

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

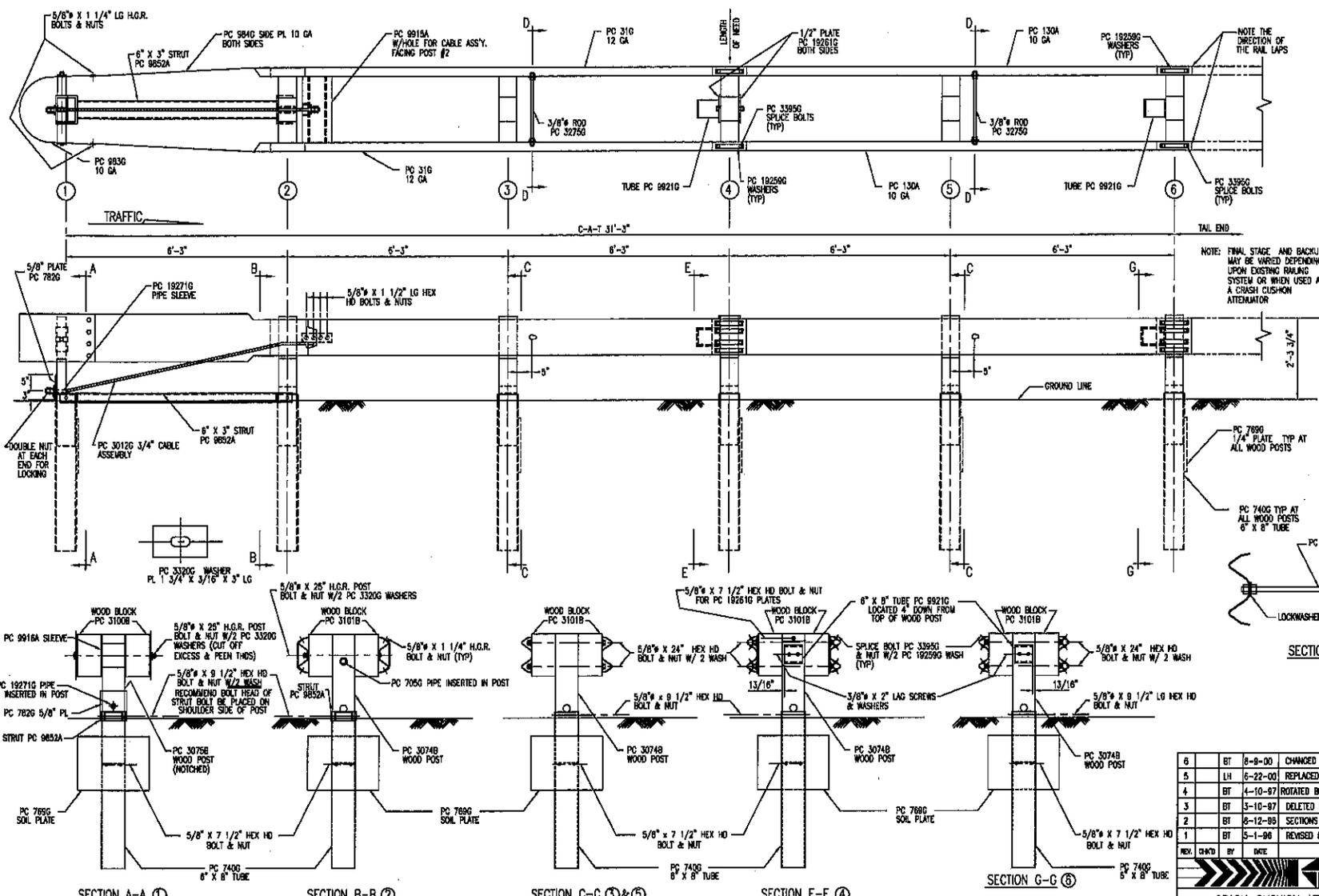
Identified by

Project ID 1000020667

MATERIALS INFORMATION

Manufacturer's Drawings for Alternative Crash Cushion System

REPLACED PER ADDENDUM No. 1 DATED JULY 22, 2014



C-A-T BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
31G	2	12/12"/10 CAT (QUADRANT)
130A	2	10/12"/8/12/8/SP CAT (QUADRANT)
7956	1	2" x 5 1/2" PIPE
740G	6	4" TUBE SLEEVE
789G	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
3312G	1	CABLE 3/4 x 8/9/DBL SNG
3374G	3	WD 3/8 POST #2, 3, 4, 5, 6 CAT
3375G	1	WD 3/8 POST #1 CAT
3100G	2	WD BLOCK 1/2 #1 CAT
3101G	10	WD BLOCK 1/2 #2-6 CAT
3255G	4	3/8" FLAT WASHER
3283G	4	3/8" x 24 1/2" LAG SCREW
3275G	2	3/8" x 24 1/2" RESTRAINT ROD
3300G	20	5/8" FLAT WASHER
3320G	4	3/8" x 1 3/4" x 3" REST WASHER
3340G	65	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	3/8" 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
4250G	8	3/8" HEX NUT
4250G	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
19281G	2	1/2 x 3 x 7 POST PLATE
19271G	1	1" x 2 1/2" PIPE SLEEVE CAT

NOTE: FINAL STAGE AND BACKUP MAY BE VARIED DEPENDING UPON EXISTING RAILING SYSTEM OR WHEN USED AS A CRASH CUSHION ATTENUATOR

NOTE: PC 740G TYP AT ALL WOOD POSTS 6" x 8" TUBE

NOTE: PC 3275G 3/8" ROD N/A NUTS & 2 LOCK WASHERS

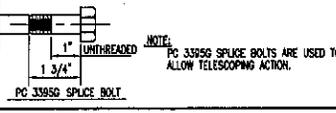
REV	BY	DATE	REVISIONS
6	BT	8-8-80	CHANGED SYSTEM HEIGHT, WAS 2'-3"
5	LH	6-22-80	REPLACED PC 786 WITH PC 789, CHANGED TITLE BLOCK
4		4-10-87	ROTATED BLOCK PC 9921 90° AT POST 4 & 6
3	BT	3-10-87	DELETED PC 3072, 3073, 4470, CHG QTY 3074 & 3478
2	BT	8-12-89	SECTIONS A-A & B-B, CORRECTED PIPE SLEEVE PC No
1	BT	5-1-88	REVISED PC No 31G & 130A

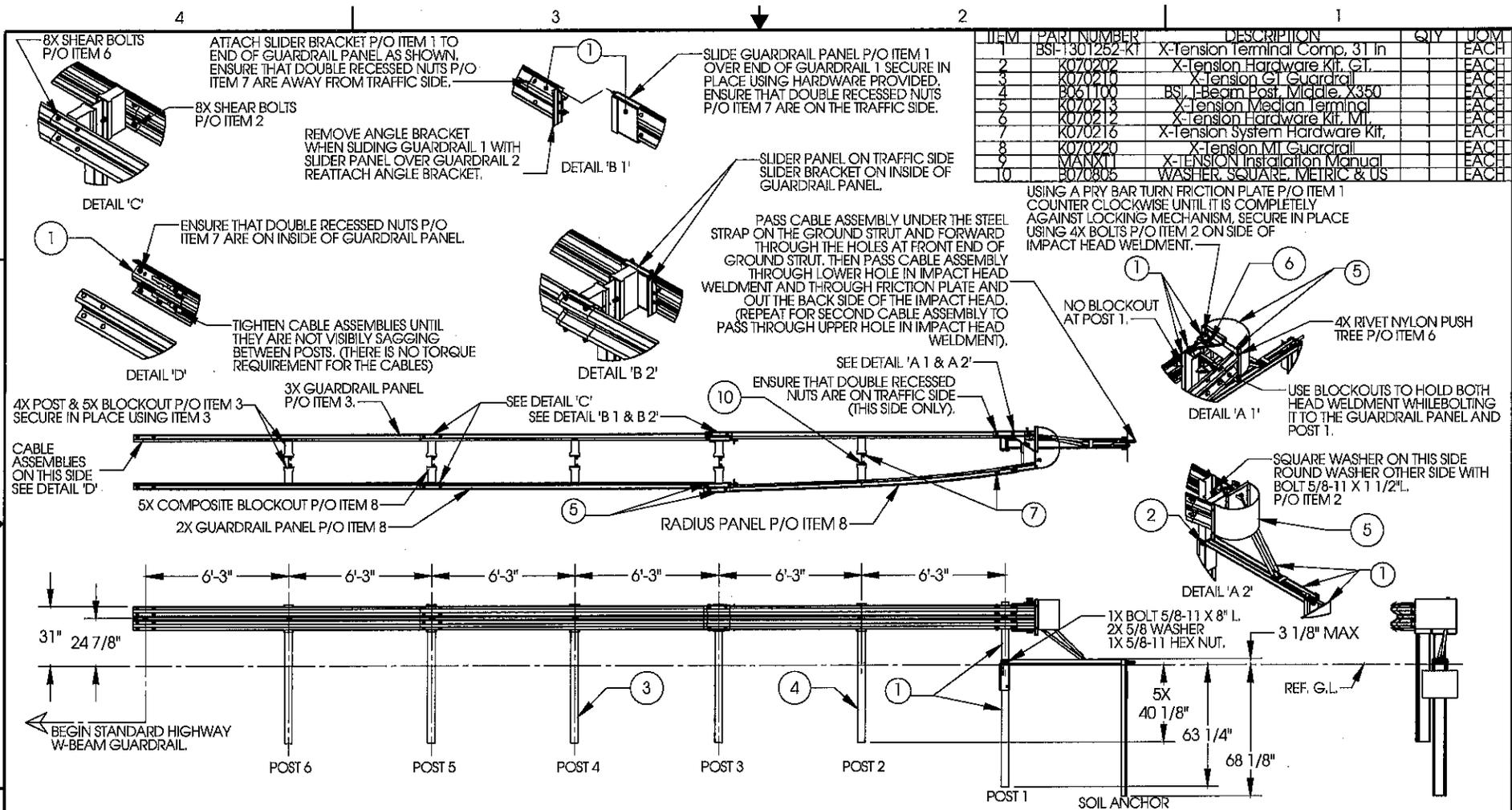
C-A-T

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

SCALE: N.T.S.
DATE: 7-15-94
ENG. FILE # SS245-01E
SHEET: E1 OF 1
SS-245

TRINITY INDUSTRIES, INC.
HIGHWAY SAFETY PRODUCTS
2526 STEWARTS FREEWAY, DALLAS, TX 75207





ITEM	PART NUMBER	DESCRIPTION	QTY	UOM
1	BSI-1301252-K1	X-Tension Terminal Comp. 31 In		EACH
2	K070202	X-Tension Hardware Kit, G.I.		EACH
3	K070210	X-Tension GI Guardrail		EACH
4	B-61100	BSI I-Beam Post, Middle, X350		EACH
5	K070213	X-Tension Median Terminal		EACH
6	K070212	X-Tension Hardware Kit, MI		EACH
7	K070216	X-Tension System Hardware Kit,		EACH
8	K070220	X-Tension MI Guardrail		EACH
9	MANXT1	X-TENSION Installation Manual		EACH
10	R070805	WASHER, SQUARE, METRIC & US		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.

© 2012 BARRIER SYSTEMS INC. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BARRIER SYSTEMS INC. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF BARRIER SYSTEMS INC. IS PROHIBITED.	
APPROVALS DRAWN BY: NMV DRAWN DATE: 2/15/13 APP'D BY: JMT APP'D DATE: 2/15/13	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS: 1/16 DECIMAL: .005 ANGLES: 1/2° INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-1994 THIRD ANGLE PROJECTION DO NOT SCALE DRAWING

REV	ECN#	DATE	SIZE	DWG NO.	REV.
B	2067	05/03/13	B		B
A	2022	2/15/13			

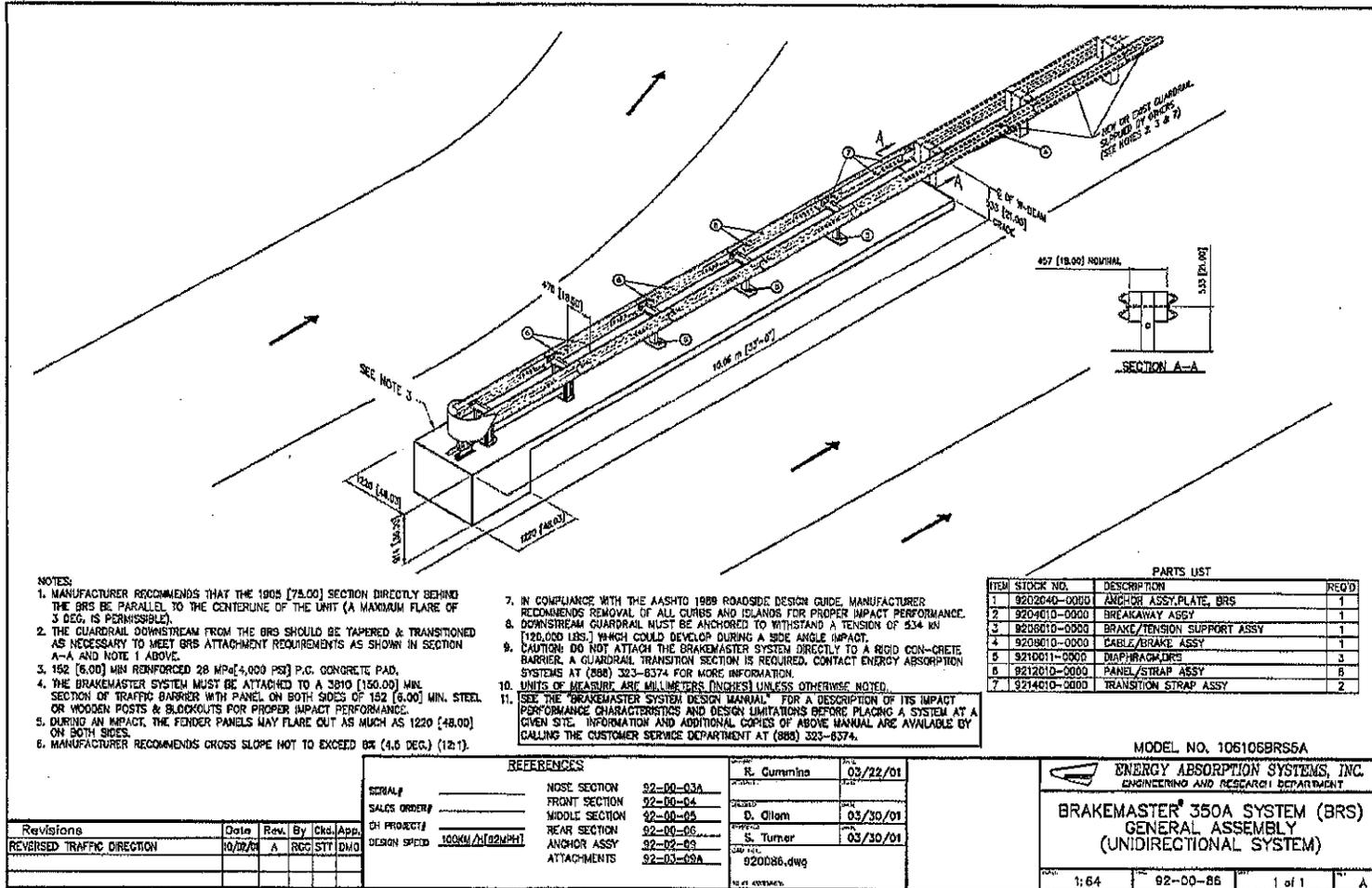
LINDSAY
TRANSPORTATION SOLUTIONS

BARRIER SYSTEMS INC.
3333 Vasco Valley Parkway, Ste 800
Voorhees, CA 92688
Tel: 668-800-3491
www.barriersystemsinc.com

TITLE: **X-TENSION POST WITH GUARDRAIL TERMINAL SYSTEM STEEL POST WITH COMPOSITE BLOCKOUT 31" RAIL HEIGHT**

SCALE: 1:50
SHEET: 1 OF 1

DWG 920086



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. 152 (6.00) MIN REINFORCED 28 MPa (4,000 PSI) P.C. CONCRETE PAD.
4. 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.
5. DURING AN IMPACT, THE FENDER PANELS MAY FLARE OUT AS MUCH AS 1220 (48.00) ON BOTH SIDES.
6. MANUFACTURER RECOMMENDS CROSS SLOPE NOT TO EXCEED 8% (4.6 DEG.) (1:1).

7. IN COMPLIANCE WITH THE AASHTO 1988 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS FOR PROPER IMPACT PERFORMANCE.
8. DOWNSTREAM GUARDRAIL MUST BE ANCHORED TO WITHSTAND A TENSION OF 534 kN (120,000 LBS.) WHICH COULD DEVELOP DURING A SIDE ANGLE IMPACT.
9. CAUTION: DO NOT ATTACH THE BRAKEMASTER SYSTEM DIRECTLY TO A RIGID CON-CRETE BARRIER. A GUARDRAIL TRANSITION SECTION IS REQUIRED. CONTACT ENERGY ABSORPTION SYSTEMS AT (888) 323-8374 FOR MORE INFORMATION.
10. UNITS OF MEASURE ARE MILLIMETERS (INCHES UNLESS OTHERWISE NOTED).
11. SEE THE BRAKEMASTER SYSTEM DESIGN MANUAL 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 (888) 323-8374.

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	9202640-0000	ANCHOR ASSY. PLATE, BRS	1
2	9204610-0000	BREAKAWAY ASSY	1
3	9208610-0000	BRAKE/TENSION SUPPORT ASSY	1
4	9208010-0000	CABLE/BRAKE ASSY	1
5	9210011-0000	DIAPHRAGM	3
6	9212010-0000	PANEL/STRAP ASSY	6
7	9214010-0000	TRANSITION STRAP ASSY	2

Revisions	Date	Rev. By	Chk. App.
REVERSED TRAFFIC DIRECTION	10/22/04	A	RCC/STT/DMD

REFERENCES	
SERIAL#	NOSE SECTION 92-00-03A
SALES ORDER#	FRONT SECTION 92-00-04
CH PROJECT#	MIDDLE SECTION 92-00-05
DESIGN SPEED	REAR SECTION 92-00-06
	ANCHOR ASSY 92-02-82
	ATTACHMENTS 92-03-09A

DESIGNED BY	R. Gurevitch	DATE	03/22/01
CHECKED BY		DATE	
DESIGNED BY	D. Dilam	DATE	03/30/01
CHECKED BY	S. Turner	DATE	03/30/01
DWG FILE	920086.dwg		

MODEL NO. 106106BRS5A

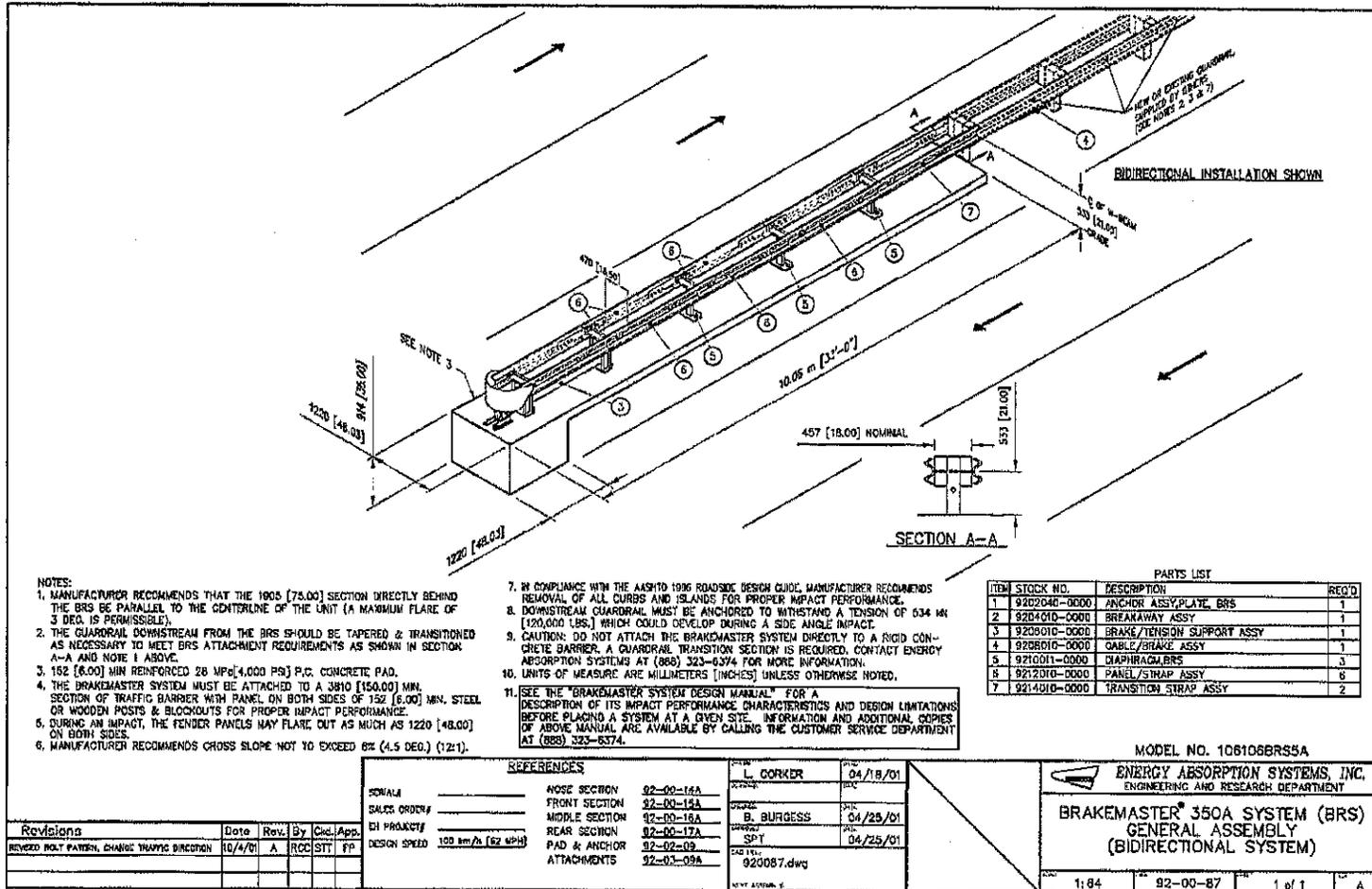
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

SCALE: 1:64 DWG NO: 92-00-85 SHEET: 1 of 1

Brakemaster® 350A System General Assembly (Unidirectional System)

DWG 920087



- 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 4 ABOVE.
 3. 152 [6.00] MIN REINFORCED 28 MPa [4,000 PSI] P.C. CONCRETE PAD.
 4. 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.
 5. DURING AN IMPACT, THE FENDER PANELS MAY FLARE OUT AS MUCH AS 1220 [48.00] ON BOTH SIDES.
 6. MANUFACTURER RECOMMENDS CROSS SLOPE NOT TO EXCEED 6% (4.5 DEG.) (12:1).

7. IN COMPLIANCE WITH THE AASHTO 1996 ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS FOR PROPER IMPACT PERFORMANCE.
8. DOWNSTREAM GUARDRAIL MUST BE ANCHORED TO WITHSTAND A TENSION OF 634 kN [120,000 LBS.] WHICH COULD DEVELOP DURING A SIDE ANGLE IMPACT.
9. CAUTION: DO NOT ATTACH THE BRAKEMASTER SYSTEM DIRECTLY TO A RIGID CONCRETE BARRIER. A QUADRANTAL TRANSITION SECTION IS REQUIRED. CONTACT ENERGY ABSORPTION SYSTEMS AT (888) 323-6374 FOR MORE INFORMATION.
10. UNITS OF MEASURE ARE MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
11. SEE THE "BRAKEMASTER SYSTEM DESIGN MANUAL" 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 (888) 323-6374.

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	9202040-0000	ANCHOR ASSY, PLATE, BRS	1
2	9204010-0000	BREAKAWAY ASSY	1
3	9208010-0000	BRAKE/TENSION SUPPORT ASSY	1
4	9208010-0000	CABLE/BRAKE ASSY	1
5	921001-0000	DIAPHRAGMERS	3
6	9212010-0000	PANEL/STRAP ASSY	8
7	9214010-0000	TRANSITION STRAP ASSY	2

Revisions	Date	Rev.	By	Chd.	App.
REVISED HOLY PATERN, CHANGE TRAFFIC DIRECTION	10/4/01	A	ROC	STT	FP

REFERENCES	
SIGNALS	NOSE SECTION 92-00-16A
SALES ORDER#	FRONT SECTION 92-00-16A
EH PROJECT#	MIDDLE SECTION 92-00-16A
DESIGN SPEED 100 km/h (62 mph)	REAR SECTION 92-00-17A
	PAD & ANCHOR ATTACHMENTS 92-02-09
	92-03-09A

DATE	04/18/01
BY	L. CORKER
DATE	04/25/01
BY	B. BURGESS
DATE	04/25/01
BY	SPT
DATE	
BY	
DATE	
BY	

MODEL NO. 106106BRSSA

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

SCALE: 1:84 PART: 92-00-87 SHEET: 1 of 1 DRAWN: A

Brakemaster® 350 General Assembly (Bidirectional System)