

INFORMATION HANDOUT

For Contract No. 10-0V6604

At 10-Mer,Sta,SJ-5-32.2/32.5, 0.0/28.1, 0.0/R12.4

Identified by

Project ID 1000020667

MATERIALS INFORMATION

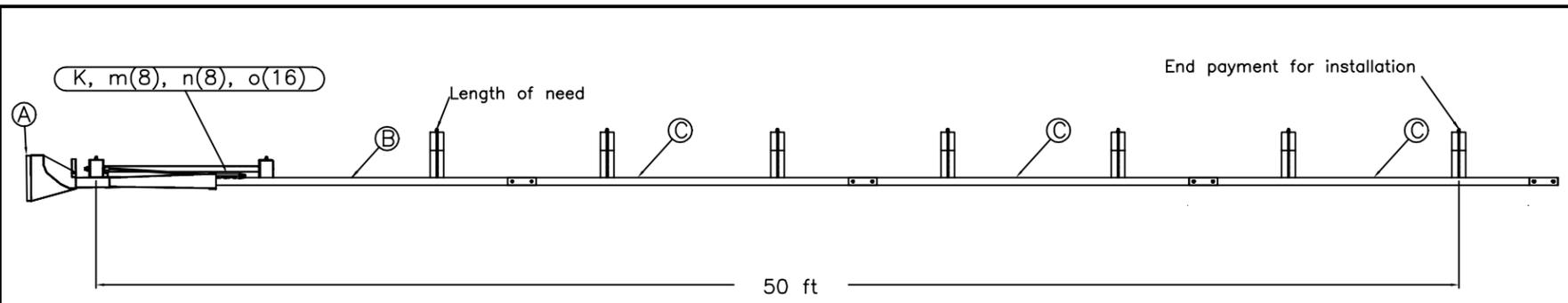
Manufacturer's Drawings for Alternative In-line Terminal System

Manufacturer's Drawings for Alternative Flared Terminal System

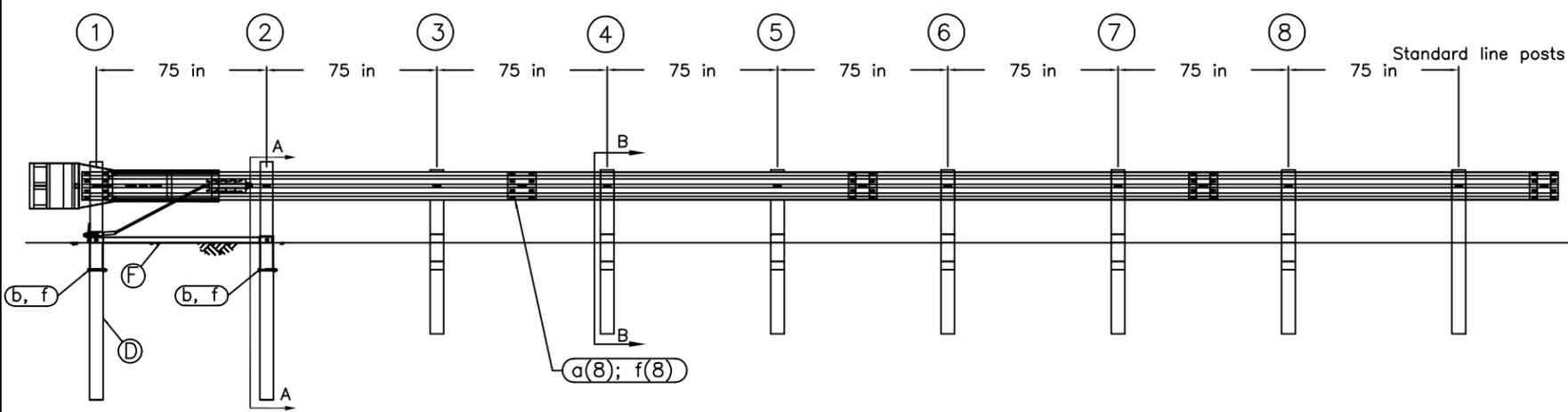
Manufacturer's Drawings for Alternative Crash Cushion System

UTILITY VARIANCE

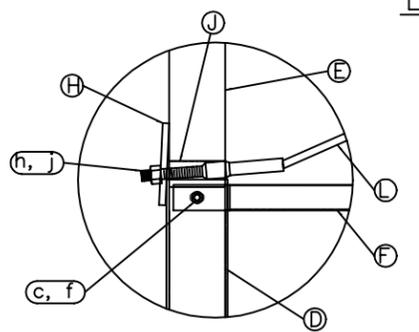
Request for Exception - Variance to "Policy on High and Low Risk Underground Facilities Within Highway Rights of Way Dated February 20, 2014



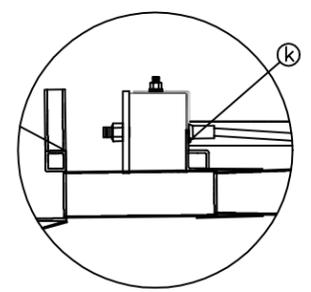
TRAFFIC → PLAN



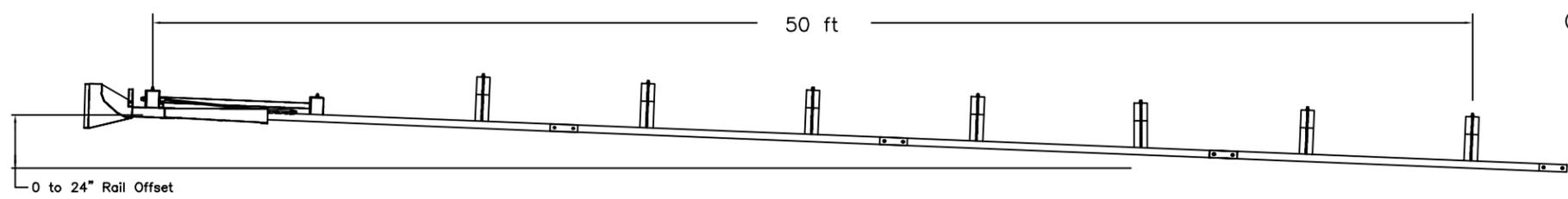
ELEVATION



POST #1 CONNECTION DETAIL



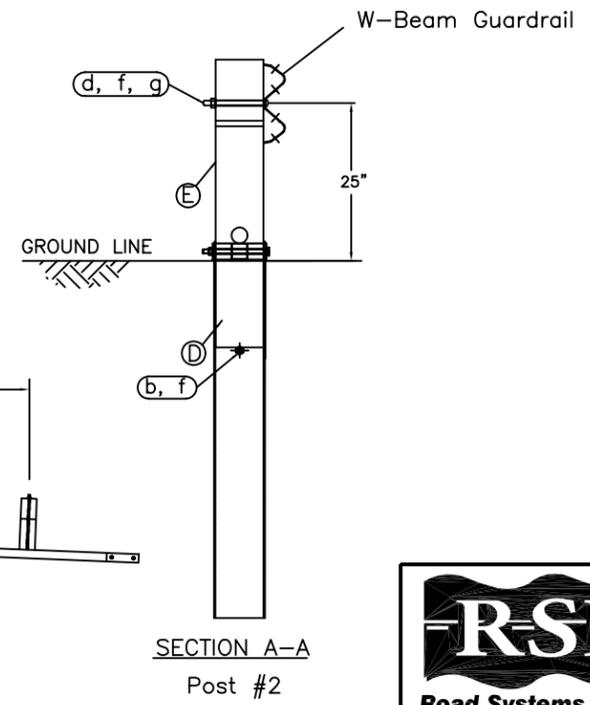
IMPACT HEAD CONNECTION DETAIL



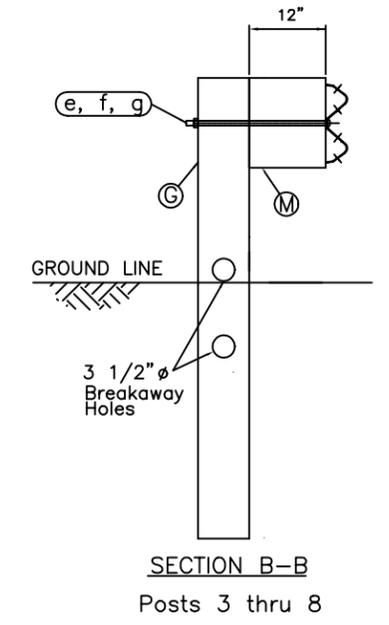
OPTIONAL FLARED INSTALLATION
25:1 maximum flare rate

- GENERAL NOTES:
1. Breakaway posts are required with the SKT.
 2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 3. The SKT can be flared at a rate of up to 25:1 to prevent the impact head from encroaching on the shoulder.
 4. The foundation tubes shall not protrude more than 4" above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
 5. When rock is encountered, a 12" Ø post hole, 20" into the rock surface may be used if approved by the engineer. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first two posts can be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
 6. 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.
 7. A site evaluation should be considered if there is less than 25' between the outlet side of the terminal and any adjacent driving lane.
 8. The soil tubes may be driven with an approved driving head. They shall not be driven with the post in the tube.
 9. The wood blockouts should be "toe-nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks.

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	S3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	S1303 MGS
C	3	W-BEAM GUARDRAIL, 12 Ga.	G1203 MGS
D	2	FOUNDATION TUBE	E731
E	2	BCT WOOD POST	P650 MGS
F	1	GROUND STRUT	E780
G	6	CRT WOOD POST	P671 MGS
H	1	BEARING PLATE	E750
J	1	PIPE SLEEVE	E740
K	1	CABLE ANCHOR BOX	S760
L	1	BCT CABLE ANCHOR ASSEMBLY	E770
M	6	MGS TIMBER BLOCKOUT OR EQUIV.	P618
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	24	5/8Ø x 1 1/4 SPLICE BOLT	B580122
b	2	5/8Ø x 7 1/2 HEX BOLT	B580754
c	2	5/8Ø x 10 HEX BOLT	B581004
d	1	5/8Ø x 10 H.G.R. BOLT	B581002
e	6	5/8Ø x 22 H.G.R. BOLT	B582202
f	35	5/8Ø H.G.R. NUT	N050
g	7	H.G.R. WASHER	W050
h	2	1 ANCHOR CABLE HEX NUT	N100
j	2	1 ANCHOR CABLE WASHER	W100
k	2	3/8 x 3 LAG SCREW	E350
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SB58A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A



SECTION A-A
Post #2



SECTION B-B
Posts 3 thru 8

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

Sequential Kinking Terminal
SKT - Assembly

Midwest Guardrail System
Wood Post System

Drawing Name: SKT-MGS-W-US Scale: NONE

Sheet: A1
Date: 12/01/04
By: JRR
Rev: 0

**ET-31™ Guardrail End Treatment
NCHRP Report 350 Test Level 3
System Length 53'-1 1/2" (16.19 m)**

For specific assembly, maintenance, or repair details refer to the state or specifying agency's standard drawings and/or Trinity standard layout drawings.

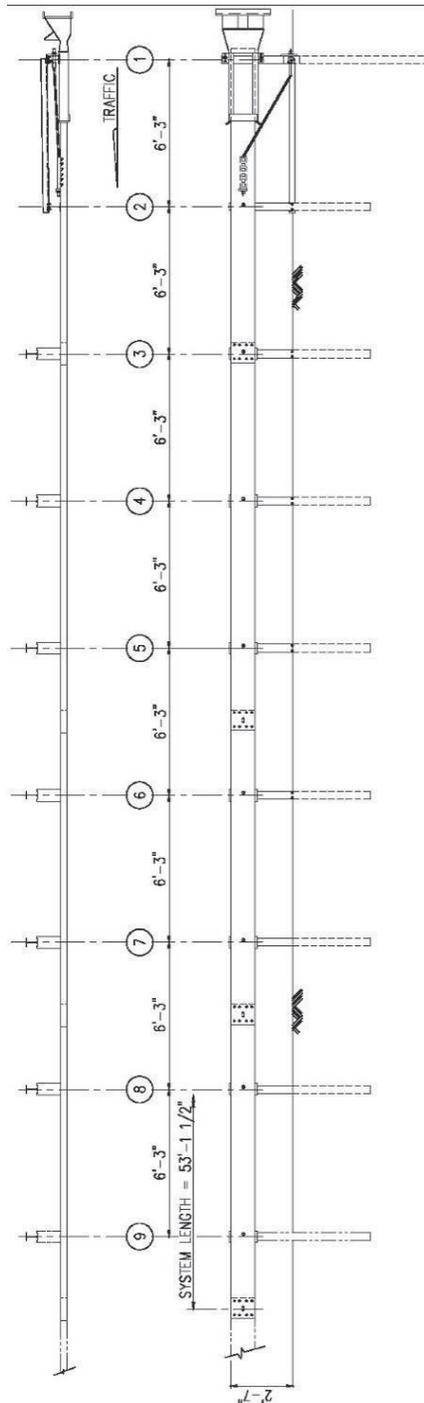
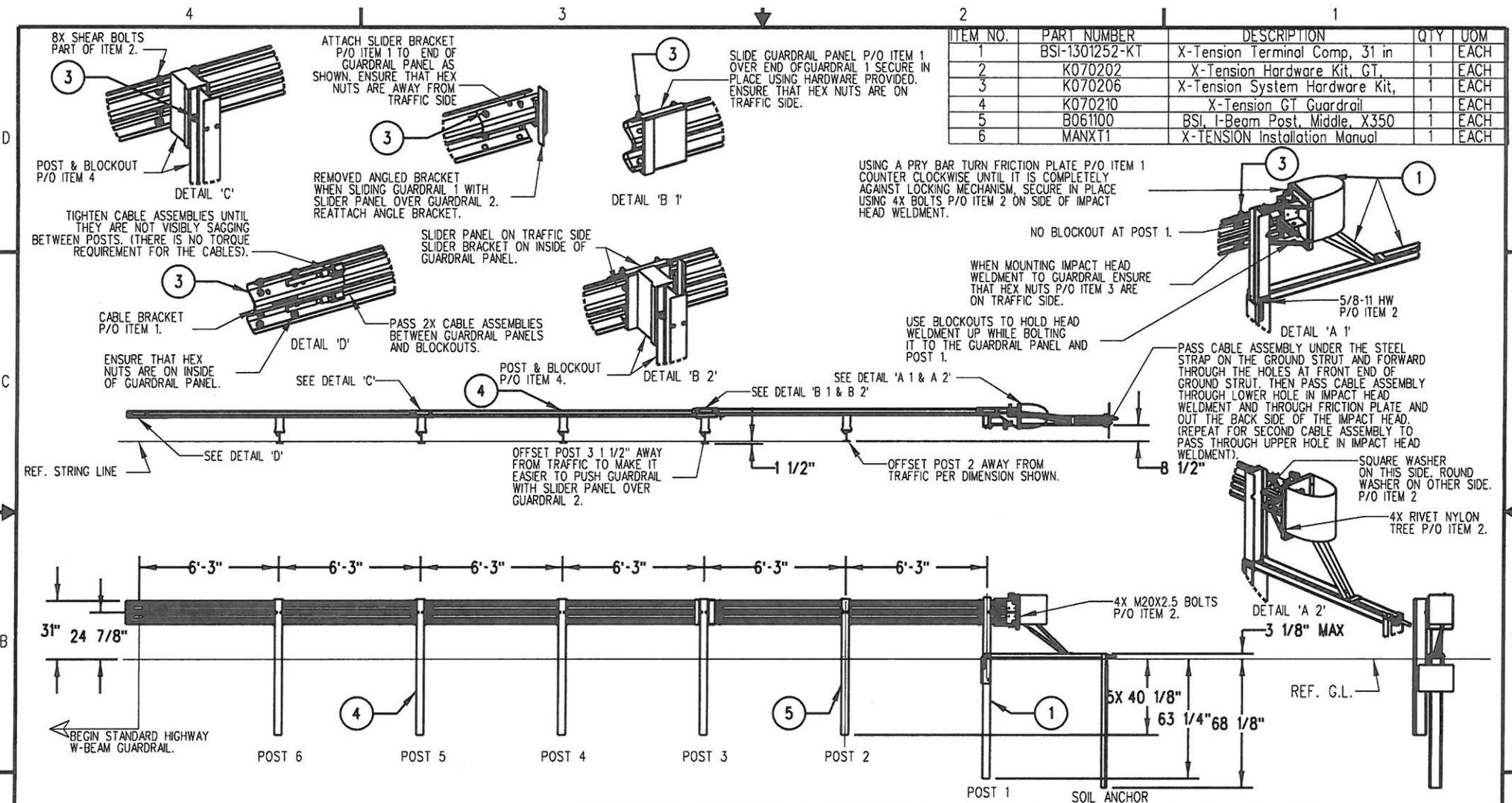


Figure 4 (TL-3)

[This drawing represents one version of the 53'-1 1/2" (16.19 m) system]

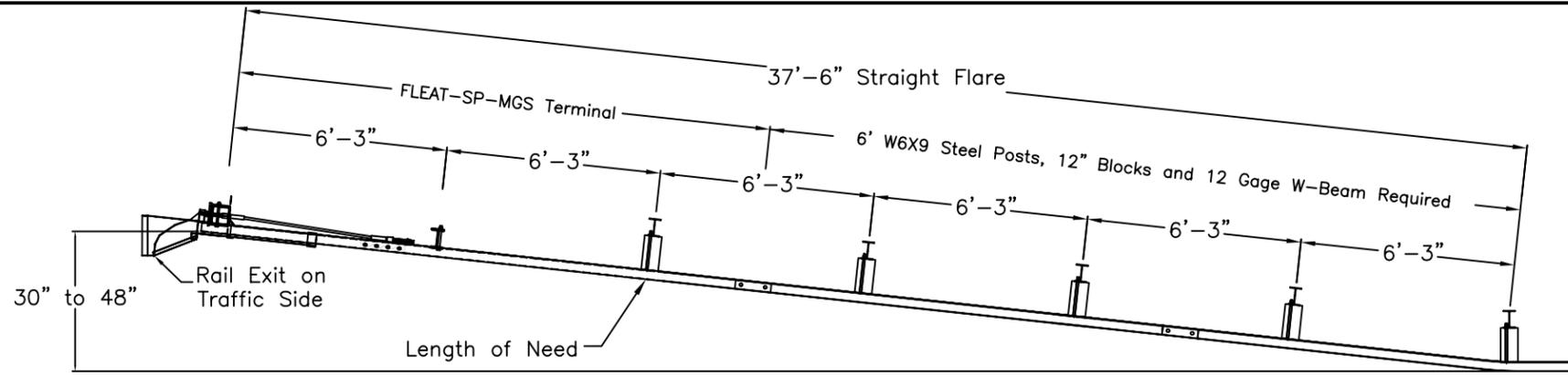


ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-KT	X-Tension Terminal Comp, 31 in	1	EACH
2	K070202	X-Tension Hardware Kit, GT,	1	EACH
3	K070206	X-Tension System Hardware Kit,	1	EACH
4	K070210	X-Tension GT Guardrail	1	EACH
5	B061100	BSL I-Beam Post, Middle, X350	1	EACH
6	MANXT1	X-TENSION Installation Manual	1	EACH

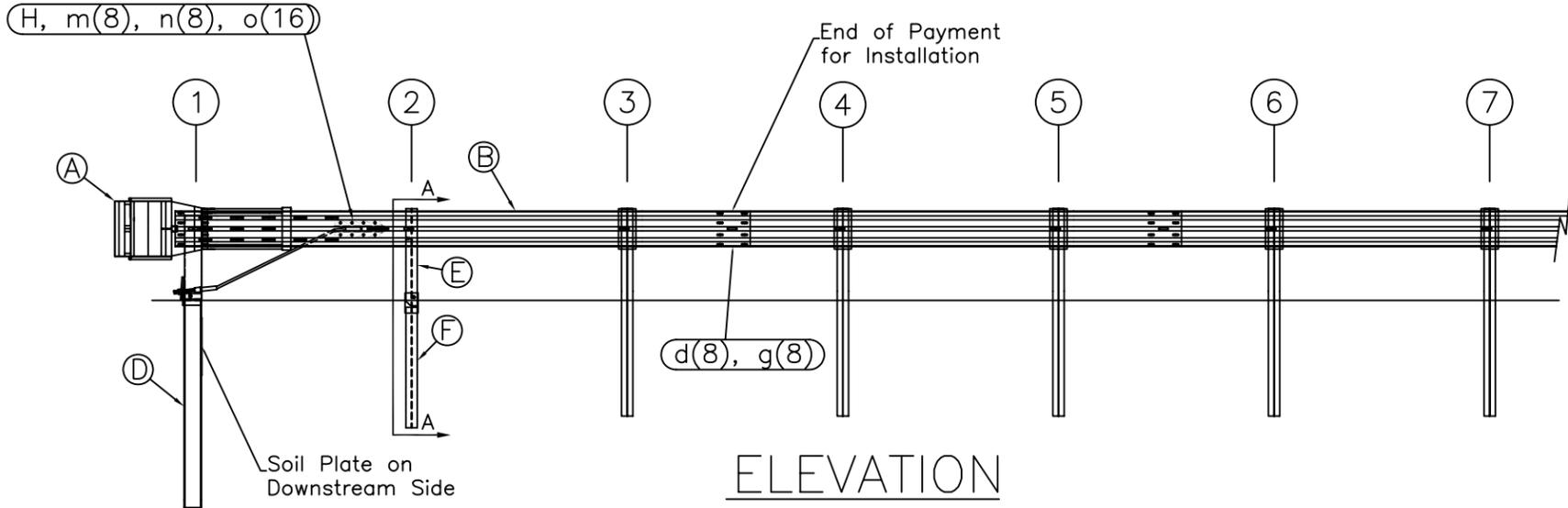
- NOTES: UNLESS OTHERWISE SPECIFIED.
- SYSTEM TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
 - ONLY TIGHTEN THE CABLE ASSEMBLIES USING THE NUTS AT THE CABLE BRACKET (SEE DETAIL 'D'). DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND ANCHOR.
 - WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE POST.

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APPROVALS			
DRAWN BY:	NMV	THIRD ANGLE PROJECTION	
DRAWN DATE:	2/08/13		
APPR'D BY:	JMT		
APPR'D DATE:	2/08/13		

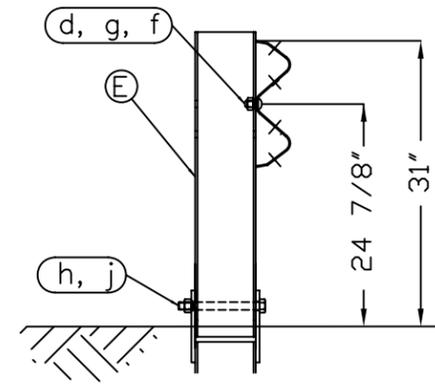
		<small>BARRIER SYSTEMS INC. 3333 Voco Valley Parkway, Ste 800, Vacaville, CA 95688 Tel: 800-800-5691 www.barriersystemsinc.com</small>	
TITLE X-TENSION GUARDRAIL TERMINAL SYSTEM STEEL POST WITH COMPOSITE BLOCKOUT 31" RAIL HEIGHT			
SIZE	DWG NO.	REV.	
B		B	
SCALE	1:50	SHEET	1 OF 1



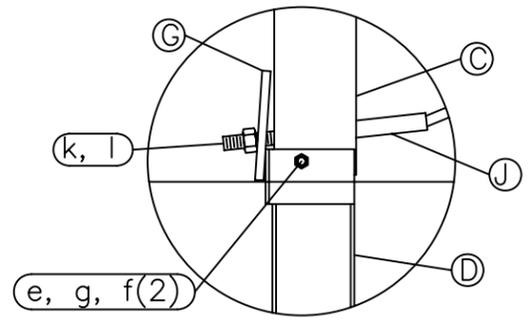
PLAN



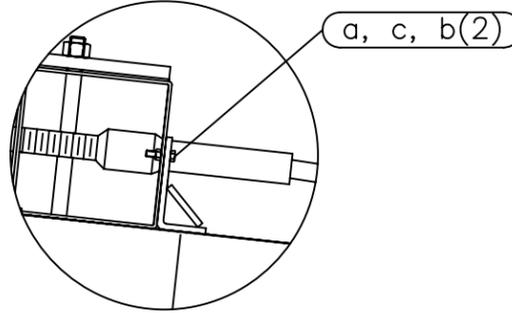
ELEVATION



SECTION A-A
Post #2



Post #1 Connection Detail



Impact Head Connection Detail

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	F3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	MGS-SF1303
C	1	FIRST POST TOP (6X6X $\frac{1}{8}$ " Tube)	TPHP1A
D	1	FIRST POST BOTTOM (6' W6X15)	TPHP1B
E	1	SECOND POST ASSEMBLY TOP	UHP2A
F	1	SECOND POST ASSEMBLY BOTTOM	HP3B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770

HARDWARE (ALL DIMENSIONS IN INCHES)			
a	2	5/16 x 1 HEX BOLT GRD 5	B5160104A
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.G.R NUT	N050
h	1	3/4 Dia. x 8 1/2 HEX BOLT GRD A449	B340854A
j	1	3/4 Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SB58A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A

GENERAL NOTES:

- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- 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.
- 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.
- When competent rock is encountered, a 12" \varnothing 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.
- 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.

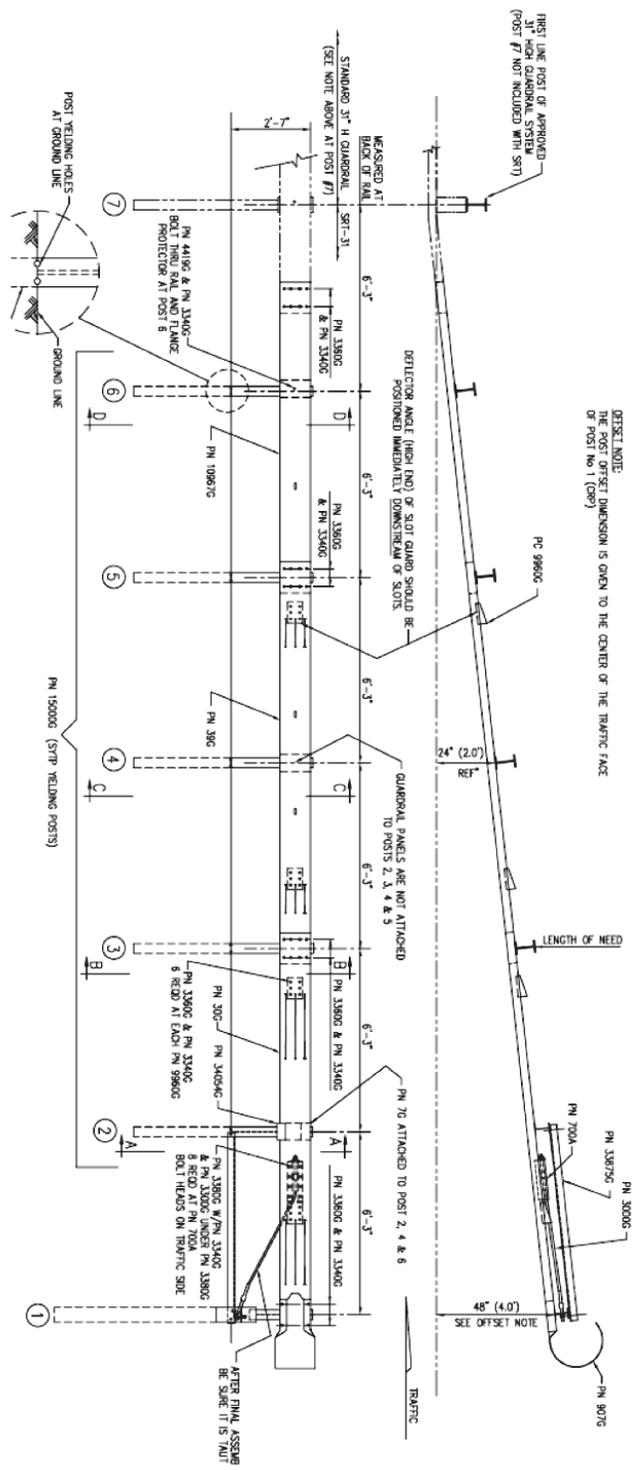
Big Spring, TX
Phone: 432-263-2435
or Phone: 330-346-0721

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

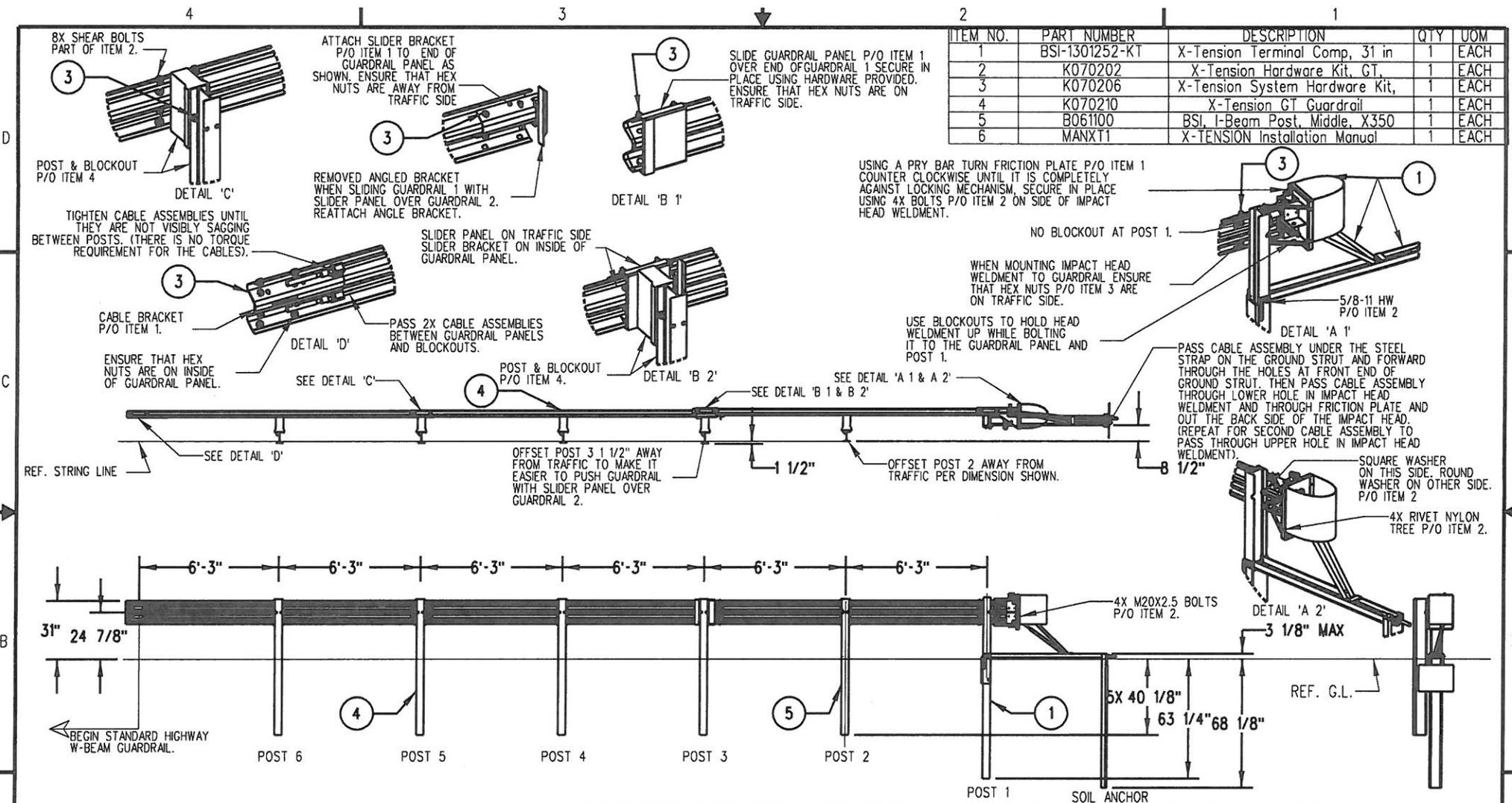
KNOW YOUR SRT™ -31 SYSTEM

SRT™ -31 SYSTEM

FOR SPECIFIC INSTALLATION, MAINTENANCE, OR REPAIR DETAILS,
REFER TO
THE STATE/SPECIFYING AGENCY'S STANDARD DRAWING(S) AND/OR
TRINITY STANDARD LAYOUT DRAWINGS



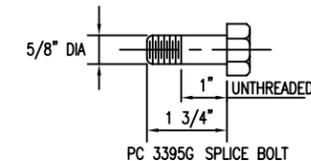
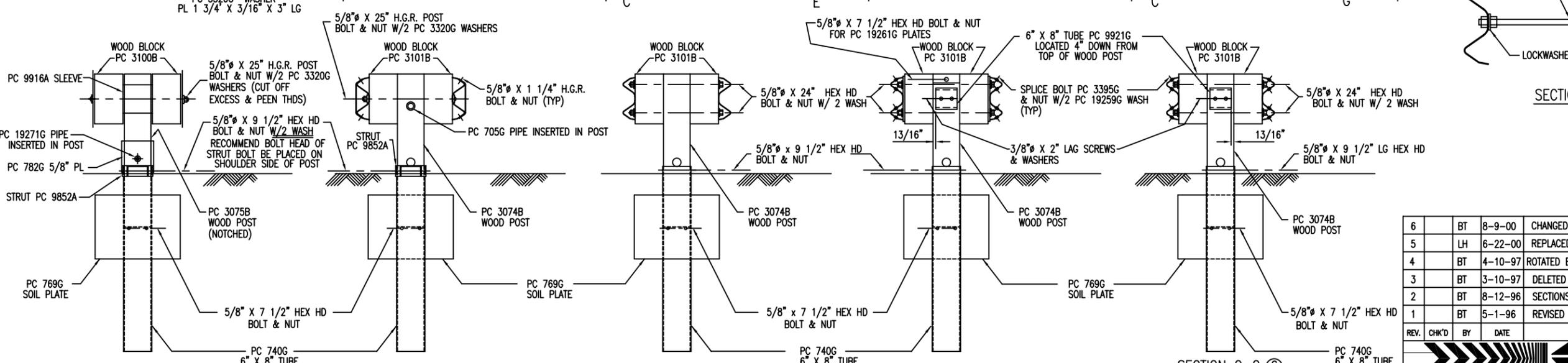
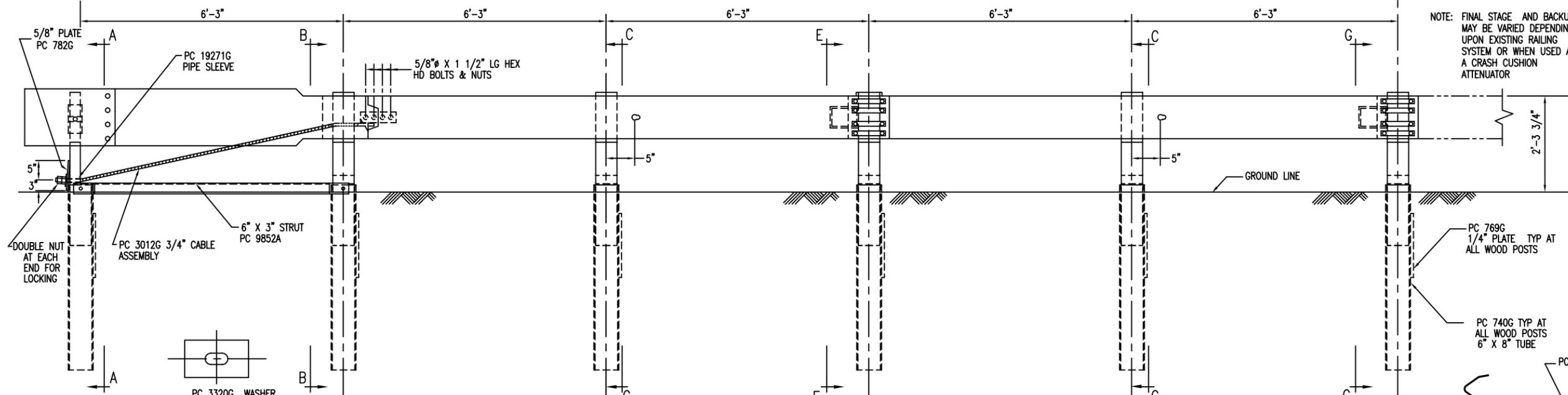
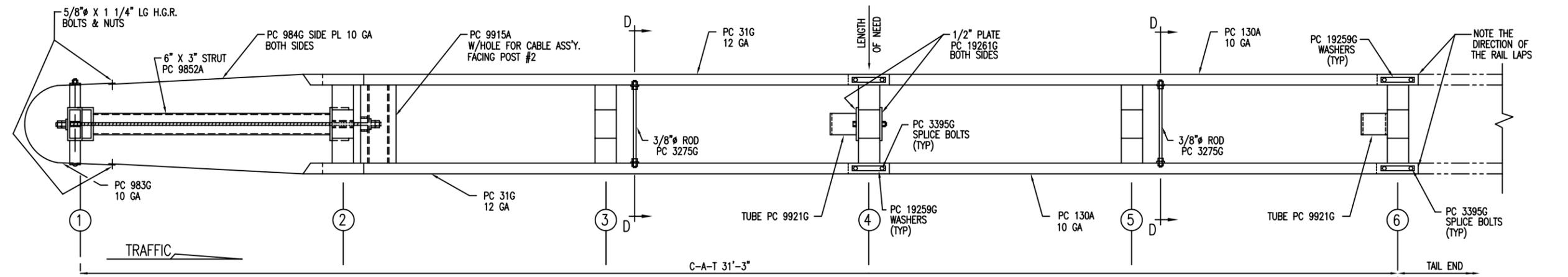
DETAIL NOTE:
MEASUREMENT DIMENSION IS GIVEN TO THE CENTER OF THE TRAFFIC FACE
OF POST NO. 1 (CSP)



ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-KT	X-Tension Terminal Comp, 31 in	1	EACH
2	K070202	X-Tension Hardware Kit, GT.	1	EACH
3	K070206	X-Tension System Hardware Kit,	1	EACH
4	K070210	X-Tension GT Guardrail	1	EACH
5	B061100	BSL I-Beam Post, Middle, X350	1	EACH
6	MANXT1	X-TENSION Installation Manual	1	EACH

- NOTES: UNLESS OTHERWISE SPECIFIED.
- SYSTEM TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
 - ONLY TIGHTEN THE CABLE ASSEMBLIES USING THE NUTS AT THE CABLE BRACKET (SEE DETAIL 'D'). DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND ANCHOR.
 - WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE POST.

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APPROVALS DRAWN BY: NMV DRAWN DATE: 2/08/13 APPR'D BY: JMT APPR'D DATE: 2/08/13				THRD ANGLE PROJECTION 		TITLE X-TENSION GUARDRAIL TERMINAL SYSTEM STEEL POST WITH COMPOSITE BLOCKOUT 31" RAIL HEIGHT	
REV: B		DATE: 2/08/13		SCALE: 1:50		SHEET: 1 OF 1	



NOTE: PC 3395G SPLICE BOLTS ARE USED TO ALLOW TELESCOPING ACTION.

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C-A-T BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
31G	2	12/12/6/0 CAT (GUARDRAIL)
130A	2	10/12/6/5/10:6/8/SP CAT (GUARDRAIL)
705G	1	2" x 5 1/2" PIPE
740G	6	4"6 TUBE SLEEVE
769G	6	1/4 x 18 x 24 SOIL PLATE
782G	1	5/8" x 8" x 8" BEARING PLATE
983G	1	10/NOSE PLATE/CAT/ROLLED
984G	2	10/SIDE PLATE CAT
3012G	1	CABLE 3/4 x 8/0/DBL SWG
3074B	5	WD 3/6 POST #2, 3, 4, 5, 6 CAT
3075B	1	WD 3/6 POST #1 CAT
3100B	2	WD BLOCK 1/2 #1 CAT
3101B	10	WD BLOCK 1/2 #2-6 CAT
3255G	4	3/8" FLAT WASHER
3263G	4	3/8" x 2" LAG SCREW
3275G	2	3/8" x 24 1/2" RESTRAINT ROD
3300G	20	5/8" FLAT WASHER
3320G	4	3/16" x 1 3/4" x 3" RECT WASHER
3340G	85	5/8" G.R. NUT
3360G	16	5/8" x 1 1/4" G.R. BOLT
3380G	8	5/8" x 1 1/2" HEX BOLT
3395G	32	5/8" x 1 3/4" HEX BOLT CAT
3478G	13	5/8" x 7 1/2" HEX BOLT
3497G	6	5/8" x 9 1/2" HEX BOLT
3650G	2	5/8" x 25" G.R. BOLT
3900G	2	1" FLAT WASHER
3910G	4	1" HEX NUT
4252G	8	3/8" HEX NUT
4258G	4	3/8" LOCK WASHER
4640G	8	5/8" x 24" HEX BOLT
9852A	1	CHANNEL STRUT x 6'-6"
9915A	1	SPACER CHANNEL CAT
9916A	1	10/BENT PLATE SLEEVE
9921G	2	6" SLEEVE 6 x 8
19259G	32	3/16" x 2" x 10" PLATE WASHER
19261G	2	1/2 x 3 x 7 POST PLATE
19271G	1	1" x 2 1/2" PIPE SLEEVE CAT

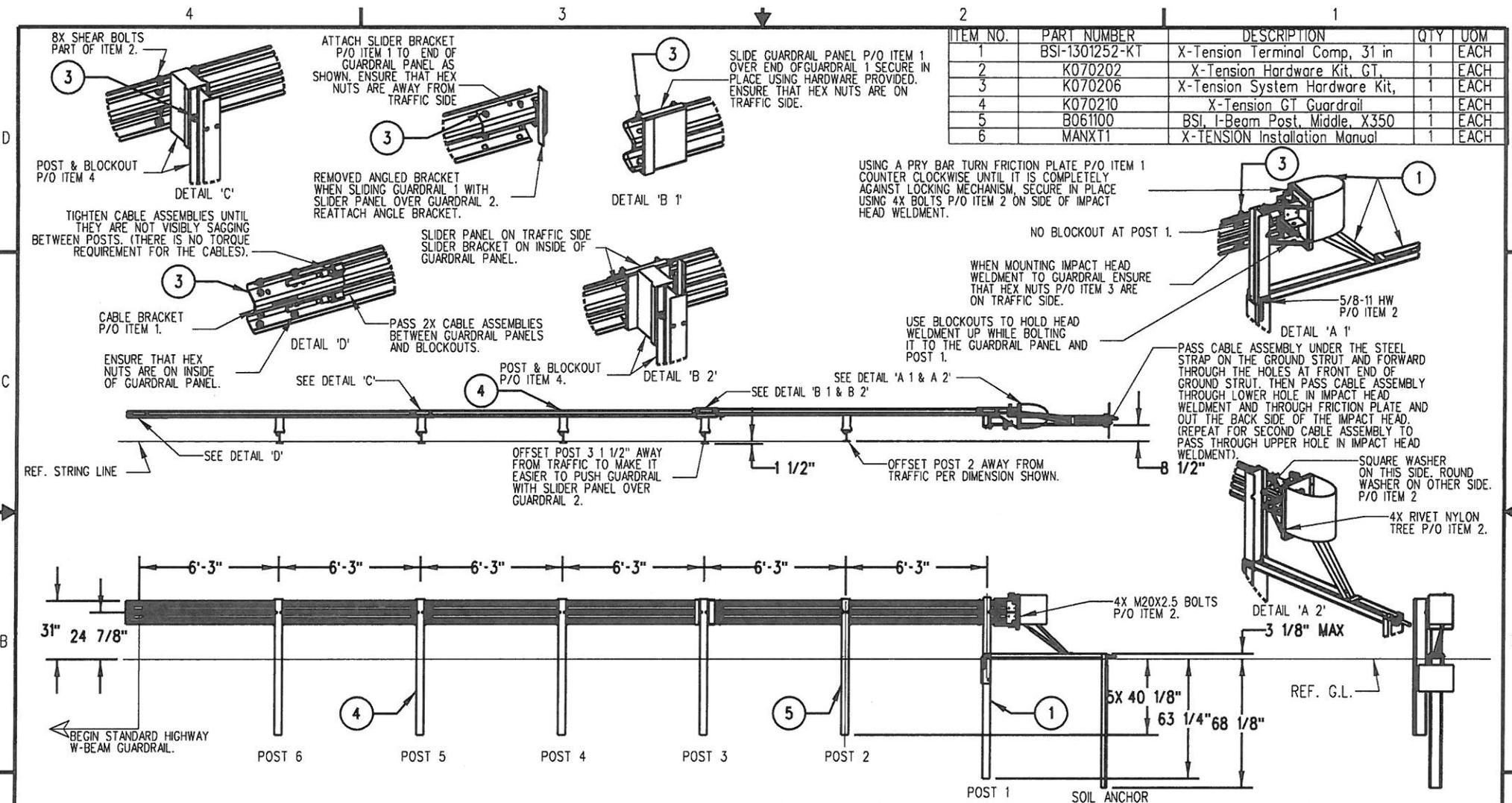
REV.	CHK'D	BY	DATE	REMARKS
6	BT		8-9-00	CHANGED SYSTEM HEIGHT, WAS 2'-3"
5	LH		6-22-00	REPLACED PC 766 WITH PC 769, CHANGED TITLE BLOCK
4	BT		4-10-97	ROTATED BLOCK PC 9921 90° AT POST 4 & 6
3	BT		3-10-97	DELETED PC 3072, 3073, 4470, CHG QTY 3074 & 3478
2	BT		8-12-96	SECTIONS A-A & B-B, CORRECTED PIPE SLEEVE PC No
1	BT		5-1-96	REVISED PC No 31G & 130A

C-A-T

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 STEMMONS FREEWAY, DALLAS, TX 75207

DRAWN	BT
CHECKED	EN
SCALE	N.T.S.
DATE	7-15-94
ENG. FILE #	SS245-01E
SHT.No.	E1 OF 1
DRAWING NO.	SS-245
REV.	6

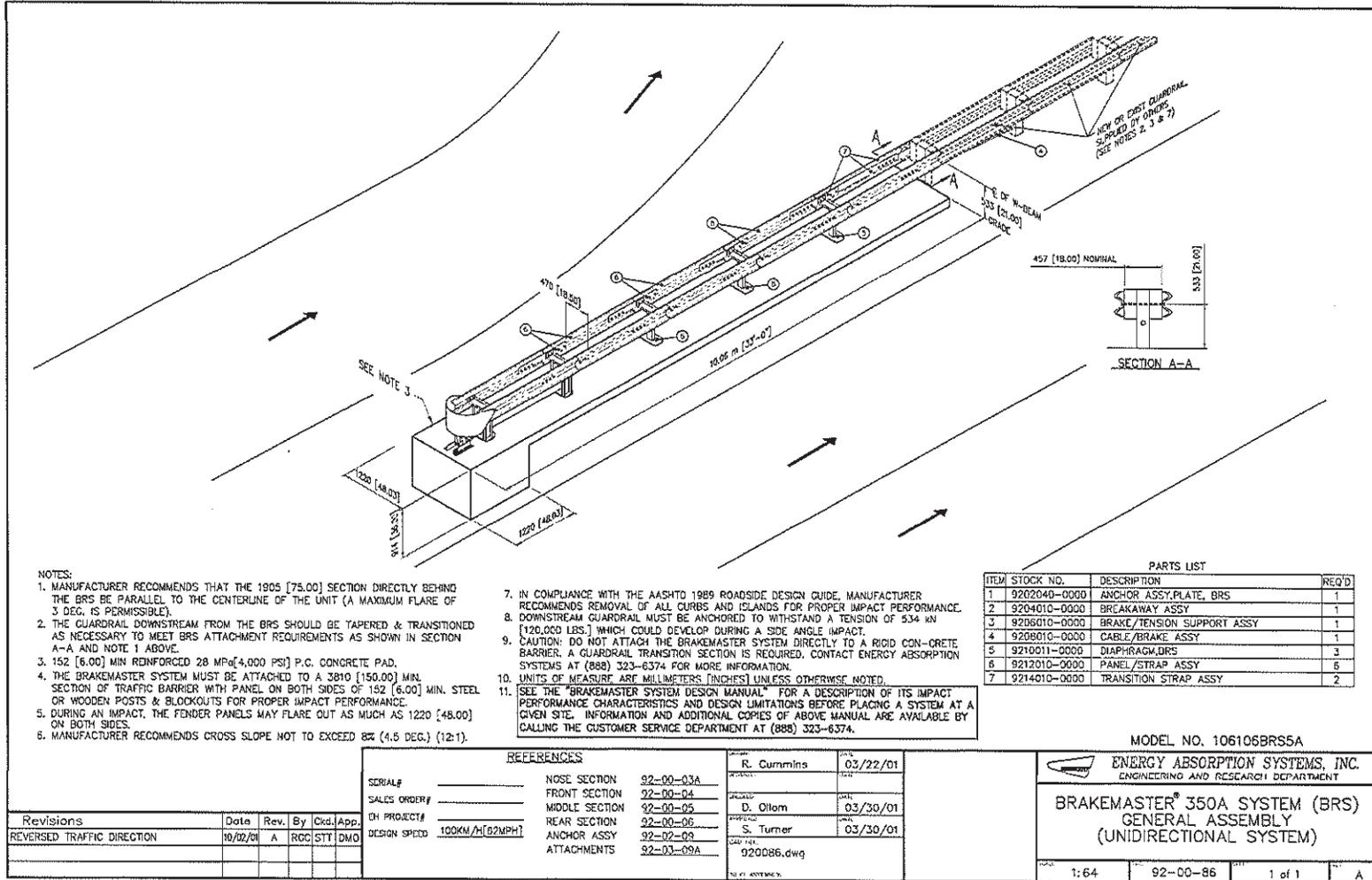


ITEM NO.	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-KT	X-Tension Terminal Comp, 31 in	1	EACH
2	K070202	X-Tension Hardware Kit, GT,	1	EACH
3	K070206	X-Tension System Hardware Kit,	1	EACH
4	K070210	X-Tension GT Guardrail	1	EACH
5	B061100	BSL I-Beam Post, Middle, X350	1	EACH
6	MANXT1	X-TENSION Installation Manual	1	EACH

- NOTES: UNLESS OTHERWISE SPECIFIED.
- SYSTEM TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
 - ONLY TIGHTEN THE CABLE ASSEMBLIES USING THE NUTS AT THE CABLE BRACKET (SEE DETAIL 'D'). DO NOT TIGHTEN THE CABLES AT THE FRONT OF THE GROUND ANCHOR.
 - WHEN DRIVING STEEL POST, ENSURE THAT A DRIVING CAP WITH TIMBER OR PLASTIC INSERT IS USED TO PREVENT DAMAGE TO THE GALVANIZING TO THE TOP OF THE POST.

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APPROVALS				TITLE X-TENSION GUARDRAIL TERMINAL SYSTEM STEEL POST WITH COMPOSITE BLOCKOUT 31" RAIL HEIGHT			
<small>DRAWN BY:</small> NMV <small>DRAWN DATE:</small> 2/08/13 <small>APPR'D BY:</small> JMT <small>APPR'D DATE:</small> 2/08/13	<small>THRD ANGLE PROJECTION</small> 	<small>REV</small> <small>ECN*</small>	<small>DATE</small>	<small>SIZE</small> B	<small>DWG NO.</small> 03/02/13 2708/13	<small>SCALE</small> 1:50	<small>REV.</small> B
<small>DO NOT SCALE DRAWING</small>						<small>SHEET</small> 1 OF 1	

DWG 920086



Brakemaster® 350A System General Assembly (Unidirectional System)

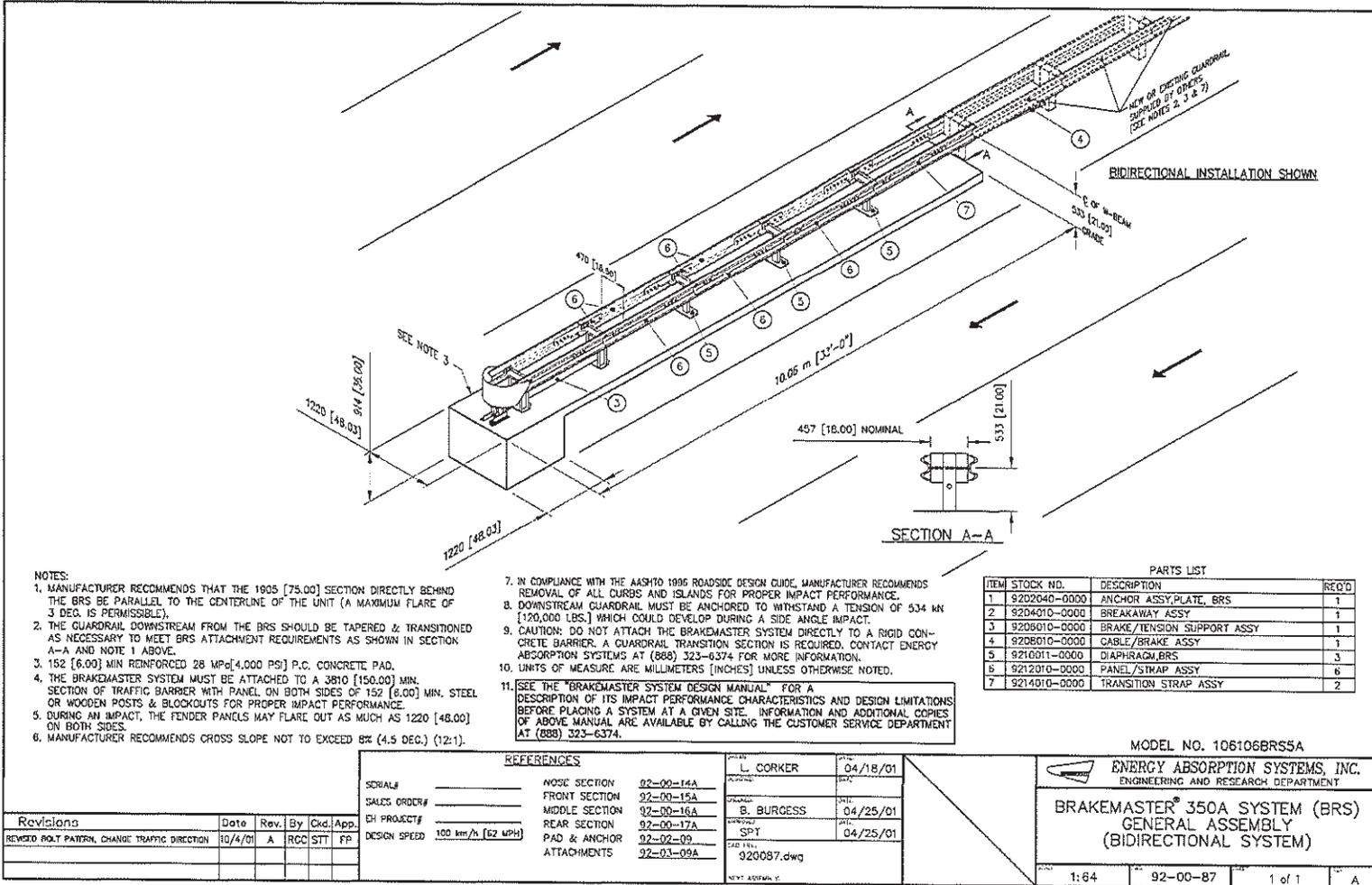
MODEL NO. 106106BRS5A

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

BRAKEMASTER® 350A SYSTEM (BRS)
GENERAL ASSEMBLY
(UNIDIRECTIONAL SYSTEM)

SCALE: 1:64 92-00-86 1 of 1 A

DWG 920087



Brakemaster® 350 General Assembly (Bidirectional System)

Memorandum

*Flex your power!
Be energy efficient!*

To: MICHAEL HUTCHISON - 10
Design Manager, Branch J
Central Region Project Development Division – Design IV

Date: February 20, 2014

File: 10-0V6601
EFIS 1000020667
10-MER-5, PM 32.2/32.5
10-STA-5, PM 0.0/28.1
10-SJ-5, PM 0.0/R12.4
617



From: LINDA FONG, Chief
Encroachment Exceptions
Division of Design
MS 28

Subject: REQUEST FOR EXCEPTION – VARIANCE TO “POLICY ON HIGH AND LOW RISK UNDERGROUND FACILITIES WITHIN HIGHWAY RIGHTS OF WAY”

Your request for a variance to policy dated February 11, 2014 (received February 17, 2013), to allow existing facilities to be located concurrent with construction, is conditionally approved.

This \$51.6 million Capital Preventative Maintenance project is located near Lathrop from Garzas Creek Bridge to Tom Paine Slough Bridge. Work on the highway mainline and ramps includes pavement overlay, placing rumble strip, replacing asphalt concrete dike, and upgrading metal beam guardrail adjacent to the highway. The existing pavement surfaces will receive grinding where pavement transitions or other features require profile mitigation.

Current policy requires that underground utility facilities be included on the project plans. No utility conflicts were identified from as-built plans, permit records, field reviews or other sources. This exception allows the proposed plans to be advertised without the presentation of any utilities.

Metal beam guardrail installation is flexible and no relocation of existing utilities would be required. Field mark-outs prior to any excavation will allow MBGR post to be set away from any subsurface hazards. No adverse operational, or maintenance issues are introduced with the proposed work.

Conditions of approval:

1. This approval shall not set any precedents.
2. This approval is a variance to the policy requiring the presentation of existing utilities on the plans and does not remove other requirements of the “Policy on High and Low Risk Underground Facilities Within Highway Rights of Way.”
3. The plan sheets must include the note, “EXISTING UTILITY FACILITIES HAVE NOT BEEN INCLUDED ON THESE PLANS.”
4. A copy of this variance must be provided for the Resident Engineer and the “Information Handout”.
5. Paragraph 8 of the nonstandard special provision 5-1.36D (attached) must be provided to the Office Engineer and incorporated into the contract plans.

Attachment

Section 5-1.36D. Use if utilities are to be relocated during construction or if utilities are involved with pile driving, drilling, or substructure construction.

Add to section 5-1.36D:

1. Use if the date of relocation is known. Identify each utility and relocation date.

The utility owner will relocate a utility shown in the following table before the corresponding date shown:

Utility Relocation and Date of the Relocation

Utility	Location	Date

2. Use if the Department has arranged the relocation schedule with the utility owner. Identify each utility and number of days for its relocation.

During the progress of the work under this Contract, the utility owner will relocate a utility shown in the following table within the corresponding number of days shown. Notify the Engineer before you work near a utility shown. The days start on the notification date.

Utility Relocation and Department-Arranged Time for the Relocation

Utility	Location	Days

3. Use if the Contractor is to arrange the relocation schedule with the utility owner. Identify each utility and number of days for its relocation.

Installation of the utilities shown in the following table requires coordination with your activities. Make the necessary arrangements with the utility company through the Engineer and submit a schedule:

1. Verified by a representative of the utility company
2. Allowing at least the time shown for the utility owner to complete its work

Utility Relocation and Contractor-Arranged Time for the Relocation

Utility	Utility address	Location	Days

4. Use if utilities are being rearranged to permit pile driving, drilling activities, or substructure construction. Identify each utility and its location.

To allow pile driving, drilling activities, or substructure construction, the utility owner will rearrange the utilities shown in the following table during construction activities. No other utility will be rearranged or temporarily deactivated before or during construction activities for this purpose unless you make arrangements with the utility owner. Notify the Engineer at least 30 days before the interfering utilities are to be rearranged. The Engineer notifies the utility owners.

Utility Rearrangement for Pile Driving, Drilling Activities, or Substructure Construction

Utility	Location

5. Use if utilities are not being rearranged to permit pile driving, drilling activities, or substructure construction. Identify each utility and its location.

The utilities shown in the following table will not be rearranged. The utilities may interfere with pile driving, drilling activities, or substructure construction. If you want any of them rearranged or temporarily deactivated, make arrangements with the utility owner.

Utilities Not Rearranged for Pile Driving, Drilling Activities, or Substructure Construction

Utility	Location

6. Use if utilities are to be exposed or protected in place during construction. Obtain a variance to policy from the Division of Design chief before using this paragraph. Identify each utility and its location.

The utilities shown in the following table may interfere with the work and must be exposed or protected in place. Make arrangements with the utility owner (1) to conduct or witness all exposures or (2) if you want any of them temporarily deactivated.

Utilities To Be Exposed or Protected in Place Construction

Utility	Location

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7. Use if utility location information on the project plans is incomplete. Obtain a variance to policy from the Division of Design chief before using this paragraph. Identify each utility and its location.

Appropriate plan sheets must include the note " EXISTING UTILITY FACILITY INFORMATION IS INCOMPLETE."

If this note is used, include in Information Handout the reason utility information is incomplete.

Utility information shown is incomplete. Utility location activities must be concurrent with construction activities for the utilities shown in the following table. Make arrangements with the utility owners to coordinate utility location activities.

Utilities To Be Located During Construction

Utility	Location

8. Use this paragraph if the limits of excavation are flexible. Improvements may either be placed away from existing facilities, the Resident Engineer may introduce an appropriate mitigation to remedy the conflict, or the improvement can be deleted from the project. All existing facilities must be located concurrent with construction activities (e.g., street lighting, traffic signal and ramp metering, landscaping, MBGR, thrie beam and end treatments).

Obtain an exception (variance to policy) from the Division of Design, Chief before using this paragraph. When this paragraph is used, include a copy of the variance in the "Information Handout" and provide a copy of the variance to the Resident Engineer.

Appropriate plan sheets must include the note: "EXISTING UTILITY FACILITIES HAVE NOT BEEN INCLUDED ON THESE PLANS."

Utility information is not shown. Utility location activities must be concurrent with construction activities. Make arrangements with the utility owners to coordinate utility location activities. Mechanically actuated excavation must not be performed within 24 inches horizontally of the exterior surface of the subsurface facilities.

MICHAEL HUTCHISON - 10
February 20, 2014
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cc: PJDickinson – HQ Maintenance
TFranklin – HQ Traffic Operations
RWeaver – HQ Environmental
LBrownell – HQ Right of Way
AClark – HQ Design
LFong
LKrichevsky
Design Files

LFong/PReilly: