41'-8"]	87.39
4	33909G	CASS CABLE BRACKET	1.82

CASS-TL3-4C (4:1) TERMINAL
(SHOWN WITH POST OPTION 1)

PROJ TL3_S4_4T1_4C

CASS-TL3 ON (4:1 SLOPE) 4-CABLE GUARDRAIL SAFETY SYSTEM	DRAWN E A S / CHK G N
TRINITY HIGHWAY PRODUCTS, LLC	SHT 5 OF 5 · SIZE D · DWG NO SS730-4 1-4C · REV 1