

INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

Identified by

Project ID 0614000115

MATERIALS INFORMATION

1. Alternative Flared Terminal System Information
2. Alternative Crash Cushion System Information
3. High Tension Cable Barrier Information
4. Geotechnical Soil Information
5. Water Source Information

INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

Identified by

Project ID 0614000115

MATERIALS INFORMATION

1. Alternative Flared Terminal System Information

ALTERNATIVE FLARED TERMINAL SYSTEM

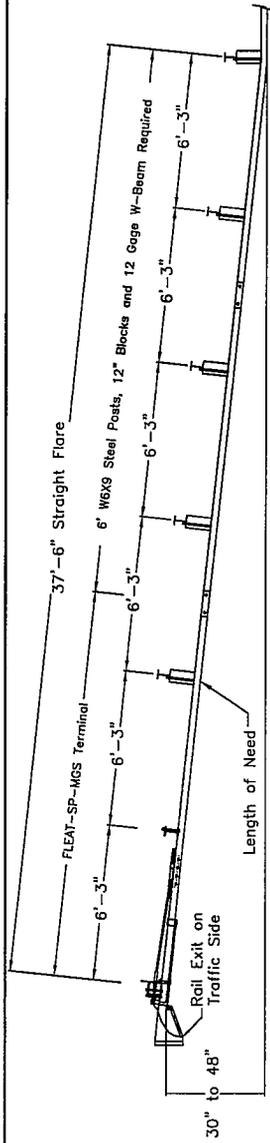
TYPE FLEAT-SP-MGS TERMINAL SYSTEM

TYPE SRT-31 TERMINAL SYSTEM

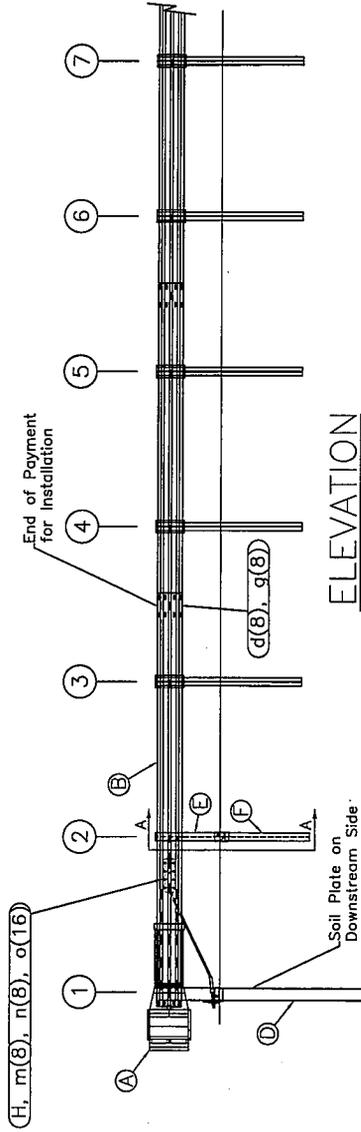
TYPE X-LITE TERMINAL SYSTEM

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	F3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Gg.	MGS-SF1303
C	1	FIRST POST TOP (6"X6" Tube)	TPHP1A
D	1	FIRST POST BOTTOM (6" W6X15)	UHP1B
E	1	SECOND POST ASSEMBLY TOP	HP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S780
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B51601044A
b	4	5/16 WASHER	W0516
c	2	5/16 HEX NUT	N0516
d	9	5/8 Dia. x 1 1/4 SPLICE BOLT (POST #2)	B580122
e	1	5/8 Dia. x 9 HEX BOLT GRD 5	B580904A
f	3	5/8 WASHER	W050
g	10	5/8 Dia. H.C.R. NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD 449	B340854A
i	1	3/4 Dia. HEX NUT	N050
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SBS8A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A

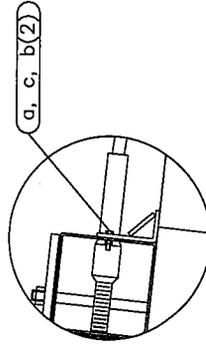
GENERAL NOTES:
 1. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 2. The lower sections of the Posts 1&2 shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
 3. The lower sections of the hinged posts should not be driven with the upper post attached. If the post is placed in a drilled hole, the backfill material must be satisfactorily compacted to prevent settlement.
 4. When competent rock is encountered, a 12" Ø post hole, 20 in. deep cored into the rock surface may be used if approved by the engineer for post 1. Granular material will be placed in the bottom of the hole, approximately 2.5' deep to provide drainage. The first post can be field cut to length, placed in the hole and backfilled with suitable backfill. The soil plate may be trimmed if required.
 5. The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.



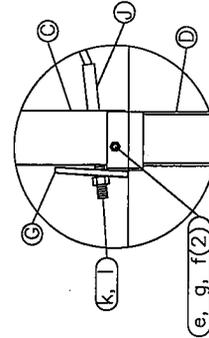
PLAN



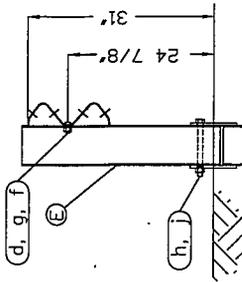
ELEVATION



Impact Head Connection Detail



Post #1 Connection Detail



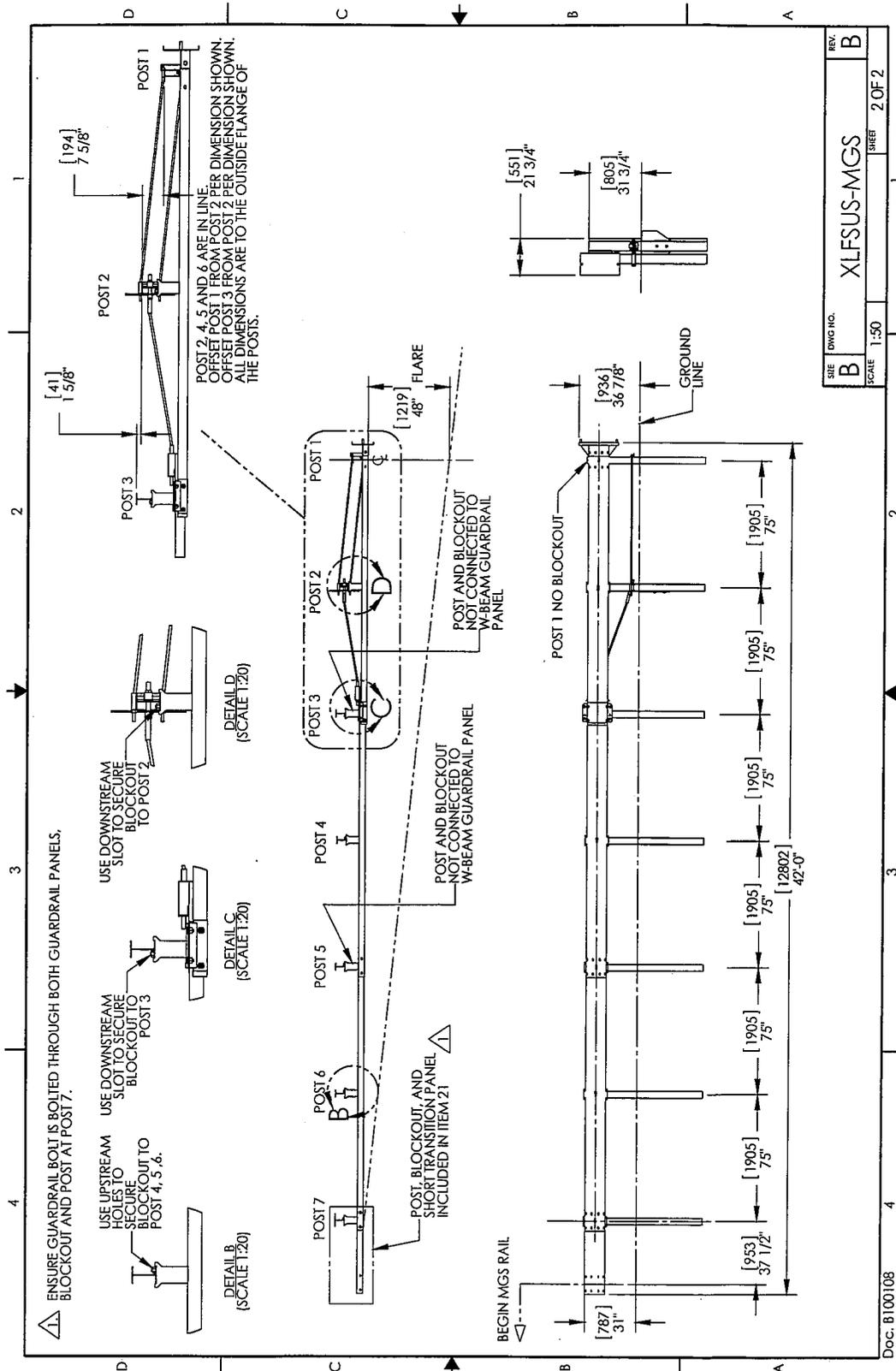
SECTION A-A
Post #2



Road Systems, Inc.
 Big Spring, TX
 Phone: 432-263-2435
 or Phone: 330-346-0721

Sheet:	1
Date:	02/24/10
By:	JRR
Rev:	0
Drawing Name:	FLT-SP-S-MGS
Scale:	None
FLEAT-SP-MGS Terminal Midwest Guardrail System 31" Top of Rail	

Appendix A - System Configuration, 37' 6" MGS



INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

Identified by

Project ID 0614000115

MATERIALS INFORMATION

2. Alternative Crash Cushion System Information

ALTERNATIVE CRASH CUSHION SYSTEM (TYPE A)

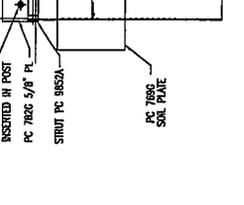
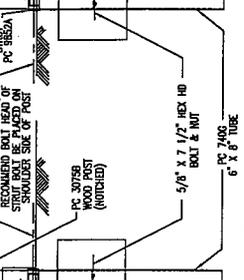
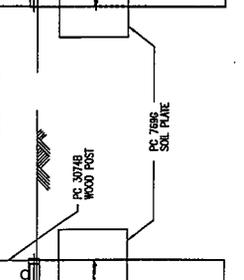
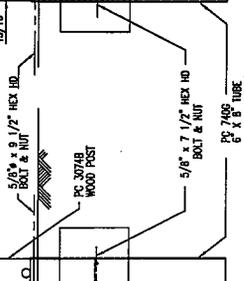
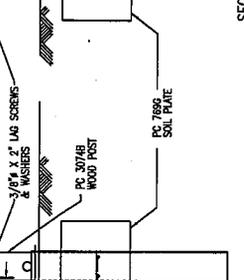
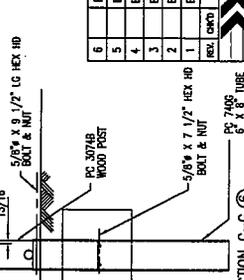
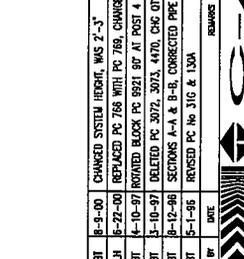
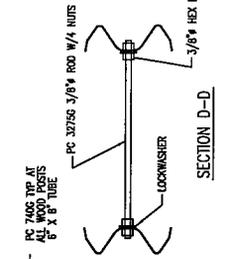
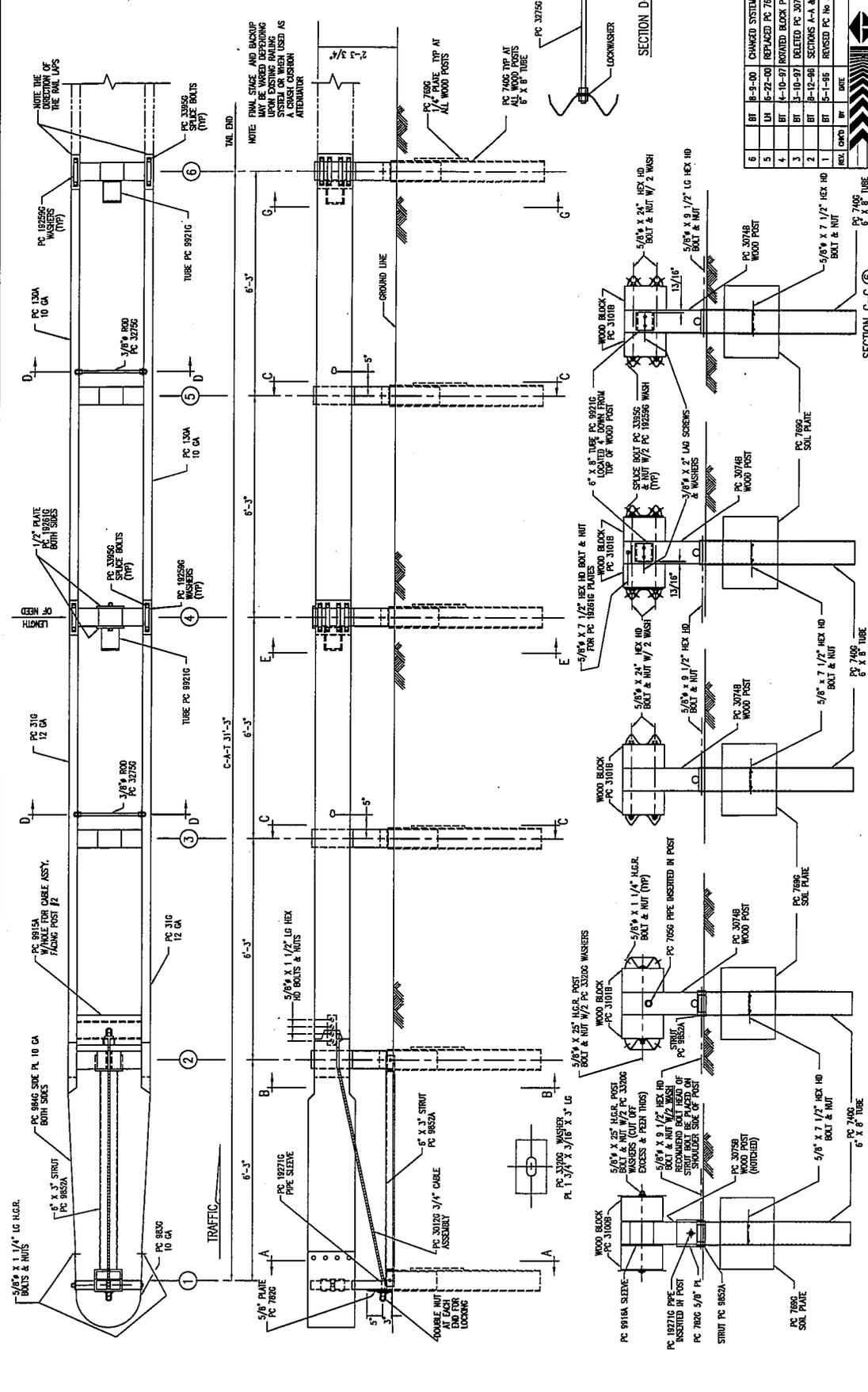
CRASH CUSHION (TYPE CAT)

CRASH CUSHION (TYPE BRAKEMASTER 350)

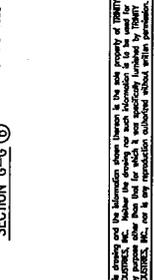
CRASH CUSHION (TYPE FLEAT-MT)

C-A-T BILL OF MATERIAL

PROJECT CODE	QTY	DESCRIPTION
316	2	12/12/0 CAT (GUARDRAIL)
13XA	2	12/12/0 (W/PC OR CAT (CONCRETE))
7405	2	2" x 5" 1/2" PIPE
7406	4	4" x 5" 1/2" PIPE
7889	1	7/4 x 18 x 24 SOIL PLATE
7890	1	7/4 x 18 x 6" BEARING PLATE
9836	1	10/8" SOLE PLATE CAT
9846	2	10/8" SOLE PLATE CAT/ROLLED
30749	5	CABLE 3/4" x 50/08L SNG
30750	5	3/4" x 50/08L SNG
31008	2	NO. 10 BLACK 1 1/2" LG CAT
31009	10	NO. 10 BLACK 12 1/2"-6" CAT
32856	4	3/8" x 2" LAG SCREW
32756	2	3/8" x 24 1/2" RESTRAINT ROD
33000	20	5/8" FLAT WASHER
33002	4	3/4" x 1 1/4" x 3" ROD WASHER
33403	85	5/8" GR. NUT
33605	8	5/8" x 1 1/2" HEX BOLT
33606	8	5/8" x 1 1/2" HEX BOLT
34758	13	3/8" x 1 1/2" HEX BOLT
34759	2	3/8" x 2" LG HEX BOLT
34760	2	3/8" x 2" LG HEX BOLT
38000	2	1" FLAT WASHER
39100	4	1" HEX NUT
42626	8	3/8" HEX NUT
42626	4	3/8" LOCK WASHER
48400	8	5/8" x 2 1/4" HEX BOLT
8652A	1	CHANNEL SHIRT x 6"-6"
9915A	1	10/8" BOLT PLATE SLEEVE
9921G	2	6" SLEEVE 6 x 8
19258B	32	3/16" x 2" x 10" PLATE WASHER
19261B	2	1/2" x 3" x 7" POST PLATE
19271G	1	1" x 2 1/2" PIPE SLEEVE CAT



REV.	DATE	BY	DESCRIPTION
6	BT	B-4-00	CHANGED SYSTEM HEIGHT, W/S 2'-3"
5	LR	6-22-00	REPLACED PC 768 WITH PC 769, CHANGED TILE BLOCK
4	BT	6-10-07	ROLLED BLOCK PC 9821 80' AT POST 4 & 6
3	BT	11-10-07	DELETED PC 3072, 3073, 3076, CNG QTY 3074 & 3078
2	BT	6-12-96	SECTIONS A-A & B-B, CORRECTED PIPE SLEEVE PC 740
1	BT	6-1-95	REVISED PC NO 516 & 130A



CRASH-CUSHION ATTENUATING TERMINAL
PLAN, ELEVATION & SECTIONS FOR USE
AS A LONGITUDINAL MEDIAN BARRIER TERMINAL
OR CRASH CUSHION ATTENUATOR

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

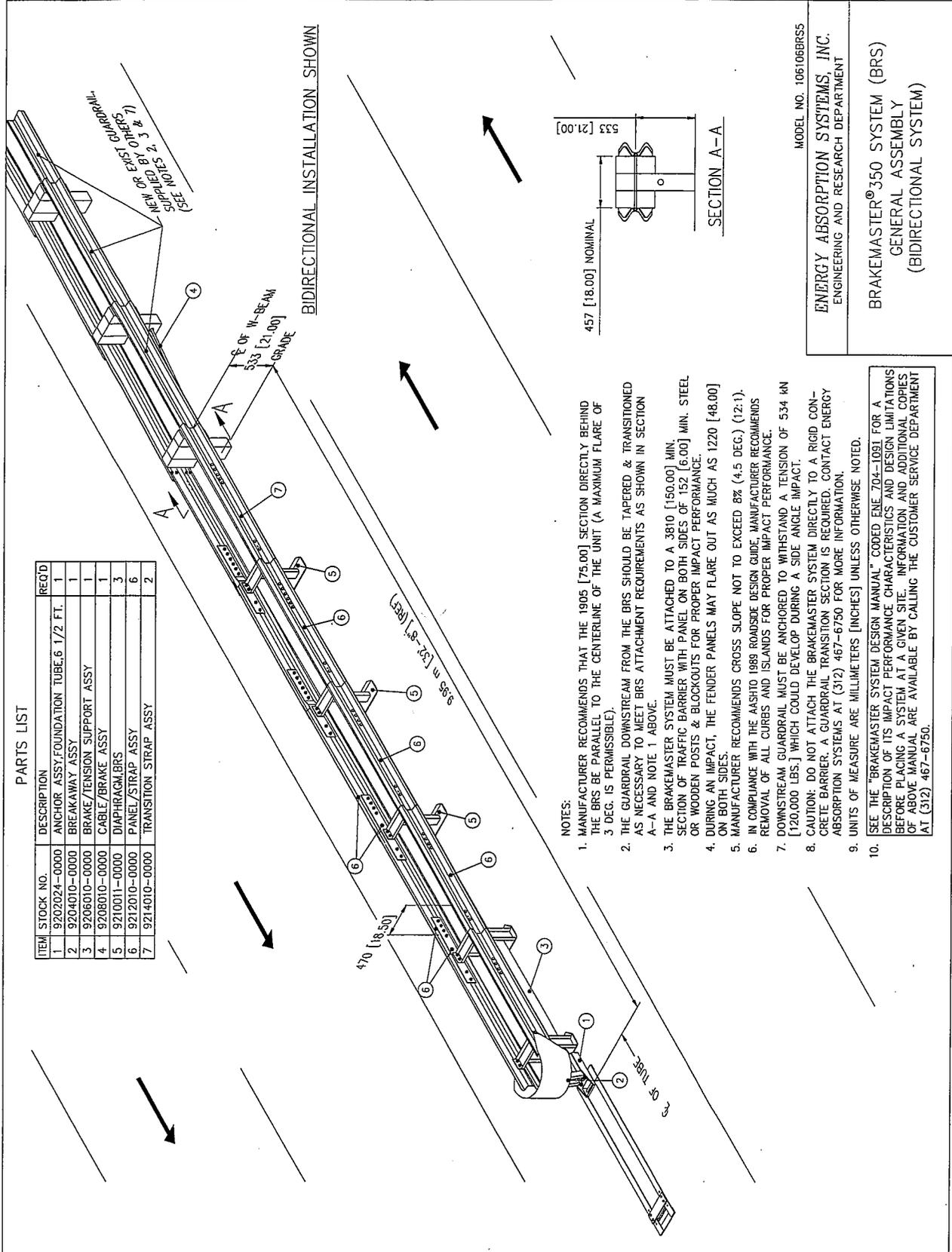
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PC 33856 SPLICE BOLTS ARE USED TO ALLOW TELESCOPING ACTION.

NOTE: PC 33856 SPLICE BOLTS ARE USED TO ALLOW TELESCOPING ACTION.

SS-245
REV 6

Brakemaster® 350



PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	9202024-0000	ANCHOR ASSY.FOUNDATION TUBE,6 1/2 FT.	1
2	9204010-0000	BREAKAWAY ASSY	1
3	9206010-0000	BRAKE/TENSION SUPPORT ASSY	1
4	9208010-0000	CABLE/BRAKE ASSY	1
5	9210011-0000	DIAPHRAGM BRS	3
6	9212010-0000	PANEL/STRAP ASSY	6
7	9214010-0000	TRANSITION STRAP ASSY	2

NOTES:

1. MANUFACTURER RECOMMENDS THAT THE 1905 [75.00] SECTION DIRECTLY BEHIND THE BRS BE PARALLEL TO THE CENTERLINE OF THE UNIT (A MAXIMUM FLARE OF 3 DEG. IS PERMISSIBLE).
2. THE GUARDRAIL DOWNSTREAM FROM THE BRS SHOULD BE TAPERED & TRANSITIONED AS NECESSARY TO MEET BRS ATTACHMENT REQUIREMENTS AS SHOWN IN SECTION A-A AND NOTE 1 ABOVE.
3. THE BRAKEMASTER SYSTEM MUST BE ATTACHED TO A 3810 [150.00] MIN. SECTION OF TRAFFIC BARRIER WITH PANEL ON BOTH SIDES OF 152 [6.00] MIN. STEEL OR WOODEN POSTS & BLOCKOUTS FOR PROPER IMPACT PERFORMANCE.
4. DURING AN IMPACT, THE FENDER PANELS MAY FLARE OUT AS MUCH AS 1220 [48.00] ON BOTH SIDES.
5. MANUFACTURER RECOMMENDS CROSS SLOPE NOT TO EXCEED 8% (4.5 DEG.) (12:1). IN COMPLIANCE WITH THE AASHTO 1989 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS FOR PROPER IMPACT PERFORMANCE.
7. DOWNSTREAM GUARDRAIL MUST BE ANCHORED TO WITHSTAND A TENSION OF 534 kN [120,000 LBS.] WHICH COULD DEVELOP DURING A SIDE ANGLE IMPACT.
8. CAUTION: DO NOT ATTACH THE BRAKEMASTER SYSTEM DIRECTLY TO A RIGID CONCRETE BARRIER. A GUARDRAIL TRANSITION SECTION IS REQUIRED. CONTACT ENERGY ABSORPTION SYSTEMS AT (312) 467-6750 FOR MORE INFORMATION.
9. UNITS OF MEASURE ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
10. SEE THE "BRAKEMASTER SYSTEM DESIGN MANUAL" CODED ENE 704-1081 FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND ADDITIONAL COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING THE CUSTOMER SERVICE DEPARTMENT AT (312) 467-6750.

MODEL NO. 106106BRSS

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

BRAKEMASTER® 350 SYSTEM (BRS)
GENERAL ASSEMBLY
(BIDIRECTIONAL SYSTEM)

ITEM	QTY	DESCRIPTION	PART#
A	2	FLEAT IMPACT HEAD	F3000
B	3	SOIL TUBE, 6" x 8" x 6'-0"	S7300
C	2	BEARING PLATE	E750
D	1	3/8" GALV Cable 20'-0"	C3820
E	2	BCT CABLE ANCHOR ASSEMBLY	E770
F	2	CABLE ANCHOR BOX	S760
G	1	GROUND STRUT	E780
H	3	BREAKAWAY END POSTS 1, 2, & 4	PB620
I	1	POST BREAKER	PBMT
J	4	BREAKAWAY LINE POSTS 3, 5, 6 & 7	PB621
K	9	TIMBER BLOCKOUT OR RECYCLED EQUIV	PB75
L	2	W-BEAM END SECTION, 12 GA. 12.5"	SFT303
M	2	W-BEAM SHORT SECTION, 12 GA. 6'-3"	G1201
N	1	W-BEAM GUARDRAIL, 12 GA. 12'-6"	G1203
P	1	DEFLECTOR BOX	DBMT
Q	1	HARDWARE	
a	2	5/16" DIA. x 3" HEX BOLT	B5160304A
b	2	5/16" HEX NUT	N0516
c	4	5/16" WASHER	W0516
d**	2	3/8" DIA. x 3" LAG SCREW	E350
e	16	1/2" DIA. SHOULDER BOLT	SBS58A
f	16	1/2" A325 NUT	N055A
g	32	1/2" WASHER	W050A
h	41	5/8" DIA. x 1 1/4" SPLICE BOLT	B580122
i	1	5/8" DIA. x 3" HEX BOLT	B580304
j	3	5/8" DIA. x 7 1/2" HEX BOLT	B580754
k	9	5/8" DIA. x 10" H.G.R. BOLT	B581002
l	54	5/8" H.G.R. NUT	N050
m	1	5/8" H.G.R. WASHER	W050
n	3	3/4" DIA. x 10" HEX BOLT	B341004
o	3	3/4" HEX NUT	N030
p	6	3/4" WASHER	W030
q	4	1" ANCHOR CABLE HEX NUT	N100
r	4	1" ANCHOR CABLE WASHER	W100
s	3	CABLE TIE	CT100 ST

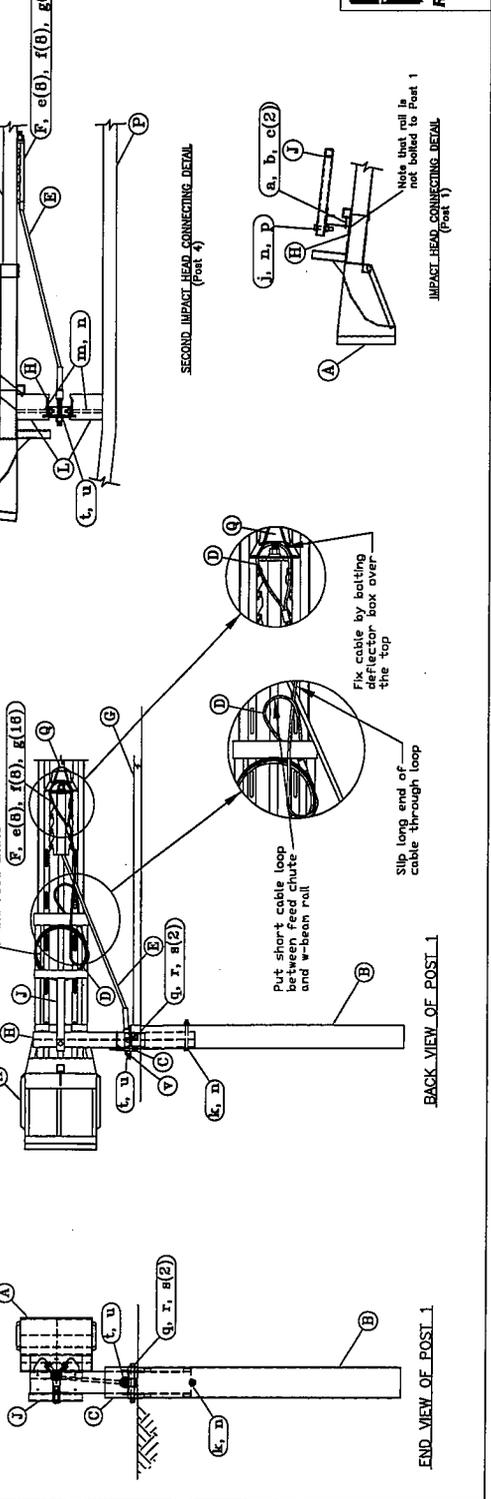
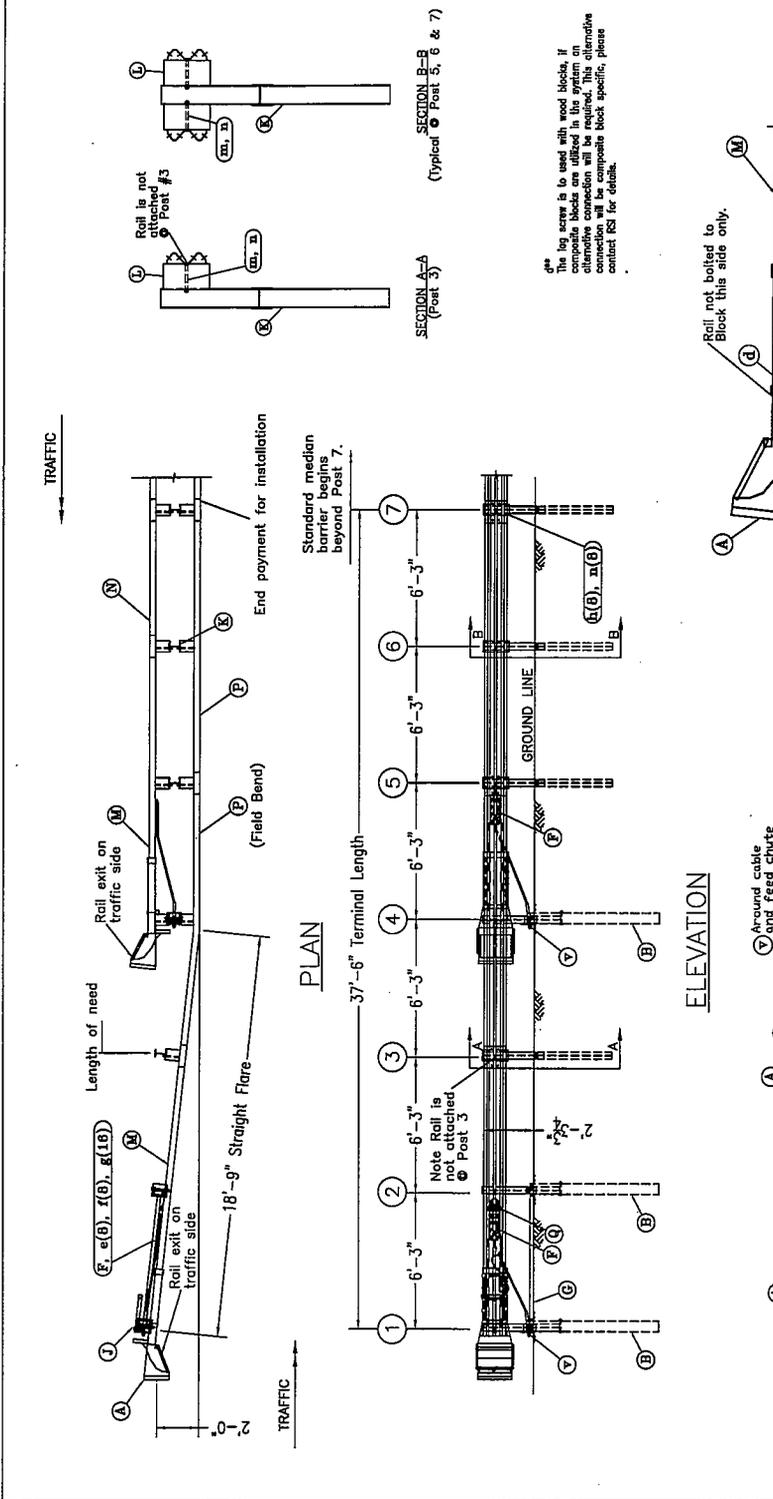
GENERAL NOTES:

- Breakaway posts are required with the FLEAT-MT.
- All bolts, nuts, cable assemblies, cable anchors and plates shall be galvanized.
- The soil tubes shall not protrude more than 4" above the ground (measured along the S cord). Site conditions may require a different height.
- The soil tubes may be driven with an approved driving head. Soil tubes should not be driven with the post in the tube. If the tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
- When rock is encountered during excavation, a 12" dia. post hole, 20' deep may be used if approved by the engineer. Greater material may be placed in the hole. The soil tubes will be 1/2" to 7/8" in length. The soil tubes will be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
- The breakaway cable assembly must be built. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

R-SI
Road Systems, Inc.
 Big Spring, TX
 P.O. Box 100
 or Phone: 330-344-0721

Sheet: **S1**
 Median FLEAT Terminal
 Steel Posts

DATE: 09/21/12
 BY: JRR
 CHECKED: MED/LS
 DRAWING NAME: NONE



ALTERNATIVE CRASH CUSHION SYSTEM (TYPE B)

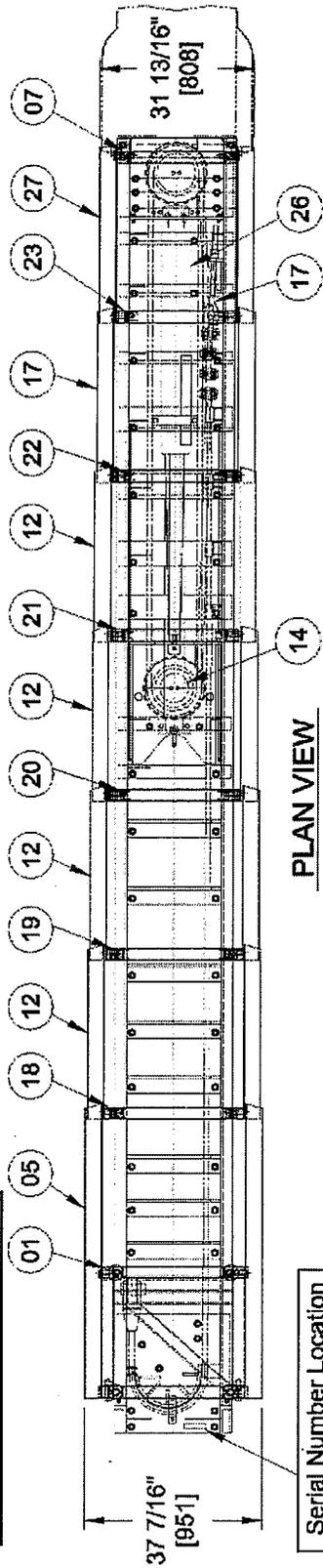
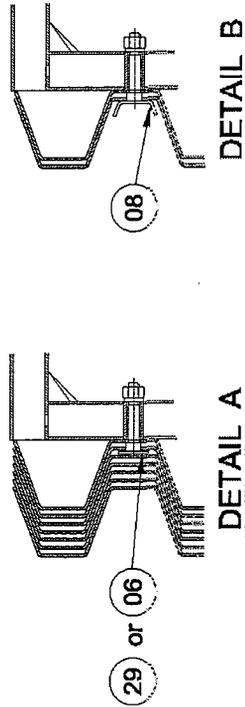
CRASH CUSHION (TYPE SMART)

CRASH CUSHION (TYPE QUADGUARD II)

CRASH CUSHION (TYPE TAU-II)

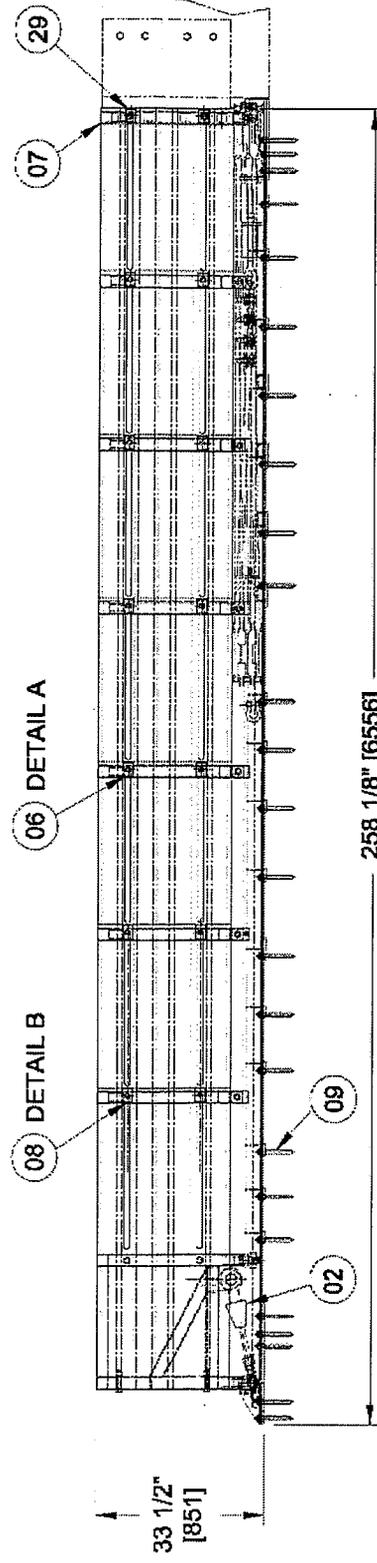
APPENDIX D - SMART CUSHION®, TEST LEVEL 3

PARTS LIST	
01 - Front Sled	
02 - Cable Assembly	
05 - Sled Panel	
07 - Terminal Brace	
09 - Anchor Bolts	
12 - Side Panels	
14 - Mobile Sheave Assembly	
17 - Cable Adjuster Bolt	
18-23 - Mobile Frames 1-6	
26 - Cylinder	
27 - Rear Panel	
06, 08, 29 - Side Keepers	

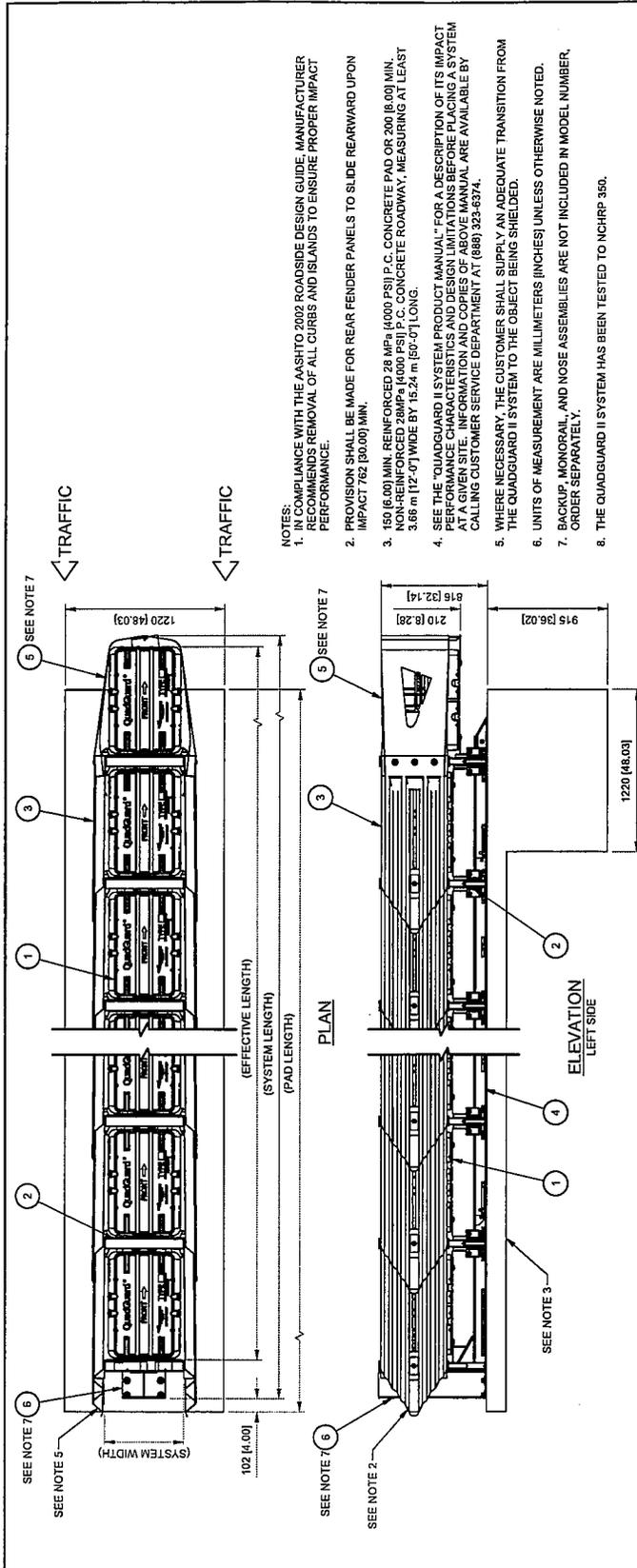


PLAN VIEW

Serial Number Location



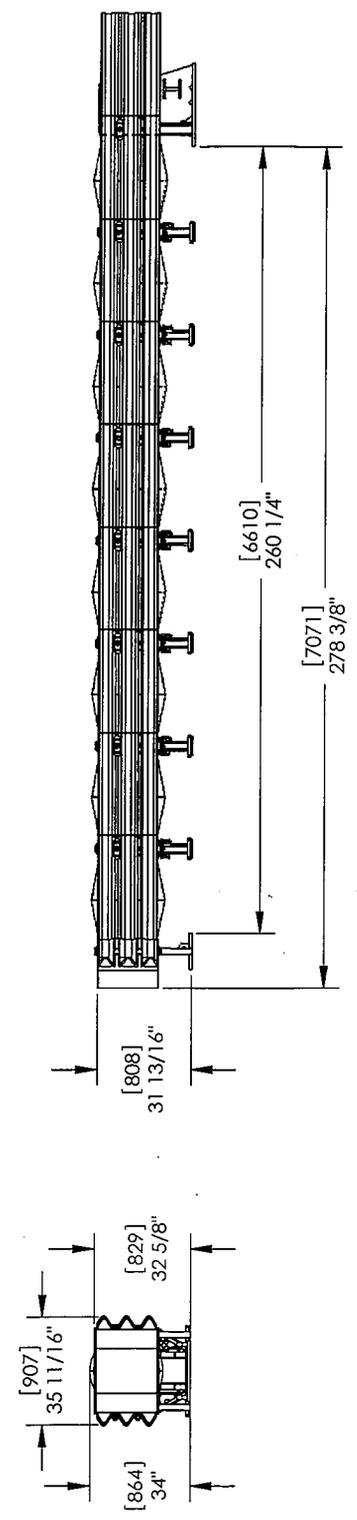
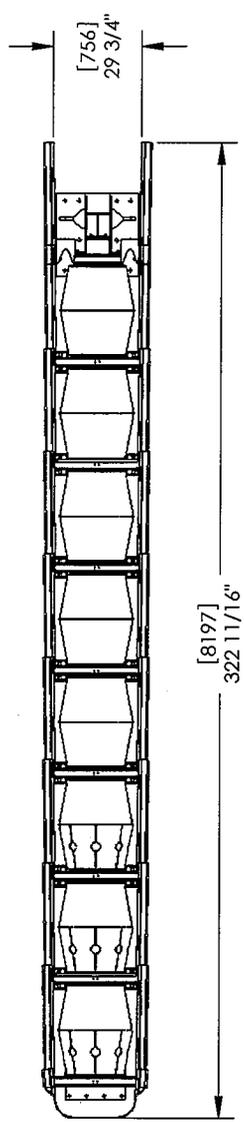
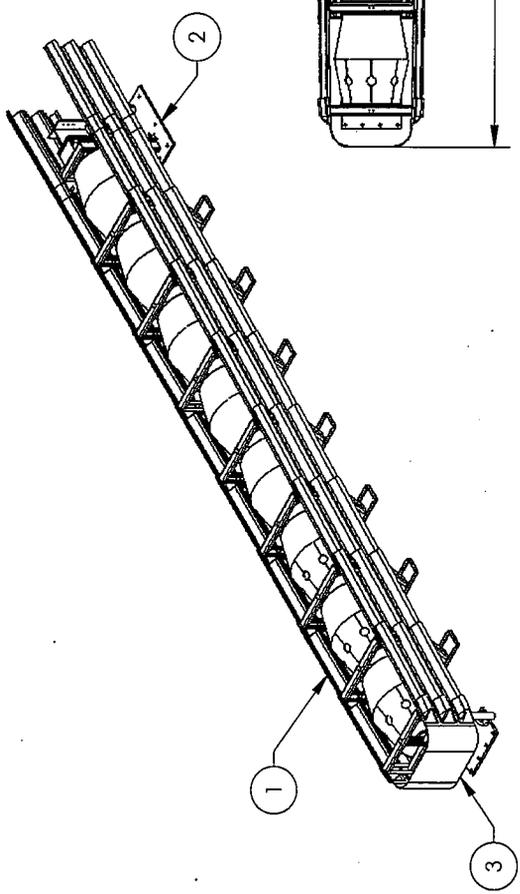
SIDE VIEW



- NOTES:**
1. IN COMPLIANCE WITH THE AASHTO 2002 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS TO ENSURE PROPER IMPACT PERFORMANCE.
 2. PROVISION SHALL BE MADE FOR REAR FENDER PANELS TO SLIDE REARWARD UPON IMPACT 762 (30.00) MIN.
 3. 150 (6.00) MIN. REINFORCED 28 MPa (4000 PSI) P. C. CONCRETE PAD OR 200 (8.00) MIN. NON-REINFORCED 28MPa (4000 PSI) P. C. CONCRETE ROADWAY, MEASURING AT LEAST 3.66 m (12'-0") WIDE BY 15.24 m (50'-0") LONG.
 4. SEE THE "QUADGUARD II SYSTEM PRODUCT MANUAL" FOR A DESCRIPTION OF ITS IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE. INFORMATION AND COPIES OF ABOVE MANUAL ARE AVAILABLE BY CALLING CUSTOMER SERVICE DEPARTMENT AT (888) 323-6374.
 5. WHERE NECESSARY, THE CUSTOMER SHALL SUPPLY AN ADEQUATE TRANSITION FROM THE QUADGUARD II SYSTEM TO THE OBJECT BEING SHIELDED.
 6. BACKUP, MONORAIL, AND NOSE ASSEMBLIES ARE NOT INCLUDED IN MODEL NUMBER, ORDER SEPARATELY.
 8. THE QUADGUARD II SYSTEM HAS BEEN TESTED TO NCHRP 350.

BAYS	MODEL NO.	WIDTH	1220 (48.03)	1194 (46.51)	1167 (45.51)	1140 (44.51)	1113 (43.51)	1086 (42.51)	1059 (41.51)	1032 (40.51)	1005 (39.51)	978 (38.51)	951 (37.51)	924 (36.51)	897 (35.51)	870 (34.51)	843 (33.51)	816 (32.51)	789 (31.51)	762 (30.51)	735 (29.51)	708 (28.51)	681 (27.51)	654 (26.51)	627 (25.51)	600 (24.51)	573 (23.51)	546 (22.51)	519 (21.51)	492 (20.51)	465 (19.51)	438 (18.51)	411 (17.51)	384 (16.51)	357 (15.51)	330 (14.51)	303 (13.51)	276 (12.51)	249 (11.51)	222 (10.51)	195 (9.51)	168 (8.51)	141 (7.51)	114 (6.51)	87 (5.51)	60 (4.51)	33 (3.51)	6 (2.51)	0 (1.51)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1	CG24024	CG24030	CG27036	CG30042	CG33048	CG36054	CG39060	CG42066	CG45072	CG48078	CG51084	CG54090	CG57096	CG60102	CG63108	CG66114	CG69120	CG72126	CG75132	CG78138	CG81144	CG84150	CG87156	CG90162	CG93168	CG96174	CG99180	CG102186	CG105192	CG108198	CG111204	CG114210	CG117216	CG120222	CG123228	CG126234	CG129240	CG132246	CG135252	CG138258	CG141264	CG144270	CG147276	CG150282	CG153288	CG156294	CG159300	CG162306	CG165312	CG168318	CG171324	CG174330	CG177336	CG180342	CG183348	CG186354	CG189360	CG192366	CG195372	CG198378	CG201384	CG204390	CG207396	CG210402	CG213408	CG216414	CG219420	CG222426	CG225432	CG228438	CG231444	CG234450	CG237456	CG240462	CG243468	CG246474	CG249480	CG252486	CG255492	CG258498	CG261504	CG264510	CG267516	CG270522	CG273528	CG276534	CG279540	CG282546	CG285552	CG288558	CG291564	CG294570	CG297576	CG300582	CG303588	CG306594	CG309600	CG312606	CG315612	CG318618	CG321624	CG324630	CG327636	CG330642	CG333648	CG336654	CG339660	CG342666	CG345672	CG348678	CG351684	CG354690	CG357696	CG360702	CG363708	CG366714	CG369720	CG372726	CG375732	CG378738	CG381744	CG384750	CG387756	CG390762	CG393768	CG396774	CG399780	CG402786	CG405792	CG408798	CG411804	CG414810	CG417816	CG420822	CG423828	CG426834	CG429840	CG432846	CG435852	CG438858	CG441864	CG444870	CG447876	CG450882	CG453888	CG456894	CG459900	CG462906	CG465912	CG468918	CG471924	CG474930	CG477936	CG480942	CG483948	CG486954	CG489960	CG492966	CG495972	CG498978	CG501984	CG504990	CG507996	CG510102	CG513108	CG516114	CG519120	CG522126	CG525132	CG528138	CG531144	CG534150	CG537156	CG540162	CG543168	CG546174	CG549180	CG552186	CG555192	CG558198	CG561204	CG564210	CG567216	CG570222	CG573228	CG576234	CG579240	CG582246	CG585252	CG588258	CG591264	CG594270	CG597276	CG600282	CG603288	CG606294	CG609300	CG612306	CG615312	CG618318	CG621324	CG624330	CG627336	CG630342	CG633348	CG636354	CG639360	CG642366	CG645372	CG648378	CG651384	CG654390	CG657396	CG660402	CG663408	CG666414	CG669420	CG672426	CG675432	CG678438	CG681444	CG684450	CG687456	CG690462	CG693468	CG696474	CG699480	CG702486	CG705492	CG708498	CG711504	CG714510	CG717516	CG720522	CG723528	CG726534	CG729540	CG732546	CG735552	CG738558	CG741564	CG744570	CG747576	CG750582	CG753588	CG756594	CG759600	CG762606	CG765612	CG768618	CG771624	CG774630	CG777636	CG780642	CG783648	CG786654	CG789660	CG792666	CG795672	CG798678	CG801684	CG804690	CG807696	CG810702	CG813708	CG816714	CG819720	CG822726	CG825732	CG828738	CG831744	CG834750	CG837756	CG840762	CG843768	CG846774	CG849780	CG852786	CG855792	CG858798	CG861804	CG864810	CG867816	CG870822	CG873828	CG876834	CG879840	CG882846	CG885852	CG888858	CG891864	CG894870	CG897876	CG900882	CG903888	CG906894	CG909900	CG912906	CG915912	CG918918	CG921924	CG924930	CG927936	CG930942	CG933948	CG936954	CG939960	CG942966	CG945972	CG948978	CG951984	CG954990	CG957996	CG960102	CG963108	CG966114	CG969120	CG972126	CG975132	CG978138	CG981144	CG984150	CG987156	CG990162	CG993168	CG996174	CG999180	CG100186	CG100492	CG100798	CG101104	CG101410	CG101716	CG102022	CG102328	CG102634	CG102940	CG103246	CG103552	CG103858	CG104164	CG104470	CG104776	CG105082	CG105388	CG105694	CG106000	CG106306	CG106612	CG106918	CG107224	CG107530	CG107836	CG108142	CG108448	CG108754	CG109060	CG109366	CG109672	CG109978	CG110284	CG110590	CG110896	CG111202	CG111508	CG111814	CG112120	CG112426	CG112732	CG113038	CG113344	CG113650	CG113956	CG114262	CG114568	CG114874	CG115180	CG115486	CG115792	CG116098	CG116404	CG116710	CG117016	CG117322	CG117628	CG117934	CG118240	CG118546	CG118852	CG119158	CG119464	CG119770	CG120076	CG120382	CG120688	CG121094	CG121400	CG121706	CG122012	CG122318	CG122624	CG122930	CG123236	CG123542	CG123848	CG124154	CG124460	CG124766	CG125072	CG125378	CG125684	CG125990	CG126296	CG126602	CG126908	CG127214	CG127520	CG127826	CG128132	CG128438	CG128744	CG129050	CG129356	CG129662	CG129968	CG130274	CG130580	CG130886	CG131192	CG131498	CG131804	CG132110	CG132416	CG132722	CG133028	CG133334	CG133640	CG133946	CG134252	CG134558	CG134864	CG135170	CG135476	CG135782	CG136088	CG136394	CG136700	CG137006	CG137312	CG137618	CG137924	CG138230	CG138536	CG138842	CG139148	CG139454	CG139760	CG140066	CG140372	CG140678	CG140984	CG141290	CG141596	CG141902	CG142208	CG142514	CG142820	CG143126	CG143432	CG143738	CG144044	CG144350	CG144656	CG144962	CG145268	CG145574	CG145880	CG146186	CG146492	CG146798	CG147104	CG147410	CG147716	CG148022	CG148328	CG148634	CG148940	CG149246	CG149552	CG149858	CG150164	CG150470	CG150776	CG151082	CG151388	CG151694	CG152000	CG152306	CG152612	CG152918	CG153224	CG153530	CG153836	CG154142	CG154448	CG154754	CG155060	CG155366	CG155672	CG155978	CG156284	CG156590	CG156896	CG157202	CG157508	CG157814	CG158120	CG158426	CG158732	CG159038	CG159344	CG159650	CG159956	CG160262	CG160568	CG160874	CG161180	CG161486	CG161792	CG162098	CG162404	CG162710	CG163016	CG163322	CG163628	CG163934	CG164240	CG164546	CG164852	CG165158	CG165464	CG165770	CG166076	CG166382	CG166688	CG166994	CG167300	CG167606	CG167912	CG168218	CG168524	CG168830	CG169136	CG169442	CG169748	CG170054	CG170360	CG170666	CG170972	CG171278	CG171584	CG171890	CG172196	CG172502	CG172808	CG173114	CG173420	CG173726	CG174032	CG174338	CG174644	CG174950	CG175256	CG175562	CG175868	CG176174	CG176480	CG176786	CG177092	CG177398	CG177704	CG178010	CG178316	CG178622	CG178928	CG179234	CG179540	CG179846	CG180152	CG180458	CG180764	CG181070	CG181376	CG181682	CG181988	CG182294	CG182600	CG182906	CG183212	CG183518	CG183824	CG184130	CG184436	CG184742	CG185048	CG185354	CG185660	CG185966	CG186272	CG186578	CG186884	CG187190	CG187496	CG187802	CG188108	CG188414	CG188720	CG189026	CG189332	CG189638	CG189944	CG190250	CG190556	CG190862	CG191168	CG191474	CG191780	CG192086	CG192392	CG192698	CG193004	CG193310	CG193616	CG193922	CG194228	CG194534	CG194840	CG195146	CG195452	CG195758	CG196064	CG196370	CG196676	CG196982	CG197288	CG197594	CG197900	CG198206	CG198512	CG198818	CG199124	CG199430	CG199736	CG200042	CG200348	CG200654	CG200960	CG201266	CG201572	CG201878	CG202184	CG202490	CG202796	CG203102	CG203408	CG203714	CG204020	CG204326	CG204632	CG204938	CG205244	CG205550	CG205856	CG206162	CG206468	CG206774	CG207080	CG207386	CG207692	CG208098	CG208404	CG208710	CG209016	CG209322	CG209628	CG209934	CG210240	CG210546	CG210852	CG211158	CG211464	CG211770	CG212076	CG212382	CG212688	CG212994	CG213300	CG213606	CG213912	CG214218	CG214524	CG214830	CG215136	CG215442	CG215748	CG216054	CG216360	CG216666	CG216972	CG217278	CG217584	CG217890	CG218196	CG218502	CG218808	CG219114	CG219420	CG219726	CG220032	CG220338	CG220644	CG220950	CG221256	CG221562	CG221868	CG222174	CG222480	CG222786	CG223092	CG223398	CG223704	CG224010	CG224316	CG224622	CG224928	CG225234	CG225540	CG225846	CG226152	CG226458	CG226764	CG227070	CG227376	CG227682	CG227988	CG228294	CG228600	CG228906	CG229212	CG229518	CG229824	CG230130	CG230436	CG230742	CG231048	CG231354	CG231660	CG231966	CG232272	CG232578	CG232884	CG233190	CG233496	CG233802	CG234108	CG234414	CG234720	CG235026	CG235332	CG235638	CG235944	CG236250	CG236556	CG236862	CG237168	CG237474	CG237780	CG238086	CG238392	CG238698	CG239004	CG239310	CG239616	CG239922	CG240228	CG240534	CG240840	CG241146	CG241452	CG241758	CG242064	CG242370	CG242676	CG242982	CG243288	CG243594	CG243900	CG244206	CG244512	CG244818	CG245124	CG245430	CG245736	CG246042	CG246348	CG246654	CG246960	CG247266	CG247572	CG247878	CG248184	CG248490	CG248796	CG249102	CG249408	CG249714	CG250020	CG250326	CG250632	CG250938	CG251244	CG251550	CG251856	CG252162	CG252468	CG252774	CG253080	CG253386	CG253692	CG254098	CG254404	CG254710	CG255016	CG255322	CG255628	CG255934	CG256240	CG256546	CG256852	CG257158	CG257464	CG257770	CG258076	CG258382	CG258688	CG258994

Item	Qty	Part Description	Part#	UM
1	1.00	30in Universal TAU-II 100kph System Components	30T100	EACH
2	1.00	Compact Backstop, 30"	COB30	EACH
3	1.00	Tau II Nose Piece per BSF Pth	BO10711	EACH
4	1.00	Concrete Ane Pkg, COB	CCOB	EACH



NOTES:
1. ITEM #4 NOT SHOWN.

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TITLE: TAU-II 30" 100kph COMPACT BACKSTOP CONCRETE, BLACK NOSE	SEE EON 00875 CHANGES: []	DATE: 9/14/05 BY: CMB	REV: A	DRAWING NUMBER: 30T100CBC	REV: A

INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

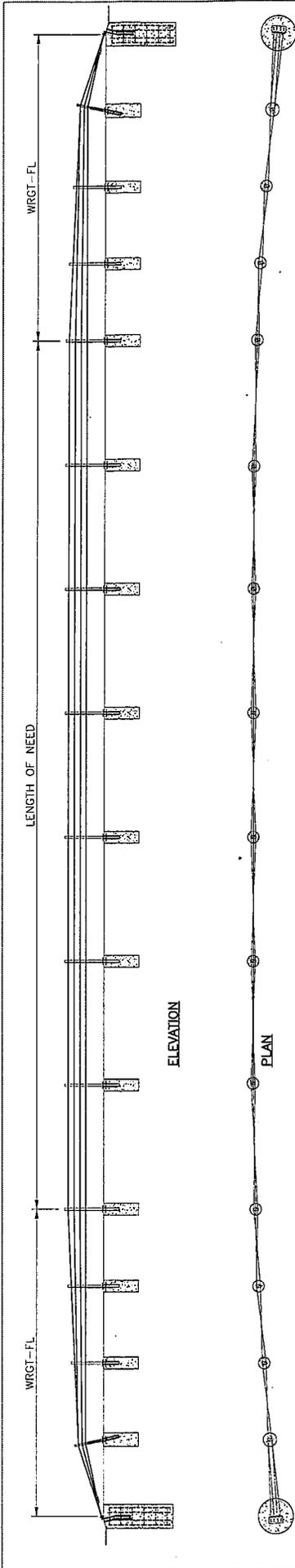
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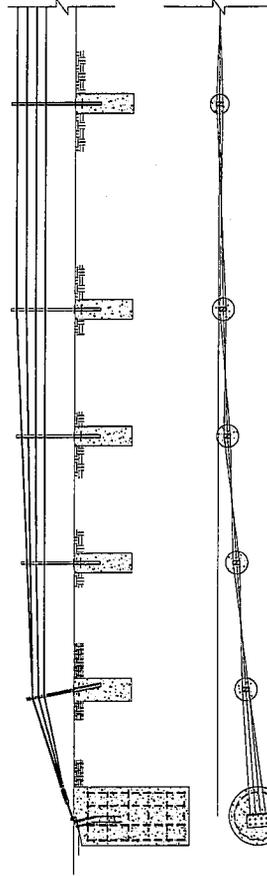
MATERIALS INFORMATION

3. High Tension Cable Barrier Information

ALTERNATIVE HIGH TENSION CABLE BARRIER



WRGT-FL END ANCHOR



ROPE TENSION TABLE		
ROPE TEMP. (°F)	TENSION (LBS)	TENSION (kN)
0	5700	25.4
5	5550	24.7
10	5400	24.0
15	5250	23.4
20	5100	22.7
25	4950	22.0
30	4800	21.4
35	4650	20.74
40	4500	20.0
45	4350	19.3
50	4200	18.7
55	4050	18.0
60	3900	17.3
65	3750	16.7
70	3600	16.0
75	3450	15.3
80	3300	14.7
85	3150	14.0
90	3000	13.3
95	2850	12.7
100	2700	12.0
105	2550	11.3
110	2400	10.7
115	2250	10.0
120	2100	9.3
125	1950	8.7
130	1800	8.0
135	1650	7.3
140	1500	6.7

* SEE SHEET 3 OF 3 FOR FURTHER INFORMATION

GENERAL NOTES:

1. BRIFEN DRAWINGS, SPECIFICATIONS, AND PRODUCT MANUAL SHOULD BE REVIEWED PRIOR TO STARTING AN INSTALLATION. FOR ADDITIONAL INFORMATION OR QUESTIONS, CONTACT BRIFEN USA, INC. AT 1-866-427-4336.
2. THE BRIFEN WRSF HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-4 CONDITIONS ON SLOPES 6:1 OR FLATTER AND NCHRP 350 TL-3 CONDITIONS ON SLOPES 4:1 TO 6:1.
3. THE POST SPACING SHALL BE DETERMINED BY THE SPECIFYING AGENCY. POST SPACING MAY BE DECREASED TO AVOID OBSTRUCTIONS OR UTILITIES. IN NO EVENT SHALL THE POST SPACING EXCEED 21'-0".
4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE, WITHOUT HUMPS, DROP-OFFS, HOLES, ETC THAT WOULD INTERFERE WITH THE STABILITY OF THE ERRANT VEHICLE. GRADING, FILL AND COMPACT MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.
5. THE WRGT-FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'-0" FROM THE END ANCHOR. POSTS 1 THROUGH POST 4, SPACED 6'-6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.
6. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.
7. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.
8. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.
9. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.
10. TAPER RATES FOR THE BRIFEN WRSF ARE AS FOLLOWS:
 HORIZONTAL: 25:1 MAXIMUM, 50:1 PREFERABLE
 VERTICAL: 25:1 MAXIMUM, 50:1 PREFERABLE

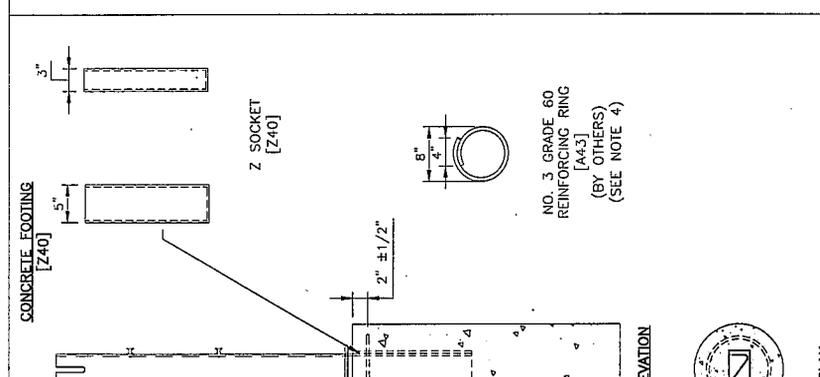
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BRIFEN USA INC.

Revision		By		Date		Date		Dwg. No.		Scale	
BRIFEN WRSF NCHRP 350 TL-4 INSTALLATION & LAYOUT DETAILS		ME		2.8.13		6.27.12		WRGTFL-11-001b		None	
1.											
2.											
3.											
4.											
5.											

* ROPE TENSION: ±20% AFTER 2-WEEK INTERVAL

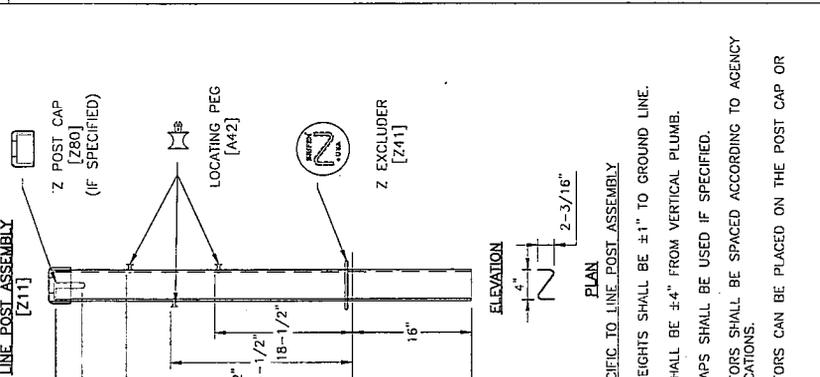
SOCKET ASSEMBLY



PLAN

- NOTES SPECIFIC TO CONCRETE FOOTING**
1. SIZE OF FOOTING WILL BE DETERMINED BY SOIL CONDITIONS, FOUNDATION TYPE AND PROJECT CONDITIONS.
 2. CONCRETE BASED ON AGENCY SPECIFICATIONS.
 3. CONCRETE BY OTHERS.
 4. REINFORCING RING (BY OTHERS) WILL BE USED ACCORDING TO FOUNDATION SIZE AND TYPE. THE REINFORCING RING MAY BE OMITTED IF THE FOOTING IS PLACED IN A CONTINUOUS CONCRETE MOW STRIP.
 5. FOOTING SHALL BE FLUSH WITH THE GROUND LINE, TO A MAXIMUM OF 1 INCH BELOW OR ABOVE GROUND LINE.
 6. SOCKET SHALL BE ±2' OF VERTICAL PLUMB.

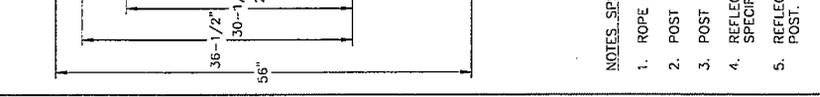
LINE POST ASSEMBLY



PLAN

- NOTES SPECIFIC TO LINE POST ASSEMBLY**
1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
 2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
 3. POST CAPS SHALL BE USED IF SPECIFIED.
 4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
 5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.

ROPE CONNECTION DETAIL



PLAN

- NOTES SPECIFIC TO ROPE CONNECTION DETAIL**
1. THE WIRE ROPE TERMINALS SHALL BE THREADED A MINIMUM OF 1-1/2" INTO RIGGING SCREW.
 2. AFTER FINAL TENSIONING, THE TERMINALS SHALL BE VISIBLE IN THE INSPECTION HOLES.

GENERAL NOTES:

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4. BRIFEN WRSF SHALL BE PLACED ON A SMOOTH SURFACE. WITHOUT BUMPS, DEEPS, POLES, ETC. THAT WOULD INTERFERE WITH THE STABILITY OF THE ERECTION. BEFORE GRADING, FILL AND CONSTRUCTION MAY BE REQUIRED TO ASSURE THAT ROPES ARE INSTALLED AT THE DESIGN HEIGHT.

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Revision		By		Date		Scale	
No.	Date	No.	Date	No.	Date	No.	Date
1.							
2.							
3.							
4.							
5.							

BRIFEN WRSF NCHRP 350 TL-4
LENGTH OF NEED COMPONENTS

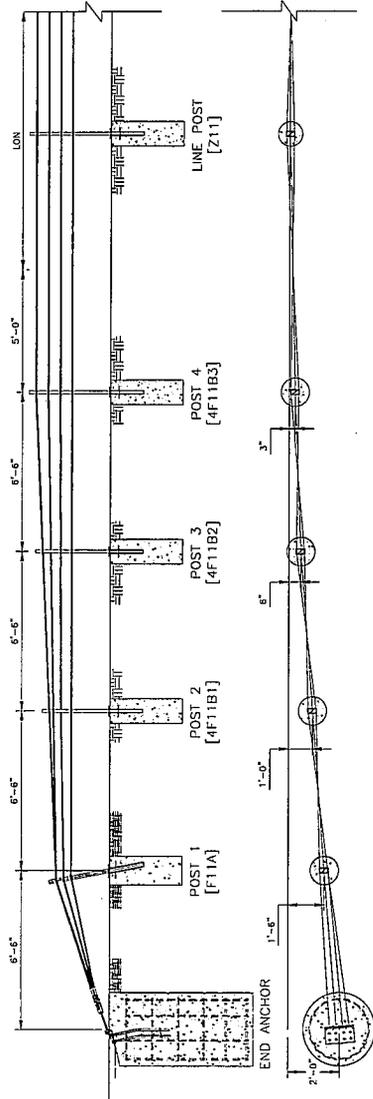
Date: 6.27.12
Drawn By: Maria Etkendo

VERSION 12.1

Dwg. No. WR67L-11-0026

Sheet No. 2 OF 3

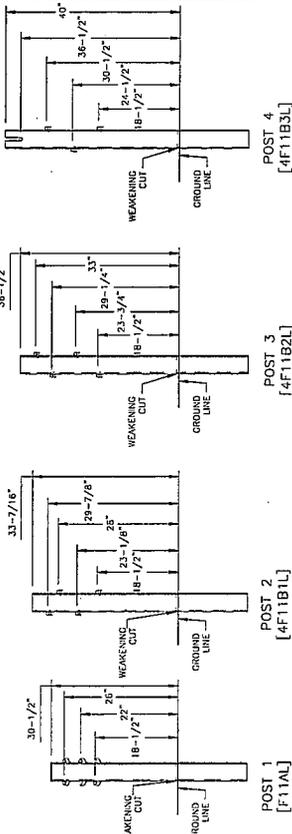
WRGT-FL END ANCHOR LAYOUT



GENERAL NOTES:

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2. THE WRGT-FL END ANCHOR HAS BEEN SUCCESSFULLY TESTED TO NCHRP 350 TL-3 CONDITIONS. THE LENGTH OF NEED BEGINS 31'-0" FROM THE END ANCHOR. POSTS 1 THROUGH POST 4, SPACED 6'-6" APART, HAVE WEAKENED CUTS AT THE GROUND THAT SHALL FACE THE ANCHOR.
3. ANCHOR AND LINE POST DIMENSIONS AND STEEL REINFORCEMENT WILL BE DETERMINED ON PROJECT SPECIFIC SOIL CLASSIFICATION, PROPERTIES AND TEMPERATURE EXTREMES. CONTACT BRIFEN USA, INC. FOR ADDITIONAL INFORMATION.
4. ALL REINFORCEMENT AND CONCRETE FOR THE ANCHORS AND LINE POSTS PROVIDED BY OTHERS.
5. REINFORCEMENT AND CONCRETE PROPERTIES SHALL MEET AGENCY SPECIFICATIONS.
6. FOR PLACEMENT NEAR GUARDRAIL OR OTHER OBSTACLES CONTACT BRIFEN USA, INC. FOR ADDITIONAL DRAWINGS AND SUPPORT.

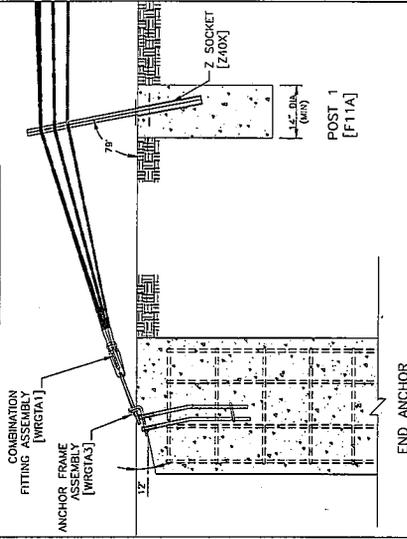
WRGT-FL POST DETAILS



NOTES, SPECIFIC TO WRGT-FL POST DETAIL

1. ROPE HEIGHTS SHALL BE ±1" TO GROUND LINE.
2. POST SHALL BE ±4" FROM VERTICAL PLUMB.
3. POST CAPS SHALL BE USED IF SPECIFIED.
4. REFLECTORS SHALL BE SPACED ACCORDING TO AGENCY SPECIFICATIONS.
5. REFLECTORS CAN BE PLACED ON THE POST CAP OR POST.
6. Z EXCLUDER (Z41) SHALL BE USED.
7. POST 1 & SOCKET SHALL BE PLACED 79' (±4") TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
8. POST 1 SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.
9. FOUNDATIONS FOR POST 2 THRU 4 SHALL BE THE SAME AS THE LINE POST ASSEMBLY'S FOR THE PROJECT.
10. WEAKENED CUTS SHALL FACE END ANCHOR.

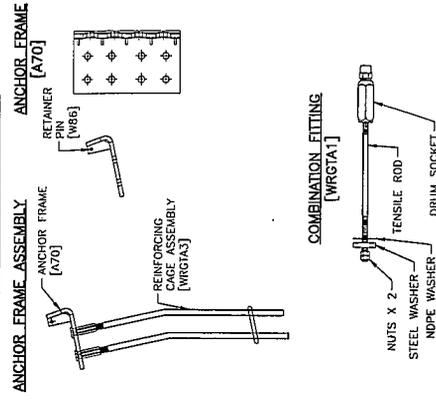
END ANCHOR DETAILS



NOTES, SPECIFIC TO END ANCHOR DETAIL

1. THE END ANCHOR ASSEMBLY SHALL BE PLACED 12' (+3', -1') BELOW HORIZONTAL PLANE.
2. POST 1 & SOCKET SHALL BE PLACED 79' (±4") TOWARD END ANCHOR FROM THE HORIZONTAL PLANE.
3. POST 1 SOCKET SHALL BE PLACED IN 14" (MIN) CONCRETE FOUNDATION. DEPTH TO BE DETERMINED FROM SOIL CONDITIONS AND PROJECT CONDITIONS.

END ANCHOR COMPONENTS



The information herein is proprietary to BRIFEN USA, and shall not be disclosed, duplicated or used otherwise without the express written consent of BRIFEN USA, Inc.

BRIFEN USA INC.

Revision		BRIFEN WRGT-FL END TERMINAL INSTALLATION & LAYOUT DETAILS	
No.	Date	By	Scale
1.	2.8.13	ME	None
2.			
3.			
4.			
Date		Drawn By	Scale
6.27.12		Merito Elkendo	None
Version		VERSION 12.1	
Dwg. No.		WRGTFL-11-003b	
Sheet No		3 OF 3	

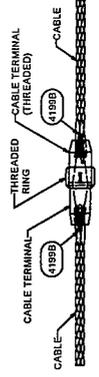
TRINITY CABLE SAFETY SYSTEM (CASS), TRINITY HIGHWAY PRODUCTS, LLC,
1170 NORTH STATE STREET, GIRARD, OH 44420 (CONTACT DAVID HYNES 800-321-2755)

DRAWING NUMBER	DRAWING NAME	REVISION DATE
SS-742	CASS-S3 (4:1 SLOPE) 4 CABLE GUARDRAIL SYSTEM	1/25/2010

FAHRENHEIT DEGREES	STD. CABLE LB/FORCE	PRE-STRETCHED LB/FORCE
<= -15	6800	7500
-10	7000	7700
-5	7200	7900
0	7400	8100
5	7600	8300
10	7800	8500
15	8000	8700
20	8200	8900
25	8400	9100
30	8600	9300
35	8800	9500
40	9000	9700
45	9200	9900
50	9400	10100
55	9600	10300
60	9800	10500
65	10000	10700
70	10200	10900
75	10400	11100
80	10600	11300
85	10800	11500
90	11000	11700
95	11200	11900
100	11400	12100
105	11600	12300
110	11800	12500
115	12000	12700
120	12200	12900
125	12400	13100
130	12600	13300
135	12800	13500
140	13000	13700
145	13200	13900
150	13400	14100
155	13600	14300
160	13800	14500
165	14000	14700
170	14200	14900
175	14400	15100
180	14600	15300
185	14800	15500
190	15000	15700
195	15200	15900
200	15400	16100

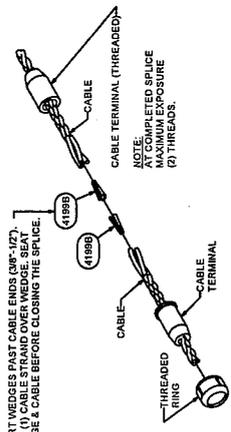
ALLOWABLE DEVIATION FROM CHART IN TANGENT SECTIONS:
 +800, -200 POUNDS/FORCE.
 CABLE TENSION READINGS ARE TYPICALLY HIGHER IN CURVED CABLE SECTIONS.

NOTE:
 1. TURNBUCKLES SHALL BE INSTALLED WITH A MINIMUM OF 1-1/2" THREAD ENGAGEMENT.
 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'.
 3. THE TORPEDO SPlice IS NOT PERMITTED FOR APPLICATIONS REQUIRING AN AGENCY TO DETERMINE IF APPROPRIATE FOR SPECIFIC APPLICATION.

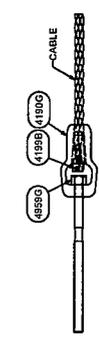


TORPEDO CABLE SPlice - 4099G

QTY	PART No.	TITLE	Lbs/Each
1	4199B	CABLE TERMINAL - THREADED	1.78
1	4199B	CABLE TERMINAL - THREADED	1.78
1	4199B	CABLE WEDGE (3 X 7)	0.08
1	4199B	3/4" CABLE WEDGE (3 X 7)	0.28

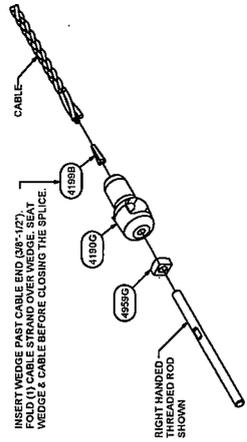


ASSEMBLY - TORPEDO CABLE SPlice 4099G



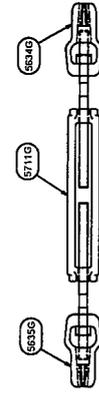
3/4" CABLE FIELD SPlice - 5634G & 5635G
 (5634G SHOWN, 5635G SIMILAR)

QTY	PART No.	TITLE	Lbs/Each
1	10520AG	3/4" STUD FLATTENED - L.H.T.	1.62
1	4190G	CABLE END CASTING	3.78
1	4190G	HEAVY HEX NUT (A563 DHD)	0.08
1	4959G	3/4" HEAVY SQUARE NUT (A563)	0.28



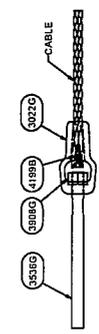
ASSEMBLY - 3/4" CABLE FIELD SPlice - 5635G
 (5635G SHOWN, 5634G SIMILAR)

QTY	PART No.	TITLE	Lbs/Each
1	10520AG	3/4" STUD FLATTENED - R.H.T.	1.62
1	4190G	CABLE END CASTING	3.78
1	4199B	3/4" CABLE WEDGE (3 X 7)	0.08
1	4959G	3/4" HEAVY SQUARE NUT (A563)	0.28



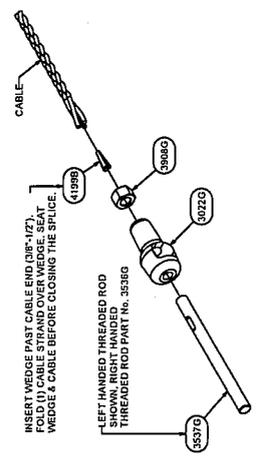
3/4" CABLE SPlice - 5698G
 (OPEN BODY STYLE)

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	10.89



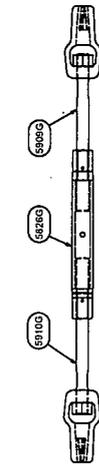
1" CABLE FIELD SPlice - 5909G & 5910G
 (5910G SHOWN, 5909G SIMILAR)

QTY	PART No.	TITLE	Lbs/Each
1	3022G	1" CABLE END CASTING	0.58
1	3095G	1" HEAVY HEX NUT (A563 DHD)	0.07
1	3095G	1" HEAVY HEX NUT (A563 DHD)	0.07
1	4199B	3/4" CABLE WEDGE (3 X 7)	0.08



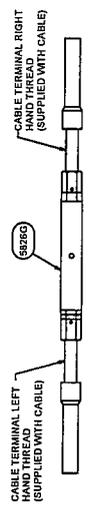
ASSEMBLY - 1" CABLE FIELD SPlice - 5909G
 (5909G SHOWN, 5910G SIMILAR)

QTY	PART No.	TITLE	Lbs/Each
1	3022G	1" CABLE END CASTING	0.58
1	3537G	1" STUD FLATTENED - L.H.T.	2.88
1	3095G	1" HEAVY HEX NUT (A563 DHD)	0.07
1	4199B	3/4" CABLE WEDGE (3 X 7)	0.08



1" CABLE SPlice - 5633G
 (CLOSED BODY STYLE)

QTY	PART No.	TITLE	Lbs/Each
1	5909G	1" CASS TURNBUCKLE CLOSED BODY STYLE	4.81
1	5910G	1" STUD ASSEMBLY L.H.T.	3.99
1	5910G	1" STUD ASSEMBLY R.H.T.	3.99



1" TURNBUCKLE - 5825G
 (CLOSED BODY STYLE)

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

SPEC: CASS-S3 (4:1 SLOPE)
 SUPPLEMENT: 4-CABLE GUARDRAIL SAFETY SYSTEM
 CHK: E.A.S. 1022010
 CHK: G.A. 1022010
 SH: 3 OF 5
 REV: 0
 TRINITY HIGHWAY PRODUCTS, LLC
 SS-742
 0

INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

Identified by

Project ID 0614000115

MATERIALS INFORMATION

4. Geotechnical Soil Information

GEOTECHNICAL SOIL INFORMATION

Memorandum

*Serious drought.
Help Save Water!*

To: MR. ALI R. ALQATAMI
Senior Design Engineer
Design I, Branch Z
Central Region – Project Development

Date: September 21, 2015

File: 06-KIN, FRE-5 VAR.
HTCB
EA# 06-0S350
EFIS ID# 0614000115

Attn: Mr. Ranjit K. Mondal, PE

From: **DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5**

Subject: Geotechnical Soil Information and Recommendation

Per request, the Office of Geotechnical Design North (OGDN) has prepared this memorandum to provide geotechnical soil information and recommendation for the subject project.

We understand that proposed project will install high tension cable barrier (HTCB) in the median on I-5 in Kings County from PM 21.64 to PM 26.72, and in Fresno County from PM 0.00 to PM 2.25, and from PM 10.89 (El Dorado Ave OC, Br. No. 42-234) to PM 14.87 (I-5/SR198 Separation, Br. No. 42-235). We understand that two alternatives manufactured by Brifen USA, Inc. and Trinity Highway Products, LLC have been considered for the HTCB. Typical foundation embedment varies from 3 to 5 feet below ground surface.

Work performed by OGDN for this memo includes reviewing available publications and specific project information pertaining to design and installation of the HTCB, performing site reconnaissance, collecting and testing representative soil samples and preparing this memo.

Site Reconnaissance, Soil Sample Collection and Laboratory Testing

OGDN performed a site reconnaissance on August 17 and 18, 2015. Five soil samples were collected, by using hand auger, at five discrete locations along the proposed HTCB alignment, with one sample at each location. The samples were taken typically at depths of 2 to 4 feet below the existing ground surface. A general summary of the sample/hand auger locations is provided in Table 1 below.

The collected soil samples were submitted to Caltrans Geotechnical Laboratory for Particle Size Analysis of Soils (ASTM D422). Test results are provided in the attachment. Based on the test results, the materials are classified as Silty Sands (SM) in accordance with Caltrans Soil and Rock Logging, Classification, and Presentation Manual, 2010 Edition.

Table 1 Sample/Hand Auger Locations

Location No.	Location Description
1	I-5 median, south of I-5/SR198 Separation
2	I-5 median, north of El Dorado Ave. OC
3	I-5 median, in the middle between Jayne Ave. OC and I-5/SR269 Separation
4	I-5 median, in the middle between I-5/SR269 Separation and Quebec Ave. OC
5	I-5 median, north of Milham Ave. OC

Conclusion and Recommendation

Soil Parameters

It is our opinion that the subsurface soils within the anticipated HTCB foundation depths (0 to 5 feet) can be generally described as cohesionless materials consisting predominantly of silty sands and sandy silts, with minor amounts (5% or less) of gravels at surficial depths. We judge that the apparent densities of the materials vary from loose to medium dense. The following soil parameters are considered suitable at the site.

Unit Weight, γ (pcf)	120	pcf
Internal Friction Angel, ϕ	30	degree

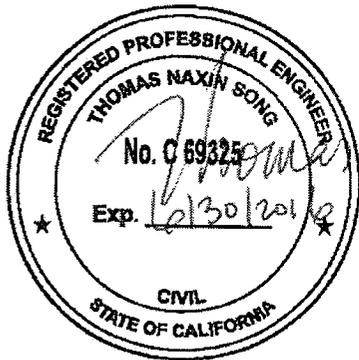
Groundwater

Groundwater was not encountered during our site reconnaissance. California Department of Water Resource (DWR) have several wells in the vicinity of the project site. Data collected in these wells show that groundwater levels were measured deeper than 300 feet below ground surface. Groundwater is not anticipated to affect the proposed HTCB foundation design and construction.

Mr. Ali R. Alqatami
September 21, 2015
Page 3

Geotechnical Soil Information and Recommendation
HTCB, 06-Kin, Fre-5 PM Var.
06-0S350, 0614000115

If you have any questions regarding this memorandum, please contact me at (916) 227-1057.



Thomas N. Song, PE 69325
Transportation Engineer - Civil
Office of Geotechnical Design - North

c: District Project Engineer
District Material Engineer
Geotechnical Archive

INFORMATION HANDOUT

For Contract No. 06-0S3504

At 06-Kin, Fre-5-21.6/26.7, 0/2.3, 10.9/14.9

Identified by

Project ID 0614000115

MATERIALS INFORMATION

5. Water Source Information

NON-POTABLE WATER SOURCES



City of Avenal

919 Skyline Blvd.
Avenal, CA 93204
Phone (559) 386-5766
Fax (559) 386-0629

January 25, 2016

Department of Transportation - Caltrans
Attn: Scott Friesen
2015 E. Shields Ave Ste. 100
Fresno, CA 93726

Dear Mr. Friesen,

This letter is in response to your request for non-potable water. The City of Avenal has a well site located at 1 Sports Way here in Avenal that can provide you with water for construction purposes only. I spoke to Rob Williams the Public Works Director and he confirmed that currently the well is able to provide the amount you requested of 400,000 gallons. In order to process your request you will have to fill out an application and pay a deposit of \$100.00.

If you have any questions regarding this letter please feel free to contact me at 559-386-5766. Our offices hours are Mon-Fri from 8a.m.-4:30p.m.

Sincerely,

City of Avenal

Yolanda Cabral
Office Manager