



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**1**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN**  
**304-558-2402**

VENDOR

\*709022004      800-380-1718  
**M H CORBIN INC**  
**8420 ESTATES COURT**  
  
**PLAIN CITY OH 43064**

SHIP TO

**DIVISION OF HIGHWAYS**  
**VARIOUS LOCALES AS INDICATED**  
**BY ORDER**

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B	FREIGHT TERMS
02/06/2008				

BID OPENING DATE: **02/27/2008**      BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		936-28		
<p><b>ENERGY ABSORPTION SYSTEM/MAINTENANCE</b></p> <p><b>OPEN END CONTRACT</b></p> <p>TO PROVIDE MATERIALS REQUIRED FOR THE MAINTENANCE OF ENERGY ABSORPTION SYSTEM GREAT (GUARDRAIL ENERGY ABSORBING TERMINAL) ATTENUATING DEVICES, ENERGY ABSORPTION SYSTEM QUADGUARD ATTENUATING DEVICES, ENERGY ABSORPTION SYSTEM QUADGUARD - HS ATTENUATING DEVICES AND TRINITY INDUSTRIES TRACC ATTENUATING DEVICES.</p> <p>PER THE ATTACHED SPECIFICATIONS AND DRAWINGS</p> <p>EXHIBIT 3</p> <p>LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON ..... AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.</p> <p>UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>Michael Austin</i>	TELEPHONE <b>614-873-5216</b>	DATE <b>2-18-08</b>
TITLE <b>V. P.</b>	FEIN <b>31-1192248</b>	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**2**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN  
 304-558-2402**

VENDOR

\*709022004      800-380-1718  
 M H CORBIN INC  
 8420 ESTATES COURT  
 PLAIN CITY OH 43064

SHIP TO

DIVISION OF HIGHWAYS  
 VARIOUS LOCALES AS INDICATED  
 BY ORDER

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
02/06/2008				

BID OPENING DATE: **02/27/2008**      BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.</p> <p>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICE SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.</p> <p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK.)</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIED BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF THE CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>ORDERING PROCEDURE: SPENDING UNIT(S) SHALL ISSUE A WRITTEN STATE CONTRACT ORDER (FORM NUMBER WV-39) TO THE VENDOR FOR COMMODITIES COVERED BY THIS CONTRACT. THE ORIGINAL COPY OF THE WV-39 SHALL BE MAILED TO THE VENDOR AS AUTHORIZATION FOR SHIPMENT, A SECOND COPY</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**3**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN**  
**304-558-2402**

PURCHASER

\*709022004      800-380-1718  
 M H CORBIN INC  
 8420 ESTATES COURT  
 PLAIN CITY OH 43064

SHIP TO

DIVISION OF HIGHWAYS  
 VARIOUS LOCALES AS INDICATED  
 BY ORDER

DATE PRINTED <b>02/06/2008</b>	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
-----------------------------------	---------------	----------	--------	---------------

BID OPENING DATE: **02/27/2008**      BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>MAILED TO THE PURCHASING DIVISION, AND A THIRD COPY RETAINED BY THE SPENDING UNIT.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.</p> <p>THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM.</p> <p>REV. 04/11/2001</p> <p>PURCHASING CARD ACCEPTANCE: THE STATE OF WEST VIRGINIA CURRENTLY UTILIZES A VISA PURCHASING CARD PROGRAM WHICH IS ISSUED THROUGH A BANK. THE SUCCESSFUL VENDOR MUST ACCEPT THE STATE OF WEST VIRGINIA VISA PURCHASING CARD FOR PAYMENT OF ALL ORDERS PLACED BY ANY STATE AGENCY AS A CONDITION OF AWARD.</p> <p>VENDOR PREFERENCE CERTIFICATE</p> <p>CERTIFICATION AND APPLICATION* IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS).</p> <p>A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'





State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**5**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN**  
**304-558-2402**

RODNEY

\*709022004      800-380-1718  
**M H CORBIN INC**  
**8420 ESTATES COURT**  
  
**PLAIN CITY OH 43064**

SHIP TO

**DIVISION OF HIGHWAYS**  
**VARIOUS LOCALES AS INDICATED**  
**BY ORDER**

DATE PRINTED <b>02/06/2008</b>	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
-----------------------------------	---------------	----------	--------	---------------

BID OPENING DATE: **02/27/2008**      BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.</p> <p>BIDDER UNDERSTANDS IF THE SECRETARY OF TAX &amp; REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.</p> <p>BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS			
SIGNATURE	TELEPHONE	DATE	
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**6**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN**  
**304-558-2402**

**\*709022004 800-380-1718**  
**M H CORBIN INC**  
**8420 ESTATES COURT**  
  
**PLAIN CITY OH 43064**

**DIVISION OF HIGHWAYS**  
**VARIOUS LOCALES AS INDICATED**  
**BY ORDER**

DATE PRINTED <b>02/06/2008</b>	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
BID OPENING DATE: <b>02/27/2008</b>		BID OPENING TIME <b>01:30PM</b>		

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
<p>CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: <u>M. H. CORBIN, INC</u></p> <p>DATE: <u>2-18-08</u></p> <p>SIGNED: <u><i>Michael M. Corbin</i></u></p> <p>TITLE: <u>V.P.</u></p> <p>* CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00)</p> <p>NOTICE</p> <p>A SIGNED BID MUST BE SUBMITTED TO:</p> <p>DEPARTMENT OF ADMINISTRATION          PURCHASING DIVISION          BUILDING 15          2019 WASHINGTON STREET, EAST          CHARLESTON, WV 25305-0130</p> <p>THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:</p> <p>SEALED BID</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS						
SIGNATURE			TELEPHONE		DATE	
TITLE		FEIN		ADDRESS CHANGES TO BE NOTED ABOVE		

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**858C2029**

PAGE  
**7**

ADDRESS CORRESPONDENCE TO ATTENTION OF  
**MICHAEL AUSTIN  
 304-558-2402**

**\*709022004 800-380-1718**  
**M H CORBIN INC**  
**8420 ESTATES COURT**  
  
**PLAIN CITY OH 43064**

**DIVISION OF HIGHWAYS**  
**VARIOUS LOCALES AS INDICATED**  
**BY ORDER**

DATE PRINTED <b>02/06/2008</b>	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
-----------------------------------	---------------	----------	--------	---------------

BID OPENING DATE: **02/27/2008** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
BUYER:				33		
RFQ. NO.:				858C2029		
BID OPENING DATE:				02/27/2008		
BID OPENING TIME:				1:30 PM		
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:						
				614-873-8095	-----	
CONTACT PERSON (PLEASE PRINT CLEARLY):						
				BILL CORBIN	-----	
***** THIS IS THE END OF RFQ 858C2029 ***** TOTAL: _____						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

## **ATTENUATING DEVICES - REPLACEMENT PARTS**

### **SCOPE OF CONTRACT**

The purpose of this contract shall be to furnish materials required for the maintenance of Energy Absorption System GREAT (Guardrail Energy Absorbing Terminal) attenuating devices, Energy Absorption System Quadguard attenuating devices, Energy Absorption System Quadguard-HS attenuating devices, and Trinity Industries TRACC attenuating devices.

### **AWARD OF BID ITEMS**

For the purposes of obtaining replacement components for all existing attenuating devices in use, all parts listed on the bid item list will be awarded

All bids are to be reviewed by the WVDOH Traffic Engineering Division prior to award.

### **MINIMUM ORDERS**

There shall be no minimum order requirement for this contract.

### **DELIVERY**

All prices bid shall be FOB destination. A list of delivery addresses for the Sign Shop in each District is attached as part of this Contract. Note, various alternate addresses may be utilized in each District. All orders shall be shipped complete within forty-five (45) days A.R.O. Late delivery charges against the vendor may be assessed at a rate of \$50.00 per calendar day beyond forty-five (45) days A.R.O. Notification of shipment from vendor or shipper shall be received a minimum of 48 hours before delivery of material at the location indicated on the release. All non-hardware parts shall be shipped adequately secured on pallets for ease in unloading.



**BID SCHEDULE**

The following estimated quantities are for bid purposes only. Actual quantities will be determined by needs of the West Virginia Division of Highways and may be increased or decreased:

**DISREGARD ITEMS 1 THROUGH 10 (NOT INCLUDED AS PART OF THIS CONTRACT)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
<b>Energy Absorption Systems GREAT Attenuators</b>						
<b>GREAT panels and parts</b>						
11	1	GREAT thrie-beam fender panel w/ connection to diaphragm hardware, mushroom bolt assembly, and deflector assembly	5	\$ 744.00	\$ 744.00	311000
12	1	GREAT complete mushroom bolt and deflector assembly	5	\$ 70.00	\$ 70.00	312000
13	1	GREAT concrete block backup deflector panel w/ connection to fender panel hardware	14	\$ 395.00	\$ 395.00	313000
14	1	GREAT concrete block backup side panel w/ connection to fender panel hardware	8	\$ 130.00	\$ 130.00	NA
15	1	GREAT steel backup side panel w/ connection to backup hardware	11, 12	\$ 130.00	\$ 130.00	NA
16	1	GREAT extension panel w/ connection to backup and thrie to w-beam panel hardware	14	\$ 195.00	\$ 195.00	314000
17	1	GREAT NJ barrier backup left side 4" offset transition panel w/ support bracket, connection to support bracket hardware, and connenction to steel backup hardware	11	\$ 3,850.00	\$ 3,850.00	315000
18	1	GREAT NJ barrier backup right side 4" offset transition panel w/ support bracket, connection to support bracket hardware, and connenction to steel backup hardware	11	\$ 3,850.00	\$ 3,850.00	316000
19	1	GREAT thrie beam to w-beam transition panel w/ connection to extension panel and w-beam hardware	14	\$ 1,565.00	\$ 1,565.00	317000
<b>GREAT diaphragms and parts</b>						
20	1	GREAT 24" diaphragm w/ cable guide assembly and cable guide connection h/w	4	\$ 1,050.00	\$ 1,050.00	321000
21	1	GREAT 30" diaphragm w/ cable guide assembly and cable guide connection h/w	4	\$ 1,175.00	\$ 1,175.00	322000
<b>GREAT restraining cables and parts</b>						
22	1	GREAT 5 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$ 1,585.00	\$ 1,585.00	331000
23	1	GREAT 6 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$ 1,620.00	\$ 1,620.00	332000
24	1	GREAT 7 bay restraining cable w/ connection hardware and 6 ea. 3x3x1/4 washer bars	6	\$ 1,690.00	\$ 1,690.00	333000
25	1	GREAT cable guide assembly w/ connection to diaphragm hardware	4	\$ 275.00	\$ 275.00	NA
26	1	GREAT front anchor plate for restraining cable w/ connection to foundation MP-3 anchors	6	\$ 365.00	\$ 365.00	NA
27	1	GREAT rear anchor plate for restraining cable w/ connection to foundation MP-3 anchors	6	\$ 365.00	\$ 365.00	NA
<b>GREAT nose cover and parts</b>						
28	1	GREAT nose cover w/ connection to diaphragm hardware (does not include legs)	3	\$ 700.00	\$ 700.00	341000
29	1	GREAT nose support legs (2 ea.) w/ tabs and connection to nose cover hardware	3	\$ 60.00	\$ 60.00	342000

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
<b>Energy Absorption Systems GREAT Attenuators (Continued)</b>						
<b>GREAT chain rail assemblies and parts</b>						
30	1	GREAT 8 ft. 11 in. "A" chain rail section w/ proof coil chains	7	\$ 865.00	\$ 865.00	NA
31	1	GREAT 9 ft. 3-1/4 in. "A" chain rail section w/ proof coil chains	7	\$ 965.00	\$ 965.00	NA
32	1	GREAT 18 ft. "B" chain rail section w/ proof coil chains	7	\$ 575.00	\$ 575.00	NA
33	1	GREAT 9 ft. "B" or "C" chain rail section w/ proof coil chains	7	\$ 575.00	\$ 575.00	351000
34	1	GREAT 3 ft. "C" chain rail section w/ proof coil chains	7	\$ 525.00	\$ 525.00	352000
35	1	GREAT 6 ft. "C" chain rail section w/ proof coil chains	7	\$ 545.00	\$ 545.00	353000
36	1	GREAT proof coil chain w/ clevis & keeper pin	7	\$ 60.00	\$ 60.00	354000
<b>GREAT backups and parts</b>						
37	1	GREAT NJ barrier 30" metal backup	10	\$ 3,000.00	\$ 3,000.00	NA
38	1	GREAT NJ barrier 24" uni-directional metal backup	9	\$ 3,000.00	\$ 3,000.00	NA
39	1	GREAT NJ barrier 24" bi-directional metal backup	10	\$ 3,650.00	\$ 3,650.00	NA
40	1	GREAT NJ barrier 30" metal backup right attachment bracket w/ attachment to metal backup hardware	10	\$ 3,695.00	\$ 3,695.00	NA
41	1	GREAT NJ barrier 30" metal backup left attachment bracket w/ attachment to metal backup hardware	10	\$ 3,695.00	\$ 3,695.00	NA
42	1	GREAT NJ barrier 24 inch uni-directional metal backup right attachment bracket w/ attachment to metal backup hardware (for barrier measuring 6 inches at top)	9	\$ 3,100.00	\$ 3,100.00	NA
43	1	GREAT NJ barrier 24 inch uni-directional metal backup left attachment bracket w/ attachment to metal backup hardware (for barrier measuring 6 inches at top)	9	\$ 3,100.00	\$ 3,100.00	NA
44	1	GREAT NJ barrier 24 inch uni-directional metal backup right attachment bracket w/ attachment to metal backup hardware for NJ barrier measuring 7 to 16 inches at top)	9	\$ 3,100.00	\$ 3,100.00	NA
45	1	GREAT NJ barrier 24 inch uni-directional metal backup left attachment bracket w/ attachment to metal backup hardware for NJ barrier measuring 7 to 16 inches at top)	9	\$ 3,100.00	\$ 3,100.00	NA
46	1	GREAT NJ barrier 24 inch bi-directional metal backup right attachment bracket w/ attachment to metal backup hardware	10	\$ 3,860.00	\$ 3,860.00	NA
47	1	GREAT NJ barrier 24 inch bi-directional metal backup left attachment bracket w/ attachment to metal backup hardware	10	\$ 3,860.00	\$ 3,860.00	NA
48	1	GREAT w-beam post steel backup w/ connection to w-beam post hardware	12	\$ 3,300.00	\$ 3,300.00	NA
49	1	GREAT 24" tension strut backup w/ 9 ft. 3-1/4 in. section "A" chain rail w/ proof coil chains (24" units)	13	\$ 3,565.00	\$ 3,565.00	NA
50	1	GREAT 30" tension strut backup w/ 9 ft. 3-1/4 in. section "A" chain rail w/ proof coil chains (30" units)	13	\$ 3,565.00	\$ 3,565.00	NA
<b>GREAT cartridges and parts</b>						
51	1	GREAT Hexfoam II Type 51 cartridge	NA	\$ 750.00	\$ 750.00	371000
52	1	GREAT concrete block backup cartridge support bracket	8	\$ 285.00	\$ 285.00	NA
53	1	GREAT NJ barrier metal backup cartridge support bracket w/ connection hardware	11	\$ 150.00	\$ 150.00	NA

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Energy Absorption Systems Quadguard Attenuators</b>				
		<b>Quadguard 24" to 36" units</b>				
		<b>Quadguard diaphragms and parts (24" to 36")</b>				
54	1	Quadguard 24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$ 715.00	\$ 715.00	811100
55	1	Quadguard 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$ 790.00	\$ 790.00	811200
56	1	Quadguard 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15	\$ 855.00	\$ 855.00	811300
		<b>Quadguard nose cover and parts (24" to 36")</b>				
57	1	Quadguard narrow yellow nose cover w/ cartridge support bracket, pull-out brackets, and connection to diaphragm hardware (fits 24" to 36" units)	16	\$ 575.00	\$ 575.00	812100
		<b>Quadguard backups and parts (24" to 36")</b>				
58	1	Quadguard 24" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$ 2,055.00	\$ 2,055.00	NA
59	1	Quadguard 30" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$ 2,110.00	\$ 2,110.00	NA
60	1	Quadguard 36" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19	\$ 2,190.00	\$ 2,190.00	NA
61	1	Quadguard concrete block backup 24" front face w/ side panel and side panel connection hardware.	20	\$ 1,175.00	\$ 1,175.00	NA
62	1	Quadguard concrete block backup 30" front face w/ side panel and side panel connection hardware.	20	\$ 1,230.00	\$ 1,230.00	NA
63	1	Quadguard concrete block backup 36" front face w/ side panel and side panel connection hardware.	20	\$ 1,310.00	\$ 1,310.00	NA
		<b>Quadguard panels and parts (24" to 36")</b>				
64	1	Quadguard quad beam to w-beam transition panel w/ diagonal brace, diagonal brace connection hardware, and connection to post #2 bar washers (24" unit)	23	\$ 830.00	\$ 830.00	814100
65	1	Quadguard quad beam to w-beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (30" unit)	23	\$ 830.00	\$ 830.00	814200
66	1	Quadguard quad beam to w-beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (36" unit)	23	\$ 830.00	\$ 830.00	814300
67	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, and connection to post #2 bar washers (24" unit)	24	\$ 830.00	\$ 830.00	814400
68	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (30" unit)	24	\$ 830.00	\$ 830.00	814500
69	1	Quadguard quad beam to three beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (36" unit)	24	\$ 830.00	\$ 830.00	814600

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Energy Absorption Systems Quadguard Attenuators (Continued)</b>				
		<b>Quadguard 69" and 90" units</b>				
		<b>Quadguard diaphragms and parts (69" and 90" units)</b>				
70	1	Quadguard 26.50" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,010.00	\$ 1,010.00	821100
71	1	Quadguard 28.95" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,040.00	\$ 1,040.00	821110
72	1	Quadguard 32.80" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,070.00	\$ 1,070.00	821120
73	1	Quadguard 35.94" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,100.00	\$ 1,100.00	821130
74	1	Quadguard 39.09" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,130.00	\$ 1,130.00	821140
75	1	Quadguard 42.24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,160.00	\$ 1,160.00	821150
76	1	Quadguard 45.39" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (NOTE: For 120" units, use Item #97)	26	\$ 1,190.00	\$ 1,190.00	821160
77	1	Quadguard 48.54" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,220.00	\$ 1,220.00	821170
78	1	Quadguard 50.12" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,250.00	\$ 1,250.00	821180
79	1	Quadguard 51.69" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,280.00	\$ 1,280.00	821190
80	1	Quadguard 54.84" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,310.00	\$ 1,310.00	821200
81	1	Quadguard 57.99" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,340.00	\$ 1,340.00	821210
82	1	Quadguard 59.57" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,370.00	\$ 1,370.00	821220
83	1	Quadguard 61.14" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,400.00	\$ 1,400.00	821230
84	1	Quadguard 64.29" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,430.00	\$ 1,430.00	821240
85	1	Quadguard 68.07" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,460.00	\$ 1,460.00	821250
86	1	Quadguard 70.59" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,490.00	\$ 1,490.00	821260
87	1	Quadguard 73.74" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,520.00	\$ 1,520.00	821270
88	1	Quadguard 78.89" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,560.00	\$ 1,560.00	821280
89	1	Quadguard 80.04" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,590.00	\$ 1,590.00	821290
		<b>Quadguard nose cover and parts (69" and 90")</b>				
90	1	Quadguard 69" and 90" yellow belt nose cover w/ nose attachment brackets, pullout brackets, nose attachment hardware, pullout bracket hardware, and nose attachment bracket hardware (fits 69" to 120" units)	27	\$ 1,685.00	\$ 1,685.00	822100

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Energy Absorption Systems Quadguard Attenuators (Continued)</b>				
		<b>Quadguard 89" and 90" units (Continued)</b>				
		<b>Quadguard backups and parts (69" and 90")</b>				
91	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, cartridge support bracket, support bracket locking bar, and connection hardware (69" unit)	29	\$ 2,510.00	\$ 2,510.00	NA
92	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, cartridge support bracket, support bracket locking bar, and connection hardware. (90" unit)	29	\$ 2,750.00	\$ 2,750.00	NA
93	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (69" unit)	30	\$ 1,650.00	\$ 1,650.00	NA
94	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (90" unit)	30	\$ 1,790.00	\$ 1,790.00	NA
		<b>Quadguard panels and parts (69" and 90")</b>				
95	1	Quadguard quad beam to w-beam transition panel w/ pivot support bracket, support bracket hardware, and connection to post #2 bar washers (69" and 90" units)	31	\$ 855.00	\$ 855.00	824100
96	1	Quadguard quad beam to thrie beam transition panel w/ pivot support bracket, support bracket hardware, and connection to post #2 bar washers (69" and 90" units)	32	\$ 860.00	\$ 860.00	824200

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Energy Absorption Systems Quadguard Attenuators (Continued)</b>				
		<b>Quadguard 120" units</b>				
		<b>Quadguard diaphragms and parts (120" units)</b>				
97	1	Quadguard 45.39' diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	35	\$ 1,240.00	\$ 1,240.00	841100
NA	NA	Quadguard 57.99' diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides <b>USE LINE ITEM 81</b>	26	NA	NA	NA
NA	NA	Quadguard 70.59' diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides <b>USE LINE ITEM 86</b>	26	NA	NA	NA
98	1	Quadguard 82.68' diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,700.00	\$ 1,700.00	841200
99	1	Quadguard 95.31' diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 1,920.00	\$ 1,920.00	841200
100	1	Quadguard 108" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26	\$ 2,200.00	\$ 2,200.00	841300
		<b>Quadguard nose cover and parts (120" units)</b>				
NA	NA	Quadguard 120" yellow belt nose cover w/ nose attachment brackets, pullout brackets, nose attachment hardware, pullout bracket hardware, and nose attachment bracket hardware (fits 120" units) <b>USE LINE ITEM 90</b>	27	NA	NA	NA
		<b>Quadguard backups and parts (120" units)</b>				
101	1	Complete Quadguard tension strut backup w/ center section, right section, left section, side panels, hinge plates, telespar struts, cartridge support bracket, support bracket locking bar, and all connection hardware	33	\$ 4,750.00	\$ 4,750.00	NA
102	1	Replacement 120" Quadguard tension strut backup right section w/ side panels, hinge plates, telespar struts, and all required connection h/w	33	\$ 1,285.00	\$ 1,285.00	NA
103	1	Replacement 120" Quadguard tension strut backup left section w/ side panels, hinge plates, telespar struts, and all required connection h/w	33	\$ 1,285.00	\$ 1,285.00	NA

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Energy Absorption Systems Quadguard Attenuators (Continued)</b>				
		<b>Quadguard common parts (all units)</b>				
		<b>Quadguard panels and parts (all units)</b>				
104	1	Quadguard mushroom bolt assembly	17	\$ 50.00	\$ 50.00	831100
105	1	Quadguard fender panel w/ connection to diaphragm hardware and mushroom bolt assembly	17	\$ 535.00	\$ 535.00	831200
106	1	Quadguard NJ barrier backup left side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22	\$ 615.00	\$ 615.00	831300
107	1	Quadguard NJ barrier backup right side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22	\$ 615.00	\$ 615.00	831400
108	1	Quadguard NJ barrier backup left side 9 inch offset transition panel w/ support bracket, and connection to support bracket hardware. (not to be used for traffic approaching rear of unit)	NA	\$ 830.00	\$ 830.00	NA
109	1	Quadguard NJ barrier backup right side 9 inch offset transition panel w/ support bracket and connection to support bracket hardware. (not to be used for traffic approaching rear of unit)	NA	\$ 830.00	\$ 830.00	NA
		<b>Quadguard backups and parts (all units)</b>				
110	1	Quadguard concrete block backup end shoe attachment w/connection to block MP-3 anchors	21	\$ 315.00	\$ 315.00	832100
111	1	Quadguard concrete block backup wheel deflector w/ connection to block MP-3 anchors	25	\$ 315.00	\$ 315.00	832200
		<b>Quadguard monorails and parts (all units)</b>				
112	1	Quadguard one bay monorail section	18, 28	\$ 415.00	\$ 415.00	833100
113	1	Quadguard two bay monorail section	18, 28	\$ 835.00	\$ 835.00	833200
114	1	Quadguard three bay monorail section	18, 28	\$ 1,090.00	\$ 1,090.00	833300
115	1	Quadguard monorail end cap w/ connection to monorail hardware	18, 28	\$ 70.00	\$ 70.00	833400
		<b>Quadguard cartridges (all units)</b>				
116	1	Quadguard type I cartridge	NA	\$ 610.00	\$ 610.00	834100
117	1	Quadguard type II cartridge	NA	\$ 645.00	\$ 645.00	834200

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard - HS Attenuators				
		Quadguard-HS 24" to 36" units				
		Quadguard-HS diaphragms and parts (24" to 36")				
NOTE: SPECIAL DIAPHRAGMS FOR DIAPHRAGMS 1 THRU 3 ARE LISTED BELOW. FOR ALL OTHER PARTS, USE PART NUMBERS 54 THROUGH 69						
118	1	Quadguard-HS 24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$ 1,060.00	\$ 1,060.00	851100
119	1	Quadguard-HS 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$ 1,155.00	\$ 1,155.00	851200
120	1	Quadguard-HS 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34	\$ 1,215.00	\$ 1,215.00	851300



**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Trinity Industries TRACC Attenuators</b>				
		<b>TRACC common parts</b>				
		<b>Base components</b>				
121	1	TRACC base module assembly (part # 25982A) pre-assembled w/ cross ties, nut holder plates, & shoulder studs. Does not include rip plates or doubler plates.	49, 50			NA
122	1	Left end shoe (part # 25955A) w/ attachment h/w	49, 50			NA
123	1	Right end shoe (part # 25954A) w/ attachment h/w	49, 50			NA
124	1	Front anchor weldment (part # 25956A) w/ attachment h/w.	49, 50			NA
125	1	3'-1" rear extension plate (part # 25961G) w/ attachment h/w (for 9-bay units)	49, 50			NA
126	1	2'-0 1/2" rear extension plate (part # 25995G) w/ attachment h/w (for 6-bay units)	55, 56			NA
		<b>9-bay unit rip plate components</b>				
127	1	Rip plate, stage 3, bottom (part # 25964G)	49, 50			211100
128	1	Rip plate, stage 3, middle (part # 25965G)	49, 50			211150
129	1	Rip plate, stage 3, top (part # 25966G)	49, 50			211200
130	1	Rip plate, stage 2, (part # 25963G)	49, 50			211250
		<b>6-bay unit rip plate components</b>				
131	1	Rip plate, stage 3, bottom (part # 25993G)	55, 56			211300
132	1	Rip plate, stage 3, middle (part # 25992G)	55, 56			211350
133	1	Rip plate, stage 3, top (part # 25991G)	55, 56			211400
134	1	Rip plate, stage 2, (part # 25990G)	55, 56			211450
		<b>doubler plates</b>				
135	1	doubler plate (part # 25960G) w/ removable bolts.	49, 50			211500
136	1	11-1/2" rear doubler plate for 6-bay unit only (part # 25996G) w/ removable bolts	55, 56			211550
		<b>fender panels</b>				
137	1	"two-bay" fender panel (part # 25973) w/ attachment to diaphragm and adjacent fender panel h/w	51, 52, 53, 54			212100
138	1	"one-bay" fender panel (part # 25974) w/ attachment to diaphragm and adjacent fender panel h/w	51, 52, 53, 54			212150
		<b>sled and frames (diaphragms)</b>				
139	1	24" frame (diaphragm) (part # 25971)	51, 52, 53, 54			213100
140	1	24" front sled (part # 25970) w/ shredder assembly (part # 25975) pre-assembled	51, 52, 53, 54			213150
141	1	shredder assembly (part # 25975) w/ hitch pin clip (part # 3253) and 3/4" x 2" clevis pin (part # 4425)	51, 52, 53, 54			213200
142	1	24" end frame (part # 25972A) w/ connection to 24" concrete block h/w, connection to NJ shape h/w (including transition adaptor (part # PC33356G) & adaptor connection to wall h/w), & connection to constant slope barrier h/w.	43, 44, 45, 46, 47, 48, 51, 52			NA
143	1	end frame (part # 33405 - 1/2 of split end frame for 33" and 39" units) w/ connection to barrier h/w (33" and 39" only)	57, 58			NA
144	1	1-1/2" WT-Frame extension (part # 33406) w/ connection to frame h/w (33" units only)	57, 58			213250
145	1	3" WT-Frame extension (part # 33471) w/ connection to frame h/w (39" units only)	59, 60, 61			213300
146	1	WT-Joint plate (part # 33467) w/ 3x1/4 fender panel plate and connection h/w (39" units only)	59, 60, 61			213350

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Trinity Industries TRACC Attenuators (Continued)</b>				
		<b>TRACC to w-beam transition components</b>				
147	1	Lower and Upper W-beam (part # PC33344A) w/ connection to end frame h/w & splice connection h/w	36, 37			214100
148	1	W-beam (part # PC105G) w/ splice connection h/w	36, 37			214150
149	1	Backup post (post #1) (part # PC564G) w/ connection to end frame h/w	36, 37			NA
150	1	Backup post (post #1) w/ end plate (part # PC33345A) w/ connection to end frame h/w	38			NA
151	1	Support post (post # 2, 3) (part # PC33393G)	36, 37			NA
152	1	Support post (post # 4-9) (part # PC33346G)	36, 37			NA
153	1	Wood block (part # PC6144B) w/ connection to support post and beam h/w	36, 37			NA
154	1	Wood block (part # PC6142B) w/ connection to support post and beam h/w	36, 37			NA
155	1	Wood block (part # PC6145B) w/ connection to support post and beam h/w	36, 37			NA
156	1	Wood block (part # PC6146B) w/ connection to support post and beam h/w	36, 37			NA
157	1	Wood block (part # PC6147B) w/ connection to support post and beam h/w	36, 37			NA
158	1	Wood block (part # PC6143B) w/ connection to support post and beam h/w	36, 37			NA
159	1	Wood block (part # PC6141B) w/ connection to support post and beam h/w	36, 37			NA
		<b>TRACC to thrie beam transition components</b>				
160	1	Right transition panel (part # PC33371A) w/ connection to end frame h/w and splice h/w	39, 40			214200
161	1	Left transition panel (part # PC33372A) w/ connection to end frame h/w and splice h/w	39, 40			214250
162	1	Backup post (post #1) (part # PC564G) w/ connection to end frame h/w	39, 40			NA
163	1	Backup post (post #1) w/ end plate (part # PC33345A) w/ connection to end frame h/w	41			NA
164	1	Steel Support post (post # 2-4) (part # PC33346G)	39, 40			NA
165	1	Wood block (part # PC6143) w/ connection to support post and beam h/w (for use w/ steel supports)	39, 40			NA
166	1	Wood Support post (post # 2-4) (part # PC6137B)	42			NA
167	1	Wood block (part # PC6138B) w/ connection to support post and beam h/w (for use with wood supports)	42			NA
		<b>TRACC to 24" concrete block transition components</b>				
168	1	24" concrete block end shoe (part # PC33367G) w/ connection to barrier h/w	43, 44			214300
		<b>TRACC to NJ barrier transition components</b>				
169	1	Lower W-beam (part # PC33360A) w/ connection to end frame h/w	45, 46			214350
170	1	Lower terminal (part # PC33380G) w/ connection to barrier and beam h/w	45, 46			214400
171	1	Upper W-beam (part # PC33359A) w/ connection to end frame h/w, wood blocks (part numbers PC6135B and PC6136B), and wood block connection h/w	45, 46			214450
172	1	Upper terminal (part # PC33380G) w/ connection to barrier and beam h/w	45, 46			214500

**BID SCHEDULE (CONTINUED)**

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		<b>Trinity Industries TRACC Attenuators (Continued)</b>				
		<b>TRACC to single slope barrier components</b>				
173	1	Lower W-beam (part # PC3360A) w/ connection to end frame h/w.	47, 48			214550
174	1	Upper W-beam (part # PC33359A) w/ connection to end frame h/w, wood blocks (part numbers PC6533B and PC6534B), and wood block connection h/w	47, 48			214600
175	1	Upper and Lower terminal (part # PC926G) w/ connection to barrier and beam h/w	47, 48			214650
		<b>TRACC miscellaneous hardware</b>				
176	1	1/2" cable clamp (part # 4324)	59, 60, 61			215100
177	1	WT-cable clamp plate (part # 33470)	59, 60, 61			215150
178	1	1/2" cable (part # 6713)	59, 60, 61			215200
179	1	plate washer assembly w/ 5/8 bolt (part # 5306), 3 ea. plate washers (part # 19737), 5/8 fw (part # 4372), and 5/8 nut (part # 3361)	51, 52, 53, 54			215250
<b>BID TOTAL</b> →						

STATE OF WEST VIRGINIA  
Purchasing Division

## PURCHASING AFFIDAVIT

**West Virginia Code §5A-3-10a states:** No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate

**DEFINITIONS:**

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions. "Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities. "Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**EXCEPTION:** The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**LICENSING:** Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

**CONFIDENTIALITY:** The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit [www.state.wv.us/admin/purchase/privacy](http://www.state.wv.us/admin/purchase/privacy) for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

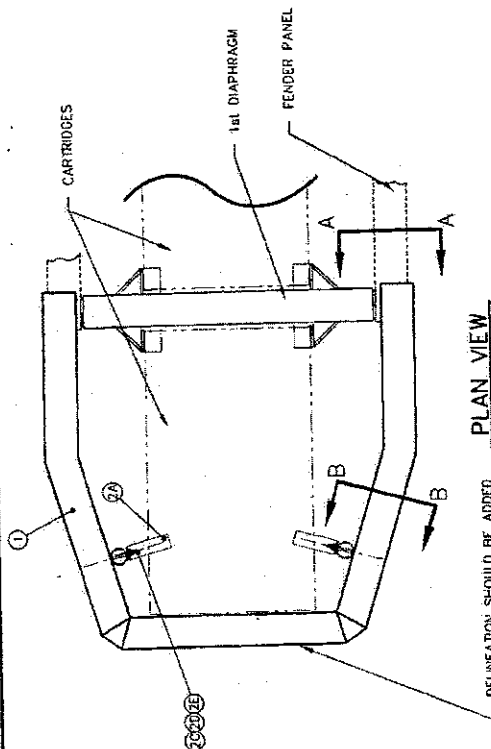
Vendor's Name: M. H. CORBIN, INC

Authorized Signature:  Date: 2-18-08

**PART DETAIL  
SHEETS (NOTE:  
SHEETS 1  
THROUGH 2  
INTENTIONALLY  
OMITTED)**

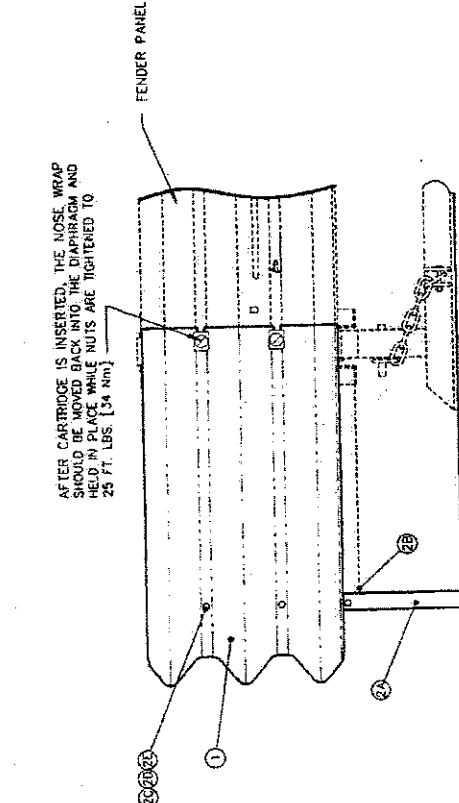
PARTS LIST		**	REQD
ITEM	STOCK NO.	DESCRIPTION	
1	2020811-0000	COVER, NOSE, GRAY	1
2	2714890-0000	NOSE, LEG ASSY	2
2A	2714892-0000	LEG, PLASTIC, GREAT, NOSE	2
2B	2714891-0000	TAB, GREAT NOSE LEG	2
2C	27704031-0000	WASHER, FLA. 1.3/8X1.0	6
2D	2708021-0000	NUT, HK. 3/8, C	6
2E	2700951-0000	BOLT, CR. 3/8X2.1/2, G2, C	6

\*FOR YELLOW, THE LAST FOUR DIGITS ARE -0100  
 \*\* DENOTES SUBASSEMBLIES



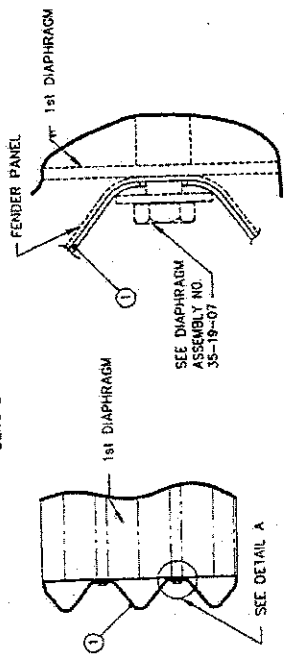
PLAN VIEW

DELINATION SHOULD BE ADDED TO THE NOSE, AS REQUIRED BY LOCAL POLICIES. MAX. WEIGHT TO BE ADDED: 7 LBS. (3.18 KG)

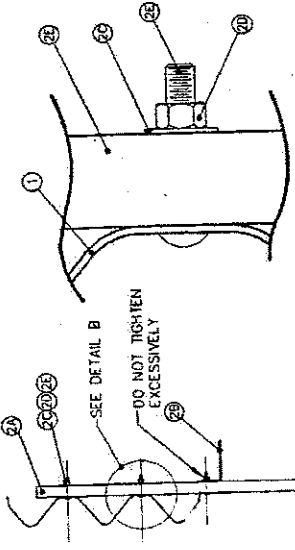


RIGHT SIDE VIEW

AFTER CARTRIDGE IS INSERTED, THE NOSE WRAP SHOULD BE MOVED BACK INTO THE DIAPHRAGM AND HELD IN PLACE WHILE NUTS ARE TIGHTENED TO 25 FT. LBS. (34 Nm)



DETAIL A



DETAIL B

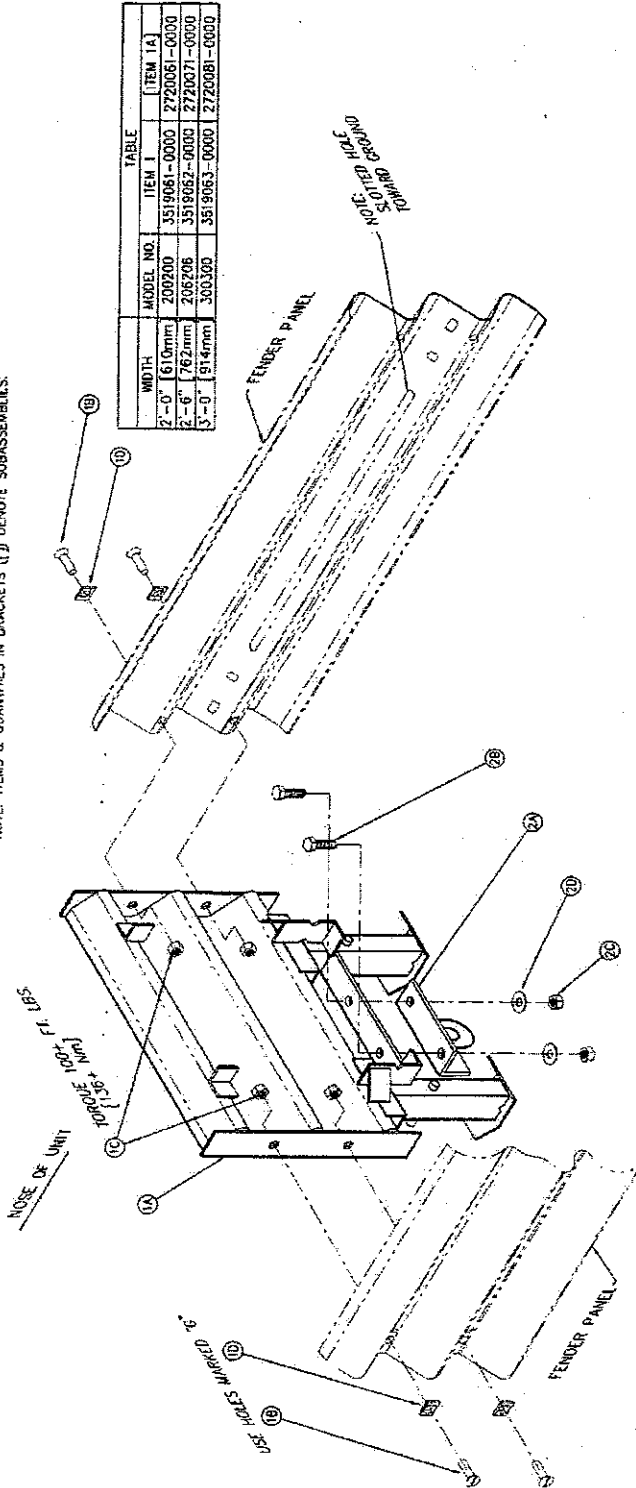
SECTION A-A

SECTION B-B

ENERGY ABSORPTION SYSTEMS, INC.  
 ENGINEERING AND RESEARCH DEPARTMENT  
 G-R-E-A-T® SYSTEM  
 NOSE COVER ASSEMBLY FOR  
 SYSTEMS  
 WITH HEX-FOAM® II CARTRIDGES

PARTS LIST															
ITEM	STOCK NO.	DESCRIPTION	NO. OF BAYS	1	2	3	4	5	6	7	8	9	10	11	12
1	SEE TABLE	DIAPHRAGM ASSY., TB		1	2	3	4	5	6	7	8	9	10	11	12
1A	SEE TABLE	DIAPHRAGM TB		1	2	3	4	5	6	7	8	9	10	11	12
1B	2708761-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G		1	2	3	4	5	6	7	8	9	10	11	12
1C	2704091-0000	NUT, HK, 3/4 x 2, G		1	2	3	4	5	6	7	8	9	10	11	12
1D	2708791-0000	WASHER, FENDER PANEL		1	2	3	4	5	6	7	8	9	10	11	12
2	2753240-0000	CABLE GUIDE, ASSY, GREAT		2	2	2	2	2	2	2	2	2	2	2	2
2A	2753241-0000	CABLE GUIDE, GREAT		1	1	1	1	1	1	1	1	1	1	1	1
2B	2700011-0000	BOLT, HK, 3/4 x 2, GS, G		2	2	2	2	2	2	2	2	2	2	2	2
2C	2704091-0000	NUT, HK, 3/4 x 2, G		2	2	2	2	2	2	2	2	2	2	2	2
2D	2708081-0000	WASHER, FLAT, 3/4 x 2, G		2	2	2	2	2	2	2	2	2	2	2	2

NOTE: ITEMS & QUANTITIES IN BRACKETS ([]) DENOTE SUBASSEMBLIES.



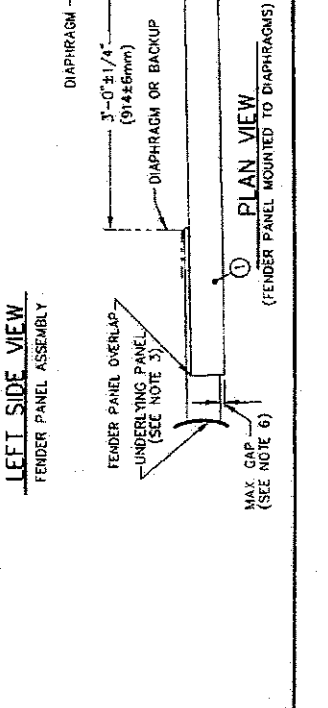
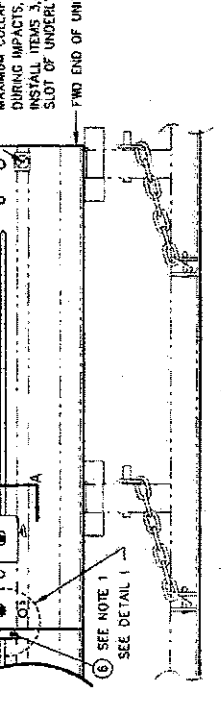
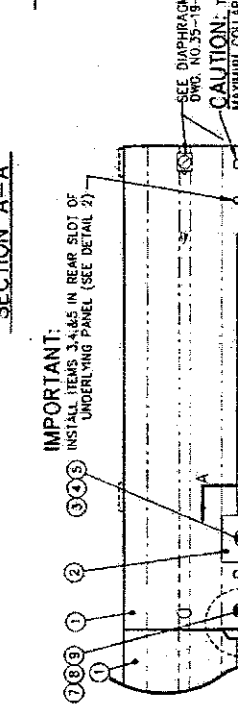
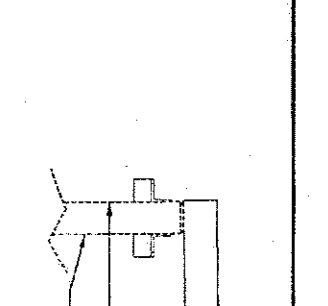
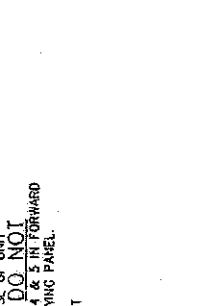
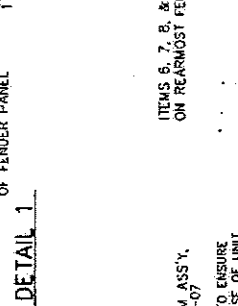
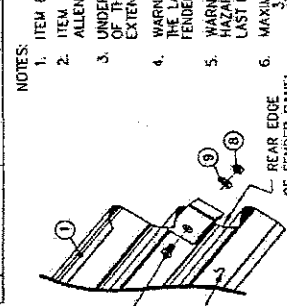
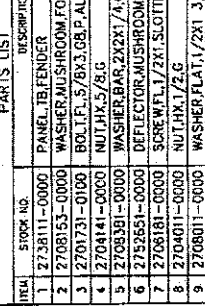
ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT  
**G-R-E-A-T® SYSTEM**  
**DIAPHRAGM ASSEMBLY**  
FOR  
**HEX-FOAM® II CARTRIDGES**

- NOTES:
1. RESTRAINING CABLE GUIDE ASSEMBLY (ITEMS 2A, 2B, 2C, & 2D) REQUIRED ON FIRST DIAPHRAGM ONLY. ON 3 BAY UNITS, REQUIRED ON FRONT TWO DIAPHRAGMS ONLY. 4 BAY UNITS AND LONGER.

PARTS LIST															
ITEM	STOCK NO.	DESCRIPTION	NO. OF DAYS	1	2	3	4	5	6	7	8	9	10	11	12
1	2738111-0000	PANEL TB/FENDER		2	4	6	8	10	12	14	16	18	20	22	24
2	2708153-0000	WASHER MUSHROOM FORGED C		2	4	6	8	10	12	14	16	18	20	22	24
3	27070731-0100	BOLT (F. 5/8X3.68) P. ALLEN SOCKET		2	4	6	8	10	12	14	16	18	20	22	24
4	2704141-0000	NUT (HX. 5/8) G		2	4	6	8	10	12	14	16	18	20	22	24
5	2708381-0000	WASHER BAR 2X2X1/4 G		2	4	6	8	10	12	14	16	18	20	22	24
6	2752651-0000	DEFLECTOR MUSHROOM BOLT		0	2	4	6	8	10	12	14	16	18	20	22
7	2708181-0000	SCREW FL. 1/2X1 SLOTTED S		0	2	4	6	8	10	12	14	16	18	20	22
8	2704011-0000	NUT (HX. 1/2) G		0	2	4	6	8	10	12	14	16	18	20	22
9	2708011-0000	WASHER FLAT 1/2X1 3/8 G		0	2	4	6	8	10	12	14	16	18	20	22

**NOTES:**

- ITEM 6 TO BE BOLTED TO ITEM 1, BEFORE ITEM 1 IS INSTALLED.
- ITEM 4 TO BE INSTALLED AND TIGHTENED, USING A 3/8" (9.5mm) ALLEN WRENCH AND TORQUE WRENCH TO 60 (ILB ±10) LB. (81.4 Nm ± 13 Nm).
- UNDERLYING PANEL IS EITHER ANOTHER FENDER PANEL, OR IN THE CASE OF THE LAST FENDER PANEL, IT COULD BE A BACKUP SIDE PANEL, EXTENSION PANEL, OR TRANSITION PANEL.
- WARNING: THE MUSHROOM DEFLECTORS MUST BE USED ON ALL EXCEPT THE LAST BAY. FAILURE TO USE THE MUSHROOM DEFLECTORS COULD CAUSE THE FENDER PANELS TO CATCH ON THE MUSHROOM WASHERS DURING AN IMPACT.
- WARNING: DO NOT FASTEN THE LAST FENDER PANEL RIGIDLY TO THE MASHROOM WITH ADDITIONAL FASTENERS BESIDES THE MUSHROOM ASSEMBLY. THE LAST PANEL MUST BE ABLE TO SLIDE TO ALLOW THE LAST CARTRIDGE TO BE CRUSHED.
- MAXIMUM GAP:  
3/4" (19mm) [1/4" (6mm) ON ANY SIDE WHERE TRAFFIC APPROACHES FROM REAR;  
1/2" (38mm) MAX ON ANY SIDE, WHERE TRAFFIC APPROACHES ROSE HEAD-ON]



**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

**G-R-E-A-T® SYSTEM**  
**THREE-BEAM FENDER**  
**PANEL ASSEMBLY**

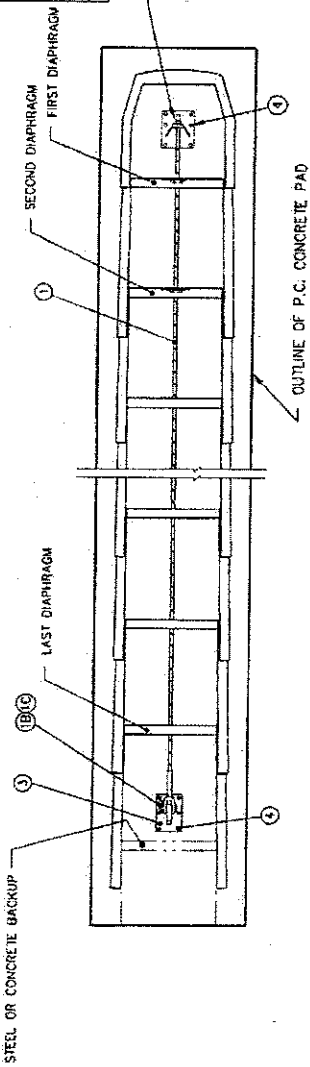


**PARTS LIST**

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	CABLE, RESTRAINING, 7/8"	1
1A	270421-0000	NUT, HK, 1 1/2, G	1
1B	2702021-0000	CLEVIS PIN, 1 5/8 X 4 5/16	1
1C	2702231-0000	PIN, COITER, 5/16 X 2 1/2	1
2	2753251-0000	ANCHOR, CABLE, (STUD END)	1
3	2752391-0000	ANCHOR, CABLE	1
4	3525120-0000	ANCHOR, HP-3 KIT, 3/4 X 6 1/2	2
5	2708491-0000	WASHER, BAR, 3 X 3 X 1/4, G	6

\* DENOTES SUBASSEMBLES

IF NECESSARY TO TENSION CABLE, USE BAR WASHER(S), (ITEM B) BETWEEN FRONT ANCHOR AND NUT (ITEMS 2 AND 1A) TORQUE NUT TO APPROXIMATELY 150 FT LBS. (203Nm)



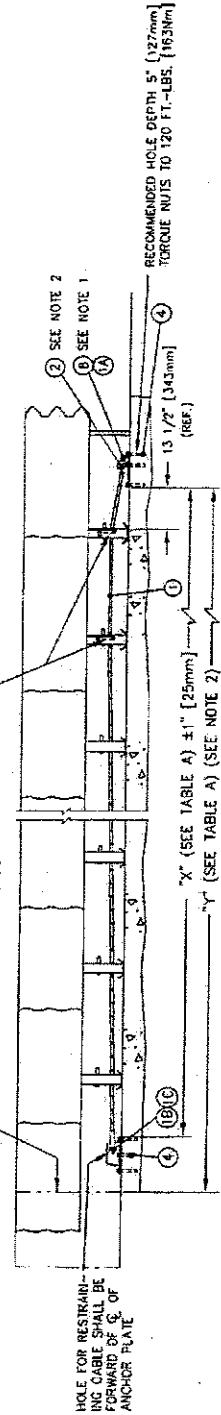
**PLAN**

(CARTRIDGES NOT SHOWN)

ASSEMBLY NO.	CABLE PART NO.	NO. OF BAYS	"X"	"Y"	CABLE LENGTH
3506090-0400	2742111-0000	4	11'-7 1/4" (3537mm)	3'-3 1/2" (1001mm)	13'-0" (3962mm)
3506090-0500	2742112-0000	5	14'-2 1/4" (4451mm)	18'-1 1/2" (5493mm)	16'-0" (4877mm)
3506090-0600	2742114-0000	6	17'-2 1/4" (5336mm)	19'-1 1/2" (5830mm)	19'-0" (5791mm)
3506090-0700	2742115-0000	7	20'-2 1/4" (6280mm)	22'-1 1/2" (6746mm)	22'-0" (6706mm)
3506090-0800	2742116-0000	8	23'-2 1/4" (7194mm)	25'-1 1/2" (7658mm)	25'-0" (7620mm)
3506090-0900	2742117-0000	9	26'-2 1/4" (8108mm)	28'-1 1/2" (8573mm)	28'-0" (8536mm)
3506090-1000	2742118-0000	10	29'-2 1/4" (9023mm)	31'-1 1/2" (9487mm)	31'-0" (9449mm)
3506090-1100	2742119-0000	11	32'-2 1/4" (9939mm)	34'-1 1/2" (10400mm)	34'-0" (10400mm)
3506090-1200	2742120-0000	12	35'-2 1/4" (10854mm)	37'-1 1/2" (11315mm)	37'-0" (11315mm)

INSERT RESTRAINING CABLE THROUGH THE RESTRAINING CABLE GUIDES ON THE FIRST AND SECOND DIAPHRAGMS SEE DWG 35-19-07.

**FRONT FACE OF BACKUP**



**ELEVATION**

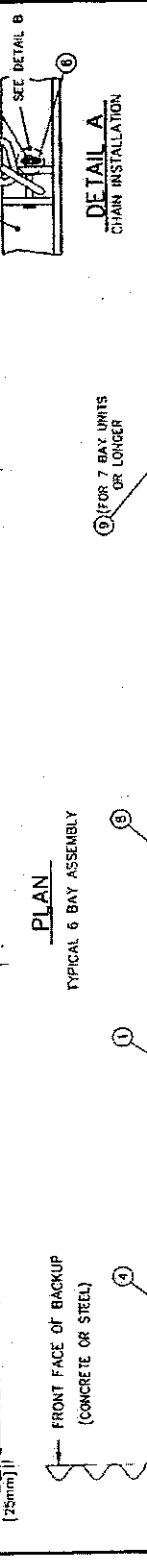
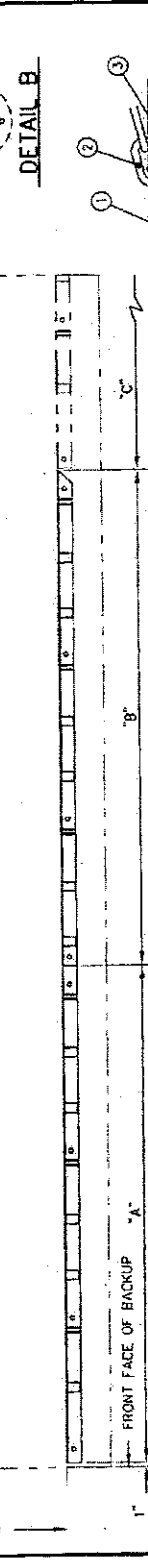
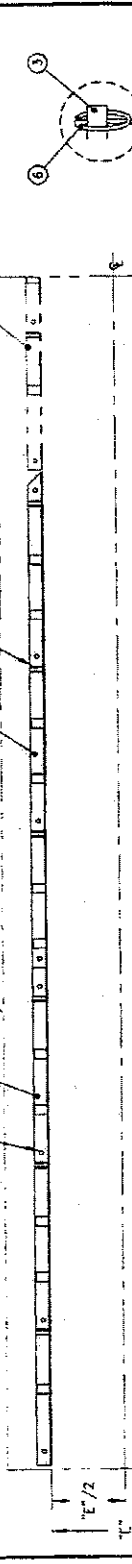
TYPICAL 6-BAY UNIT SHOWN. SEE TABLE A FOR OTHER SIZES FOR CLARITY, ANCHOR CHAINS AND RAIL NOT SHOWN

- NOTES:
1. USE ITEM B AS REQUIRED FOR SHIM.
  2. FRONT AND REAR ANCHORAGE MAY BE SIMULTANEOUSLY MOVED REARWARD 3" (76mm) TO AVOID REBAR.

**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

**G-R-E-A-T® SYSTEM**  
RESTRAINING CABLE  
ANCHOR ASSEMBLY  
4-12 BAY SYSTEMS

ASSEMBLY NO.	NO. OF BAYS	TOTAL RAIL LENGTH	PARTS LIST		QUANTITIES REQUIRED													
			ITEM	STOCK NO.	DESCRIPTION	NO. OF BAYS	1	2	3	4	5	6	7	8	9	10	11	12
3518040-0200	1	2'-11" (885mm)	2'-11" (885mm)	2722031-0000	N/A	N/A	1	2	3	4	5	6	7	8	9	10	11	12
3518040-0300	2	3'-11" (1093mm)	3'-11" (1093mm)	2722032-0000	N/A	N/A	2	2	2	2	2	2	2	2	2	2	2	2
3518040-0400	3	4'-11" (1498mm)	4'-11" (1498mm)	2722033-0000	N/A	N/A	3	4	6	8	10	12	14	16	18	20	22	24
3518040-0500	4	5'-11" (1893mm)	5'-11" (1893mm)	2722034-0000	N/A	N/A	4	6	8	10	12	14	16	18	20	22	24	
3518040-0600	5	6'-11" (2288mm)	6'-11" (2288mm)	2722035-0000	N/A	N/A	5	8	10	12	14	16	18	20	22	24		
3518040-0700	6	7'-11" (2683mm)	7'-11" (2683mm)	2722036-0000	N/A	N/A	6	10	12	14	16	18	20	22	24			
3518040-0800	7	8'-11" (3078mm)	8'-11" (3078mm)	2722037-0000	N/A	N/A	7	12	14	16	18	20	22	24				
3518040-0900	8	9'-11" (3473mm)	9'-11" (3473mm)	2722038-0000	N/A	N/A	8	14	16	18	20	22	24					
3518040-1000	9	10'-11" (3868mm)	10'-11" (3868mm)	2722039-0000	N/A	N/A	9	16	18	20	22	24						
3518040-1100	10	11'-11" (4263mm)	11'-11" (4263mm)	2722040-0000	N/A	N/A	10	18	20	22	24							
3518040-1200	11	12'-11" (4658mm)	12'-11" (4658mm)	2722041-0000	N/A	N/A	11	20	22	24								
3518040-1300	12	13'-11" (5053mm)	13'-11" (5053mm)	2722042-0000	N/A	N/A	12	22	24									



PLAN  
TYPICAL 6 BAY ASSEMBLY

ELEVATION

CONCRETE PAD OR ROADWAY

USE ITEMS 3 AND 6 TO FASTEN CHAIN ITEM 2, TO CHAIN KEEPER (SEE DETAIL A)

USE ITEM 4 TO SECURE CHAIN RAILS TO CONCRETE. RECOMMENDED HOLE DEPTH: 5" (127mm) FINAL TORQUE TO BE: 170 FT.-LBS. (163 Nm)

FRONT FACE OF BACKUP (CONCRETE OR STEEL)

OUTLINE OF P.C. CONCRETE PAD

CONCRETE PAD OR ROADWAY

FRONT FACE OF BACKUP (CONCRETE OR STEEL)

CHAIN INSTALLATION

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

G-R-E-A-T® SYSTEM

CHAIN RAIL ASSEMBLY

NOTES:  
1. USE CHAIN RAILS AS TEMPLATE TO LOCATE MP-3 ANCHOR BOLTS  
2. CHAIN RAILS ARE IDENTIFIED BY LENGTH.

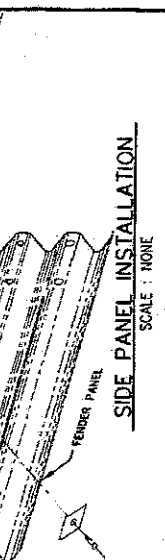
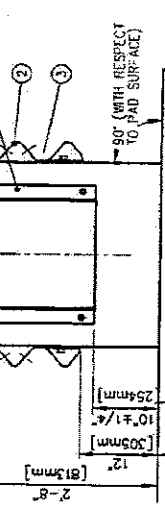
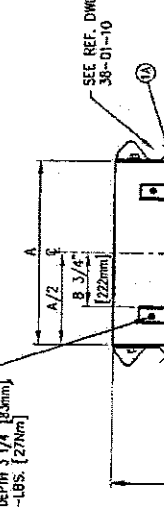
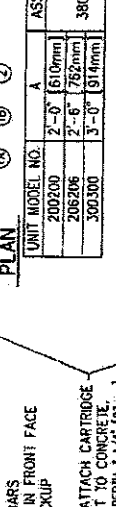
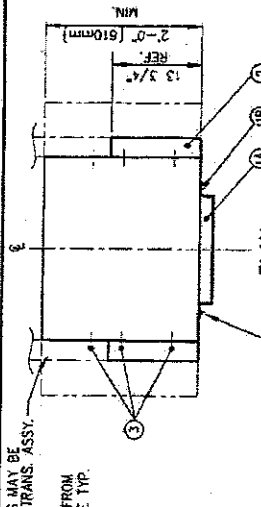
ITEM	STOCK NO.	DESCRIPTION	QUANTITY	REMARKS
1	2752600-0000	BRACKET ASSY, CART. SUPPORT, CONC.	1	
1A	2752601-0000	BRACKET, CARTRIDGE SUPPORT, C-B/U	1	
1B	3525060-0000	ANCHOR, MP-3 KIT, 3/8 x 4	1	
2	2752121-0000	PANEL, SIDE, CONC. BACKUP	2	
3	3525130-0000	ANCHOR, MP-3 KIT, 3/4 x 6 1/2	2	

NOTES:  
 \* INDICATED QUANTITIES INDICATE SUBASSEMBLIES.  
 1. BACKUP MUST BE ABLE TO WITHSTAND A MAXIMUM OVERBURDEN WEIGHT OF 2000 LB-IN. (2280kg) AT DECK JUNE FOR DURATIONS OF 480 MIN.  
 2. IF SYSTEM IS TO BE LOCATED ON 7" (178mm) MIN. PECK STRUCTURE OR 8" (203mm) MIN. NON-REINFORCED ROADWAY ALL VERTICAL STEEL SHALL BE DOWELED INTO P.C. CONCRETE A MIN. OF 5" (127mm).  
 3. MECHANICAL TYPE ANCHORS MAY BE SUBSTITUTED IN HORIZONTAL APPLICATIONS AND USED BY OTHERS. THE SUBSTITUTED ANCHORS SHALL BE THE SAME NUMBER AS THE ORIGINAL. THE FOLLOWING MINIMUM PULLOUT STRENGTHS: 3/8" DIA. - 2160 POUNDS (9825 N); 3/4" DIA. - 11,000 POUNDS (48950 N).

CONCRETE	IN BACKUP	IN FOOTING	#5	#6
4 YD' [0.3m']	9 YD' [0.7m']	84 FT. [226m]	37 FT. [11.3m]	
5 YD' [0.36m']	9 YD' [0.7m']	91 FT. [277m]		
5 YD' [0.44m']	9 YD' [0.7m']	98 FT. [299m]		

UNIT MODEL NO. A  
 209200 2'-0" [610mm]  
 208206 2'-6" [762mm]  
 300300 3'-0" [914mm]

ASSEMBLY NO. 3801010-0000



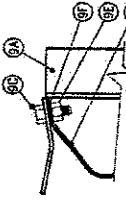
ENERGY ABSORPTION SYSTEMS, INC.  
 ENGINEERING AND RESEARCH DEPARTMENT

G-R-E-A-T® SYSTEM  
 CONCRETE BACKUP WALL ASSEMBLY  
 FOR  
 HEX-FOAM® II CARTRIDGES

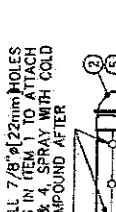
PARTS LIST		REVISION
ITEM	STOCK NO.	
1	2903201-0000	BACKUP, N/A, 24" CENTERED
2	2752111-0000	PANEL, SIDE, STEEL BACKUP
3	SEE TABLE	BRACKET ATTACHMENT, N/A, R
4	SEE TABLE	BRACKET ATTACHMENT, N/A, L
5	3526130-0000	ANCHOR, WP-3 KIT, 3/4 x 6 1/2
6	2701581-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G
7	2799081-0000	WASHER, FENDER PANEL
8	2704031-0000	NUT, HK, 3/8, G
9	2752590-0000	BRACKET ASSY, CART SUPPORT, ST
9A	2752591-0000	BRACKET, CARTRIDGE, SU
9B	2752591-0000	BAR, CLAMPING, CART, SU
9C	2701221-0000	BOLT, HK, 3/8 x 1, G2, G
9D	2701331-0000	BOLT, HK, 3/8 x 4 1/2, G2
9E	2704031-0000	NUT, HK, 3/8, G
9F	2708021-0000	WASHER, FLAT, 3/8 x 1, G

IDENTIFIED QUANTITIES INDICATE SUBASSEMBLIES			
ASSEMBLY NUMBER	QTY.	ITEMS	ITEM #
3821121-0000	1	BARRIER	6
3821121-0000	1	CASE "A"	10
3821121-0000	1	CASE "B"	10
3821121-0000	1	CASE "C"	10
3821121-0000	1	CASE "D"	10
3821121-0000	1	CASE "E"	10
3821121-0000	1	CASE "F"	10
3821121-0000	1	CASE "G"	10
3821121-0000	1	CASE "H"	10
3821121-0000	1	CASE "I"	10
3821121-0000	1	CASE "J"	10
3821121-0000	1	CASE "K"	10
3821121-0000	1	CASE "L"	10
3821121-0000	1	CASE "M"	10
3821121-0000	1	CASE "N"	10
3821121-0000	1	CASE "O"	10
3821121-0000	1	CASE "P"	10
3821121-0000	1	CASE "Q"	10
3821121-0000	1	CASE "R"	10
3821121-0000	1	CASE "S"	10
3821121-0000	1	CASE "T"	10
3821121-0000	1	CASE "U"	10
3821121-0000	1	CASE "V"	10
3821121-0000	1	CASE "W"	10
3821121-0000	1	CASE "X"	10
3821121-0000	1	CASE "Y"	10
3821121-0000	1	CASE "Z"	10

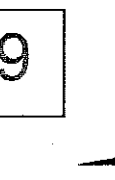
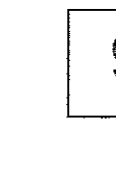
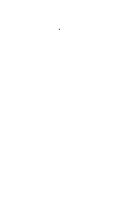
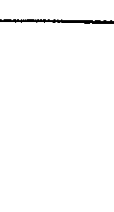
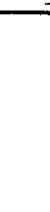
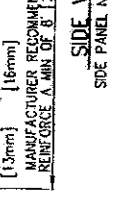
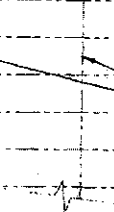
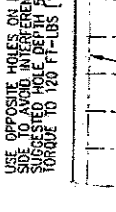
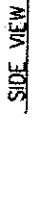
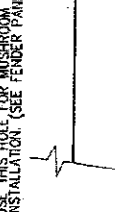
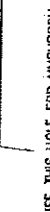
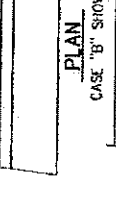
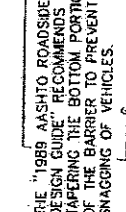
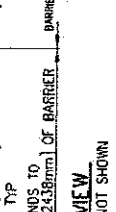
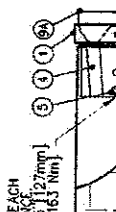
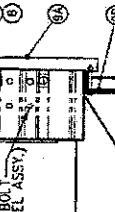
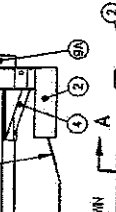
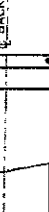
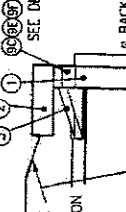
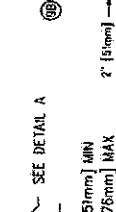
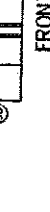
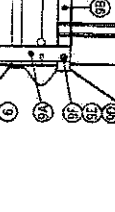
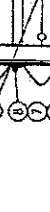
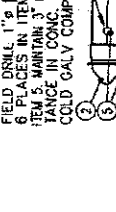
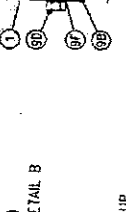
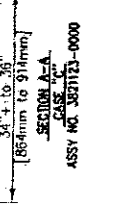
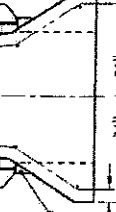
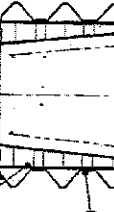
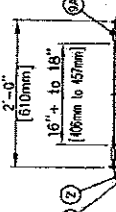
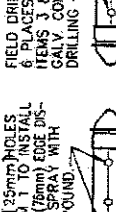
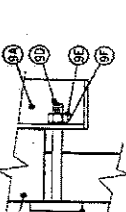
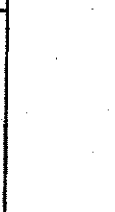
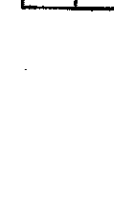
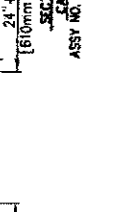
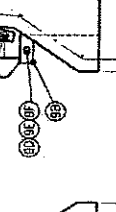
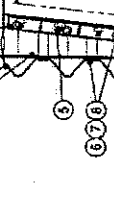
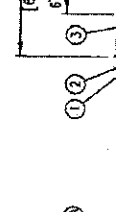
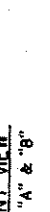
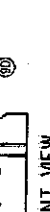
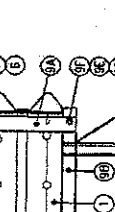
MECHANICAL TYPE ANCHORS MAY BE SUBSTITUTED IN HORIZONTAL APPLICATIONS AND SHALL BE SUPPLIED BY THE MANUFACTURER. SUBSTITUTED ANCHORS SHALL BE THE SAME DIMENSION AS THE ORIGINAL ANCHORS AND SHALL HAVE THE FOLLOWING MINIMUM PULLOUT STRENGTHS:  
 3/8" - 2760 POUNDS (12 300 N)  
 3/4" - 11,000 POUNDS (49 000 N)



FIELD DRILL 1 1/8" (25mm) HOLES  
 6 PLACES IN ITEM 1 TO INSTALL  
 ITEM 5. MAINTAIN 3/16" (5mm) EDGE DIS-  
 TANCE IN CONC. SPRAY WITH  
 COLD GALV COMPOUND.



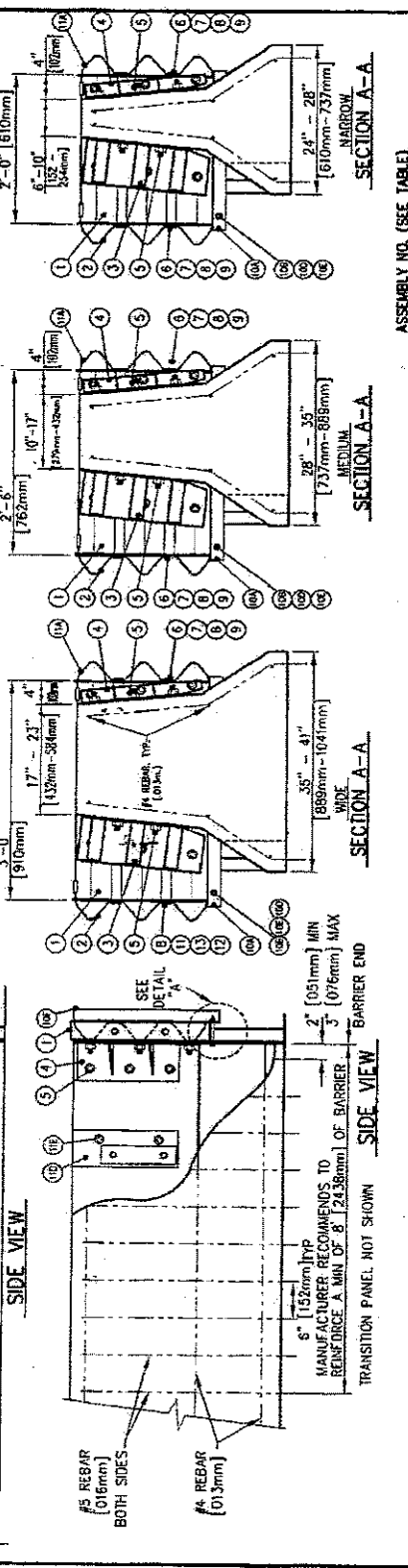
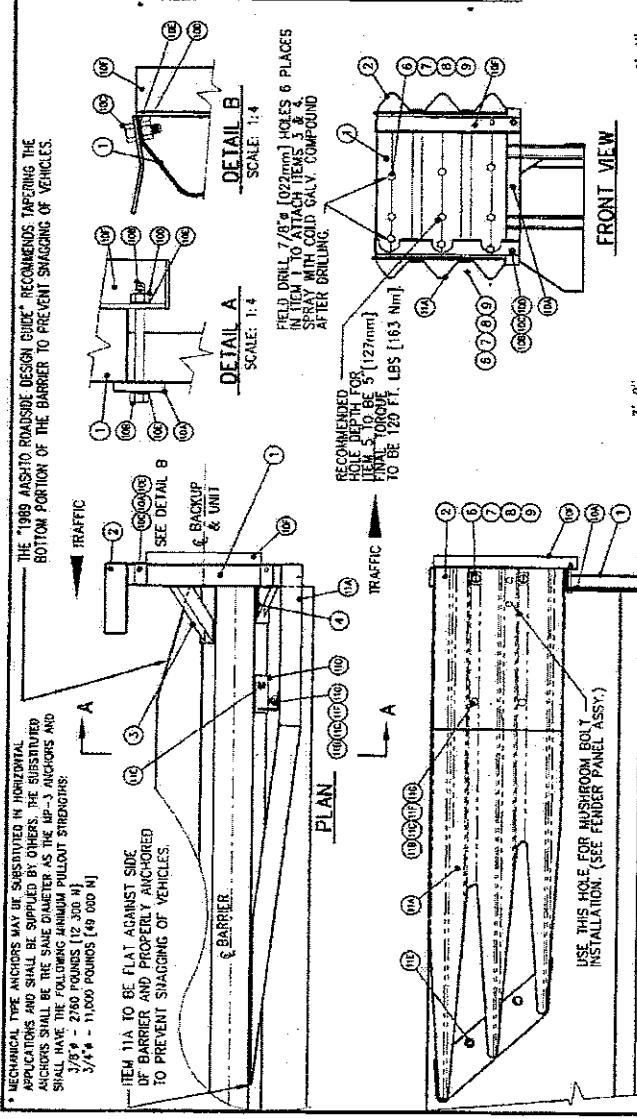
FIELD DRILL 7/8" (22mm) HOLES  
 6 PLACES IN ITEM 1 TO ATTACH  
 ITEMS 3 & 4. SPRAY WITH COLD  
 GALV COMPOUND AFTER  
 DRILLING



ITEM	STOCK NO.	DESCRIPTION	REQT.
1	SEE TABLE	BACKUP, NJ OFFSET L	1
2	2752111-0000	PANEL, SIDE, STEEL BACKUP	1
3	2752191-0000	BRACKET, ATTACHMENT, NJ, R	1
4	2752201-0000	BRACKET, ATTACHMENT, NJ, L	1
5	3525130-0000	ANCHOR, MP-3 KIT, 3/4 x 6 1/2	2
6	2708781-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G	10
7	2708791-0000	WASHER, FENDER PANEL	10
8	2704091-0000	NUT, HK, 3/4, G	10
9	2708201-0000	WASHER, LOCK, 3/4, G	10
10	2752590-0000	BRACKET ASSY, CART, SUPPORT, ST	1
10A	2752611-0000	BAR, CLAMPING, CART, SUPP, BRACKET	1
10B	2701531-0000	BOLT, HK, 3/8 x 4 1/2, G2, G	2
10C	2701221-0000	BOLT, HK, 3/8 x 1, G2, G	2
10D	2704031-0000	NUT, HK, 3/8, G	4
10E	2708021-0000	WASHER, FLAT, 3/8 x 1, G	6
10F	2752591-0000	BRACKET, CARTRIDGE, SUPPORT, ST, BU	1
11	2752241-0000	PANEL, TRANS, L, 4, OFFSET	1
11A	2752241-0000	PANEL, TRANSITION, 4, OFFSET, L	1
11B	2708201-0000	WASHER, LOCK, 3/4, G	2
11C	2701581-0000	BOLT, HK, 3/4 x 2, G2, G	2
11D	2752271-0000	BRACKET, SUPPORT, TRANS, PIN, NIDNIB	1
11E	3525130-0000	ANCHOR, MP-3 KIT, 3/4 x 6 1/2	1
11F	2708081-0000	WASHER, FLAT, 3/4 x 2, G	2
11G	2704091-0000	NUT, HK, 3/4, G	2

INDENTED QUANTITIES INDICATE SUBASSEMBLIES

MODEL NO/ITEM 1 PART NO	ASSEMBLY NO.
2002200	2903211-0000
2002206	2903212-0000
3003300	2903213-0000



ASSEMBLY NO. (SEE TABLE)

**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

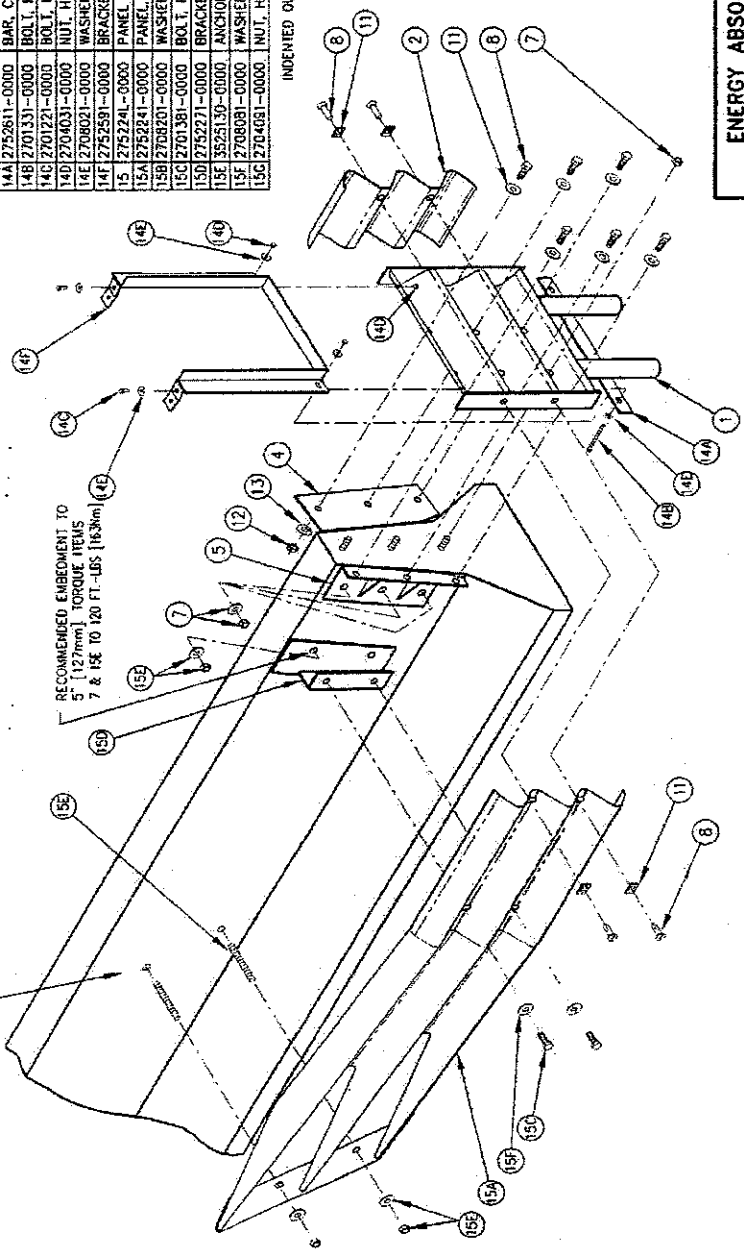
**G-R-E-A-T® SYSTEM**  
**BACKUP ASSEMBLY FOR**  
**NEW JERSEY MEDIAN BARRIER**  
BI-DIRECTIONAL

TABLE		ITEM 1	ITEM 4	ASSEMBLY NUMBER
MODEL NUMBER	PART NO.	PART NO.		
200200	2903211-0000	2752191-0001		3821021-0000
208206	2903212-0000	2752641-0000		3821022-0000
300300	2903213-0000	2753052-0000		3821023-0000

PARTS LIST		STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE		BACKUP, N.L. OFFSET, L.	1
2	2752111-0000		PANEL, SIDE, STEEL BACKUP.	1
3	DELETED			
4	SEE TABLE		BRACKET, ATTACHMENT, N.L. R.	1
5	2752201-0000		BRACKET, ATTACHMENT, N.L. L.	1
6	DELETED			
7	3525130-0000		ANCHOR, MP-3 KIT, 3/4 x 6 1/2	2
8	2706761-0000		SCREW, FLAT, SLOTTED, 3/4 x 2, G.	10
9	DELETED			
10	DELETED			
11	2708791-0000		WASHER, FENDER PANEL.	10
12	2704091-0000		NUT, HK, 3/4, G.	10
13	2708201-0000		WASHER, LOCK, 3/4, G.	10
14	2752590-0000		BRACKET ASSY. CART. SUPPORT, ST.	1
14A	2752511-0000		BAR, CLAMPING, CART. SUPT. BRACKET	1
14B	2701331-0000		BOLT, HK, 3/8 x 4 1/2, G2, G.	2
14C	2701221-0000		BOLT, HK, 3/8 x 1, G2, G.	2
14D	2704031-0000		NUT, HK, 3/8, G.	4
14E	2708021-0000		WASHER, FLAT, 3/8 x 1, G.	6
14F	2752591-0000		BRACKET, CARTRIDGE SUPPORT, ST. BU.	1
15	2752241-0000		PANEL, ASSY. TRANS. L, 4, OFFSET, L.	1
15A	2752241-0000		PANEL, TRANSITION, 4, OFFSET, L.	1
15B	2701381-0000		WASHER, LOCK, 3/4, G.	2
15C	2701381-0000		BOLT, HK, 3/4 x 2, G2, G.	2
15D	2752271-0000		BRACKET, SUPPORT, TRANS. PNL-NICHIB	1
15E	3525130-0000		ANCHOR, MP-3 KIT, 3/4 x 6 1/2	1
15F	2708081-0000		WASHER, FLAT, 3/4 x 2, G.	2
15G	2704081-0000		NUT, HK, 3/4, G.	2

INDEXED QUANTITIES INDICATE SUB ASSEMBLIES.

ITEM 15A TO BE FLAT AGAINST SIDE OF BARRIER AND TIGHTLY ANCHORED TO PREVENT SWAGING OF VEHICLES.



ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

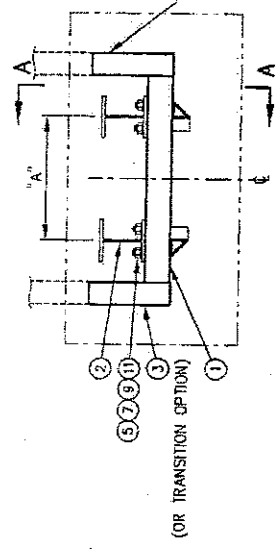
NEW JERSEY  
MEDIAN BARRIER  
ATTACHED BACKUP  
BI-DIRECTIONAL

ITEM	STOCK NO.	DESCRIPTION	RECD
1	SEE TABLE	BACKUP, WF, 24" x 30" x 36"	1
2	2903311-0000	POST, WF, 74	2
3	2752111-0000	PANEL, SIDE, STEEL BACKUP	2
5	2706761-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G	12
7	2704091-0000	NUT, HEX, 3/4, G	12
9	2708791-0000	WASHER, FENDER PANEL	12
11	2708201-0000	WASHER, LOCK, 3/4, G	B

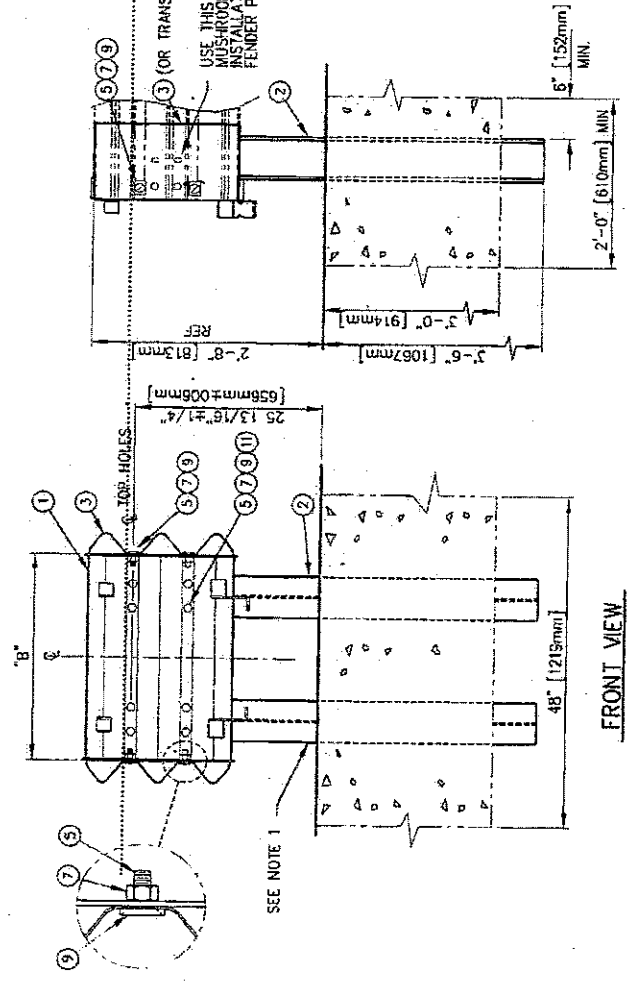
INDENTED QUANTITIES INDICATE SUB ASSEMBLIES.

MODEL NUMBER	ASSEMBLY NUMBER	PART NO.	"A"	"B"
200200	3831011-0000	2903321-0000	1'-0" [305mm]	2'-0" [610mm]
206206	3831012-0000	2903322-0000	1'-6" [457mm]	2'-6" [762mm]
300300	3831013-0000	2903323-0000	2'-0" [610mm]	3'-0" [914mm]

TRANSITION OPTION MAY BE SUBSTITUTED FOR ITEM 3 (EITHER OR BOTH SIDES) SEE TRANS. ASSY.



TOP VIEW



FRONT VIEW

NOTE:  
1. PRE-ASSEMBLE BACKUP (ITEM 1) TO WF POSTS (ITEM 2) PRIOR TO EMBEDDING IN CONCRETE.  
SEE PAGE 26 FOR FORWARD PAD DETAILS

SIDE VIEW

ASSEMBLY NO. (SEE TABLE)

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

G-R-E-A-T® SYSTEM  
WIDE FLANGE BACKUP  
ASSEMBLY  
FOR HEX FOAM® II CARTRIDGES



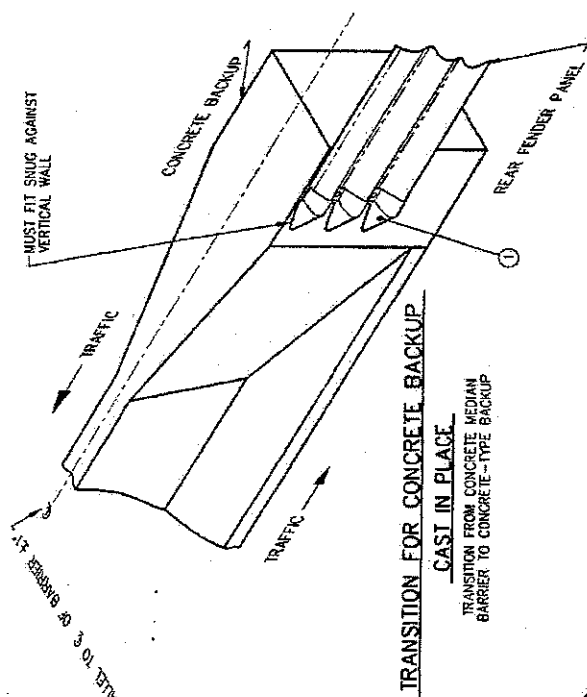
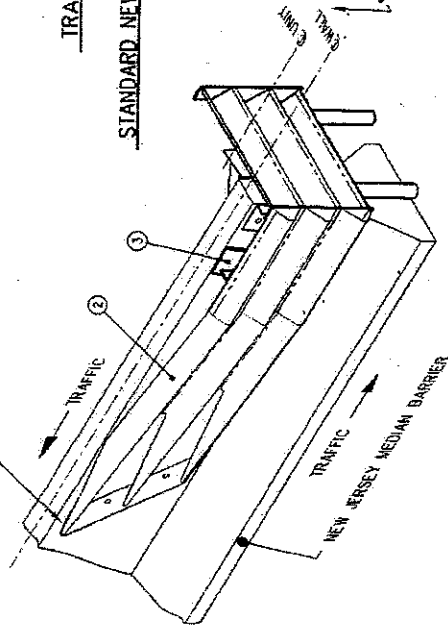


PARTS LIST	
ITEM	STOCK NO. DESCRIPTION
1	2752071-0000 DEFLECTOR, TB, CONIC BACKUP
2	2752241-0000 PANEL, TRANSITION, 4 OFFSET, L
3	2752271-0000 BRACKET, SUPPORT, TRANS PNL - RI CM8
4	2752161-0000 PANEL, TRANSITION, W-THREE BEAM
5	2752181-0000 PANEL, EXTENSION, 2 DEC, 60

TRANSITION PANEL  
FOR

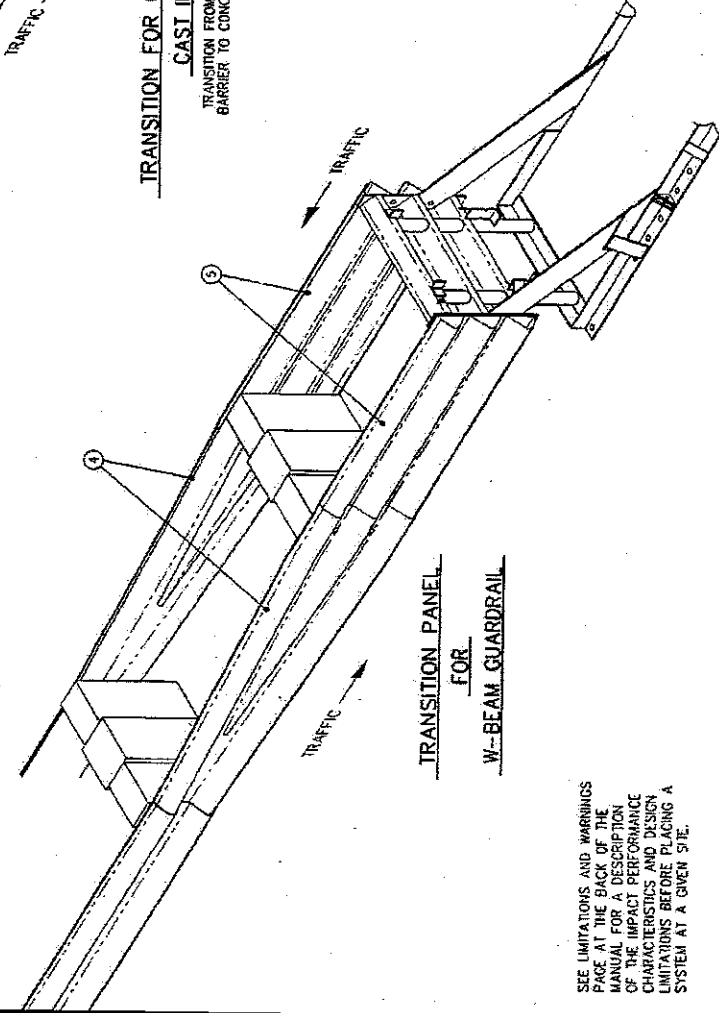
STANDARD NEW JERSEY MEDIAN BARRIER

PANEL TO BE FLAT AGAINST SIDE OF BARRIER AND PROPERLY ANCHORED TO PREVENT SWAGING OF VEHICLES



TRANSITION FOR CONCRETE BACKUP  
CAST IN PLACE

TRANSITION FROM CONCRETE MEDIAN BARRIER TO CONCRETE-TYPE BACKUP



TRANSITION PANEL  
FOR  
W-BEAM GUARDRAIL

SEE LIMITATIONS AND WARNINGS PAGE AT THE BACK OF THE MANUAL FOR A DESCRIPTION OF THE IMPACT PERFORMANCE CHARACTERISTICS AND DESIGN LIMITATIONS BEFORE PLACING A SYSTEM AT A GIVEN SITE.

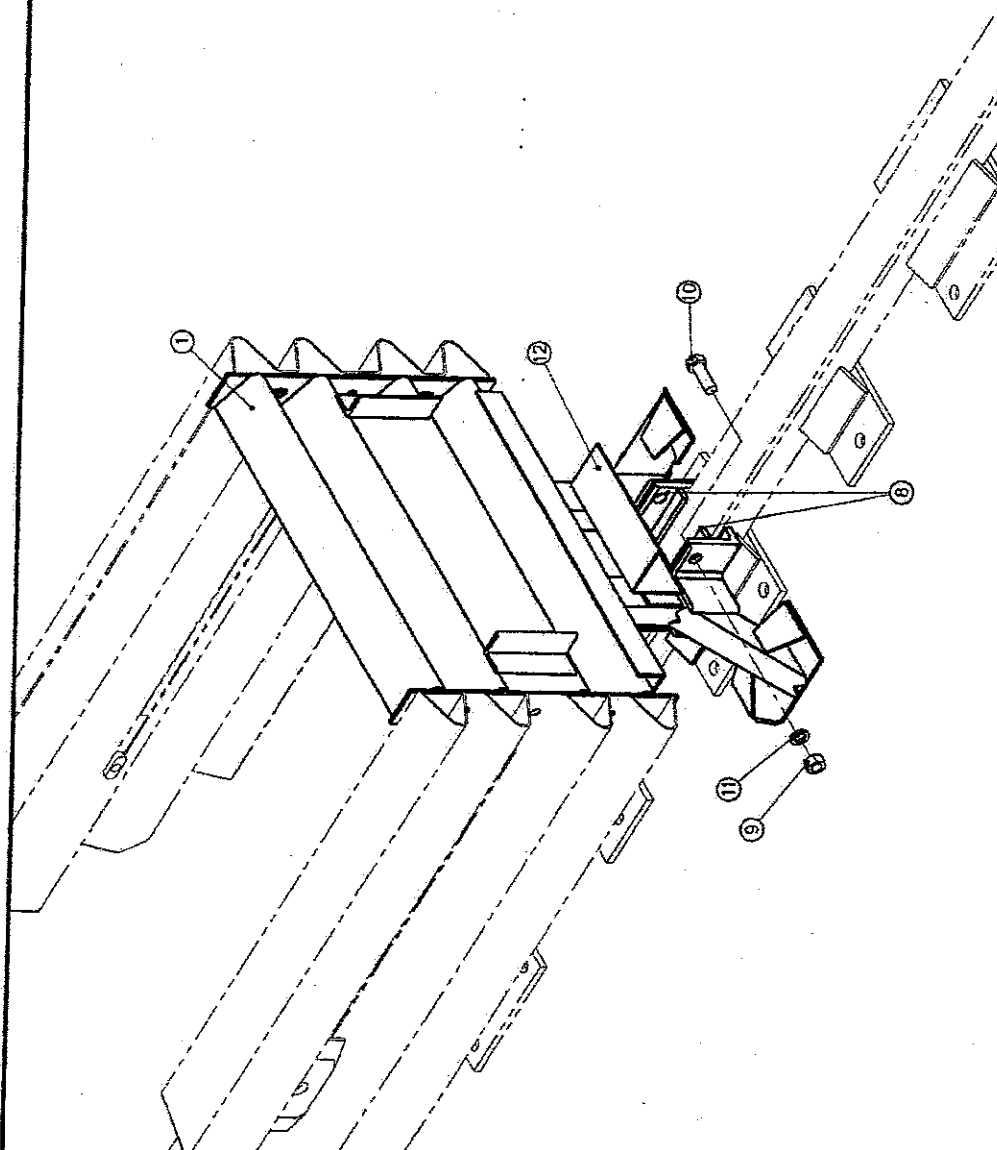
ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT  
**G-R-E-A-T® SYSTEM**  
**TRANSITION PANELS**  
**FOR BI-DIRECTIONAL TRAFFIC**

**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	RECD
1	SEE TABLE A	DIAPHRAGM, OB, QG, G	1.00
8	2760091-0000	MONORAIL GUIDE, QG, G	2.00
9	2704341-0000	NUT, HY, 3/4, G, CR, DH	4.00
10	2699121-0000	BOLT, THK, 3/4X2, BR, G	4.00
11	2708201-0000	WASHER, LOCK, 3/4, G	4.00
12	2760282-0000	BRACKET, CART SUPPORT, DIAPHRAGM	2.00

TABLE A

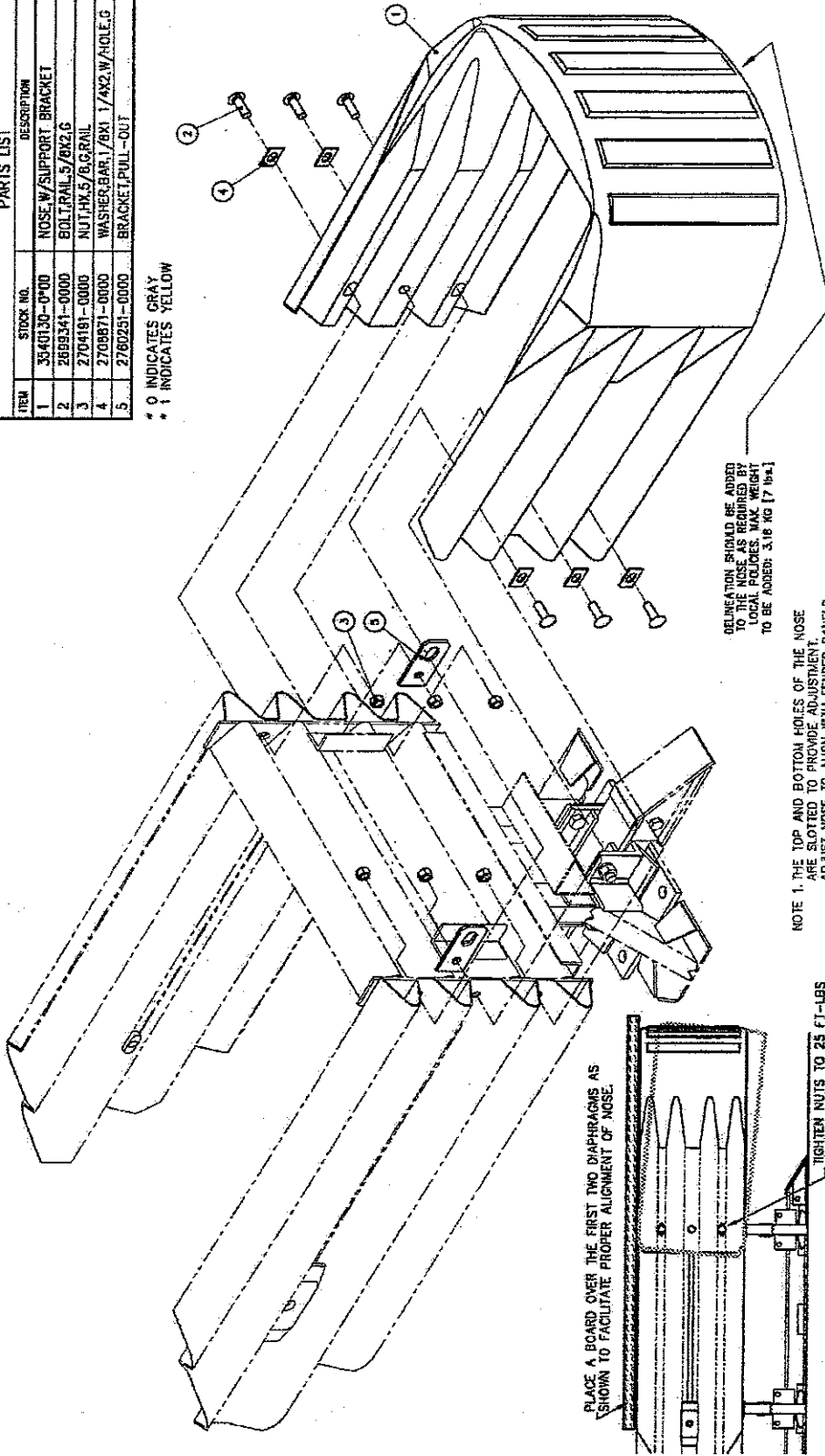
ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
35-40071-0000	2761011-0000	DIAPHRAGM, OB, 24, QG, G	610 [24.00]
35-40072-0000	2761021-0000	DIAPHRAGM, OB, 30, QG, G	760 [30.00]
35-40073-0000	2761031-0000	DIAPHRAGM, OB, 36, QG, G	915 [36.00]



ASSEMBLY NO. SEE TABLE A		ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT	
QUADGUARD® SYSTEM		DIAPHRAGM ASSY, QG	
DATE	REV.	BY	CHK/APP.
5-2-96		J. Espinoza	
5/17/96		S. Trageser	
5/17/96		J. Machado	
DRAWING NO. 35-4007.dwg		NEXT ASSY/MT.	
REFERENCES			
DATE	REV.	BY	CHK/APP.
01/04/92	D	ROC	KRM/DLL
07/27/90	B	D/S	STJ/JAM
02/07/91	C	J	RL/SPT

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	3540130-0700	NOSE W/SUPPORT BRACKET	1.00
2	2699341-0000	BOLT,RAIL 5/8X2.G	6.00
3	2704191-0000	NUT,HX 5/8.G,RNHL	6.00
4	2708871-0000	WASHER,BAR,Y/BX1 1/4X2.W/HOLE.G	6.00
5	2780251-0000	BRACKET,PULL-OUT	2.00

\* 0 INDICATES GRAY  
 \*\* 1 INDICATES YELLOW



ASSEMBLY NO. 3540050-0100 (YELLOW)  
 ASSEMBLY NO. 3540050-0000 (GRAY)

ENERGY ABSORPTION SYSTEMS, INC.  
 ENGINEERING AND RESEARCH DEPARTMENT

**QUADGUARD® SYSTEM**  
**NOSE ASSY, QG**

SCALE: 1:10 PART: 35-40-05 DRAWING: 1 of 1 QTY: 0

REV	DATE	BY	CHKD	APP
0	5/20/96	D. Stouis		
1	3/1/96	MHO/AM		
2	5/21/96	S. Trogeiser		
3	5/22/96	M. Oberth		

FILE: 354005.dwg  
 PLOT: 05/27/96

REFERENCES

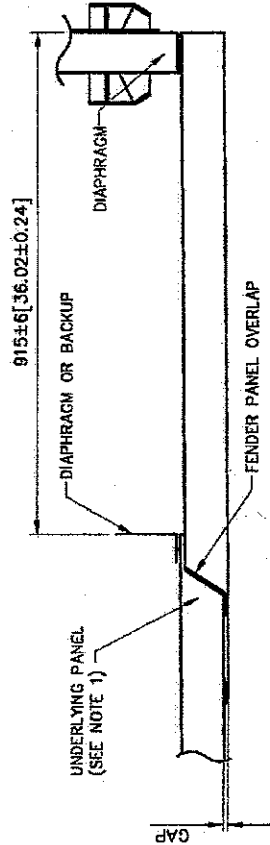
Revisions	Date	Rev.	By	Chk.	App.
MODIFIED DEPICTION OF ENDICAP	07/11/97	B	TB	BB	SPT
UPDATED CARTRIDGE SUPPORT	11/03/97	C	RCE	RHM	DLJ
ADDED DETAIL "A"	07/23/98	D	TB	RM	SPT

DETAIL "A"  
 SCALE: 1:20

**QUADGUARD SYSTEM**  
**FOR NARROW HAZARDS**

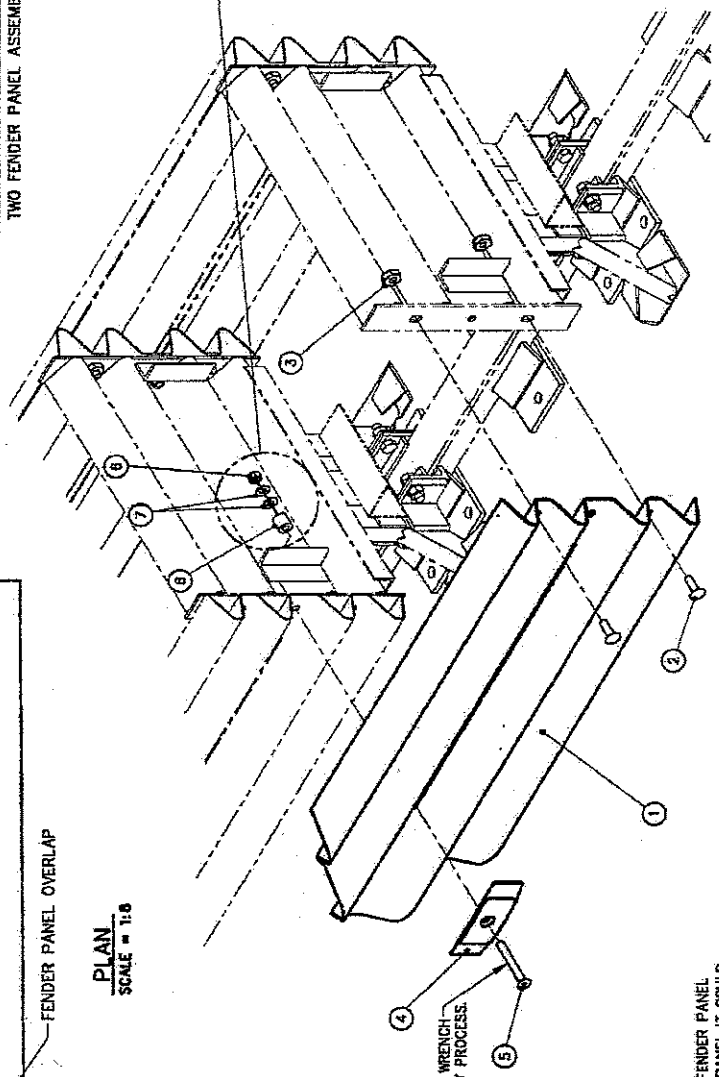
ITEM	STOCK NO.	DESCRIPTION	QTY
1	2780081-0000	PANEL, FENDER, QG, G	1.00
2	2699341-0000	BOLT, RAIL, 5/8X2, G	2.00
3	2704181-0000	NUT, HX, 5/8, G, RAIL	2.00
4	2708841-0000	WASHER, MUSHROOM, CAST, QG, G	1.00
5	2706604-0000	SCREW, FL, 5/8X5, QG, G, SOCKET	1.00
6	2704141-0000	NUT, HX, 5/8, G	1.00
7	2708291-0000	WASHER, FLAT, 5/8X1, 3/4, G	4.00
8	2021811-0000	BUSHING, ELASTOMERIC, 32X18X32	1.00

TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY.



**CAUTION**  
20 [0.78] MAX.  
FOR PROPER IMPACT  
PERFORMANCE.

**PLAN**  
SCALE = 1:0



THE BUSHING (ITEM 8) SHOULD BE COMPRESSED 1 TO 3 mm (1/16" TO 1/8") TO COMPLETE THE ASSEMBLY. ONE TO FOUR WASHERS (ITEM 7) SHOULD BE USED TO ACCOMPLISH THIS. DO NOT OVER COMPRESS THE ELASTOMERIC BUSHING. DO NOT TIGHTEN NUT MORE THAN 2 FULL TURNS AFTER WASHER(S) (ITEM 7) BEGINS TO COMPRESS BUSHING.

USE A 3/8" ALLEN WRENCH DURING THE ASSEMBLY PROCESS.

- NOTES:
1. UNDERLYING PANEL IS EITHER ANOTHER FENDER PANEL OR, IN THE CASE OF THE LAST FENDER PANEL IT COULD BE A BACKUP SIDE PANEL, EXTENSION PANEL OR TRANSITION PANEL.
  2. UNITS OF MEASUREMENT ARE IN MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.

Revisions	Date	Rev.	By	Chk/ App.
CORRECTED DIAPHRAGM SPACING	10/26/96	G	ROG/SJT	KRM
ITEM 8 WAS SPRINGLOUDED	03/11/96	E	TR	RS
CHGD NOTE 3 & ADDED CAUTION LABEL	4/15/96	F	ON	KM

REFERENCES	DATE	BY	CHK/APP.
DESIGNED BY	5/21/96	J. Espinoza	
DRAWN BY	3/1/96	JVM/MHO	
CHECKED BY	5/21/96	S. Trageser	
APPROVED BY	5/21/96	J. Machado	
DATE	354004.dwg		
FILE NAME	NEXT ASSEMBLY: ALL MODELS		

ASSEMBLY NO. 3540040-0000  
**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT  
**QUADGUARD® SYSTEM**  
 FENDER PANEL ASSY, QG  
 1:12 35-40-04 1 of 1 G

**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**

**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**

TABLE 1

ASSEMBLY NO.	DIAM. RAIL DIMEN.	*ITEM 1	*ITEM 2	*ITEM 3	*ITEM 5	NO. OF BAYS
3540050-0100	0	0	0	0	0	1
3540050-0200	815 (36.0)	1	0	0	2	2
3540050-0300	1830 (72.0)	0	0	0	3	3
3540050-0400	2745 (108.1)	0	0	0	4	4
3540050-0500	3660 (144.1)	0	0	0	5	5
3540050-0600	4575 (180.1)	0	0	0	6	6
3540050-0700	5490 (216.1)	0	0	0	7	7
3540050-0800	6405 (252.1)	0	0	0	8	8
3540050-0900	7320 (288.2)	0	0	0	9	9
3540050-1000	8235 (324.2)	0	0	0	10	10
3540050-1100	9150 (360.2)	0	0	0	11	11
3540050-1200	10065 (396.2)	0	0	0	12	12

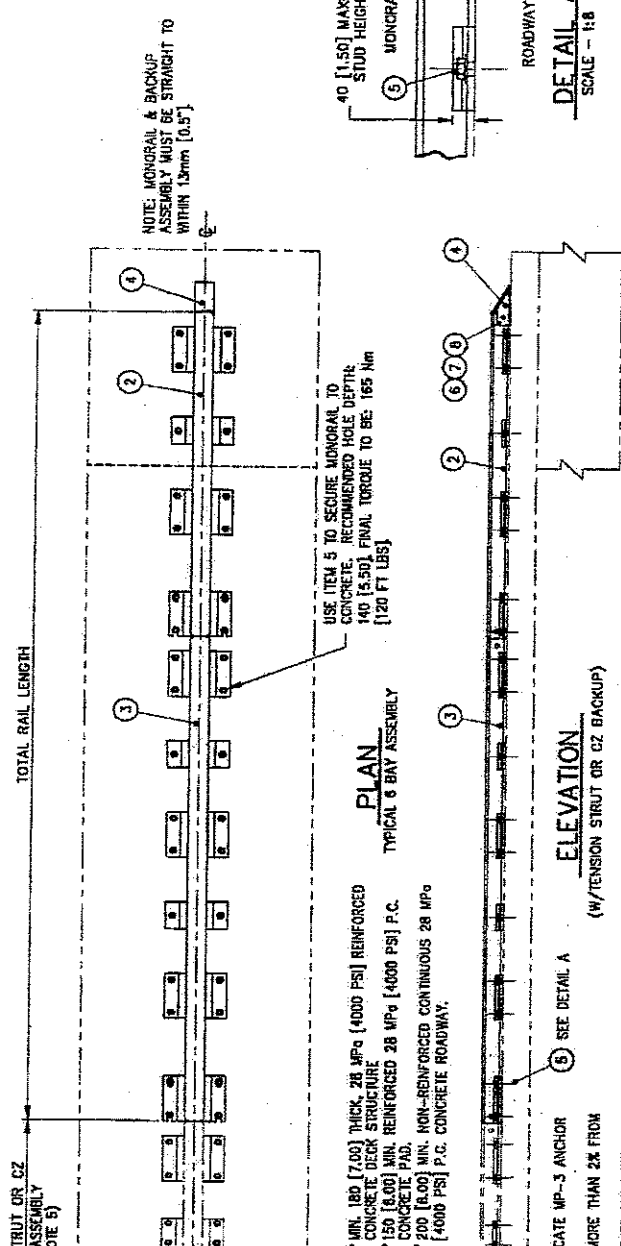
PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQD.
1	2760051-0000	MONORAIL ONE BAY, QG,G	•
2	2760061-0000	MONORAIL TWO BAYS, QG,G	•
3	2760071-0000	MONORAIL THREE BAYS, QG,G	•
4	2760081-0000	END CAP MONORAIL, QG,G	1.00
5	3525300-0000	ANCHOR MP-3, PT-MT, 3/4X7, VT	•
6	2699571-0000	SOLT.HX.5/8X3.1/2, GS,G	1.00
7	2704141-0000	NUT, HX.5/8,G	1.00
8	2708231-0000	WASHER, LOCK, 5/8,G	1.00

NOT APPLICABLE FOR 69° & 90° OR CZ QG SYSTEMS

NOT APPLICABLE FOR CZ QG SYSTEMS

\* SEE TABLE



1. USE MONORAIL(S) (ITEMS 1, 2 AND 3) AS TEMPLATE(S) TO LOCATE MP-3 ANCHOR BOLT(S) (ITEM 5). SEE SHEET 2.

2. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% & NOT VARY MORE THAN 2% FROM FRONT TO BACK.

3. UNITS OF MEASUREMENT ARE MILLIMETERS (INCHES) UNLESS OTHERWISE NOTED.

4. EVERY STUD MUST BE EMBEDDED TO A DEPTH OF 140 [5.5] IF REBAR IS ENCOUNTERED ON A P.C. CONCRETE PAD, DRILL THROUGH IT. IF REBAR IS ENCOUNTERED ON A DECK STRUCTURE, ASK PROJECT ENGINEER FOR DIRECTION.

5. FOR CZ SYSTEMS, SEE DRAWING 35-40-24. ALSO.

ASSEMBLY NO. SEE TABLE 1

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM  
MONORAIL ASSY, QG

N.I.S. 35-40-06 1 of 3

DESIGN	5-8-96
CHECK	3-1-96
DATE	5/17/96
BY	S. Trojager
DATE	5/17/96
BY	M. Oberth
FILE NO.	35-4005.dwg
DATE	5/17/96

REFERENCES

DATE	Rev.	By	CHK.	APP.
07/09/96	K	TB	BS	KM
06/05/96	L	LHC	KM	SPT
07/27/97	T	STT	KM	SPT

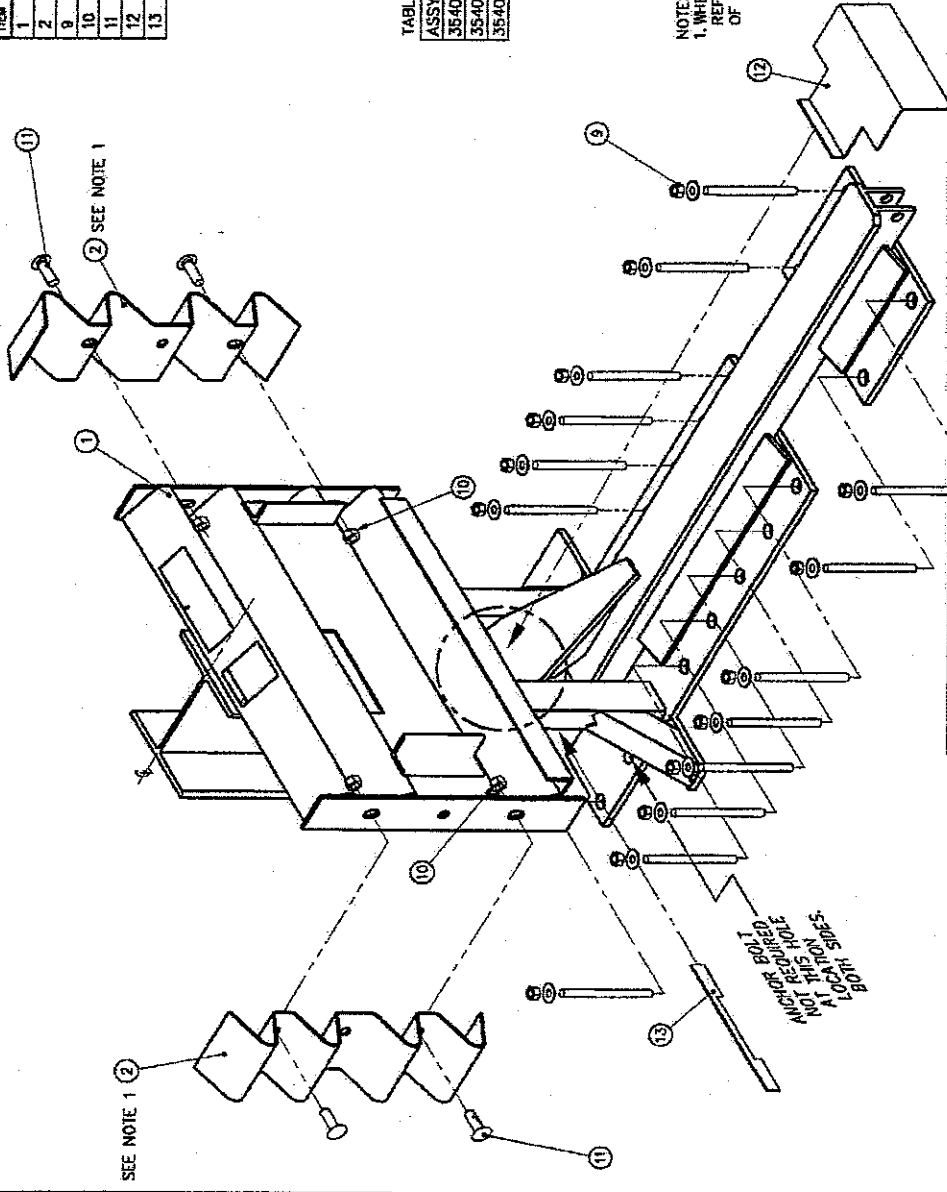
**PARTS LIST**

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BACKUP, TS, QS, G	1.00
2	2760141-0000	PANEL, SIDE, QS, G	2.00
9	3525300-0000	ANCHOR, MP-3, PT-KIT, 3/4X7, VT	3.00
10	2704191-0000	NUT, HK, 5/8, G, RAIL	4.00
11	2685341-0000	BOLT, RAIL, 5/8X2, G	4.00
12	2760293-0000	BRACKET, CARTRIDGE SUPPORT, TS, B/U	1.00
13	2760294-0000	LOCKING BAR, CARTRIDGE SUPPORT	1.00

**TABLE A**

ASSY. NO.	STOCK NO.	DESCRIPTION	QTY
3540031-0000	2760011-0000	BACKUP, TS, 24, QS, G	610 [24.00]
3540032-0000	2760021-0000	BACKUP, TS, 30, QS, G	780 [30.00]
3540033-0000	2760031-0000	BACKUP, TS, 36, QS, G	915 [36.00]

**NOTES:**  
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL PART NO. 2760141-0000.



ASSEMBLY NO. SEE TABLE A

**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT

**QUADGUARD® SYSTEM**  
**BACKUP ASSY, TS, QS**

N.T.S.      35-40-03      1 of 1

DATE	4-22-96
DESIGNED BY	S. LEWIS
CHECKED BY	JMM/MHO
DATE	3-1-96
DESIGNED BY	S. Trageer
CHECKED BY	J. Machado
DATE	5/16/96
DATE	5/16/96
FILE	354003.dwg
NO. ASSY.	

REFERENCES

Date	Rev.	By	Chk.	App.
10/21/95	E	REG	KRM	DNJ
03/01/95	F	LWC	MM	SPT
07/06/94	D	#	BB	SPT

Revisions:  
 1. REVISED DRAWINGS 12 & 13  
 2. REVISED DRAWINGS 12 & 13  
 3. REVISED DRAWINGS 12 & 13  
 4. REVISED DRAWINGS 12 & 13

QTY: 4

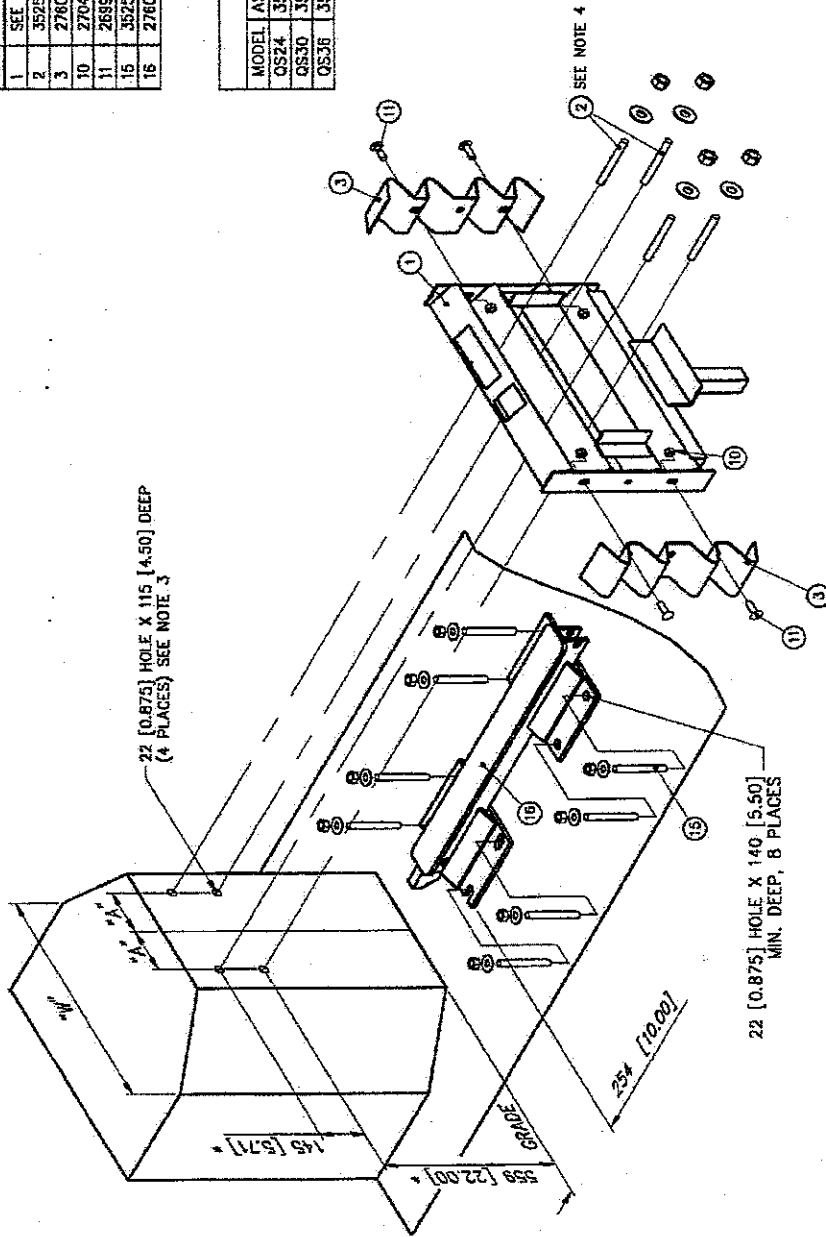
**QUADGUARD SYSTEM  
 FOR NARROW HAZARDS**

**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	REQD.
1	SEE TABLE	BACKUP CONCRETE FRONT FACE, QG	1.00
2	3525130-0000	ANCHOR, MP-3, PT. KIL, 3/4x6 1/2 HOR	1.00
3	2760141-0000	PANEL, SIDE, QG, G	2.00
10	2704191-0000	NUT, PK. 5/8x3 RAIL	4.00
11	2699341-0000	BOLT, RAIL, 5/8x2, G	4.00
15	3525300-0000	ANCHOR, MP-3, PT. KIL, 3/4x7 VT	2.00
16	2760081-0000	MONORAIL ONE BAY, QG, G	1.00

TABLE

MODEL	ASSEMBLY NO.	"W"	"A"	"A"	ITEM 1
QS24	3540141-0000	610 [24.00]	140 [5.50]	2760181-0000	
QS30	3540142-0000	762 [30.00]	152 [6.00]	2760181-0000	
QS36	3540143-0000	914 [36.00]	181 [7.50]	2760201-0000	



- NOTES:  
 1. DIMENSIONS ARE IN MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.  
 2. FOR REFERENCE ONLY. USE ITEM 1 AS A TEMPLATE TO DRILL HOLES IN CONCRETE.  
 3. A BEAR CUTTING BIT WILL LIKELY BE REQUIRED TO ACHIEVE PROPER ANCHOR INSTALLATION.  
 4. STUDS LOCATED IN UPPER VALLEY WILL NEED TO EXTEND APPROX. 57 [2.25] FROM FACE OF CONCRETE IN ORDER TO GET NUTS ON. WASHERS MAY BE OMITTED.

REFERENCES

CONCRETE BACKUP, QG

35-40-08

DESIGNED BY	DATE
D. Staus	5/24/96
W. Kragg	3/1/96
S. Trogeser	6/5/96
W. Kragg	6/5/96

UNI-DIRECTIONAL  
ASSEMBLY NO. (SEE TABLE)

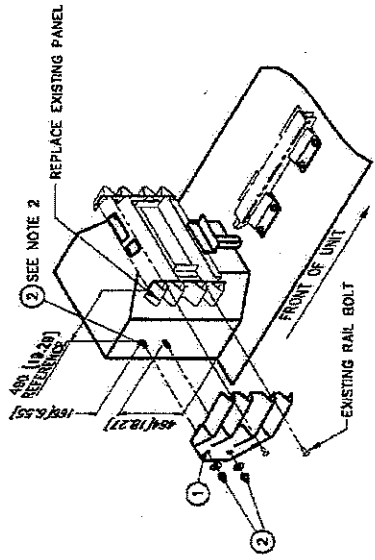
**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

**QUADGUARD® SYSTEM**  
BACKUP ASSY, CONCRETE, QG

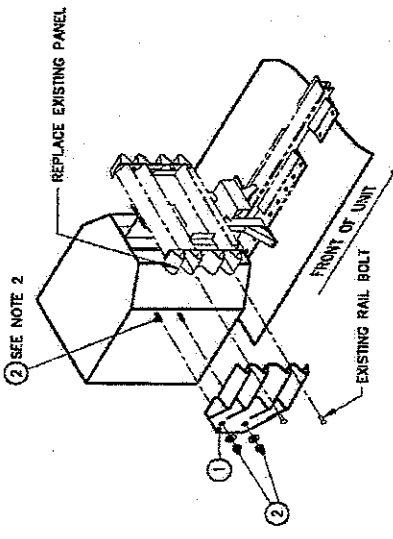
1:15 35-40-14 1 of 1

Revisions	Date	Rev. By	Chd./App.
BACKUP AND 2 LEGS	06/03/96	H	LWS KM BB
DEL ITEMS 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	11/04/91	F	REC KM D.J.
ADDED LEGS AND NOTES 3 & 4	7/6/96	G	PAS KM SPT

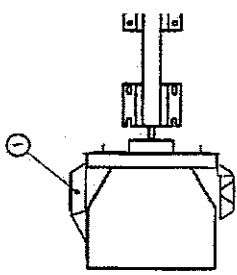
PARTS LIST		
ITEM	STOCK NO.	DESCRIPTION
1	2760271-0000	SIDE PANEL END SHOE, QG.C
2	3525130-0000	ANCHOR, MP-3, PT. INT. 3/4X6 1/2 HOR



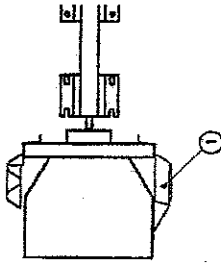
CONCRETE BACKUP



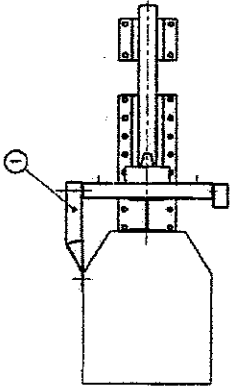
TENSION STRUT BACKUP



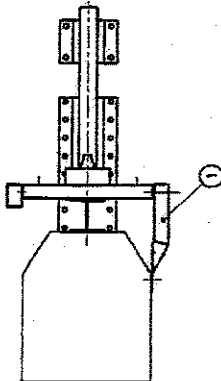
RIGHT SIDE APPLICATION



LEFT SIDE APPLICATION



RIGHT SIDE APPLICATION



LEFT SIDE APPLICATION

NOTES:  
 1. DIMENSIONS ARE IN MILLIMETERS (INCHES)  
 2. USE END SHOE AS TEMPLATE FOR DRILLING.  
 RECOMMENDED HOLE DEPTH 127 (5.00).  
 FINAL TORQUE TO BE 183Nm (130 FT-LBS) (TYP).  
 ANCHOR STUD END SHOULD BE FLUSH WITH  
 OUTSIDE SURFACE OF ANCHOR NUT.

Revisors	Date	Rev.	By	Check/Appro.
W. Krage	8/17/86	1	W. Krage	W. Krage
S. Trogner	6/5/86	2	S. Trogner	S. Trogner
W. Krage	6/5/86	3	W. Krage	W. Krage
D. Sidus	5/24/86	4	D. Sidus	D. Sidus

REFERENCES

ASSEMBLY NO. 35-40150-0000	
ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT	
QUADGUARD® SYSTEM END SHOE ASSY, QG	
DATE	REV.
5/24/86	1
3/1/86	2
6/5/86	3
6/5/86	4
35-4015.dwg	
N.T.S.	
1 of 1	

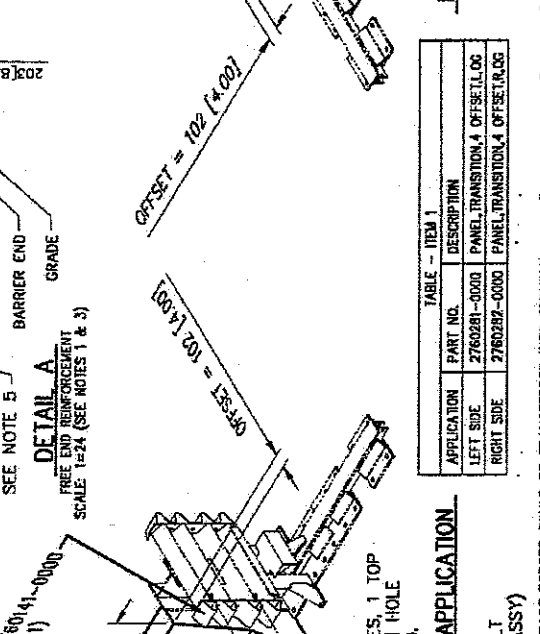
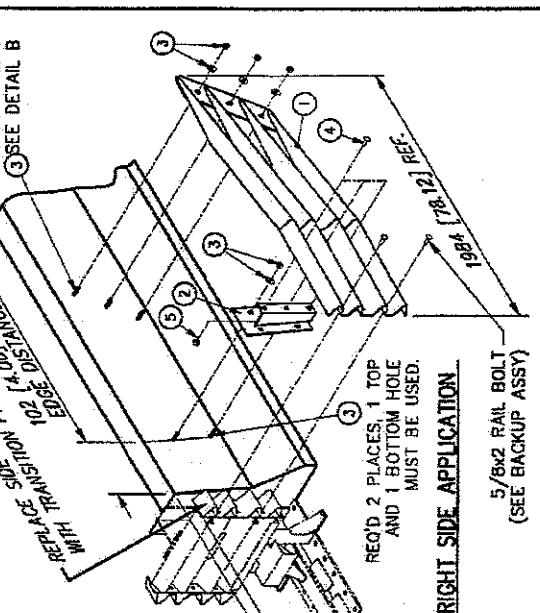
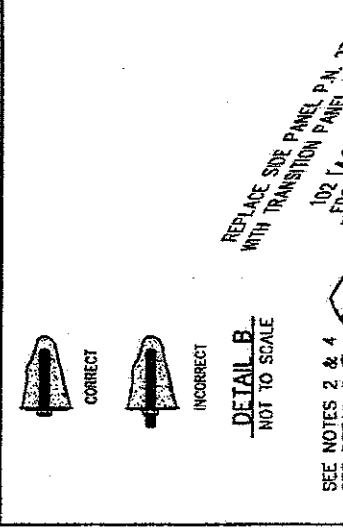
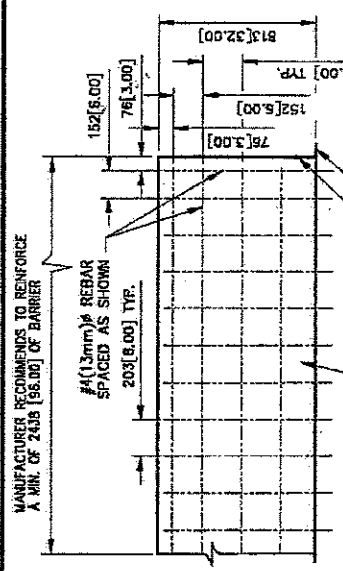
**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**



**QUADGUARD SYSTEM  
FOR NARROW HAZARDS**

**PARTS LIST**

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE	PANEL, TRANSITION, 4 OFFSET, Q.C.	1.00
2	2760301-0000	BRACKET, SUPPORT, 4 TRANS TO CHB	1.00
3	3525130-0000	ANCHOR, MP-3, FT. KIT, 3/4" X 1/2" HOR	1.00
4	2899341-0000	BOLT, RAIL, 5/8" X 2, G	3.00
5	2704191-0000	NUT, HK, 5/8" X 2, G, RAL	3.00



**TABLE - ITEM 1**

APPLICATION	PART NO.	DESCRIPTION
LEFT SIDE	2760281-0000	PANEL, TRANSITION, 4 OFFSET, Q.C.
RIGHT SIDE	2760282-0000	PANEL, TRANSITION, 4 OFFSET, Q.C.

5. MIN. 27.8 MPa [4000 PS] P.C. CONCRETE MEDIUM BARRIER. (SEE BACKUP ASSY)

3. IMPACT FORCES COULD BE TRANSFERRED INTO TERMINAL END OF THE BARRIER. ADEQUATE ANCHORAGE IS REQUIRED FOR PROPER IMPACT PERFORMANCE.

4. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B.

1. THE CONCRETE BARRIER REINFORCEMENT SHOWN IN DETAIL "A" IS RECOMMENDED TO ENSURE ADEQUATE BARRIER INTEGRITY FOR PROPER IMPACT PERFORMANCE. IT IS APPROPRIATE FOR A STANDARD SAFETY SHAPED BARRIER WITH A 610 [24.00] BASE AND A 150 [6.00] TOP. VARIATIONS MAY BE REVIEWED AND DETERMINATIONS MADE AS TO REASONABLE EQUIVALENCE BY PROJECT ENGINEER.

2. USE TRANSITION PANEL AS TEMPLATE FOR DRILLING. RECOMMENDED HOLE DEPTH 127 [5.00]. FINAL TORQUE TO BE 16.3 Nm [120 FT-LBS] (TYP.).

**REFERENCES**

NO.	NAME	DATE
1	J. Esposito	08/21/96
2	J. WELCH	8/21/96
3	B. Burgess	8/27/96
4	S. Turner	9/27/96

354018.dwg  
SEE ASS'Y

**NOTES**

1. THE CONCRETE BARRIER REINFORCEMENT SHOWN IN DETAIL "A" IS RECOMMENDED TO ENSURE ADEQUATE BARRIER INTEGRITY FOR PROPER IMPACT PERFORMANCE. IT IS APPROPRIATE FOR A STANDARD SAFETY SHAPED BARRIER WITH A 610 [24.00] BASE AND A 150 [6.00] TOP. VARIATIONS MAY BE REVIEWED AND DETERMINATIONS MADE AS TO REASONABLE EQUIVALENCE BY PROJECT ENGINEER.

2. USE TRANSITION PANEL AS TEMPLATE FOR DRILLING. RECOMMENDED HOLE DEPTH 127 [5.00]. FINAL TORQUE TO BE 16.3 Nm [120 FT-LBS] (TYP.).

3. IMPACT FORCES COULD BE TRANSFERRED INTO TERMINAL END OF THE BARRIER. ADEQUATE ANCHORAGE IS REQUIRED FOR PROPER IMPACT PERFORMANCE.

4. ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B.

**TRANSITION ASSY, 4 OFFSET, Q.C.**

LEFT ASSEMBLY NO. 354018 - 0000  
RIGHT ASSEMBLY NO. 354018R - 0000

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

**REVISONS**

Date	Rev.	By	Chk.	App.
08/21/96	D	RCG	RCG	RCG
07/17/96	E	DDG	RCG	SPT
08/25/96	F	LWC	RCG	SPT

UPDATED CHRT SUPPORT & RAIL END HOLE  
REVISED DIM'S  
REVISED ITEM 3 NOTES

**SCALE**

1:1

1 OF 1

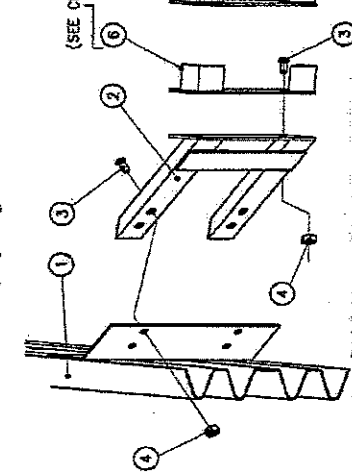
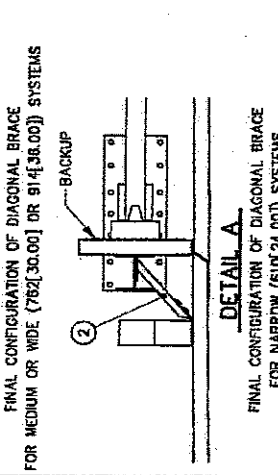
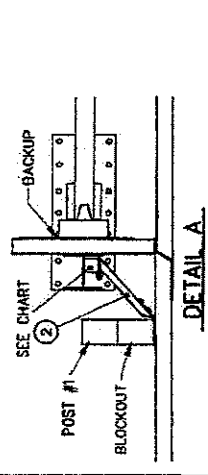
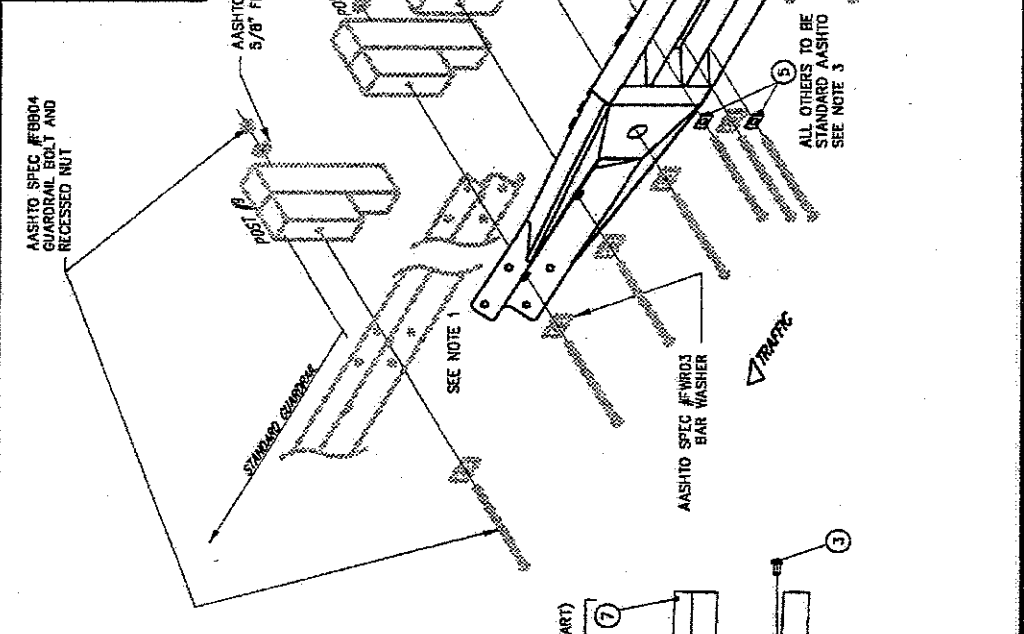
F

ITEM	STOCK NO.	DESCRIPTION	REQ'D		
			N	M	W
1	2760321-0000	GUARDRAIL TO W-BEAM TRANS. PANEL	1	1	1
2	2760341-0000	DIAGONAL BRACE	1	1	1
3	2698341-0000	BOI T.RAIL-5/RK2.G	4	6	6
4	2704191-0000	NUT, HK, 5/8.G	4	6	6
5	2706871-0000	WASHER, BAR, 1/8X1 1/4X2.W/HOLE	2	2	2
6	2760342-0000	DIAGONAL BRACE BLOCKOUT, 3"	0	1	0
7	2760343-0000	DIAGONAL BRACE BLOCKOUT, 6"	0	0	1

SYSTEM WIDTH	ASSEMBLY #	BLOCKOUT
610 (24.00)	N 354021M-0000	NOT REQ'D
762 (30.00)	M 354021M-0000	ITEM #0*
914 (36.00)	W 354021W-0000	ITEM #7*

\*SEE PARTS LIST ABOVE FOR QTY REQ'D

POST #1 IS NOT BOLTED DIRECTLY TO TRANSITION PANEL COUNTERSINK HOLES AS NEEDED.



**DIAGONAL BRACE ASSEMBLY**

NOTES:  
 1. PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION SHOWN. ACTUAL OVERLAP SHALL BE DETERMINED BY THE SITE CONDITIONS AND PROJECT ENGINEER PER TRAFFIC DIRECTION. USE STANDARD GUARDRAIL CONNECTION.  
 2. RIGHT SIDE OF ROAD APPLICATION SHOWN. ASSEMBLY MAY BE USED ON EITHER OR BOTH SIDES FOR LEFT, RIGHT, MEDIAN OR GORE APPLICATIONS. SEE NOTE 1.  
 THIS ASSEMBLY IS NOT INCLUDED IN THE MODEL NUMBER AND MUST BE ORDERED SEPARATELY.  
 3. ENERGY ABSORPTION SYSTEMS, INC. SUPPLIES THE STOCK ITEMS SHOWN IN THE PARTS LIST. ALL OTHER COMPONENTS OF THE DOWNSTREAM GUARDRAIL ARE STANDARD HIGHWAY MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL HIGHWAY SUPPLY VENDORS.

DATE	BY	CHKD	APP.
09/20/96	T. Buuse		
08/21/96	J.M.		
10/14/96	S.M.		
10/14/96	J. Mechofo		

SCALE: N.T.S. P.N. 35-40-21 1 of 2

DATE	BY	CHKD	APP.
09/20/96	T. Buuse		
08/21/96	J.M.		
10/14/96	S.M.		
10/14/96	J. Mechofo		

SCALE: N.T.S. P.N. 35-40-21 1 of 2

DATE	BY	CHKD	APP.
09/20/96	T. Buuse		
08/21/96	J.M.		
10/14/96	S.M.		
10/14/96	J. Mechofo		

SCALE: N.T.S. P.N. 35-40-21 1 of 2

DATE	BY	CHKD	APP.
09/20/96	T. Buuse		
08/21/96	J.M.		
10/14/96	S.M.		
10/14/96	J. Mechofo		

SCALE: N.T.S. P.N. 35-40-21 1 of 2

**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT

**TRANSITION ASSEMBLY,  
 QUAD-BEAM TO W-BEAM**

SCALE: N.T.S. P.N. 35-40-21 1 of 2

**QUADGUARD SYSTEM  
 FOR NARROW HAZARDS**

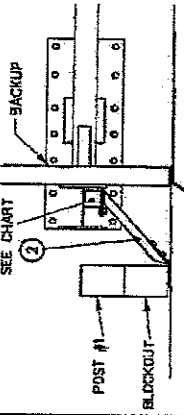
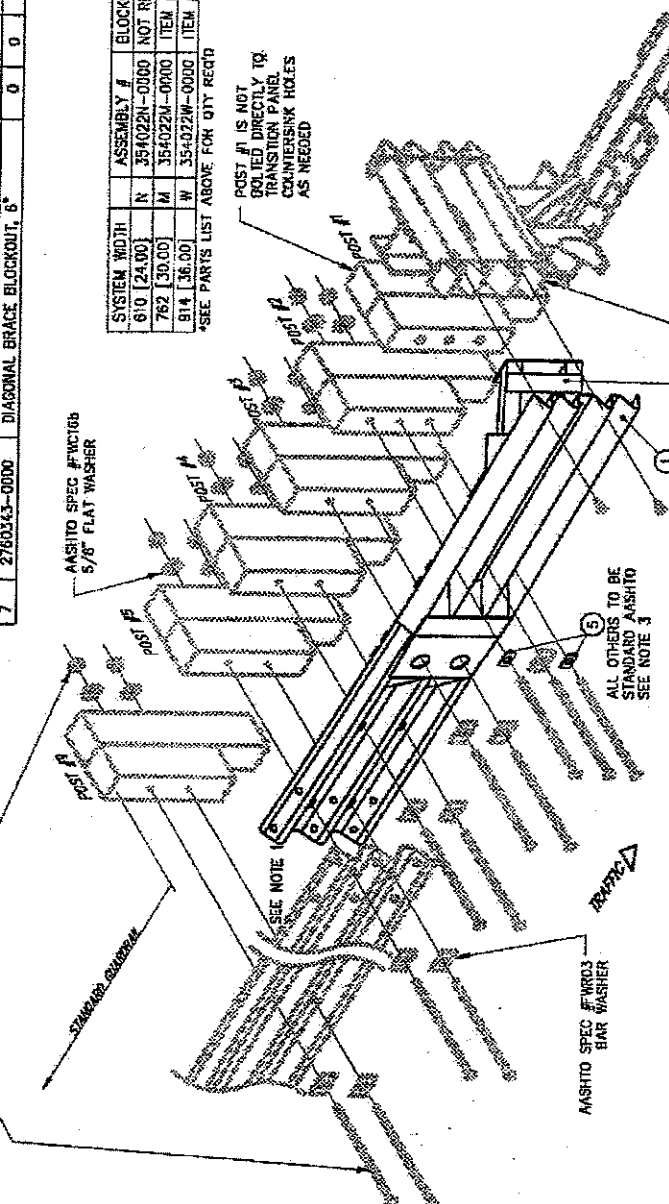
ITEM	STOCK NO.	DESCRIPTION	REQD		
			N	M	W
1	2760331-0000	DIAGONAL BRACE TO THRE-BEAM TRANS. PANEL	1	1	1
2	2760341-0000	DIAGONAL BRACE	1	1	1
3	2689341-0000	BOLTERAL 5/8X2.0	4	6	6
4	2704191-0000	NUT 1/2X 3/8 G. RAIL	4	6	6
5	2708871-0000	WASHER BAR 1/8X1 1/4X2.W/HOLE	2	2	2
6	2760342-0000	DIAGONAL BRACE BLOCKOUT, 3"	0	1	0
7	2760343-0000	DIAGONAL BRACE BLOCKOUT, 6"	0	0	1

SYSTEM WIDTH	ASSEMBLY #	BLOCKOUT
610 [24.00]	N 354022N-0000	NOT REQD
762 [30.00]	M 354022M-0000	ITEM #5*
914 [36.00]	W 354022W-0000	ITEM #7*

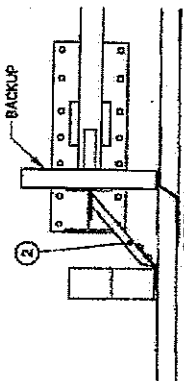
\*SEE PARTS LIST ABOVE FOR QTY REQD

AASHTO SPEC #F8804  
GUARDRAIL BOLT AND  
RECESSED NUT

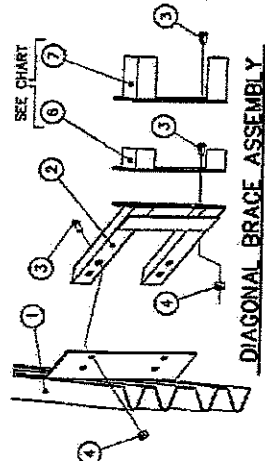
AASHTO SPEC #F1616  
5/8" FLAT WASHER



FINAL CONFIGURATION OF DIAGONAL BRACE  
FOR MEDIUM & WIDE (762[30.00] OR 914[36.00]) SYSTEMS



FINAL CONFIGURATION OF DIAGONAL BRACE  
FOR NARROW (610[24.00]) SYSTEMS



NOTES:  
1. PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION SHOWN.  
2. ACTUAL OVERLAP SHALL BE DETERMINED BY THE SITE  
CONDITIONS AND PROJECT ENGINEER PER TRAFFIC DIRECTION.  
3. USE STANDARD GUARDRAIL CONNECTION.  
4. RIGHT SIDE OF ROAD APPLICATION SHOWN. ASSEMBLY MAY  
BE USED ON EITHER OR BOTH SIDES FOR LEFT, RIGHT, MEDIUM  
OR CURB APPLICATIONS. SEE NOTE 1.  
5. THIS ASSEMBLY IS NOT INTERFERED IN THE MODEL NUMBER AND  
MUST BE ORDERED SEPARATELY.  
6. ENERGY ABSORPTION SYSTEMS, INC. SUPPLIES THE STOCK  
ITEMS SHOWN IN THE PARTS LIST. ALL OTHER COMPONENTS  
OF THE DOWNSTREAM GUARDRAIL ARE STANDARD HIGHWAY  
MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL  
HIGHWAY SUPPLY VENDOR.

Revisions	Date	Rev. By	Chk'd/APP.
ADDED #6&7 FOR MED. & WIDE SYSTEMS	3/7/97	A	JF BB SPT

REFERENCES

DATE	BY	REVISION
09/23/96	T. Busse	
08/21/96	JVM	
10/14/96	SML	
10/14/96	U. Mecholski	

35-4022.dwg  
REVISED

ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

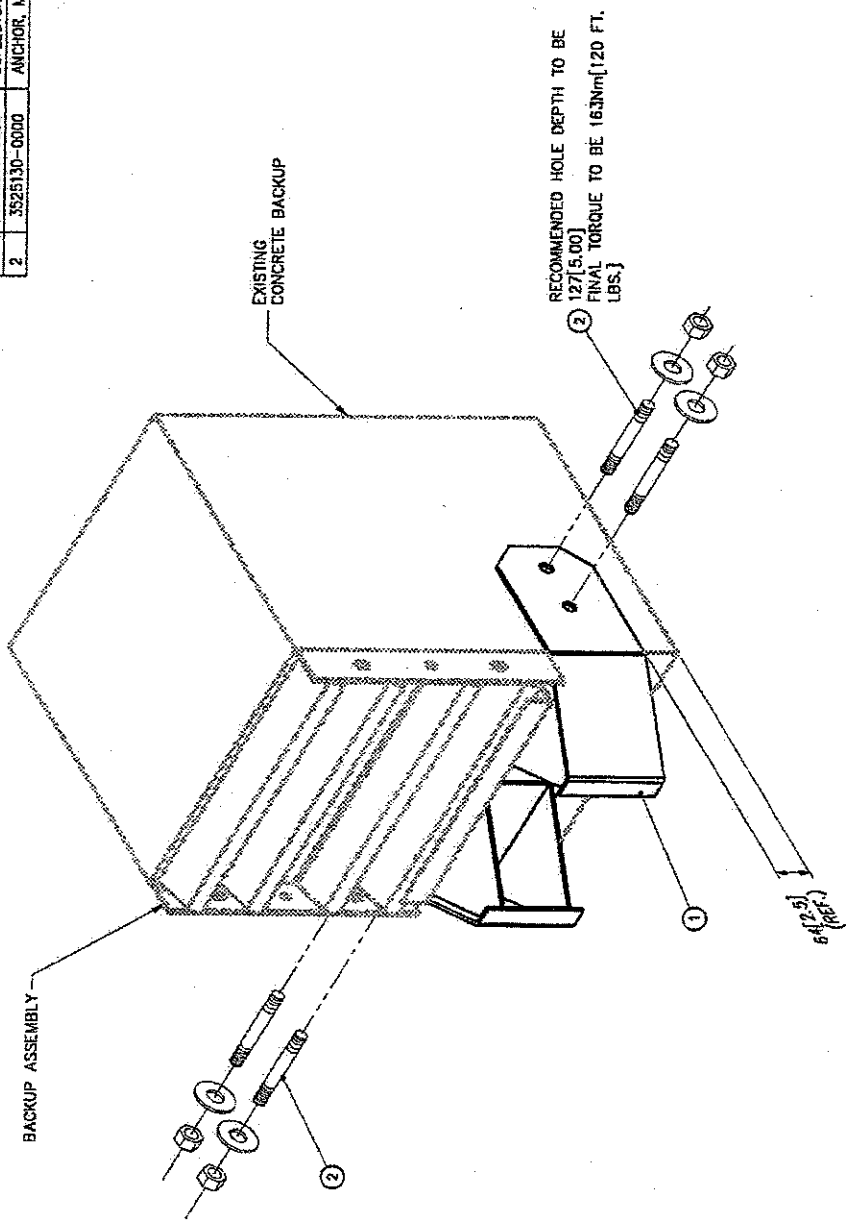
TRANSITION ASSEMBLY  
QUAD-BEAM TO THRE-BEAM

DATE: N.T.S. 35-40-22 1 of 2

QUADGUARD SYSTEM  
FOR NARROW HAZARDS

**PARTS LIST**

ITEM	STOCK NO.	DESCRIPTION	QTY
1	2780311-0000	DEFLECTOR, CONCRETE BACKUP, QG	2
2	3525130-0000	ANCHOR, MP-3, KIT, 3/4x8 1/2, HORIZ	1



**NOTE:**  
 1. USE DEFLECTOR AS A TEMPLATE TO LOCATE AND DRILL 23(0.86) Ø HOLES.  
 2. DIMENSIONS ARE IN MILLIMETERS [INCHES], UNLESS OTHERWISE NOTED.

Revisions	Date	Rev.	By	Chk.	App.
CHGD. PART NO. TO ASSY NO.	11/14/91	A	RGE	SML	WJ
CHGD. TITLE BLOCK	11/14/91	B	JSC	BSPT	

**REFERENCES**

DESIGNER	DATE	CHKD.	DATE
R. CUMMINS	08/26/96		
W. KRADE	08/26/96		
SML	9/23/98		
WJK	9/24/96		

354020.dwg  
 354020

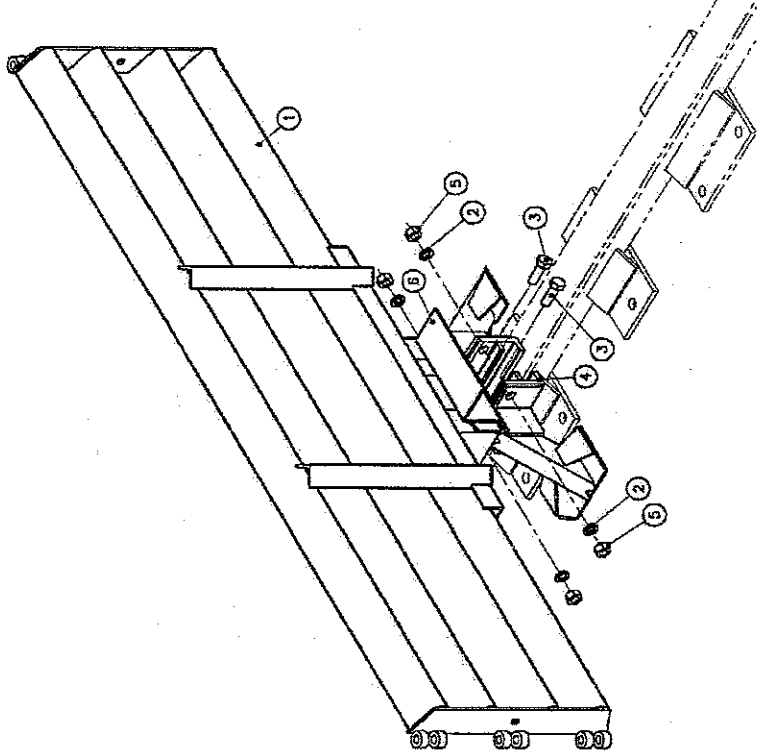
ASSY NO. 354020-0000  
 ENERGY ABSORPTION SYSTEMS, INC.  
 ENGINEERING AND RESEARCH DEPARTMENT  
 DEFLECTOR ASSEMBLY,  
 CONCRETE BACKUP,  
 RETROFIT, QG

SCALE	1=4
PROJ. NO.	35-40-20
REV.	1 of 1

**QUADGUARD SYSTEM  
 FOR NARROW HAZARDS**

**QUADGUARD SYSTEM  
FOR WIDE HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	RECD
1	SEE TABLE A	DIAPHRAGM, QG, QG	1.00
2	2708201-0000	WASHER, LOCK, 3/4, G	4.00
3	2699121-0000	BOLT, H.K., 3/4x2, SS, G	4.00
4	2760091-0000	MONORAIL GUIDE, QG, G	2.00
5	2704341-0000	NUT, H.K., 3/4, G, GR, DH	4.00
6	2760292-0000	BRACKET, CARTRIDGE SUPPORT, DIAPHRAGM	2.00



**TABLE A**

ASSEMBLY NO.	DESCRIPTION	ITEM 1 PART NO.
3540340-0873	DIAPHRAGM ASSY, QG, 0873	2761041-0873
3540340-0753	DIAPHRAGM ASSY, QG, 0753	2761041-0753
3540340-0833	DIAPHRAGM ASSY, QG, 0833	2761041-0833
3540340-0913	DIAPHRAGM ASSY, QG, 0913	2761041-0913
3540340-0993	DIAPHRAGM ASSY, QG, 0993	2761041-0993
3540340-1073	DIAPHRAGM ASSY, QG, 1073	2761041-1073
3540340-1153	DIAPHRAGM ASSY, QG, 1153	2761041-1153
3540340-1233	DIAPHRAGM ASSY, QG, 1233	2761041-1233
3540340-1313	DIAPHRAGM ASSY, QG, 1313	2761041-1313
3540340-1393	DIAPHRAGM ASSY, QG, 1393	2761041-1393
3540340-1473	DIAPHRAGM ASSY, QG, 1473	2761041-1473
3540340-1513	DIAPHRAGM ASSY, QG, 1513	2761041-1513
3540340-1593	DIAPHRAGM ASSY, QG, 1593	2761041-1593
3540340-1633	DIAPHRAGM ASSY, QG, 1633	2761041-1633
3540340-1729	DIAPHRAGM ASSY, QG, 1729	2761041-1729
3540340-1783	DIAPHRAGM ASSY, QG, 1783	2761041-1783
3540340-1853	DIAPHRAGM ASSY, QG, 1853	2761041-1853
3540340-2033	DIAPHRAGM ASSY, QG, 2033	2761041-2033

(SEE TABLE A)

**ASSEMBLY NO. 3540340-**  
**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT  
**QUADGUARD SYSTEM**  
**DIAPHRAGM ASSY, QG, WIDE**

DATE	BY	REVISION
5/12/97	D. Steis	DATE
5/13/97	J. Machado	DATE
7/2/97	KRM	DATE
7/7/97	J. Machado	DATE

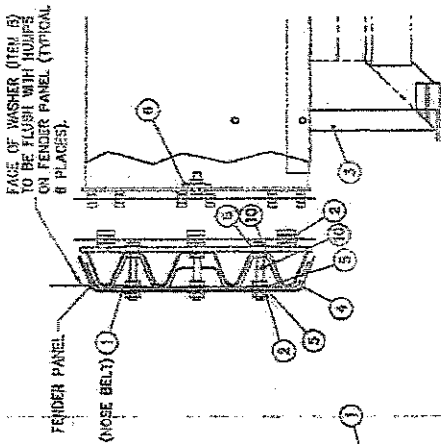
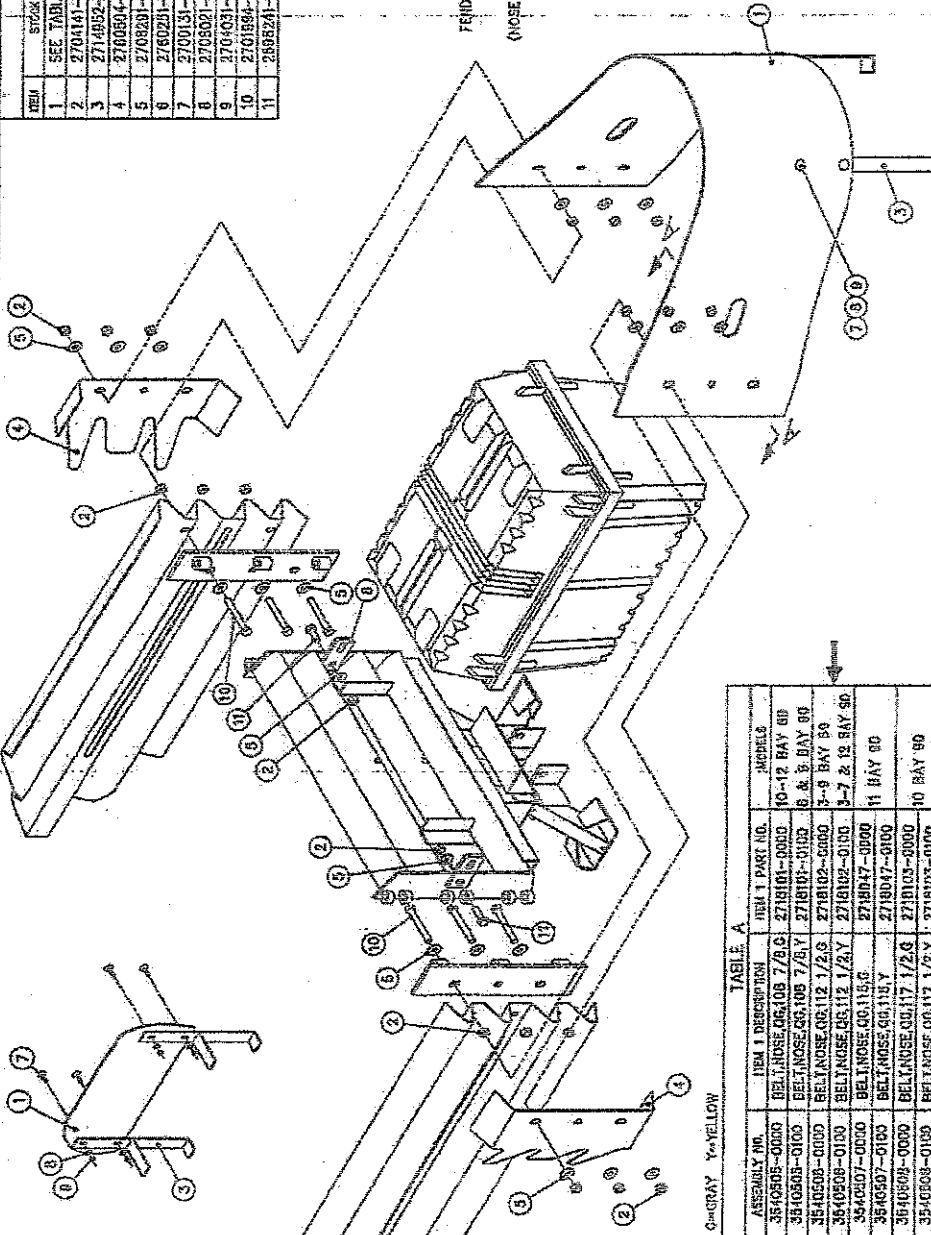
DOE FILE: 3540340-0000.dwg  
 DESIGNED BY: J. Machado

**REFERENCES**

Revisions	Date	Rev.	By	Chd/Appr.
DELETED ITEMS 2, 4, 5, 6, RE-NUMBERED	04/27/98	C	DDS	SJT KM
SEE SHEET 2	04/27/98	H	TPX	KM SPT
REV CHG TO MATCH SHEET 2	9/23/98	I	DLS	KM DLI

1 of 2

ITEM	SYMBOL NO.	DESCRIPTION	QTY
1	SEE TABLE A	BELT NOSE ASSEMBLY	1.00
2	2701411-0000	NUT 1/8" X 3/8"	20.0
3	2714822-0000	LEG SUPPORT FOR FLEX BELTS	2.00
4	2708904-0000	CLAMP BELT	2.00
5	2708281-0000	WASHER FLAT 3/8" X 1/2"	20.0
6	2708281-0000	WASHER FLAT 3/8" X 1/2"	20.0
7	2709131-0000	BOLT 1/2" X 3/4" X 1/2"	4.00
8	2708021-0000	WASHER FLAT 3/8" X 1/2"	4.00
9	2704031-0000	NUT 1/8" X 3/8"	4.00
10	2701894-0000	BOLT 1/8" X 5/8" X 1/4" GALL. THREAD	6.00
11	2698241-0000	BOLT 1/8" X 5/8" X 1/4" GALL. THREAD	2.00



ASSEMBLY NO.	ITEM 1 DESCRIPTION	ITEM 1 PART NO.	QTY
3540505-0000	BELT NOSE ASSEMBLY 7/8" G	2718101-0000	10-12 BAY 80
3540505-0100	BELT NOSE ASSEMBLY 7/8" BAY 90	2718101-0100	8 & 9 BAY 90
3540505-0200	BELT NOSE ASSEMBLY 1/2" G	2718102-0000	3-9 BAY 90
3540505-0300	BELT NOSE ASSEMBLY 1/2" BAY 90	2718102-0100	3-7 & 12 BAY 90
3540507-0100	BELT NOSE ASSEMBLY 1/2" G	2718047-0000	11 BAY 90
3540509-0000	BELT NOSE ASSEMBLY 1/2" G	2718047-0100	10 BAY 90
3540509-0100	BELT NOSE ASSEMBLY 1/2" BAY	2718103-0100	10 BAY 90

ASSEMBLY NO. SEE TABLE  
**EMERY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT  
**QUANGUARD<sup>®</sup> SYSTEM**  
 NOSE ASSY, QG, G OR Y, 89/90

DATE	03/07/99
BY	T. Busch
CHKD	
DATE	05/21/89
BY	KRM
CHKD	SPT
DATE	03/21/98
BY	384050.0HW
CHKD	

REFERENCES

Revisions	Date	Rev. By	App.
THIS DRAWING SHOWS 0000	03/07/99	B	TB 803 SPT
REV 001 2708281-0000	03/07/99	C	DK LIME 184
REV 002 2708281-0000	03/07/99		

SCALE 1:10  
 SHEET 1 of 1

# QUADGUARD SYSTEM FOR WIDE HAZARDS

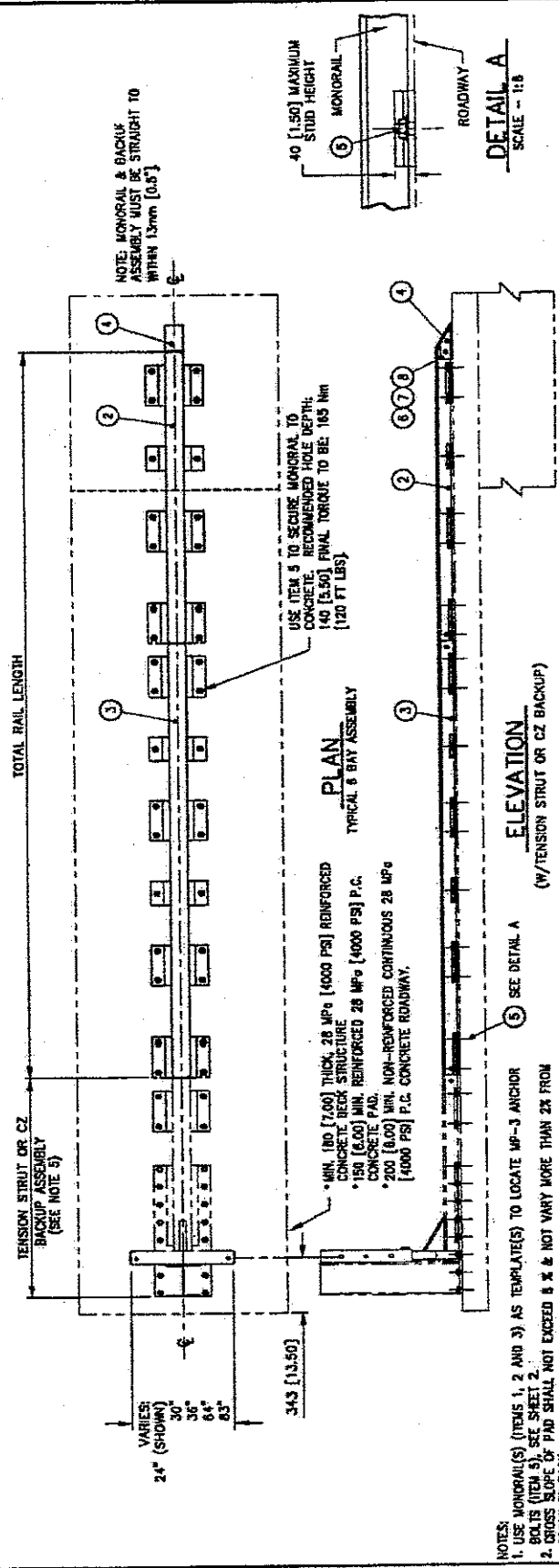
TABLE 1						
ASSEMBLY NO.	TOTAL RAIL LENGTH	*ITEM 1	*ITEM 2	*ITEM 3	*ITEM 5	NO. OF BAYS
35-40060-0100	0	0	0	0	0	1
35-40060-0200	915 (36.0)	1	0	0	2	2
35-40060-0300	1830 (72.0)	0	1	0	3	3
35-40060-0400	2745 (108.1)	0	0	1	4	4
35-40060-0500	3660 (144.1)	1	0	1	5	5
35-40060-0600	4575 (180.1)	0	1	1	6	6
35-40060-0700	5490 (216.1)	0	0	2	7	7
35-40060-0800	6405 (252.1)	1	0	2	8	8
35-40060-0900	7320 (288.2)	0	1	2	9	9
35-40060-1000	8235 (324.2)	0	0	3	10	10
35-40060-1100	9150 (360.2)	1	0	3	12	11
35-40060-1200	10065 (396.2)	0	1	3	13	12

NOT APPLICABLE FOR 60° & 90° OR C2 CG SYSTEMS

NOT APPLICABLE FOR C2 CG SYSTEMS

PARTS LIST	
ITEM	DESCRIPTION
1	MONORAIL ONE BAY, QG.G
2	MONORAIL TWO BAYS, QG.G
3	MONORAIL THREE BAYS, QG.G
4	END CAP, MONORAIL, QG.G
5	ANCHOR, MP-3, PT-KT.3/AKT.VT
6	BOI FAX 5/RX3 1/2, QG.G
7	NUT, HK.5/8.G
8	WASHER, LOCK 5/8.G

\* SEE TABLE



- NOTES:
1. USE MONORAIL(S) (ITEMS 1, 2 AND 3) AS TEMPLATE(S) TO LOCATE MP-3 ANCHOR BOLTS (ITEM 5). SEE SHEET 2.
  2. GROSS SLOPE OF PAD SHALL NOT EXCEED 8% & NOT VARY MORE THAN 2% FROM FRONT TO BACK.
  3. UNITS OF MEASUREMENT ARE MILLIMETERS (INCHES) UNLESS OTHERWISE NOTED.
  4. EVERY STUD MUST BE EMBEDDED TO A DEPTH OF 140 (5.5) IF REBAR IS ENCOUNTERED IN A P.C. CONCRETE PAD, DRILL THROUGH IT, IF REBAR IS ENCOUNTERED ON A DECK STRUCTURE, ASK PROJECT ENGINEER FOR DIRECTION.
  5. FOR C2 SYSTEMS, SEE DRAWING 35-40-24 ALSO.

ASSEMBLY NO. SEE TABLE L  
**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT

**QUADGUARD® SYSTEM**  
**MONORAIL ASSY. QG**

N.T.S. 35-40-06 1 of 3

DATE	BY	REV.	DESCRIPTION
5-8-96	D. Sluys	1	ISSUE FOR CONSTRUCTION
3-1-96	MHO/JVM	2	REVISED FOR 1200 BAY
5/17/98	S. Triggner	3	REVISED FOR 1200 BAY
5/17/98	M. Oberth	4	REVISED FOR 1200 BAY

354006.dwg

Revisions	Date	Rev.	By	Chk.	App.
ITEM 6 WAS 270191-0000	10/07/98	K	7B	BB	KM
ITEM 4 REDESIGNED	05/05/98	L	LUC	KM	SPT
"NO. OF BAYS" was at left end of table.	02/21/91	I	STI	KM	SPT

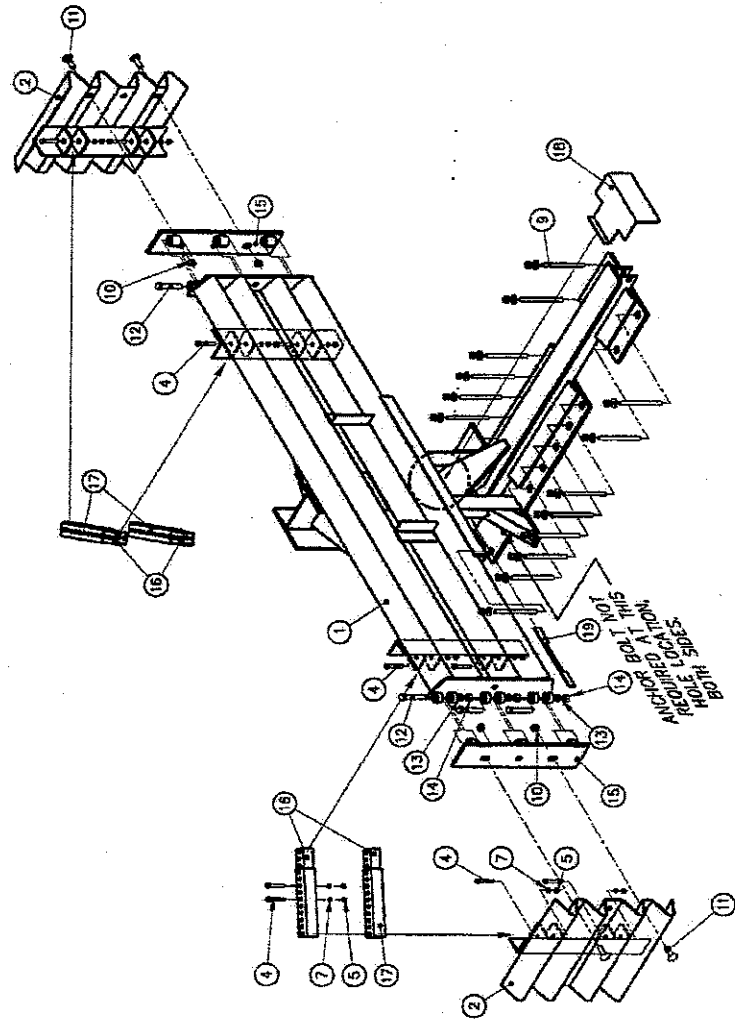
**PARTS LIST**

ITEM	STOCK NO.	DESCRIPTION	RECD
1	SEE TABLE A	BACKUP, TS, OG WIDE, G	1.00
2	2760471-0000	PANEL, SIDE, OG WIDE, G	2.00
4	2698001-0000	BOLT, HK, 3/8X3 1/2, 6.2, G, ALL THREAD	18.0
5	2704031-0000	NUT, HK, 3/8, G	18.0
7	2708041-0000	WASHER, LOCK, 3/8, G	18.0
9	3525300-0000	ANCHOR, MP-3, PT-M1, 3/4X2, VT	3.00
10	2704191-0000	NUT, HK, 5/8, G, RAIL	4.00
11	2699341-0000	BOLT, RAIL, 5/8X2, G	4.00
12	2701991-0000	BOLT, HK, 5/8X4, G, G	6.00
13	2708231-0000	WASHER, LOCK, 5/8, G	6.00
14	2704141-0000	NUT, HK, 5/8, G	6.00
15	2760435-0000	HINGE, PLATE, FENDER, PANEL, OG, G	2.00
16	2760501-0000	TEL. ST 1 3/4X1 3/4X12GA, H4S, G, 10" LG	4.00
17	2760502-0000	TEL. ST 2X2X12GA, H2S, G, 10" LONG	4.00
18	2760293-0000	BRACKET, CAR BRIDGE SUPPORT, TS B/U	1.00
19	2760294-0000	LOCKING BAR, CART SUPPORT, OG	1.00

**TABLE A**

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540391-0000	2760451-0000	BACKUP, TS, 6A, OG WIDE, G, 1620 [64"]	
3540392-0000	2760452-0000	BACKUP, TS, 6B, OG WIDE, G, 2100 [83"]	

NOTES:  
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL PART NO. 2760141-0000.



**ASSEMBLY NO. SEE TABLE A**

**ENERGY ABSORPTION SYSTEMS, INC.**  
 ENGINEERING AND RESEARCH DEPARTMENT  
**QUADGUARD® SYSTEM**  
 BACKUP ASSY, TS, OG WIDE

DATE	7/1/97
BY	D. Staus
DATE	6/2/97
BY	J. Machado
DATE	7/17/97
BY	B. Kragg
DATE	7/17/97
BY	J. Machado
DATE	3540390-0000.dwg
BY	NEW ASSEMBLY

**REFERENCES**

Revisions	Date	Rev	By	Chk	App
ITEM 17 WAS 2760501-0000	12/20/96	E	LWC	EMK	SPT
REMOVED 1 ANCHOR BOLT & ADDED NOTE	03/19/96	C	LWC	KM	SPT
UPDATED DIMS, ITEM 15 WAS 2760433-0000	12/10/95	D	DK	BB	SPT

**QUADGUARD SYSTEM  
 FOR WIDE HAZARDS**



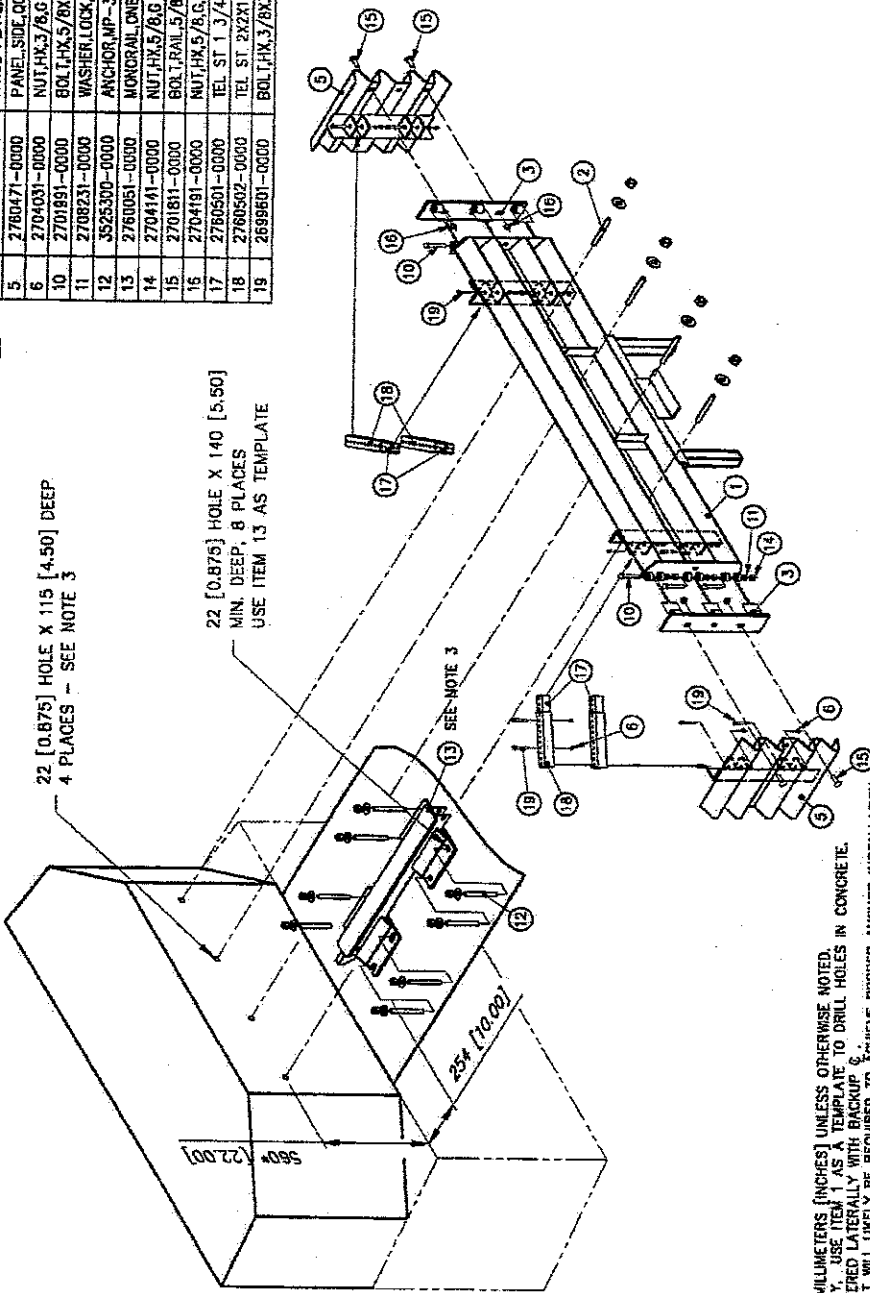
**QUADGUARD SYSTEM  
FOR WIDE HAZARDS**

TABLE

ASSY. NO.	ITEM 1	DESCRIPTION	WIDTH
3540401-0000	2760491-0000	BACKUP FACE, CONC. 64.00 WIDE, G	1820 [64']
3540402-0000	2760491-0000	BACKUP FACE, CONC. 63.00 WIDE, G	2100 [63']

22 [0.875] HOLE X 115 [4.50] DEEP.  
4 PLACES - SEE NOTE 3

22 [0.875] HOLE X 140 [5.50]  
MIN. DEEP, 8 PLACES  
USE ITEM 13 AS TEMPLATE



- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS [INCHES] UNLESS OTHERWISE NOTED.
  2. FOR REFERENCE ONLY, USE ITEM 1 AS A TEMPLATE TO DRILL HOLES IN CONCRETE.
  3. ITEM 13 TO BE CENTERED Laterally WITH BACKUP.
  4. A REBAR CUTTING BIT WILL LIKELY BE REQUIRED TO ACHIEVE PROPER ANCHOR INSTALLATION.

REFERENCES

CONCRETE BACKUP, 60 WIDE 35-40-41

Revisions	Date	Rev.	By	Chd./App.
ITEM 10 WAS 2698571-0000	12/20/98	D	LNC/BMK	SPT
ADDED LEGS	2/7/99	B	DLS	KM SPT
CHGD ITEM 3. WAS 2760433-0000	12/7/99	C	CK	KM BB

ITEM	STOCK NO.	DESCRIPTION	REQD.
1	SEE TABLE	BACKUP FACE, CONC. 60 WIDE, G	1.00
2	3529130-0000	ANCHOR, MP-3, PT KIT, 3/4X6 1/2 HOR	1.00
3	2760435-0000	HINGE PLATE, FENDER PANEL, 60, G	2.00
5	2760471-0000	PANEL, SIDE, 60 WIDE, G	2.00
6	2704031-0000	NUT, HK, 3/8, G	16.0
10	2701991-0000	BOL, LHX, 5/8X4, 6S, G	6.00
11	2708231-0000	WASHER, LOCK, 5/8, G	6.00
12	3525300-0000	ANCHOR, MP-3, PT KIT, 3/4X7 VT	2.00
13	2760061-0000	MONORAIL, ONE BAY, 60, G	1.00
14	2704141-0000	NUT, HK, 5/8, G	6.00
15	2701811-0000	BOL, L, RAIL, 5/8X1 1/4, G	4.00
16	2704191-0000	NUT, HK, 5/8, G, RAIL	4.00
17	2760501-0000	TEL ST. 1.3/4X1.3/4X12.6A, HAS, G, 10" LG.	4.00
18	2760502-0000	TEL ST. 2X2X12.6A, HAS, G, 10" LONG	4.00
19	2699601-0000	BOL, LHX, 3/8X3 1/2, G2, G, ALL THREAD	16.0

ASSEMBLY NO. (SEE TABLE)

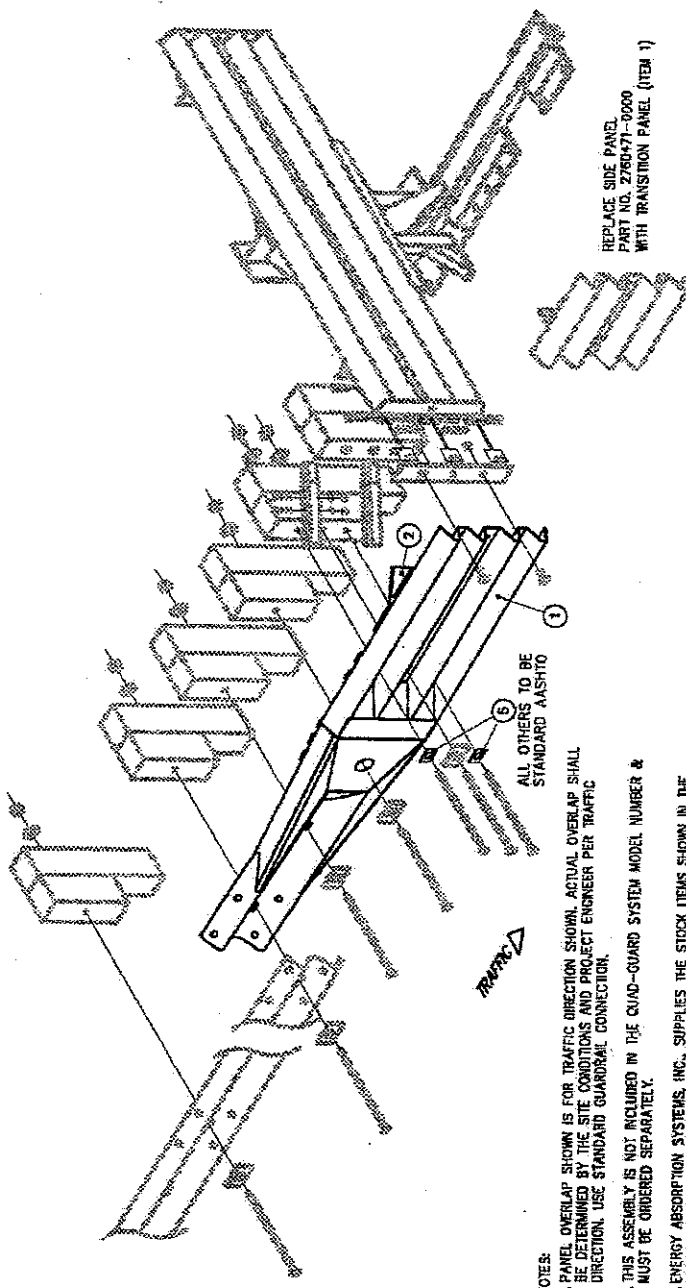
ENERGY ABSORPTION SYSTEMS, INC.  
ENGINEERING AND RESEARCH DEPARTMENT

BACKUP ASSY, CONCRETE, 60 WIDE

1:25 3540400-0000 1 of 1 D

**QUADGUARD SYSTEM  
FOR WIDE HAZARDS**

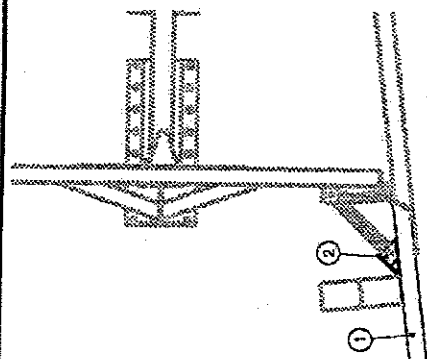
PARTS LIST		RECD
ITEM	STOCK NO.	DESCRIPTION
1	2760321-0000	QUADGUARD TO W-BEAM TRANS. PANEL
2	2760903-0000	BRACKET/PINOT SUPPORT TRANS. OG
3	2701811-0000	BOLTRAIL-5/BX1 1/4.G
4	2704191-0000	NUT.HX.5/8.G
5	2708871-0000	WASHER.BAR.1/BX1 1/4X2.W/HOLE



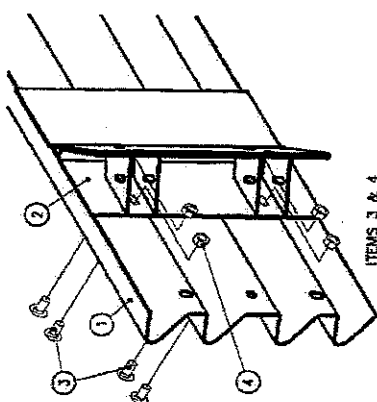
HERLACE SIDE PANEL  
PART NO. 2760471-0000  
WITH TRANSITION PANEL (ITEM 1)

4. PANEL MAY BE USED ON LEFT AND/OR RIGHT SIDE.

- NOTES:
- PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION SHOWN. ACTUAL OVERLAP SHALL BE DETERMINED BY THE SITE CONDITIONS AND PROJECT ENGINEER PER TRAFFIC DIRECTION. USE STANDARD GUARDRAIL CONNECTION.
  - THIS ASSEMBLY IS NOT INCLUDED IN THE QUAD-GUARD SYSTEM MODEL NUMBER & MUST BE ORDERED SEPARATELY.
  - ENERGY ABSORPTION SYSTEMS, INC., SUPPLIES THE STOCK ITEMS SHOWN IN THE PARTS LIST WITH THE ASSEMBLY NUMBER. ALL OTHER COMPONENTS OF THE DOWNSTREAM GUARDRAIL (POSTS, HARDWARE AND RAIL ELEMENTS) ARE STANDARD HIGHWAY MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL HIGHWAY SUPPLY VENDORS.



**DETAIL A**



**ITEM 2 ASSEMBLY**  
ITEMS 3 & 4  
REQUIRED 4 PLACES

ASSEMBLY NO. 3540211-0000

**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

**QUAD-GUARD™  
TRANSITION ASSEMBLY,  
QUAD-BEAM™ TO W-BEAM - WIDE**

N.T.S. 3540211-0000 1 of 2 B

REV	DATE	BY	CHKD	APP
1	5/28/97	JVM		
2	8/21/98	KRM		
3	3/6/97	J. Machado		
4	3/6/97			

1. Busses  
2. Joints  
3. Hardware  
4. Materials

DATE FILED: 3/6/97  
DRAWN BY: J. Machado  
CHECKED BY: KRM

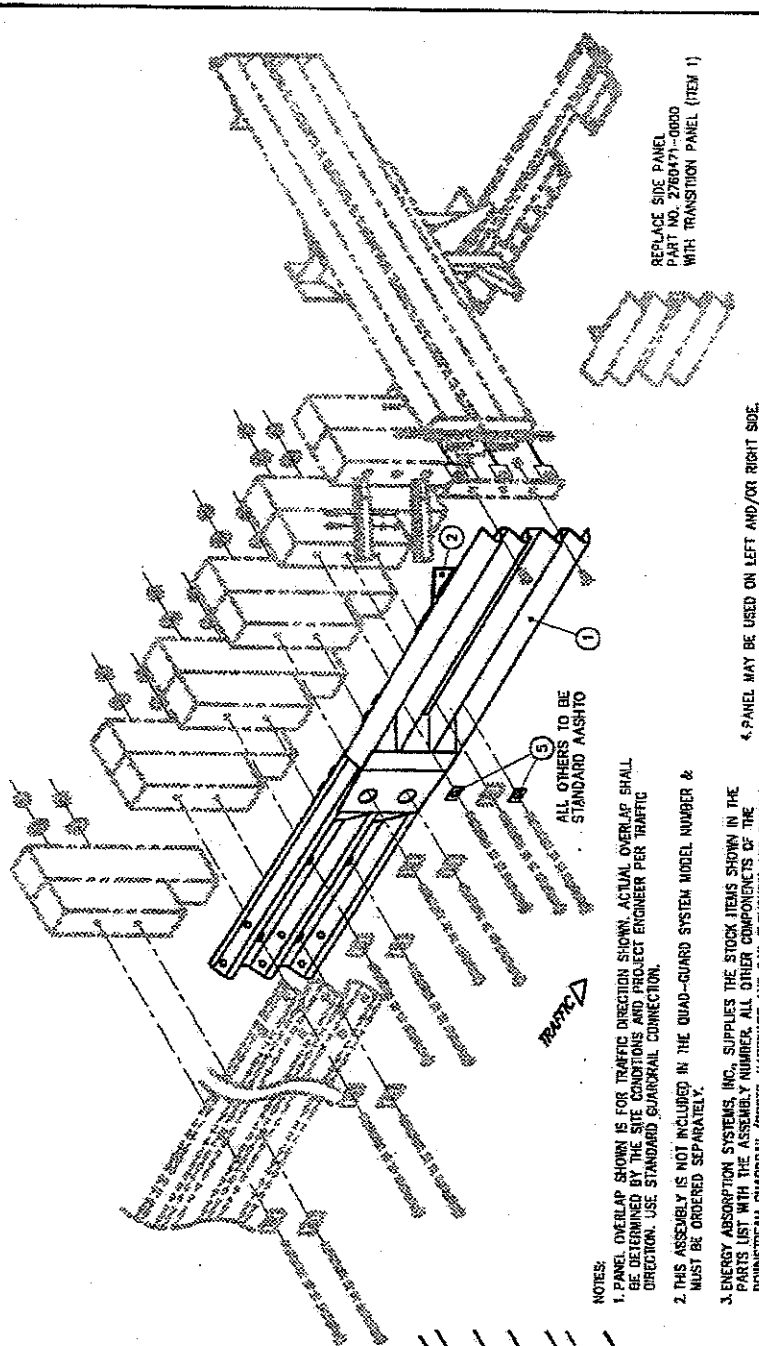
UNIT ASSEMBLY: 3540211-0000.dwg

REFERENCES

Revisions	Date	Rev.	By	Chk'd	App.
MULTIPLE REVS	6/29/93	A	ELS	KM	JVM
UPDATED BOLT LAYOUT FOR ITEM 2	11/24/94	B	RCG	BB	SPT

**QUADGUARD SYSTEM  
FOR WIDE HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	REQD.
1	2760331-0000	QUADGUARD TO THRIE-BEAM TRANS. PANEL	1.00
2	2760903-0000	BRACKET, PIVOT SUPPORT, TRANS. QG	1.00
3	2701611-0000	ROL 1 RAIL 5/BX1 1/4.C	4.00
4	2704191-0000	NUT, HK. 5/B.G	4.00
5	2708871-0000	WASHER, BAR, 1/BX1 1/4X2.W/HOLE	2.00

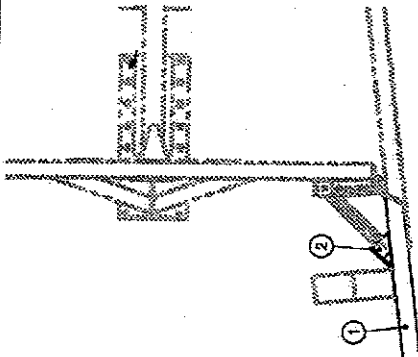


REPLACE SIDE PANEL  
PART NO. 2760471-0000  
WITH TRANSITION PANEL (ITEM 1)

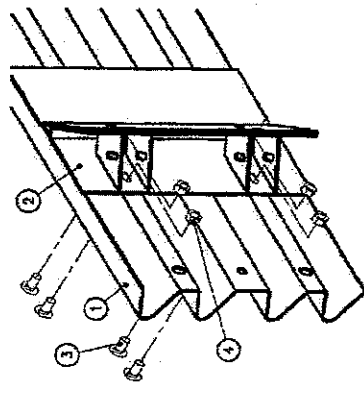
← PANEL MAY BE USED ON LEFT AND/OR RIGHT SIDE.

**NOTES:**

- PANEL OVERLAP SHOWN IS FOR TRAFFIC DIRECTION SHOWN. ACTUAL OVERLAP SHALL BE DETERMINED BY THE SITE CONDITIONS AND PROJECT ENGINEER PER TRAFFIC DIRECTION. USE STANDARD GUARDRAIL CONNECTION.
- THIS ASSEMBLY IS NOT INCLUDED IN THE QUAD-GUARD SYSTEM MODEL NUMBER & MUST BE ORDERED SEPARATELY.
- ENERGY ABSORPTION SYSTEMS, INC., SUPPLIES THE STOCK ITEMS SHOWN IN THE PARTS LIST WITH THE ASSEMBLY NUMBER. ALL OTHER COMPONENTS OF THE DOWNSTREAM GUARDRAIL (POSTS, HARDWARE AND RAIL ELEMENTS) ARE STANDARD HIGHWAY MATERIALS AND MAY BE OBTAINED FROM YOUR LOCAL HIGHWAY SUPPLY VENDORS.



**DETAIL A**



**ITEM 2 ASSEMBLY**  
ITEMS 3 & 4  
REQUIRED 4 PLACES

Revisions	Date	Rev.	By	Chd./App.
MULTIPLE REVS	8/29/97	A	DLS	KM JAM
UPDATED BOLT LAYOUT FOR ITEM 2 ASSY	1/17/99	B	RCC	BB SPT

**REFERENCES**

DATE	BY	FOR
05/29/97	JVM	B/21/96
08/03/97	KRM	08/03/97
06/03/97	J. Machado	06/03/97
3540221-0000.dwg		

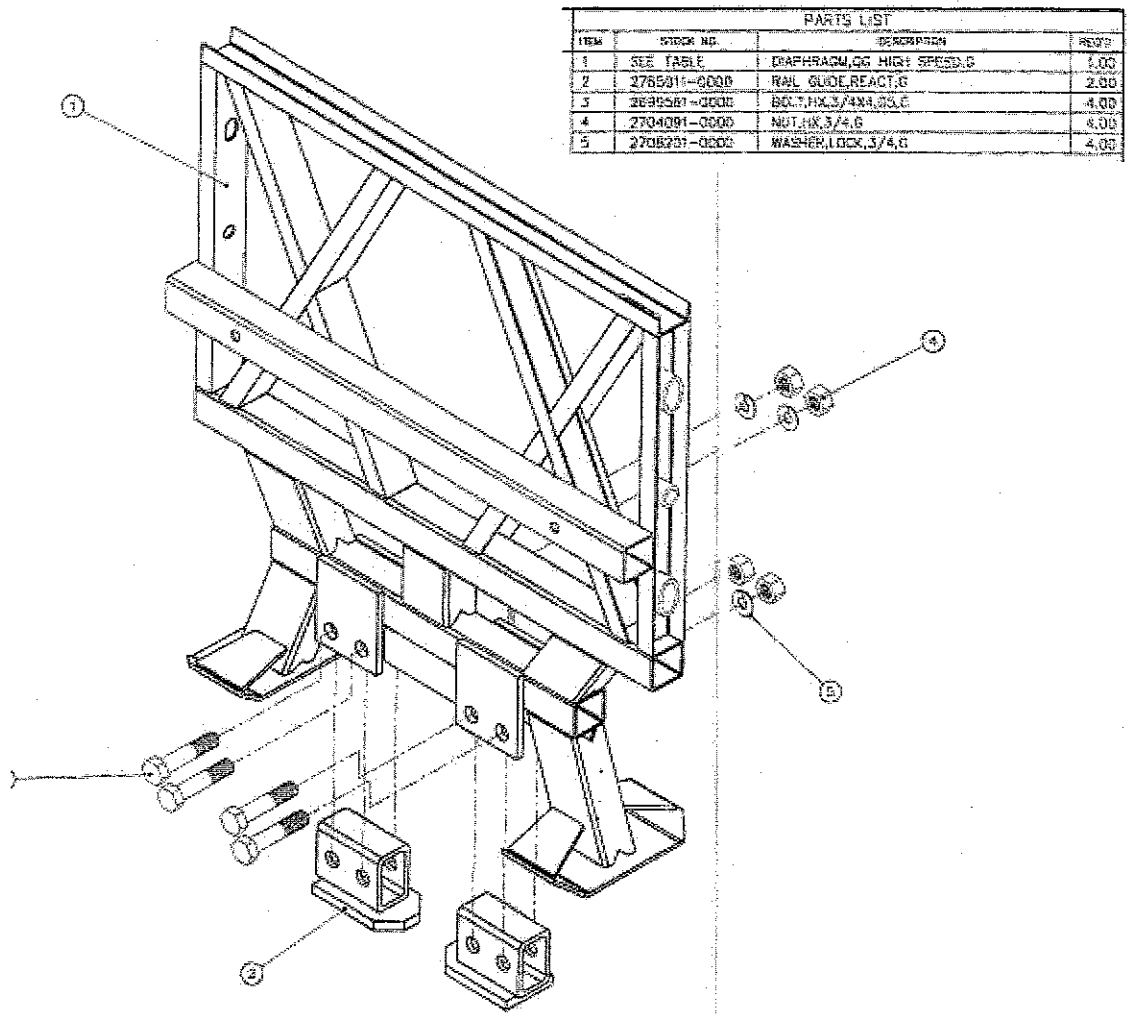
ASSEMBLY NO. 3540221-0000

**ENERGY ABSORPTION SYSTEMS, INC.**  
ENGINEERING AND RESEARCH DEPARTMENT

**QUAD-GUARD™**  
TRANSITION ASSEMBLY, - WIDE  
QUAD-BEAM TO THRIE-BEAM -

N.T.S. 3540221-0000 1 of 2



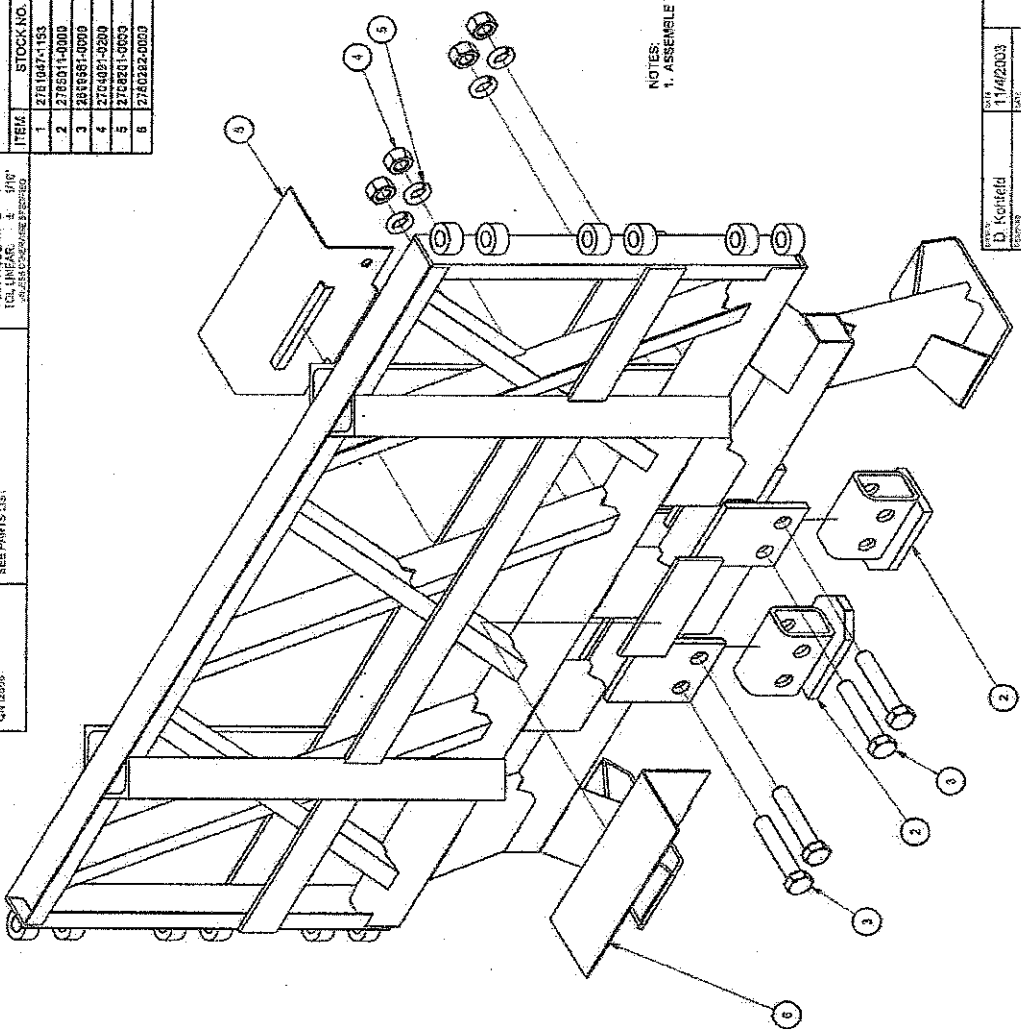


PARTS LIST			
ITEM	QTY	DESCRIPTION	REV
1	SEE TABLE	DIAPHRAGM,CG HIGH SPEED,G	1.00
2	2785311-0000	RAIL GLIDE,REACT,G	2.00
3	2695581-0000	BOLT,HK,3/4X3,SS,G	4.00
4	2704081-0000	NUT,HK,3/4,G	4.00
5	2708231-0000	WASHER,LOCK,3/4,G	4.00

NOTE: THIS DIAPHRAGM TO BE USED ONLY FOR DIAPHRAGMS 1 THRU 3 ON THE QUADGUARD-HS

PARTS LIST		ITEM	STOCK NO.	DESCRIPTION	QTY.
1	27810432-1153	DIAPHRAGM, QG, EXTRA WIDE, 1153, G	1		
2	2785011-0000	RAIL GUIDE, REACT, G	2		
3	2816681-0000	SOCKET, 3/8X4.65, G	4		
4	2704021-0200	NOTCH, 3/8, G	4		
5	2782821-0000	WASHER, LOCK, 3/4, G	4		
6	2780282-0000	BRACKET, CARTRIDGE SUPT, DIA, QG, G	2		

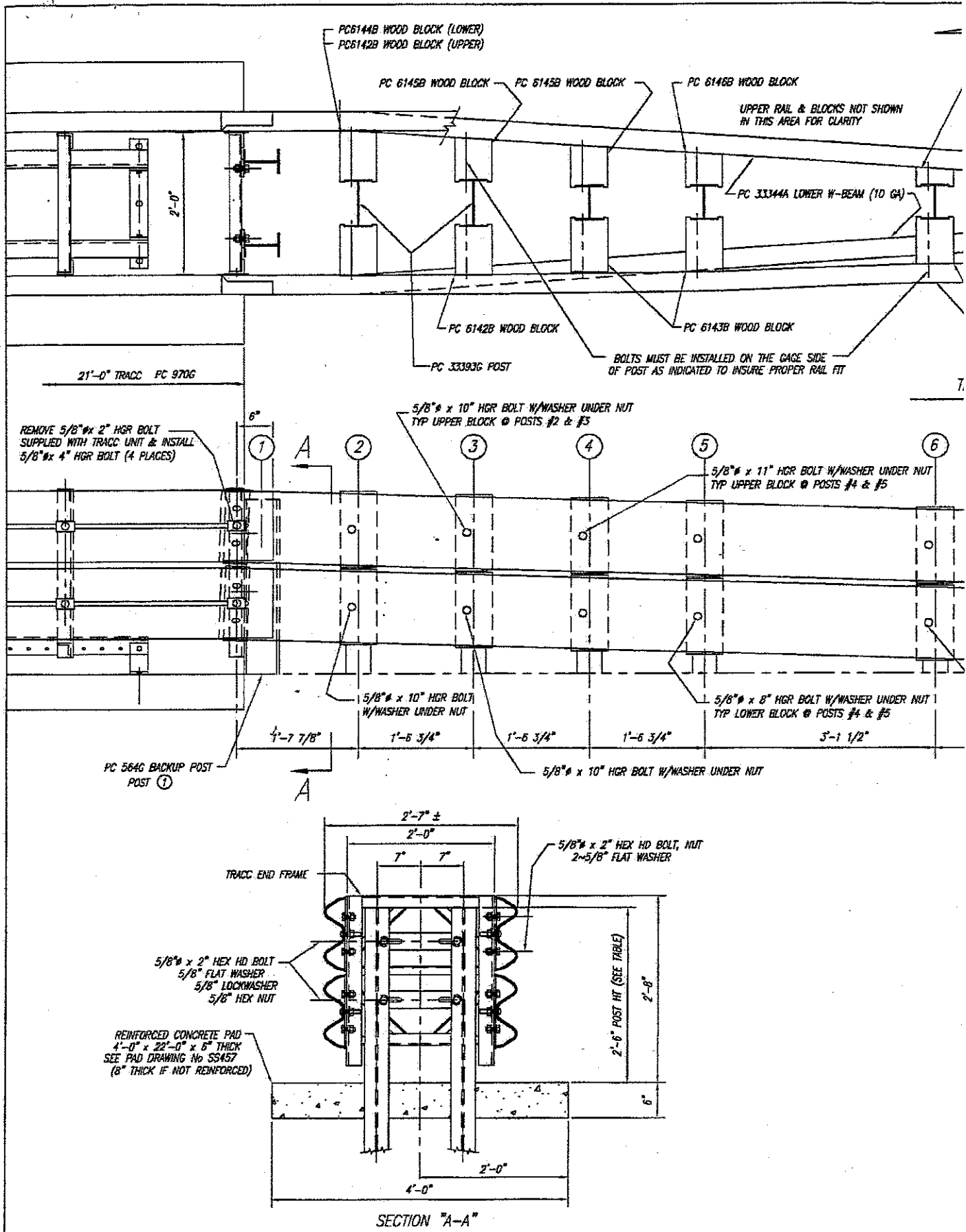
TOL. ANGULAR: ± 1°  
 TOL. LINEAR: ± .010"  
 UNLESS OTHERWISE SPECIFIED  
 SEE PARTS LIST  
 ON 2206



NOTES:  
 1. ASSEMBLE ITEMS 2 WITH FASTENERS AS SHOWN.

ASSEMBLY NO. 6010432-1153

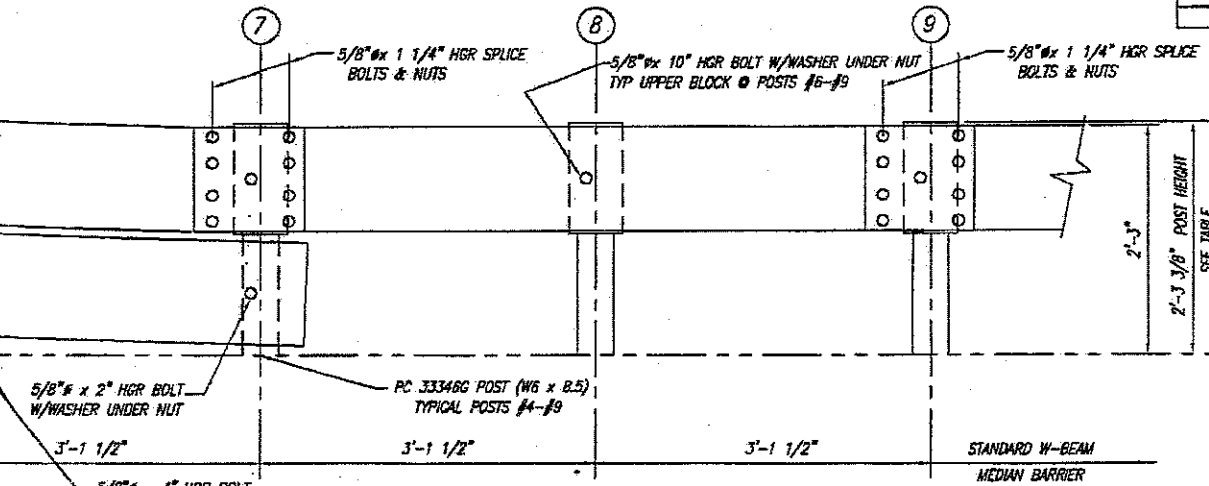
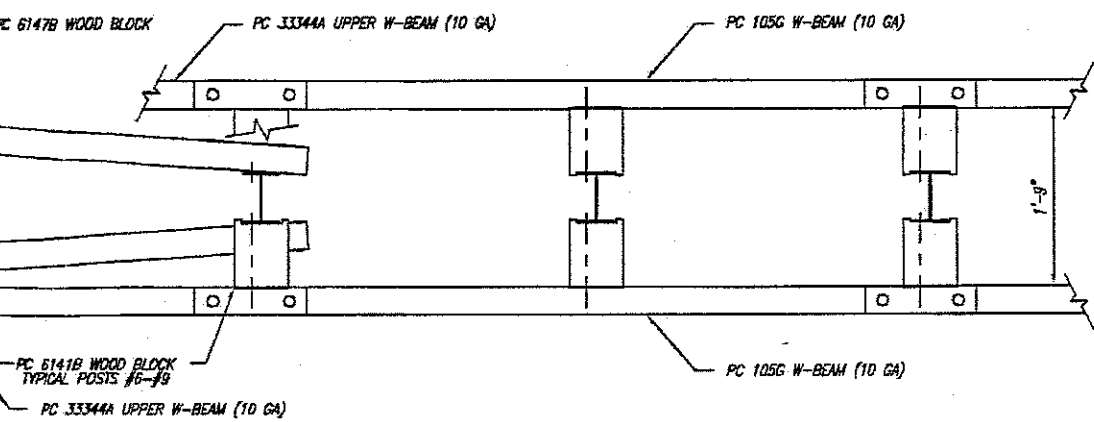
DESIGNED BY	D. Korteid	DATE	11/16/2003
CHECKED BY	A. Franklin	DATE	10/31/2003
APPROVED BY	A. Franklin	DATE	11/10/2003
BY	SPY	DATE	11/10/2003
BY	STI	DATE	11/11/2003
REV.	6010432-1153	REV.	3/10-1
ENERGY ABSORPTION SYSTEMS, INC. ENGINEERING AND RESEARCH DEPARTMENT		DIAPHRAGM ASSY, QG, EX-WIDE, 1153	
6010432-1153		1 of 1	



TRAFFIC

TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
1056C	2	10/63/TRACC (GUARDRAIL)
564G	2	BACKLUP POST (WB x 8.5 x 6'-6")
33344A	4	10/126/TRACC (GUARDRAIL)
33383G	2	POST WB x 13 x 7'-6"
33346C	6	POST WB x 8.5 x 6'-6"
6141B	8	RTD WD BLOCK 1'-1 (6 x 8)
6142B	4	RTD WD BLOCK 1'-1 (6 x 8 3/4)
6143B	4	RTD WD BLOCK 1'-1 (6 x 9 1/4)
6144B	2	RTD TPRD WD BLK 1'-1 (6 x 8 9/16)
6145B	4	RTD TPRD WD BLK 1'-1 (6 x 7 1/4)
6146B	2	RTD TPRD WD BLK 1'-1 (6 x 5 15/16)
6147B	2	RTD TPRD WD BLK 1'-1 (6 x 3 3/8)
HARDWARE		
3510G	4	5/8" x 11" HGR POST BOLT
3500G	16	5/8" x 10" HGR POST BOLT
3480G	4	5/8" x 8" HGR POST BOLT
4432G	6	5/8" x 4" HGR POST BOLT
3400G	2	5/8" x 2" HGR POST BOLT
3360G	32	5/8" x 1 1/4" HGR SPLICE BOLT
3340G	80	5/8" HGR HEX NUT
3300G	32	5/8" FLAT WASHER (6 HGR POST BOLTS)
3404G	12	5/8" x 2" HEX HD BOLT (A325)
4372G	20	5/8" WASHER
3310G	4	5/8" LOCKWASHER
3361G	12	5/8" HEX NUT



POST HEIGHT TABLE

POST NO	HEIGHT
①	2'-6"
②	2'-7 3/8"
③	2'-6 3/4"
④	2'-5 1/8"
⑤	2'-5 1/2"
⑥	2'-4 3/8"
⑦	2'-3 3/8"
⑧	2'-3 3/8"
⑨	2'-3 3/8"

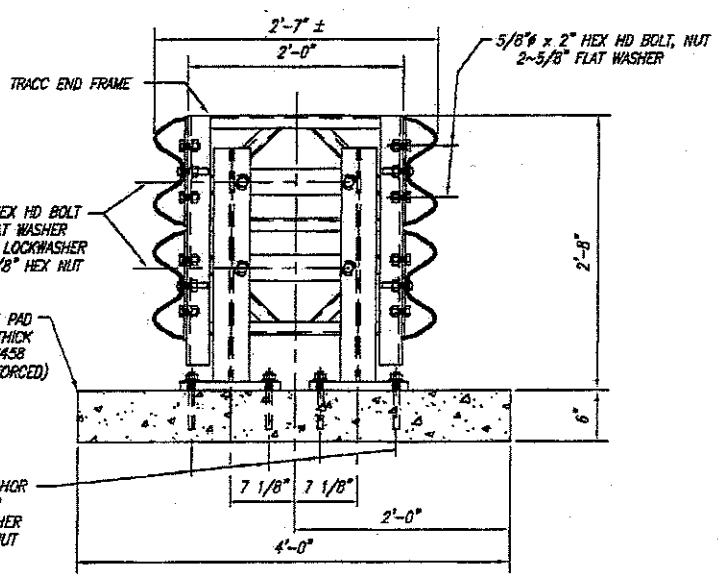
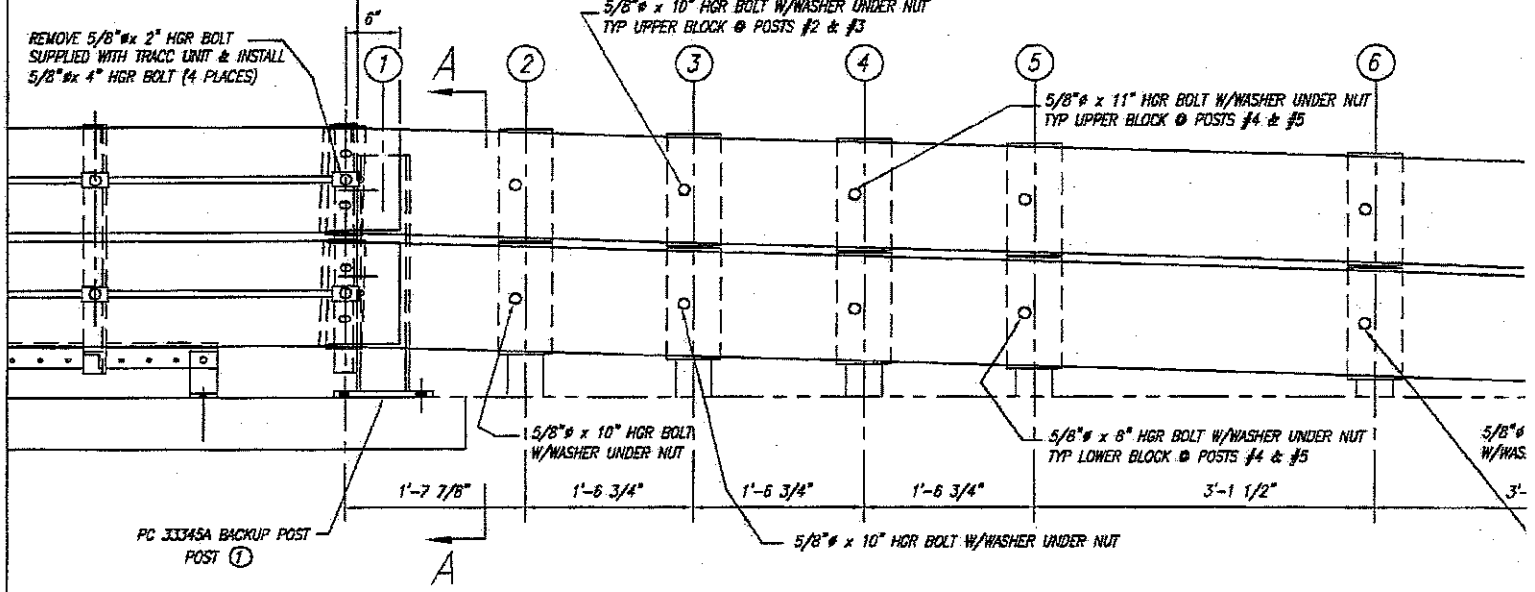
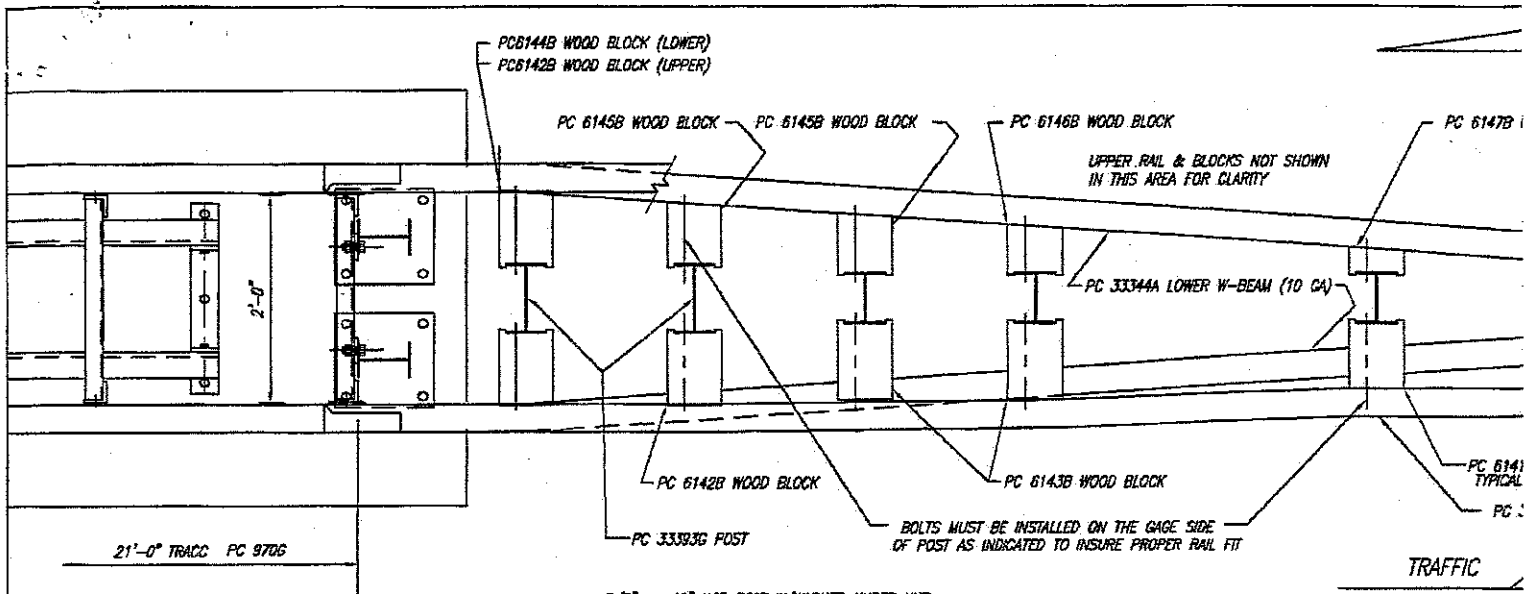
COPYRIGHT © 2000 TRINITY INDUSTRIES INC  
 This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. nor is any reproduction authorized without written permission.

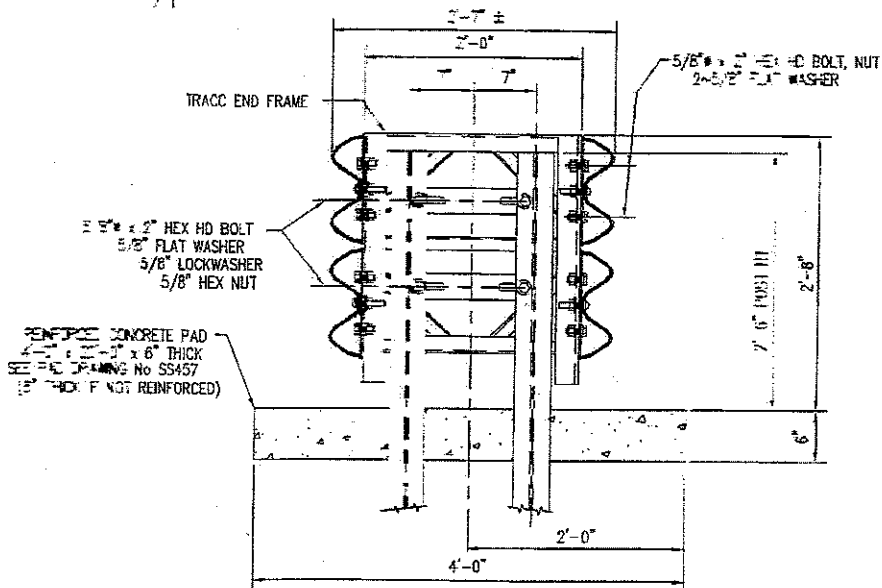
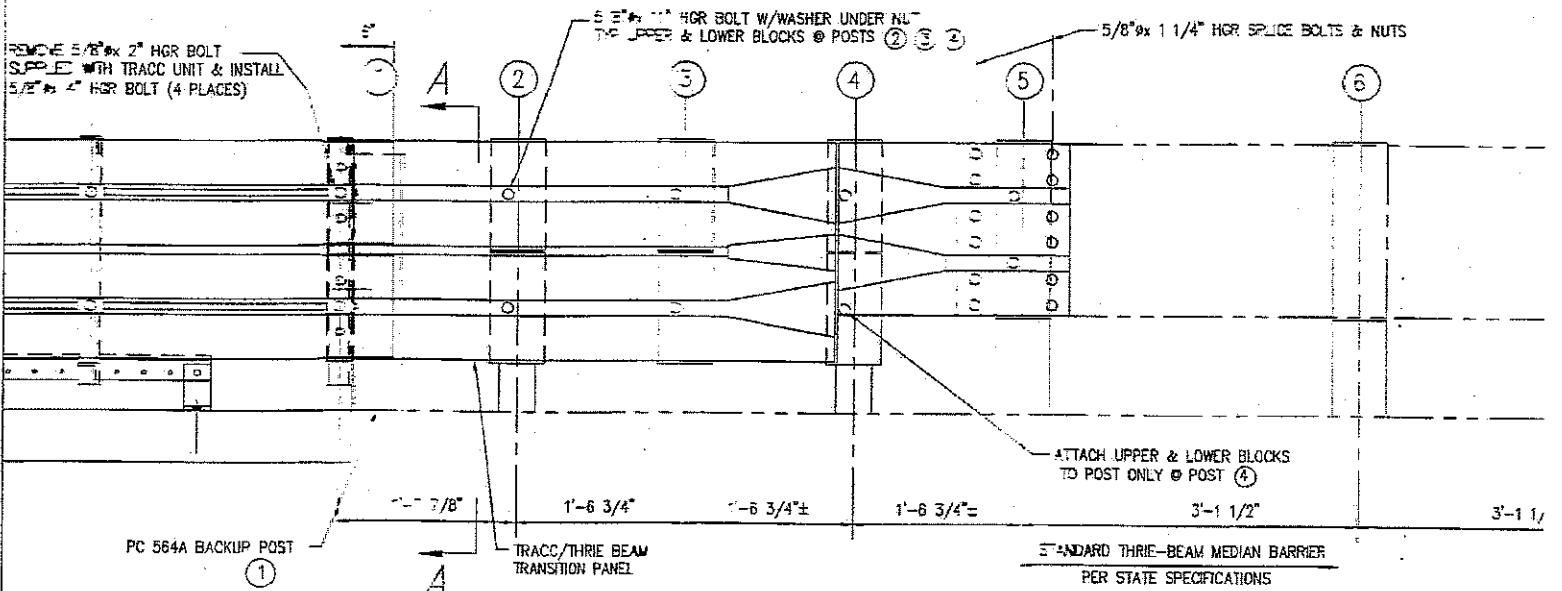
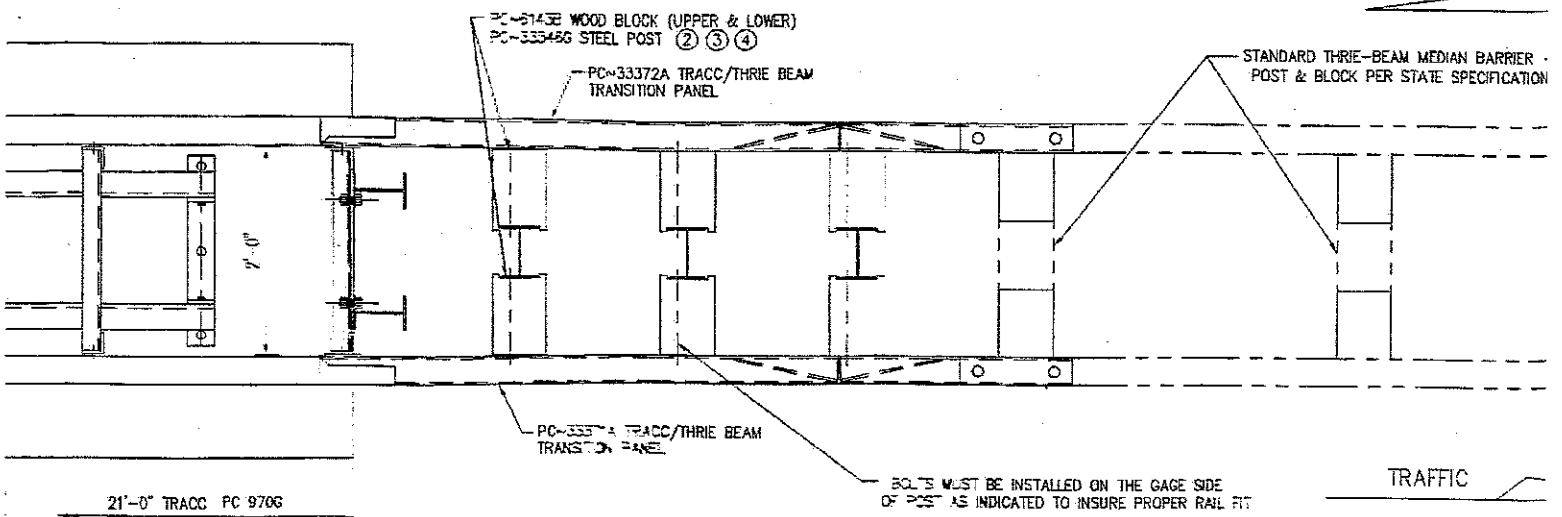
1	BT	6-7-01	REVISED POSTS #2 & #3 AND LENGTH OF TRANSITION.
REV.	CHKD	BY	DATE
REMARKS			
TRACC TRANSITION TO W-BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS (ALL DRIVEN POSTS)			DRAWN B.T. CHECKED APPROVED DATE 8/16/00 ENCL FILE # SS453-01E SHEET# E1 OF 1 DRAWING NO. SS 453
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STENMONS FREEWAY, DALLAS, TX 75356			REV. 1

37

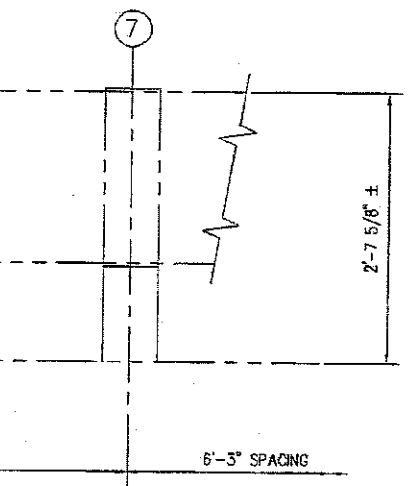
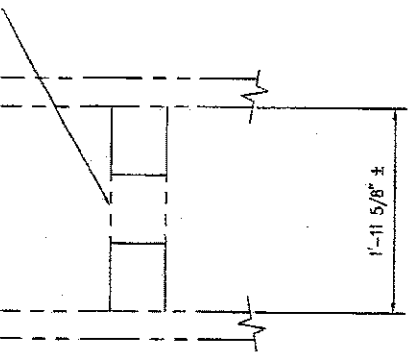
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 36







TRAFFIC



TRACC TRANSITION BILL OF MATERIAL

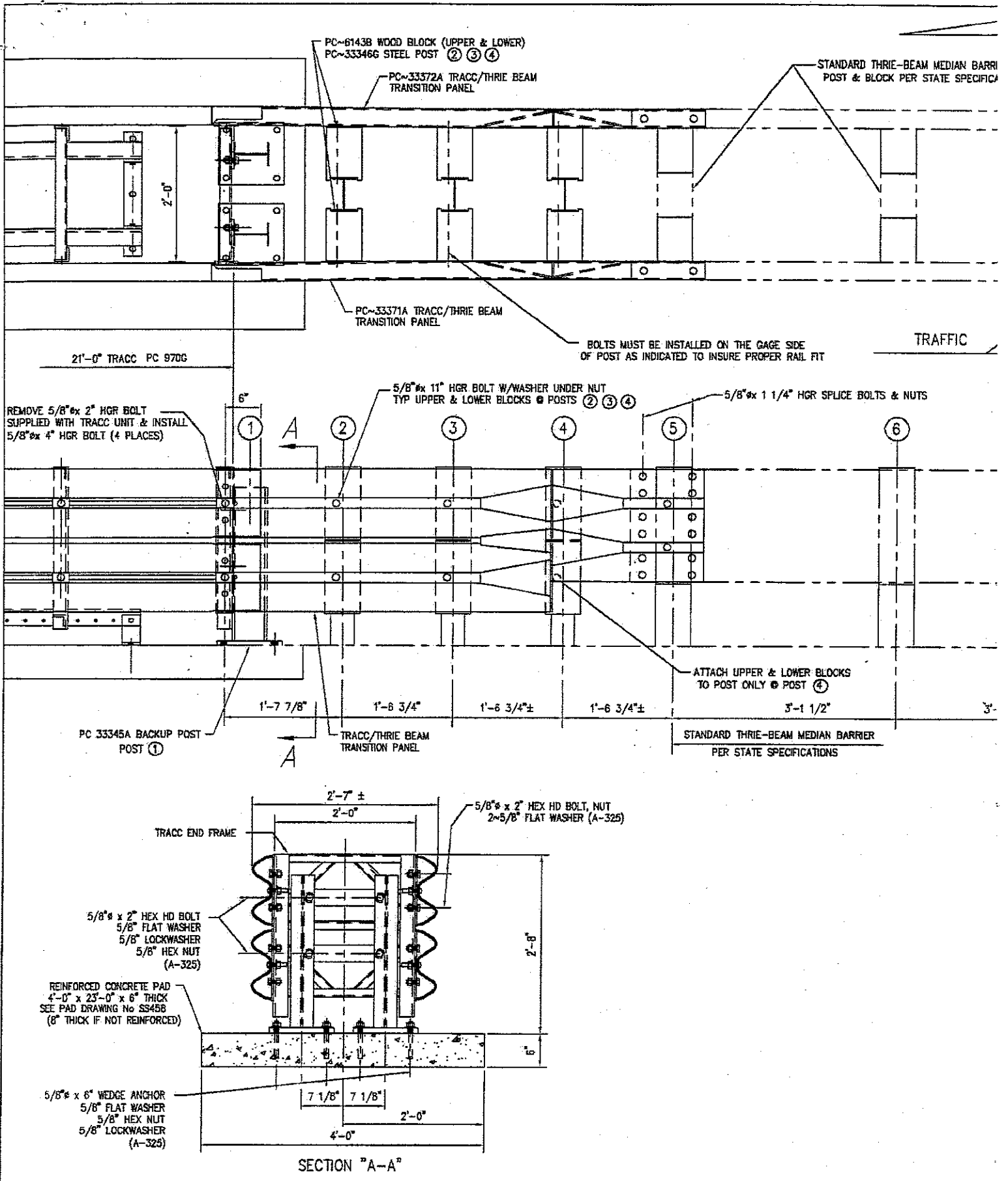
PRODUCT CODE	QTY	DESCRIPTION
564G	2	POST W6 x 8.5 x 6'-6"
6143B	12	RTD WD BLOCK 1'-1 (6 x 9 1/4)
33348G	3	POST W6 x 8.5 x 6'-6"
33371A	1	TRACC/THRIE BEAM TRANSITION PANEL
33372A	1	TRACC/THRIE BEAM TRANSITION PANEL
HARDWARE		
4432G	4	5/8" $\phi$ x 4" HGR POST BOLT
3510G	12	5/8" $\phi$ x 11" HGR POST BOLT
3360G	24	5/8" $\phi$ x 1 1/4" HGR SPLICE BOLT
3340G	36	5/8" HGR HEX NUT
3300G	12	5/8" FLAT WASHER (6 HGR POST BOLTS)
3404G	12	5/8" $\phi$ x 2" HEX HD BOLT (A325)
4372G	20	5/8" WASHER
3310G	4	5/8" LOCKWASHER
3361G	12	5/8" HEX NUT

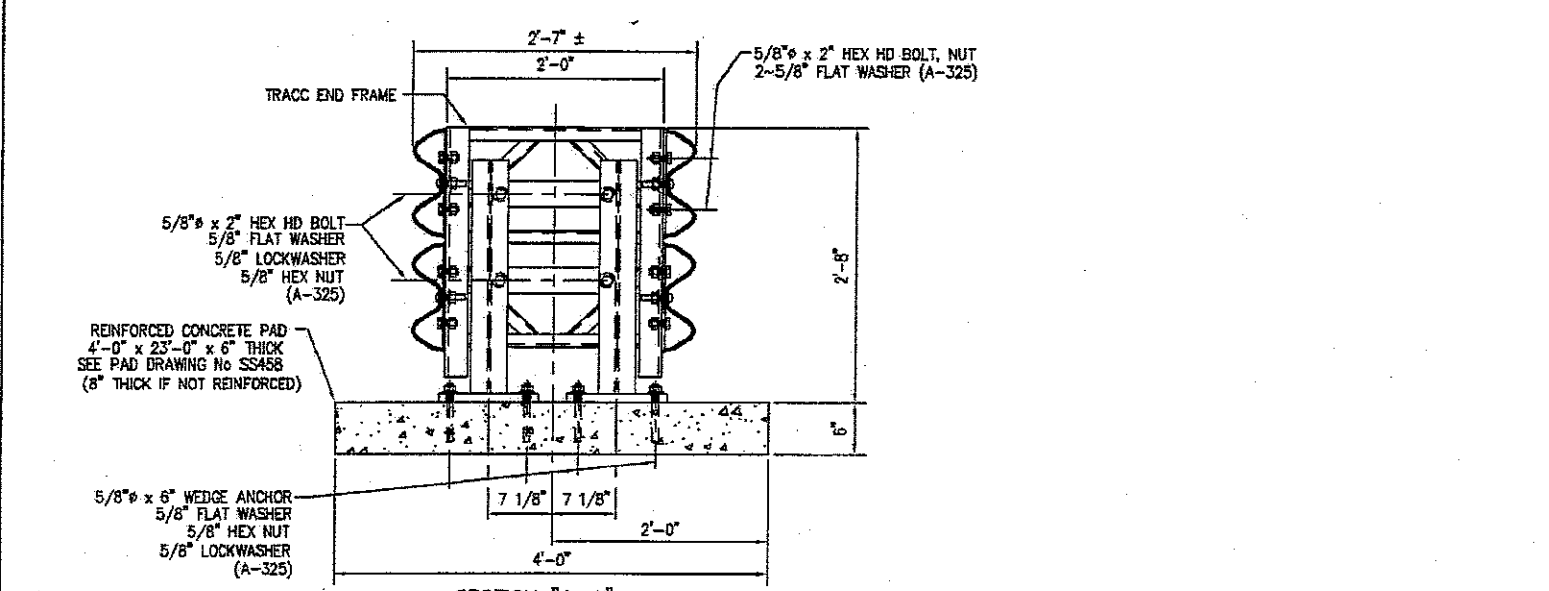
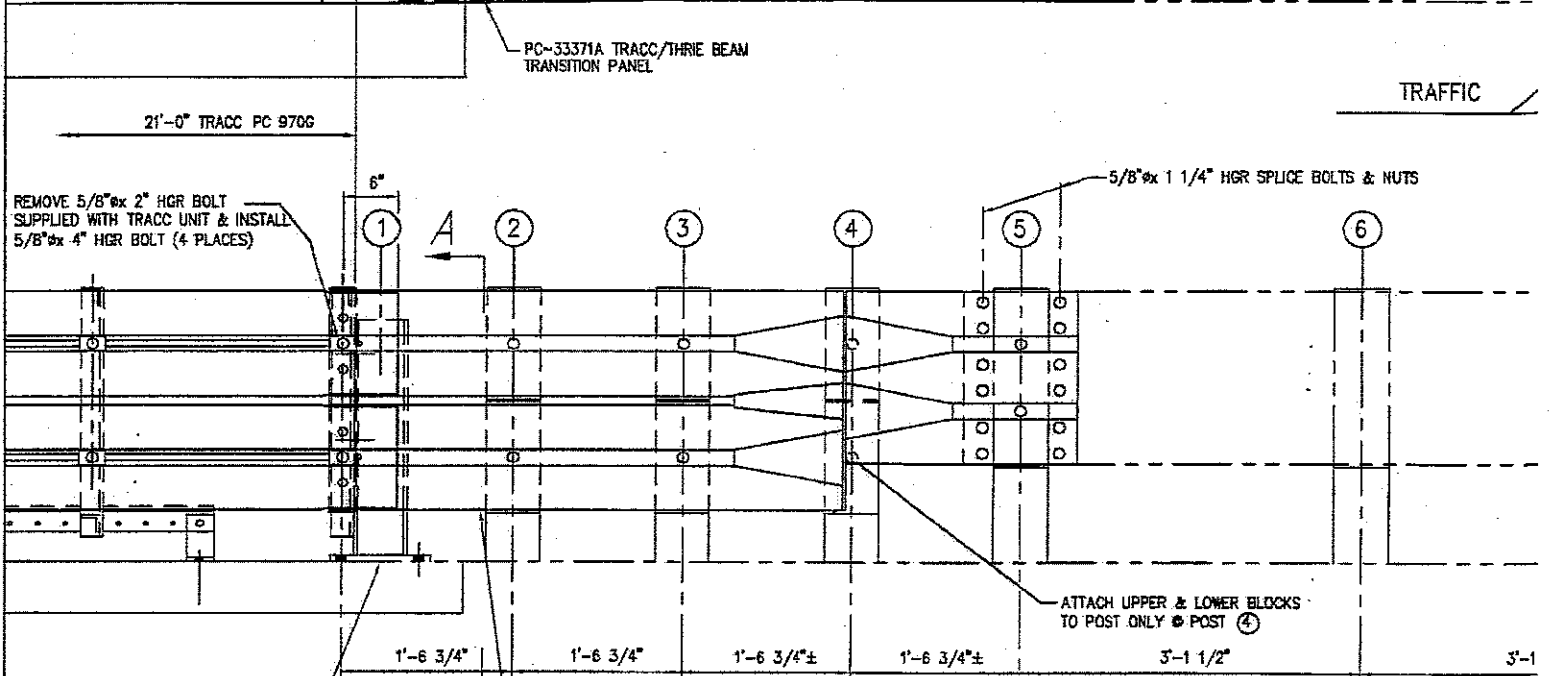
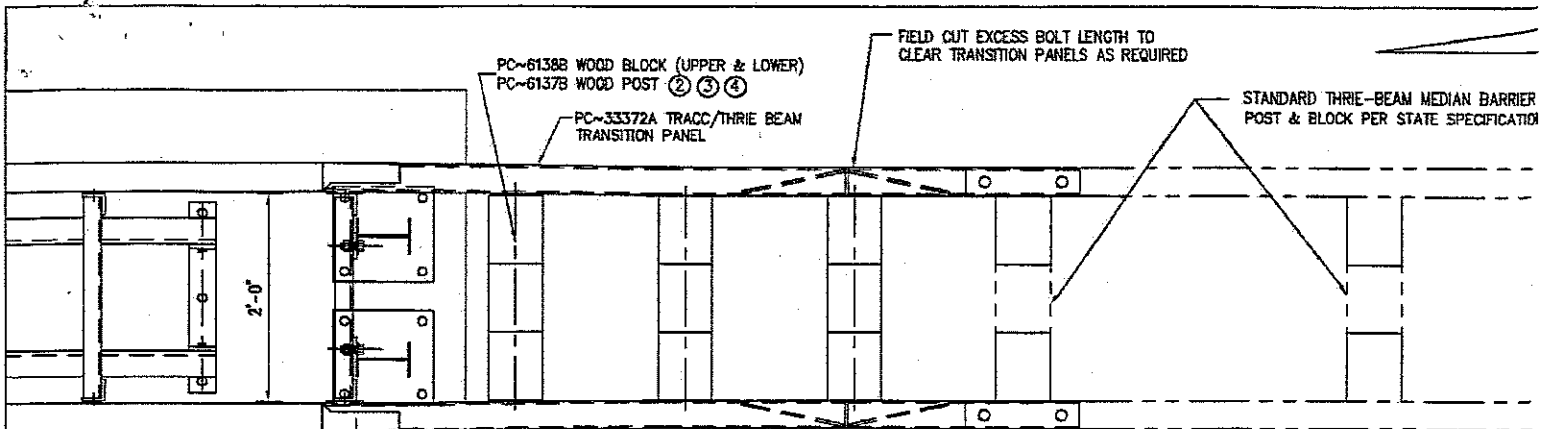
REV.	CHK'D	BY	DATE	REMARKS
				DRAWN B.T. CHECKED APPROVED DATE 8-22-00 ENG. FILE # SS454-01E SHT.No. E1 OF 1 DRAWING NO. SS 454 REV. 0
TRACC TRANSITION TO THRIE BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS (ALL DRIVEN POSTS)				TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75356

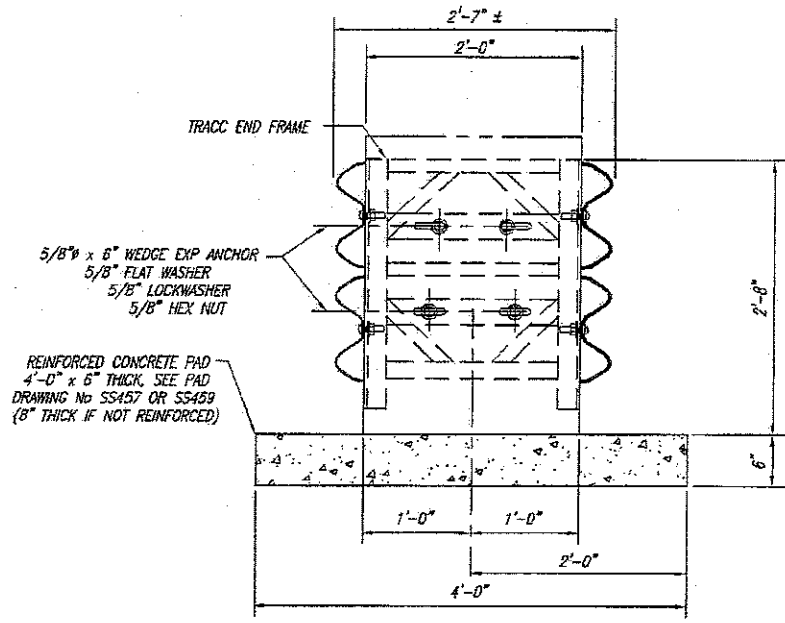
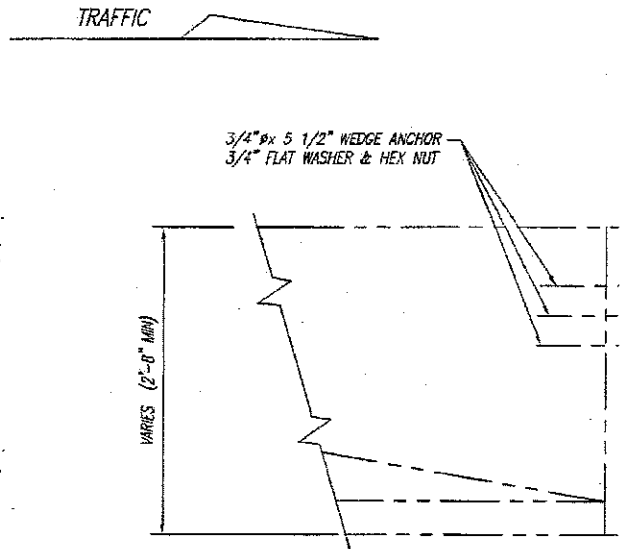
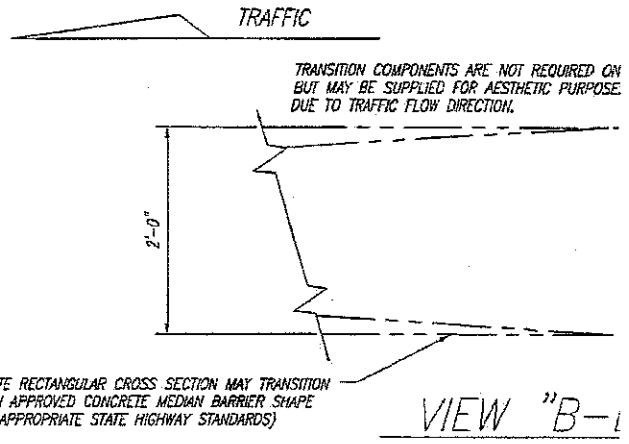
COPYRIGHT © 2000 TRINITY INDUSTRIES, INC.  
 This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. nor is any reproduction authorized without written permission.

40

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 39

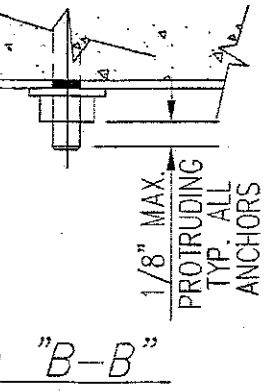
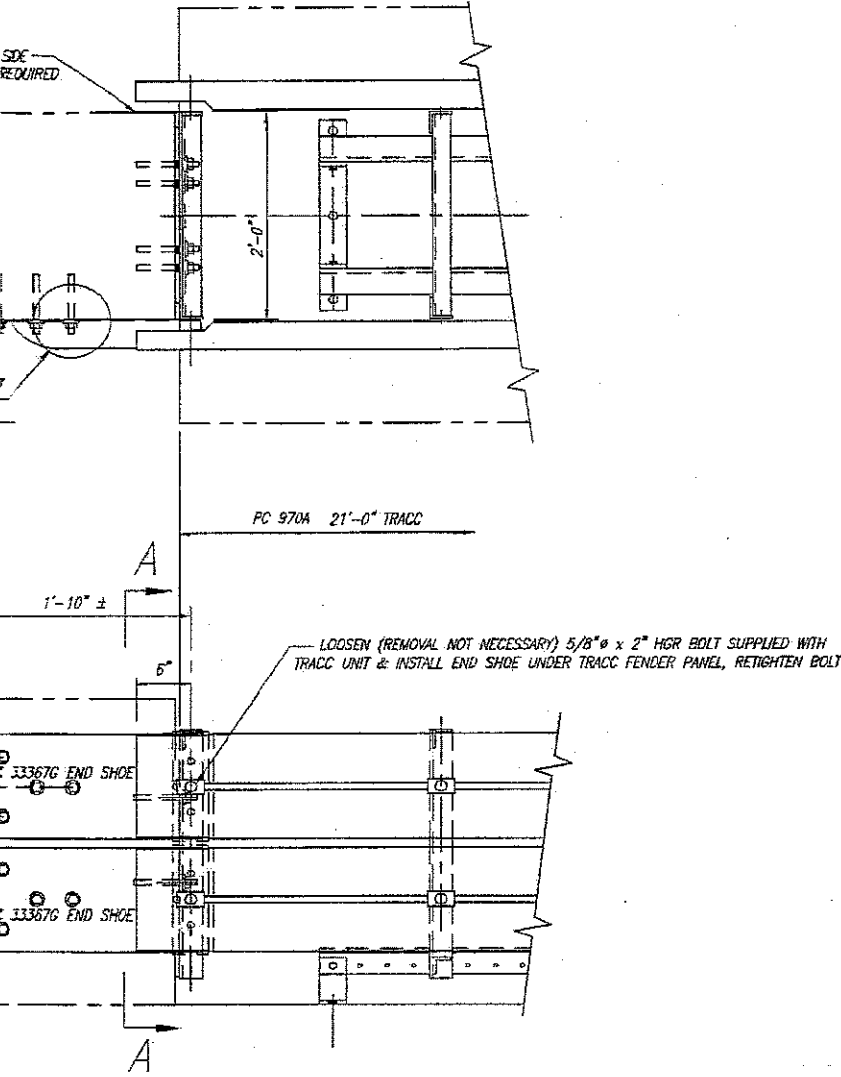






SECTION "A-A"

TRACC TRANSITION BILL OF MATERIAL		
PRODUCT CODE	QTY	DESCRIPTION
33367G	2	TRACC 10GA END SHOE
HARDWARE		
3310G	4	5/8" LOCKWASHER
4451G	4	5/8" x 6" WEDGE EXP ANCHOR
4688G	8	3/4" x 5 1/2" WEDGE EXP ANCHOR

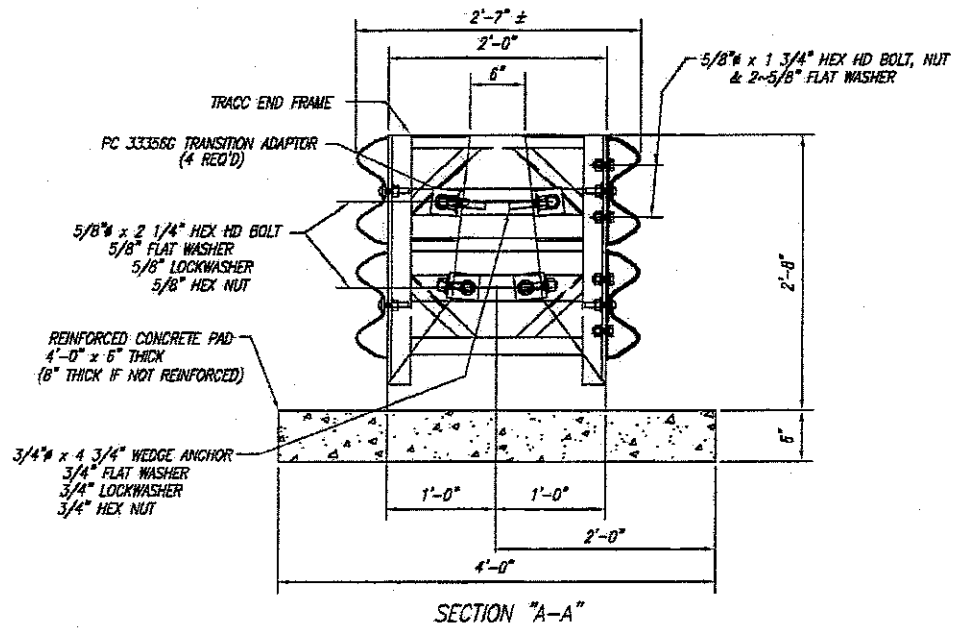
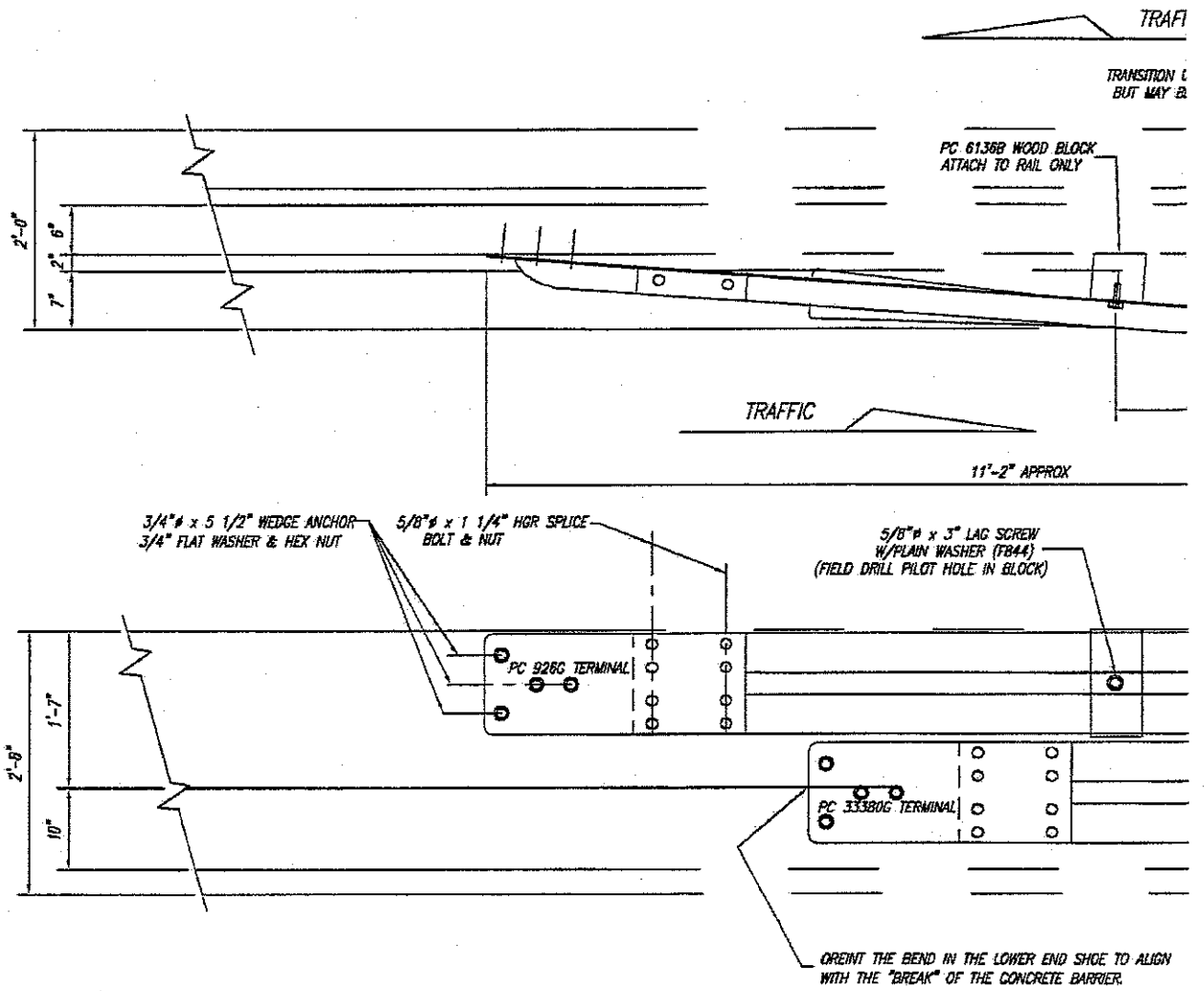


1	B.T.	IL.H.	11/19/03	ADDED EXPANSION BOLT VIEW B-B
REV.	CHK'D	BY	DATE	REMARKS
TRACC TRANSITION TO VERTICAL CONCRETE WALL, PIER, PARAPET OR BARRIER PLAN, ELEVATION & SECTIONS				DRAWN B.T. CHECKED APPROVED DATE 9-7-00 ENG. FILE # SS456-01E SHIT.No. E1 OF 1 DRAWING NO. SS 456
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75356				REV. 1

COPYRIGHT © 2000 TRINITY INDUSTRIES, INC.  
 This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC., nor to any reproduction authorized without written permission.

44

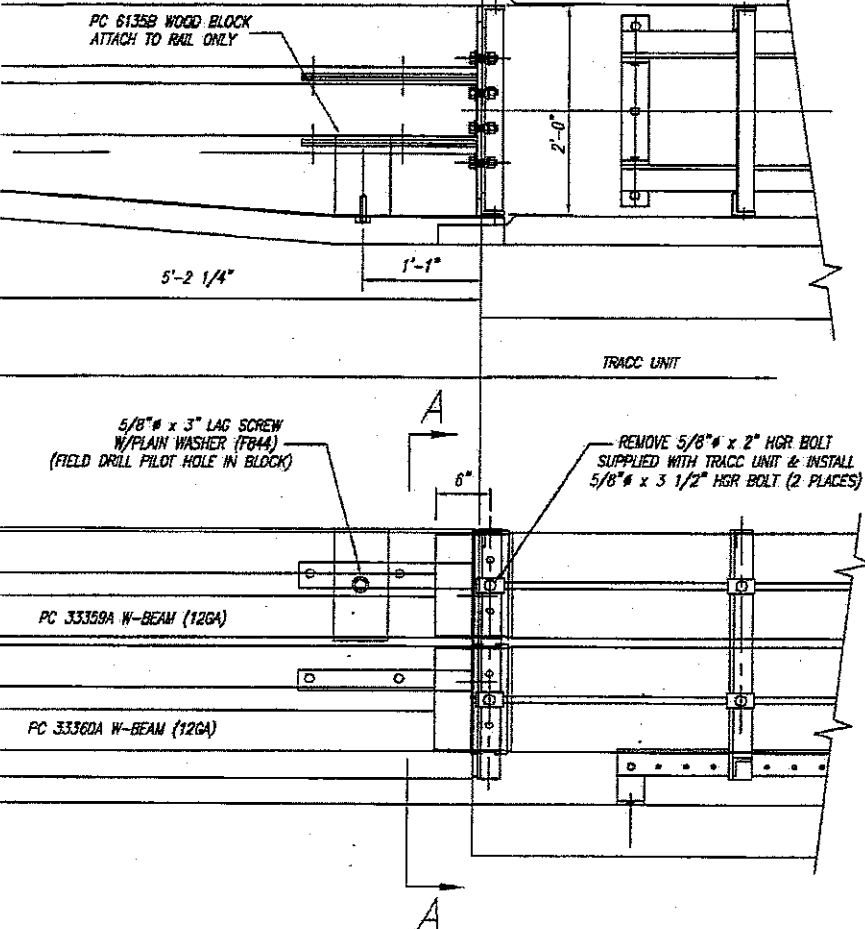
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 43






C

COMPONENTS ARE NOT REQUIRED ON THIS SIDE SUPPLIED FOR AESTHETIC PURPOSES.



TRACC TRANSITION BILL OF MATERIAL		
PRODUCT CODE	QTY	DESCRIPTION
926G	1	10/END SHOE/EXTRA HOLE (UPPER)
6135B	1	TAPERED WD-BLK 1'-1" (6 x 8 1/2)
6136B	1	TAPERED WD-BLK 1'-1" (6 x 5 3/4)
33356G	4	TRANSITION ADAPTOR PLATE
33358A	1	12/10" TRACC (UPPER GUARDRAIL)
33360A	1	12/6"10.5" TRACC (LOWER GUARDRAIL)
33380G	1	10/END SHOE/EXTRA HOLE/BEND (LOWER)
HARDWARE		
3380G	16	5/8" x 1 1/4" HGR SPLICE BOLT
3435G	2	5/8" x 3 1/2" HGR POST BOLT
4412G	2	5/8" x 3" LAG SCREW
5306G	4	5/8" x 2 1/4" HEX HD BOLT (A325)
3391G	4	5/8" x 1 3/4" HEX HD BOLT (A325)
3300G	2	5/8" WASHER (F844)
3340G	16	5/8" HGR NUT
4372G	12	5/8" WASHER (F436)
3310G	4	5/8" LOCKWASHER
3361G	8	5/8" HEX NUT (A563 DH)
4688G	8	3/4" x 5 1/2" WEDGE ANCHOR
5136G	8	3/4" x 4 3/4" WEDGE ANCHOR
4699G	8	3/4" LOCKWASHER
3701G	16	3/4" WASHER
3710G	16	3/4" HEX NUT

REV.	CHKD BY	DATE	REMARKS
6	SAR	6-20-05	UPDATED PART NUMBERS
5	LH	6-18-02	CHANGED BLOCK POSITION ON TOP PANEL; ADDED LOWER END SHOE NOTE
4	BT	8-2-00	DELETED PC4717, PC33361 & 62, ADDED PC926 & PC33380, CHG QTY HARDWARE
3	BT	3-29-00	DELETED PC4421, ADDED PC4412
2	BT	11-5-99	DELETED PC6139, 6140, 5307 & 4441, ADDED PC6135, 6136 & 4412
1	BT	6-30-99	DELETED PC33357G & 33358, ADDED 2 MORE PC33356, CHGD SECT A-A & HWHR



**TRACC**

TRACC TRANSITION TO  
CONCRETE SAFETY SHAPE BARRIER  
PLAN, ELEVATION & SECTIONS

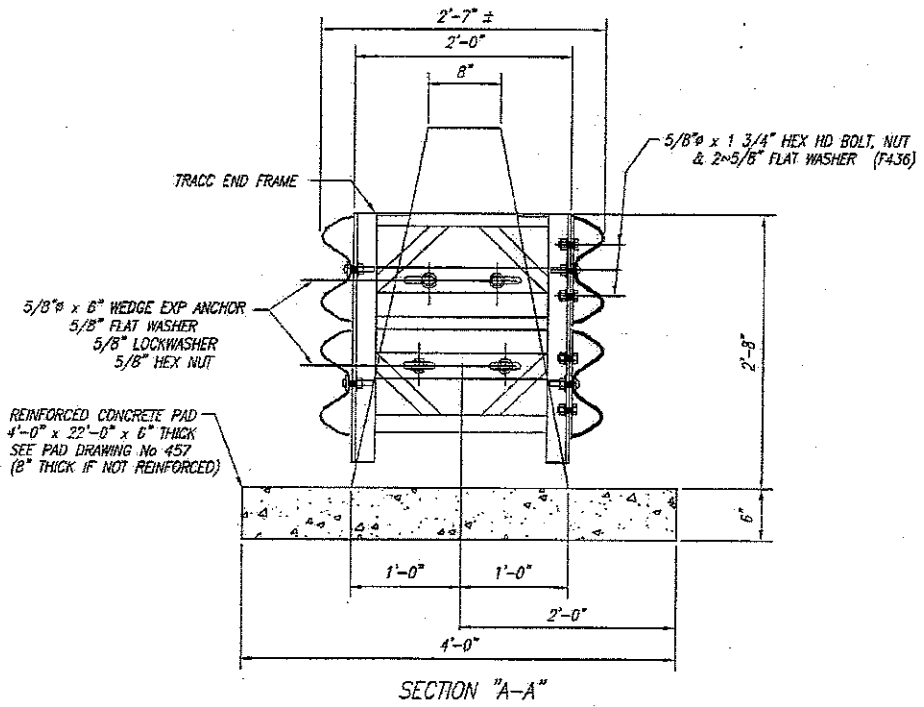
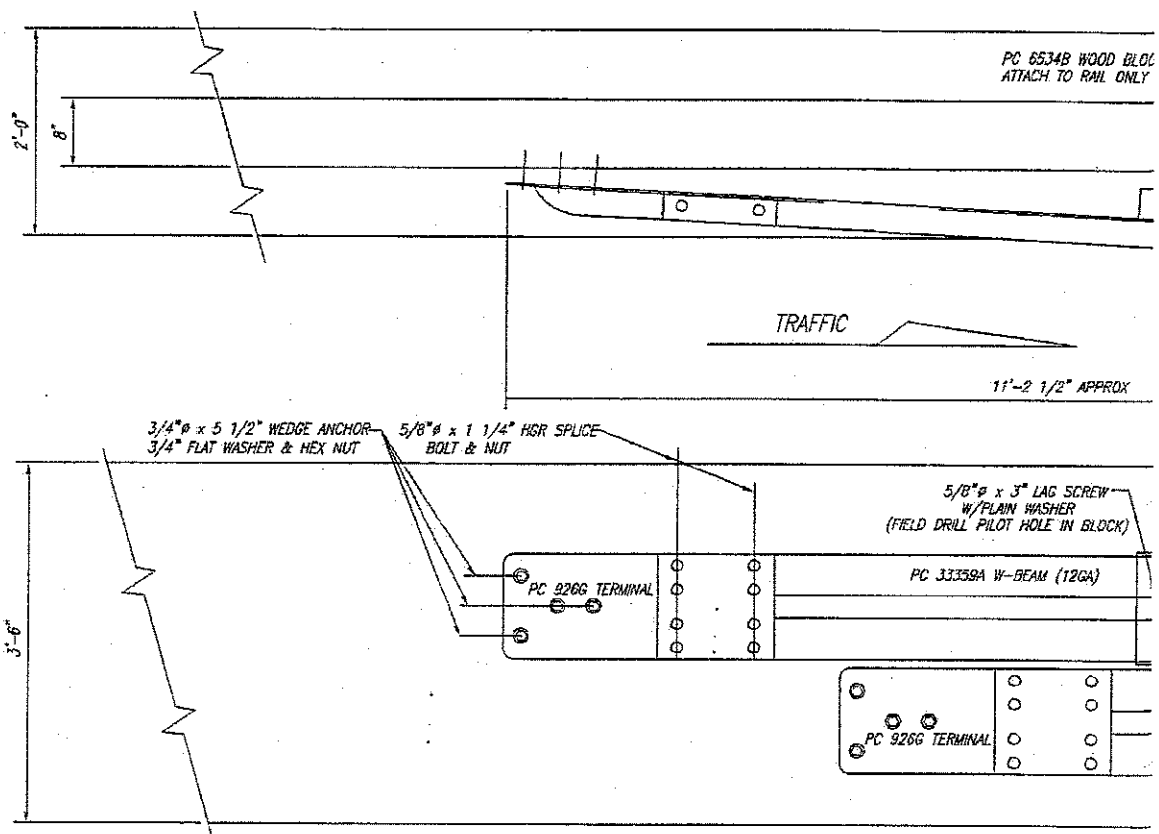
TRINITY INDUSTRIES, INC.  
HIGHWAY SAFETY PRODUCTS

DRAWN	BT
CHECKED	
APPROVED	
DATE	05/10/02
ENG. FILE #	SS461-01E
SHT/No.	E1 OF 1
DRAWING NO.	
REV.	

COPYRIGHT © 1999 TRINITY INDUSTRIES INC.  
This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was originally furnished by TRINITY.

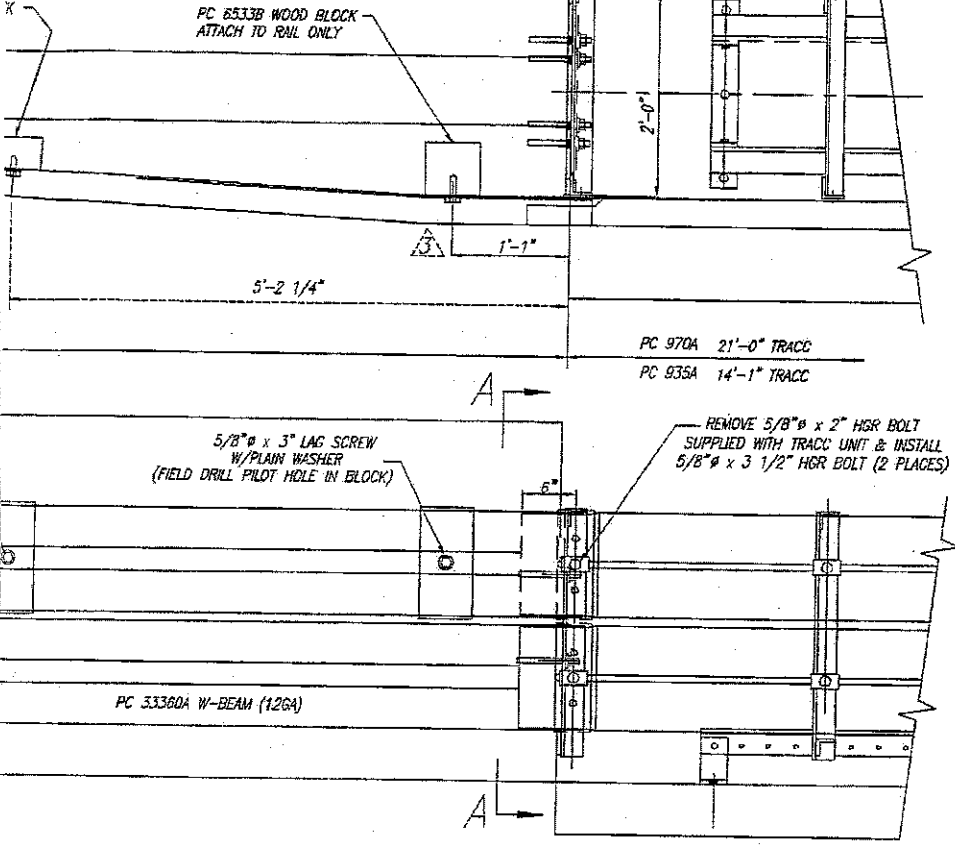
46

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 45



TRAFFIC

TRANSITION COMPONENTS ARE NOT REQUIRED ON THIS SIDE BUT MAY BE SUPPLIED FOR AESTHETIC PURPOSES.



TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
9266	2	10/END SHOE
6533B	1	TAPERED WD BLK 1'-1" (6 7/8 x 6)
6534B	1	TAPERED WD BLK 1'-1" (6 x 3 3/4)
33359A	1	12/10/0"/TRACC (UPPER GUARDRAIL)
33360A	1	12/5/10.5"/TRACC (LOWER GUARDRAIL)
HARDWARE		
3360G	16	5/8" x 1 1/4" HGR SPLICE BOLT
3391G	4	5/8" x 1 3/4" HEX BOLT
3435G	2	5/8" x 3 1/2" HGR POST BOLT
4412G	2	5/8" x 3" LAG SCREW
3300G	6	5/8" WASHER (F844)
3340G	16	5/8" HGR NUT
4372G	8	5/8" WASHER (F836)
3310G	4	5/8" LOCKWASHER
3361G	8	5/8" HEX NUT (A563 DH)
4451G	4	5/8" x 6" WEDGE EXP ANCHOR
4688G	8	3/4" x 5 1/2" WEDGE EXP ANCHOR
3701G	8	3/4" WASHER
3710G	8	3/4" HEX NUT

4	LH	08/27/03	REVISED QUANTITY OF 3/4" NUTS/WASHERS
3	BT	01/29/03	CHANGED BLOCK LOCATION
2	LH	01/21/03	CHANGED BLOCKS & THEIR LOCATION ON TOP PANEL
1	BT	6-2-00	DELETED PC33361 & PC 4717, ADDED PC926, CHG QTY HARDWARE
REV.	CHKD	BY	DATE
REMARKS			



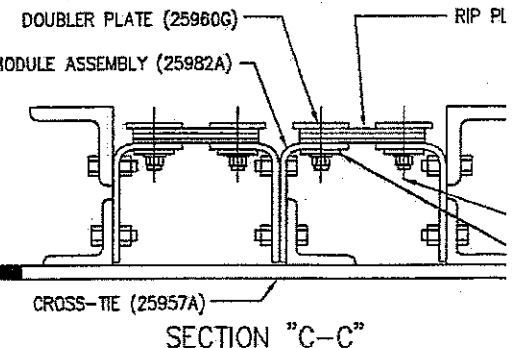
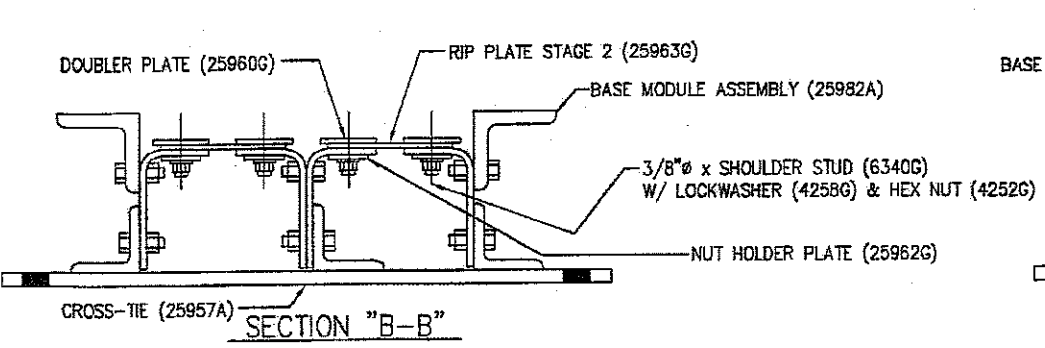
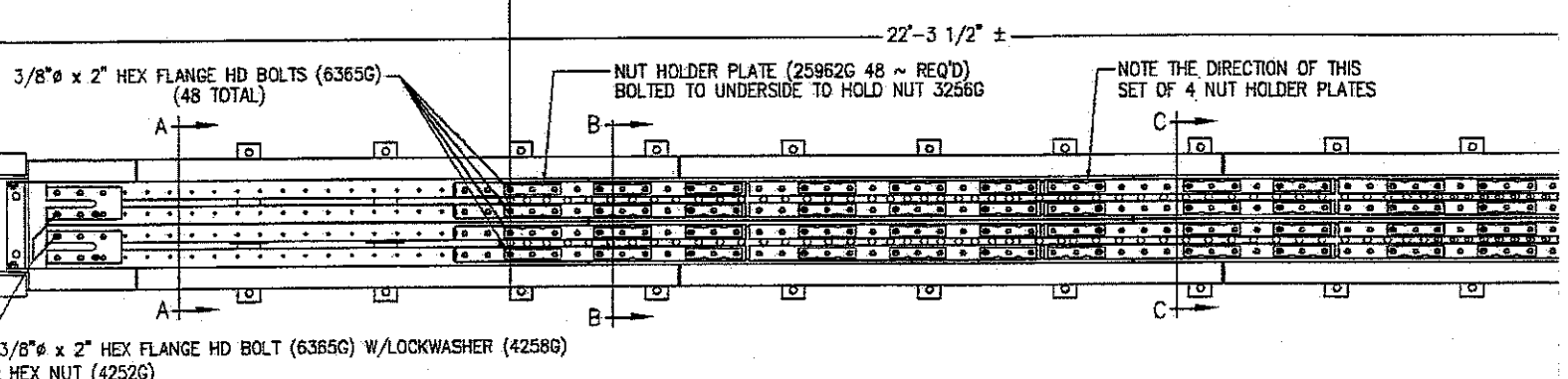
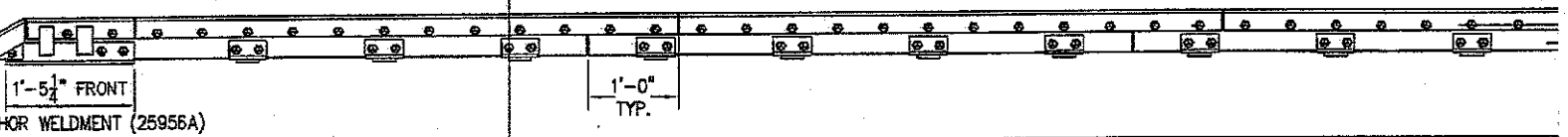
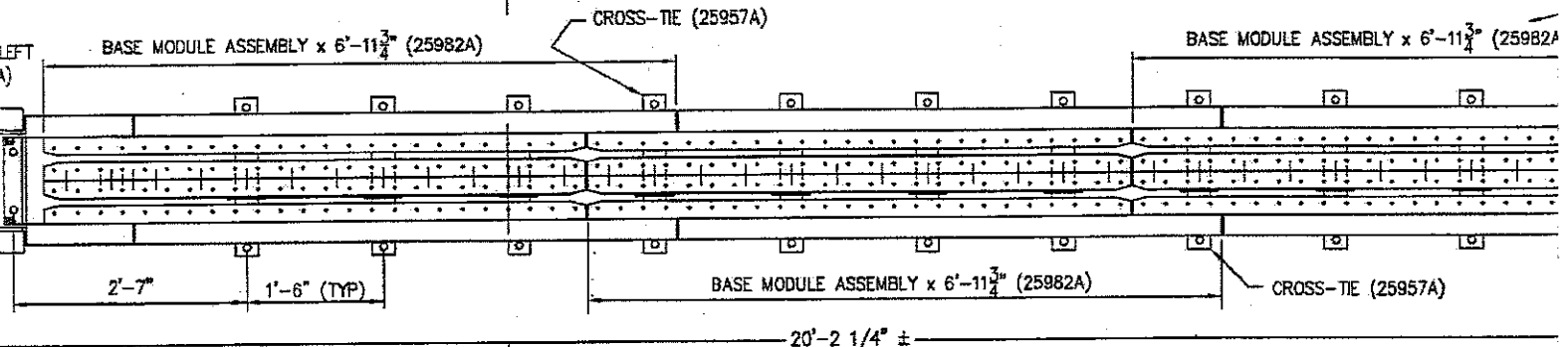
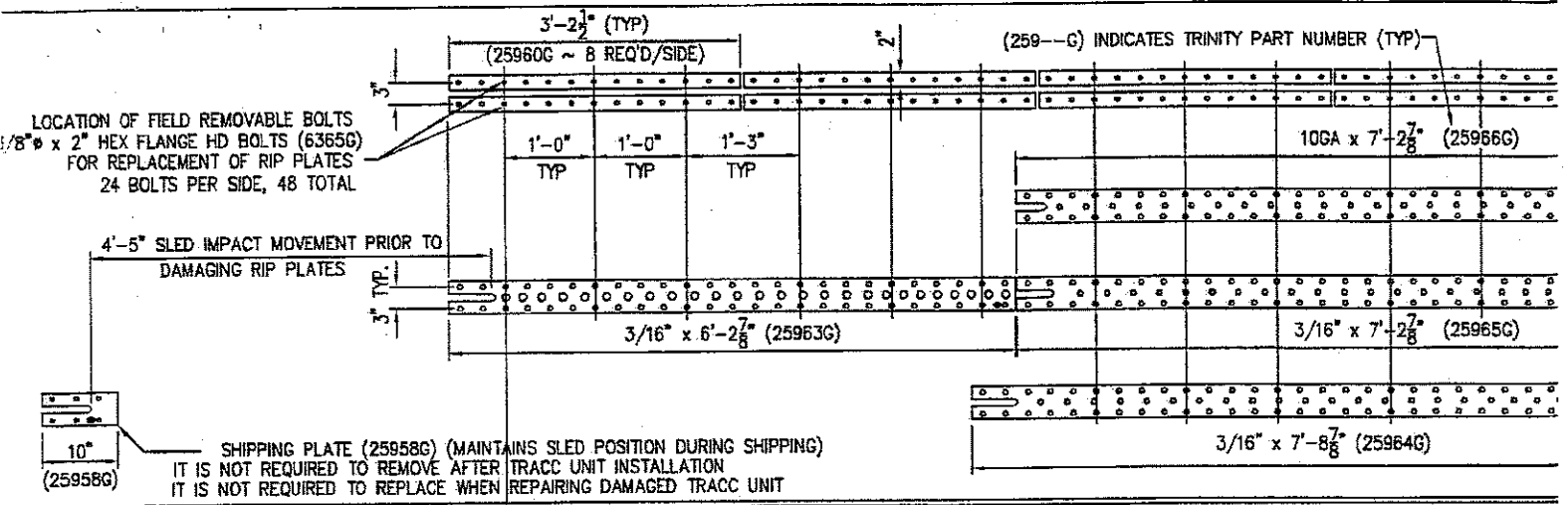
# TRACC

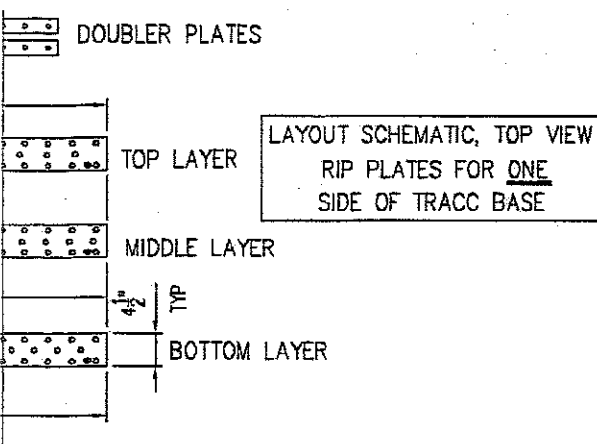
TRACC TRANSITION TO  
CONCRETE BARRIER SINGLE SLOPE  
PLAN, ELEVATION & SECTIONS

TRINITY INDUSTRIES, INC.  
HIGHWAY SAFETY PRODUCTS  
2525 STEMMONS FREEWAY, DALLAS, TX 75356

DRAWN	B.T.
CHECKED	
APPROVED	
DATE	11/05/99
ENG. FILE #	SS462-01E
SHINo.	E1 OF 1
DRAWING NO.	SS 462
REV.	4

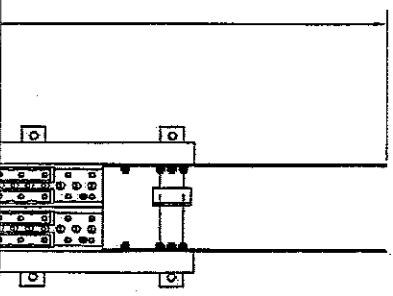
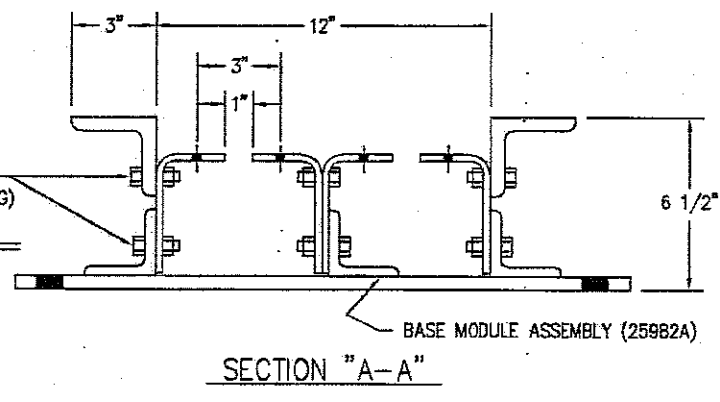
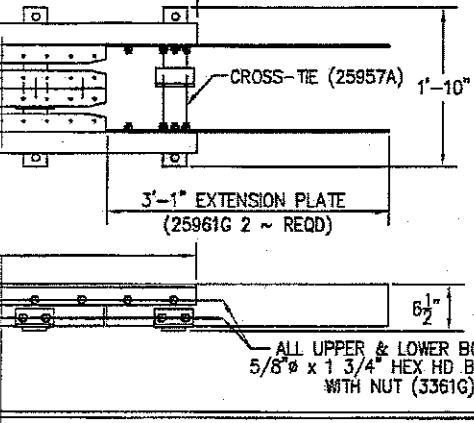
Copyright © 1999 TRINITY INDUSTRIES, INC.  
This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. nor is any reproduction authorized without written permission.





TRACC BASE (25981A) BILL OF MATERIALS				
Part #	Description	Qty	WT. EACH (#)	TOTAL WT.
03258G	3/8" Shoulder Nut	48	0.030	1.44
03361G	5/8" Heavy Hex Nut (A563 DH)	40	0.120	4.8
03391G	5/8" x 1 3/4" Hex Head Bolt (A325)	40	0.210	8.4
04252G	3/8" Hex Nut	180	0.030	5.4
04258G	3/8" Lock Washer	180	0.006	1.08
06340G	3/8" X 1 1/2" Shoulder Stud	178	0.060	10.68
06365G	3/8" x 2" Hex Flange Head Bolt (GR-5)	50	0.070	3.5
25954A	End Shoe, Right	1	11.000	11
25955A	End Shoe, Left	1	11.000	11
25956A	Front Anchor Weldment	1	67.000	67
25957A	Cross Tie	3	16.000	54
25958G	Rip Plate, Stage 1 (Shipping Plate)	2	0.800	1.6
25960G	Doublers	16	8.000	128
25961G	Extension Plate, Rear	2	16.000	32
25962G	Nut Holder (Nut Retainer Plate)	48	0.500	24
25963G	Rip Plate, Stage 2	2	17.000	34
25964G	Rip Plate, Stage 3, Bottom	2	22.000	44
25965G	Rip Plate, Stage 3, Middle	2	20.000	40
25966G	Rip Plate, Stage 3, Top	2	15.000	30
25982A	Base Module Assembly	3	329.000	987
			TOTAL WEIGHT	1498.90

NOTE:  
 SEE DRAWING PN 25982 FOR ASSEMBLY OF BASE MODULE COMPONENTS.



STAGE 3  
 (TOP) (25966G)  
 (MIDDLE) (25965G)  
 (BOTTOM) (25964G)

3/8" x SHOULDER STUD (6340G)  
 W/ LOCKWASHER (4258G) & HEX NUT (4252G)

NUT HOLDER PLATE (25962G)

2	SAR	6/17/05	UPDATED PART NUMBERS	
1	SG	BT	5/13/05 REPLACED BEAM GUIDES & BASE ANGLES WITH BASE MODULES	
REV.	CHNGD	BY	DATE	REMARKS

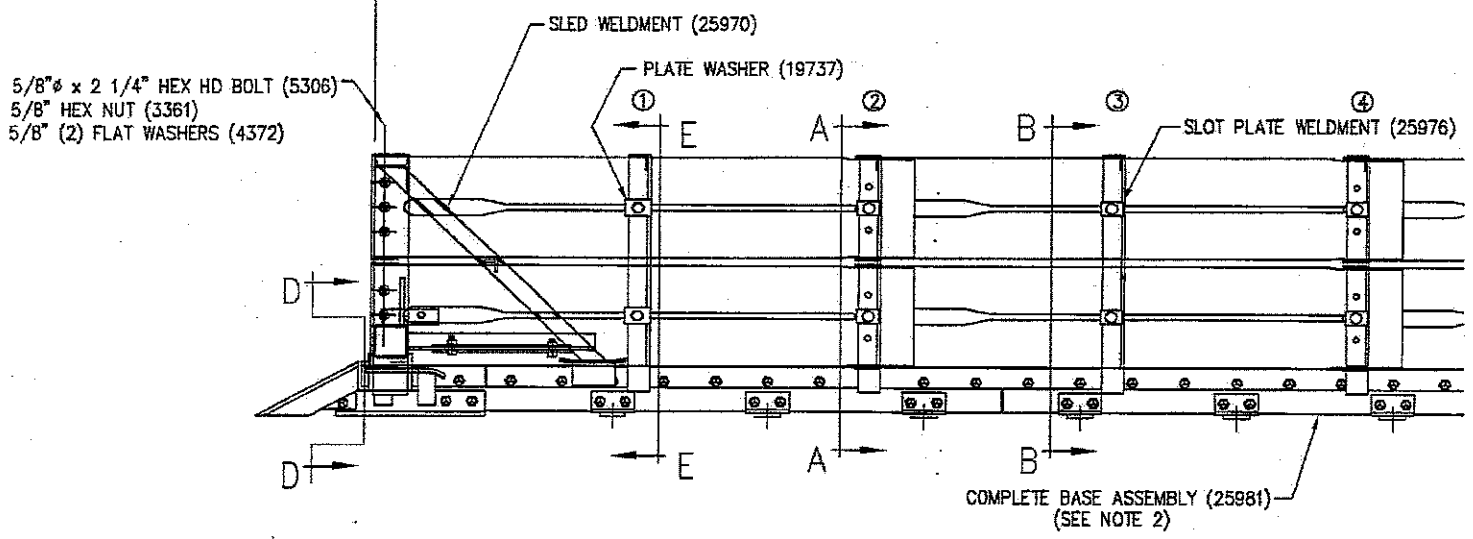
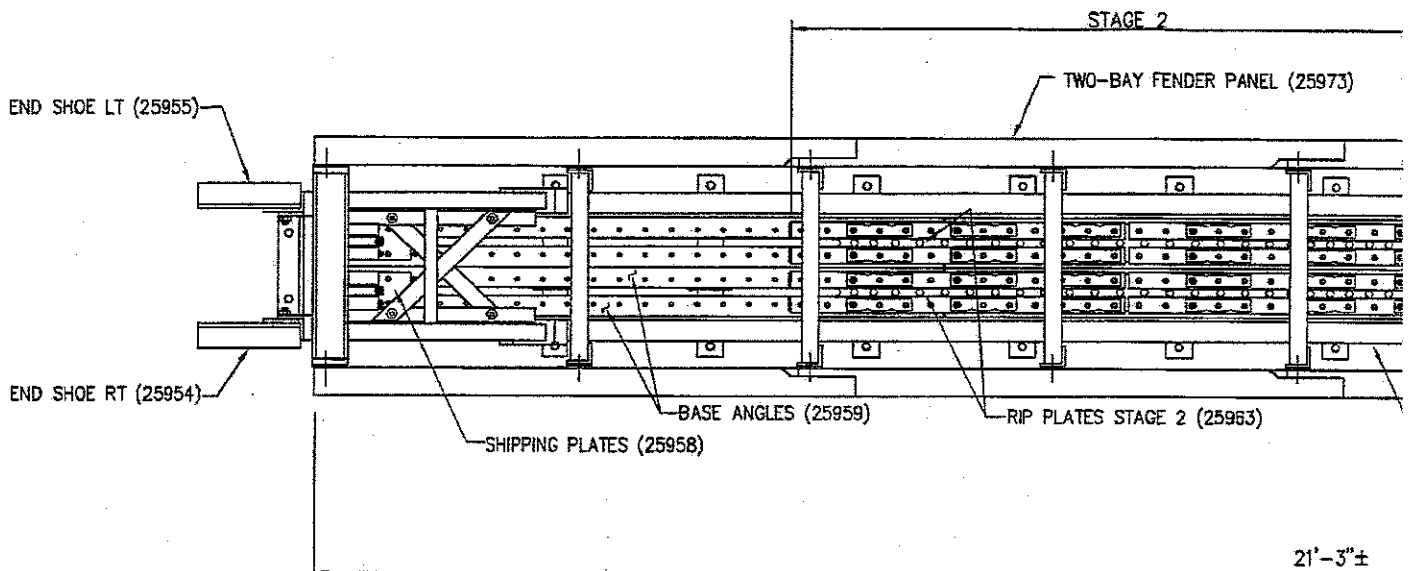
**TRACC**

TRACC  
 CRASH-CUSHION ATTENUATING TERMINAL  
 ASSEMBLED BASE UNIT  
 PN 25981

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

DRAWN	BT/LH
CHECKED	B.T.
APPROVED	
DATE	04/22/05
ENG. FILE #	SS1001-01E
SHT. No.	E1 OF 1
DRAWING NO.	SS 1001/PN 25981
REV.	2

COPYRIGHT © 2005 TRINITY INDUSTRIES INC  
 This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. nor is any reproduction authorized without written permission.

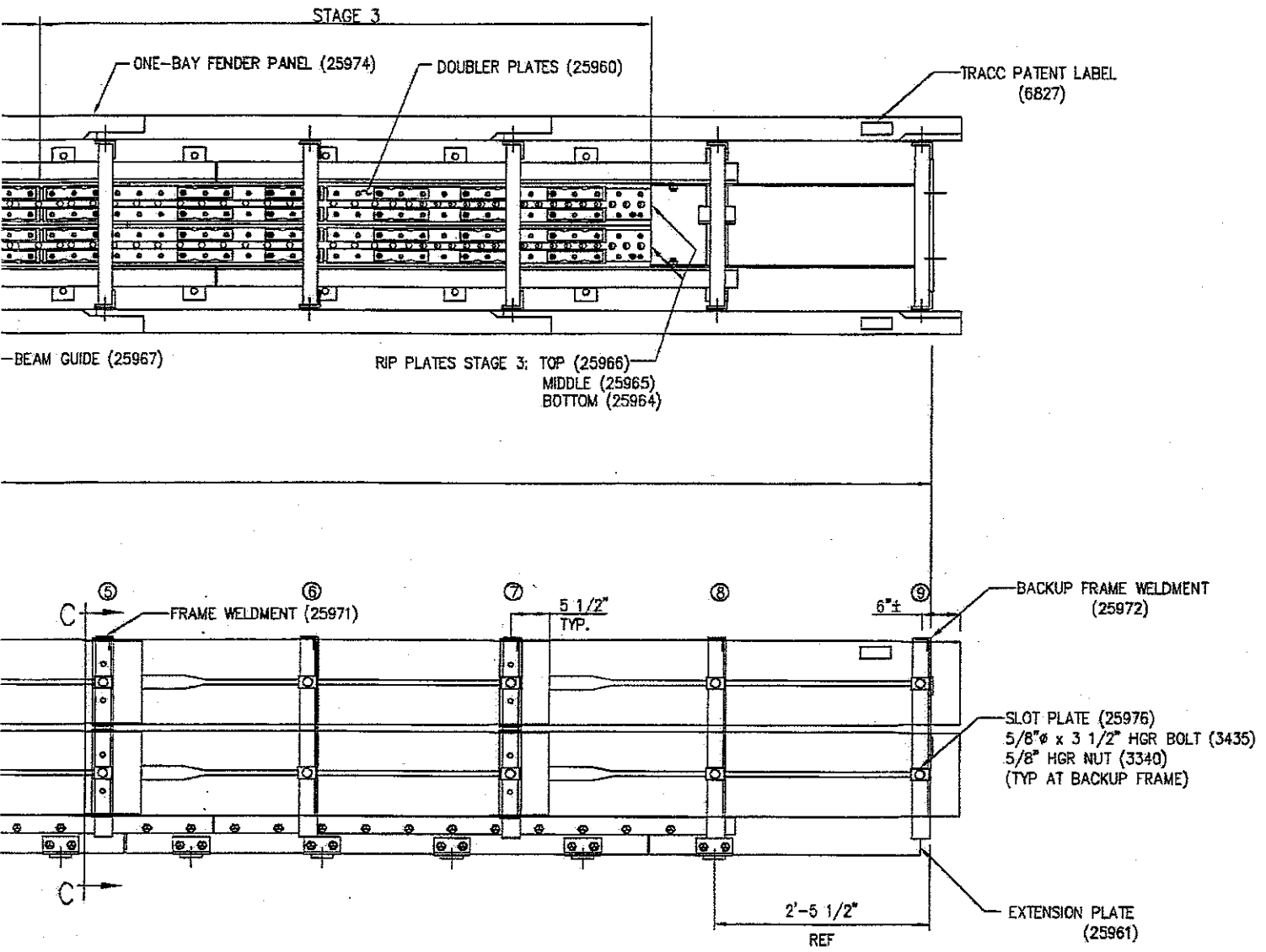


TRACC BILL OF MATERIAL (PN 25980)

PART NUMBER	QTY	DESCRIPTION	WT/EA
19737G	12	1/4"x3"x2 1/4" TRACC WSHR	0.5#
25970A	1	SLED WELDMENT	185#
25971A	8	FRAME WELDMENT	60#
25972A	1	BACKUP FRAME WELDMENT	74#
25973A	16	TWO - BAY FENDER PANEL	49#
25974A	4	ONE - BAY FENDER PANEL	28#
25975A	2	SHREDDER ASSEMBLY	6#
25976A	32	SLOT PLATE	0.4#
25981A	1	ASSEMBLED BASE (NOTE 2)	1499#
TOTAL WEIGHT (EXCLUDES SHOP HRDWR)			3165#

SHOP HARDWARE (GALV A153)

PART NUMBER	QTY	DESCRIPTION	MATL SPEC
3253G	2	HITCH PIN CLIP	
3340G	32	5/8" HGR NUT	A563 GR A
3361G	46	5/8" HEX NUT	A563 GR DH
3391G	32	5/8"φ x 1 3/4" HEX HD BOLT	A325
3400G	12	5/8"φ x 2" HGR BOLT	A307 GR A
3435G	20	5/8"φ x 3 1/2" HGR BOLT	A307 GR A
4372G	88	5/8" FLAT WASHER	F436
4425G	2	3/4" X 2" CLEVIS PIN	
5306G	14	5/8"φ x 2 1/4" HEX HD BOLT	A325
6827B	2	TRACC PATENT LABEL	



- NOTES:
- FOR SECTIONAL VIEWS SEE SHEET E2 OF 2.
  - SEE DRAWING SS1001 (PN 25981) FOR ASSEMBLY OF ALL BASE COMPONENTS.

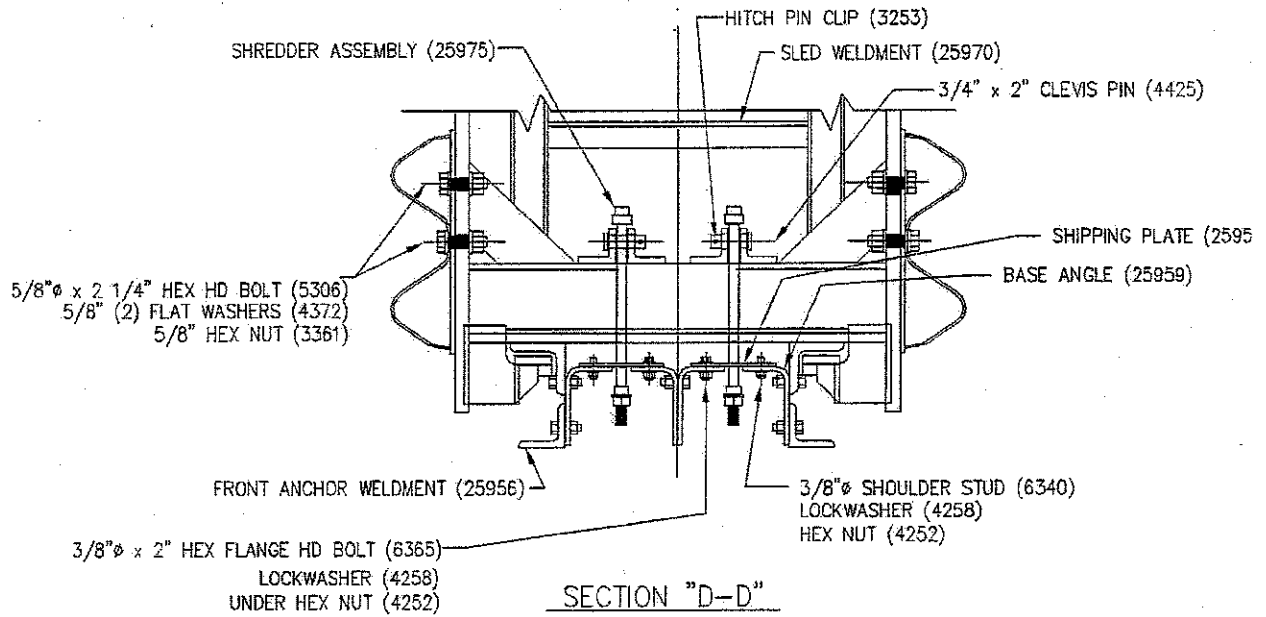
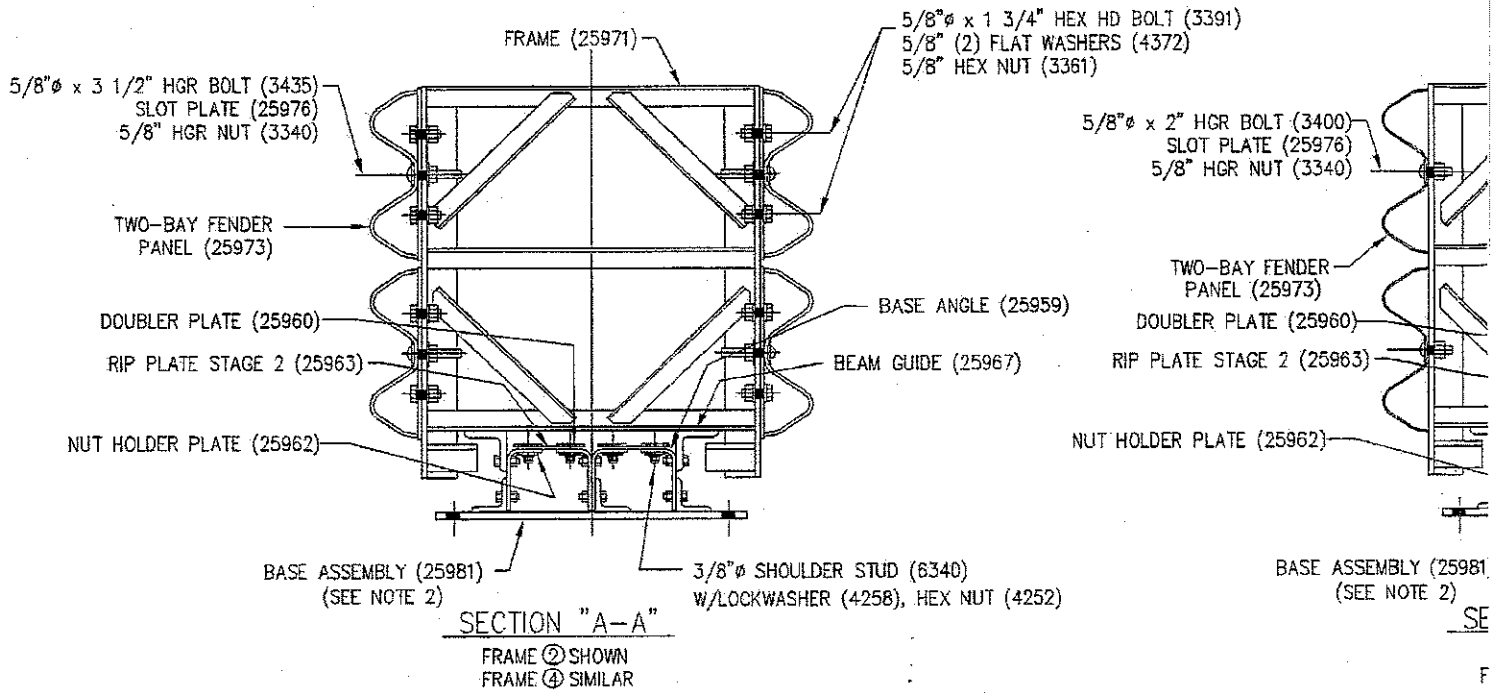
1	SAR	6/18/05	FIXED WEIGHT & ADDED STAGES 2 & 3	
REV.	CHKD	BY	DATE	REMARKS
<b>TRACC</b> CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION, & SECTION SHOP ASSEMBLY DETAILS PN 25980				DRAWN LH CHECKED BT APPROVED DATE 05/11/05 ENG. FILE # SS1002-01E SHEET E1 OF 2 DRAWING NO. SS 1002-01E-05000
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75207				REV. 1

This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. Any reproduction or distribution without written permission is prohibited.

COPYRIGHT © 2005 TRINITY INDUSTRIES, INC.

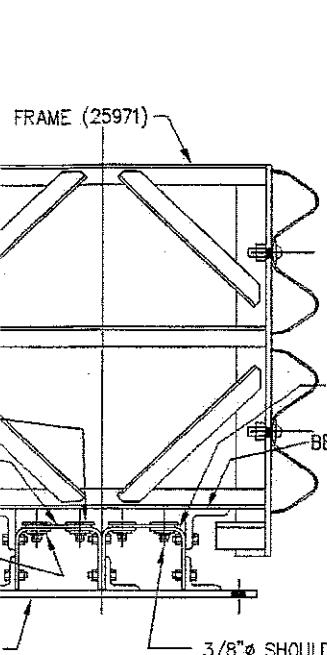
52

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 51

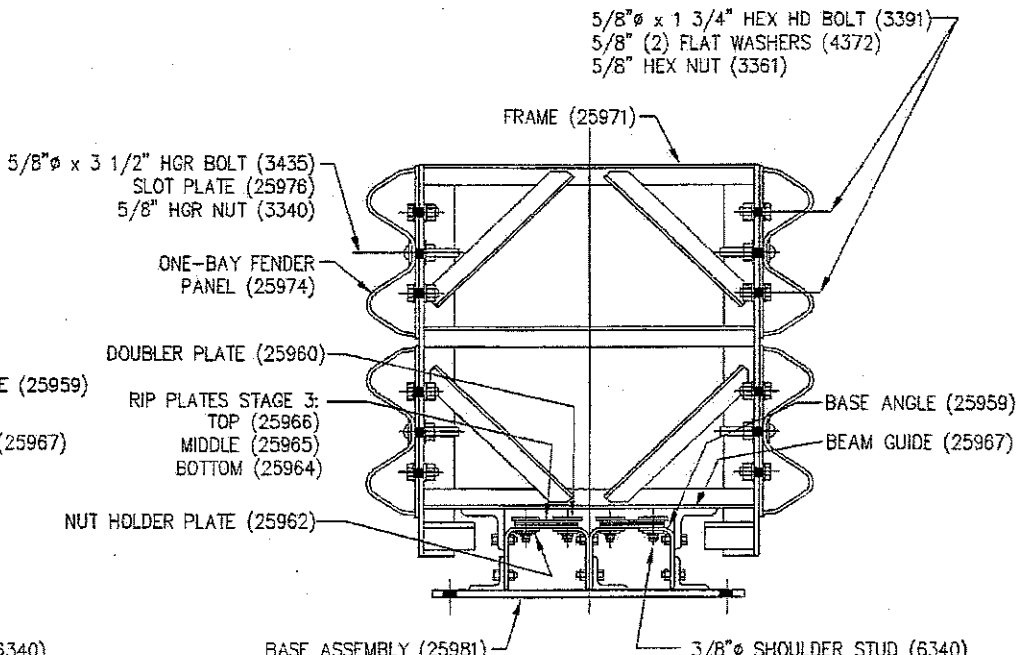


- NOTES:  
1.) FOR PLAN & ELEV.  
2.) SEE DRAWING SS1C  
OF ALL BASE COMP

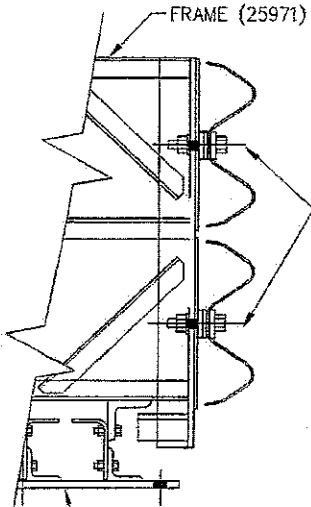




SECTION "B-B"  
 FRAME ③ SHOWN  
 FRAME ⑤ & ⑧ SIMILAR



SECTION "C-C"  
 FRAME ⑤ SHOWN  
 FRAME ⑦ SIMILAR



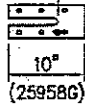
SECTION "E-E"  
 FRAME ① SHOWN

1	SAR	6/18/05	UPDATED PART NUMBERS	
REV.	CHK'D	BY	DATE	REMARKS
<b>TRACC</b> CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION & SECTIONS SHOP ASSEMBLY DETAILS PN 25980				DRAWN L. H. CHECKED B.T. APPROVED DATE 05/11/05 ENG. FILE # SS1002-02E SHT.No. E2 OF 2 DRAWING NO.
<b>TRINITY INDUSTRIES, INC.</b> HIGHWAY SAFETY PRODUCTS				REV.

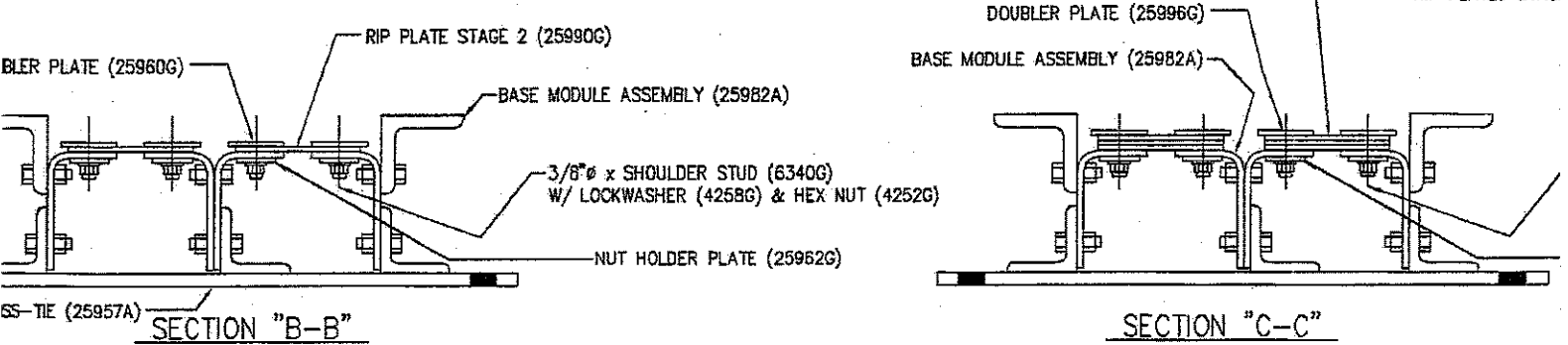
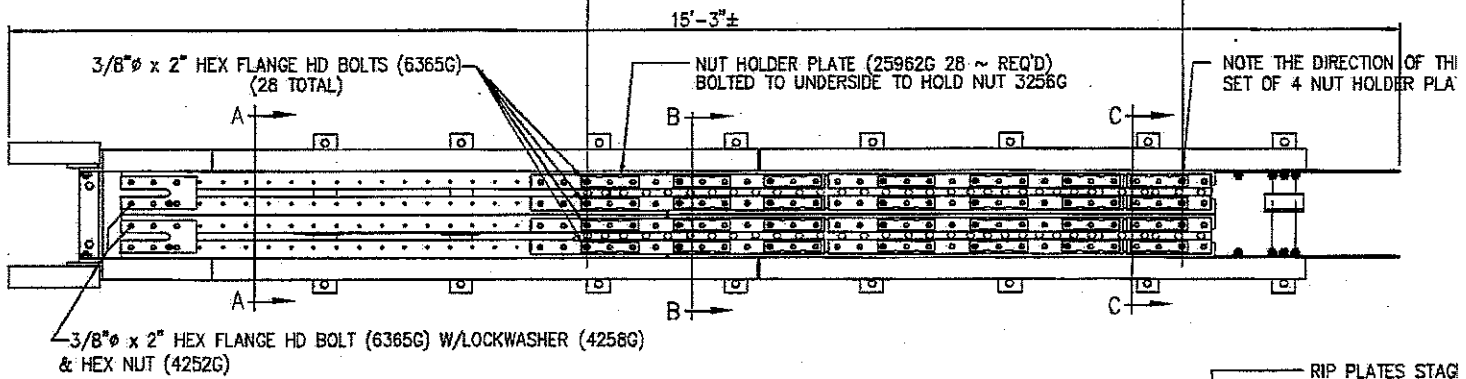
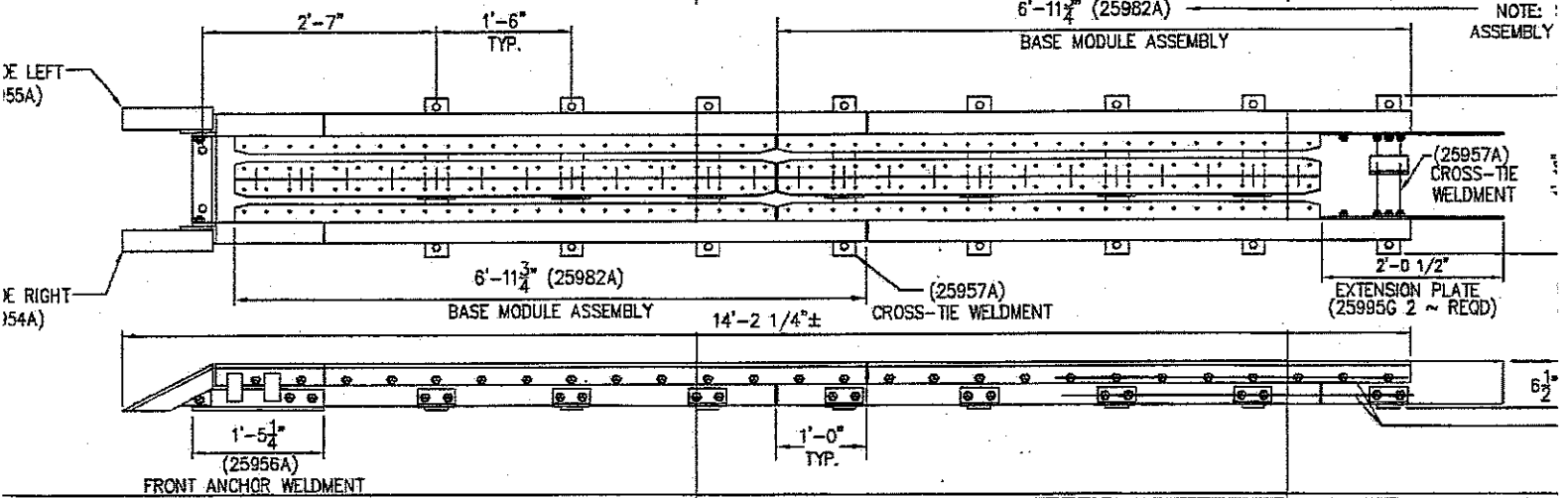
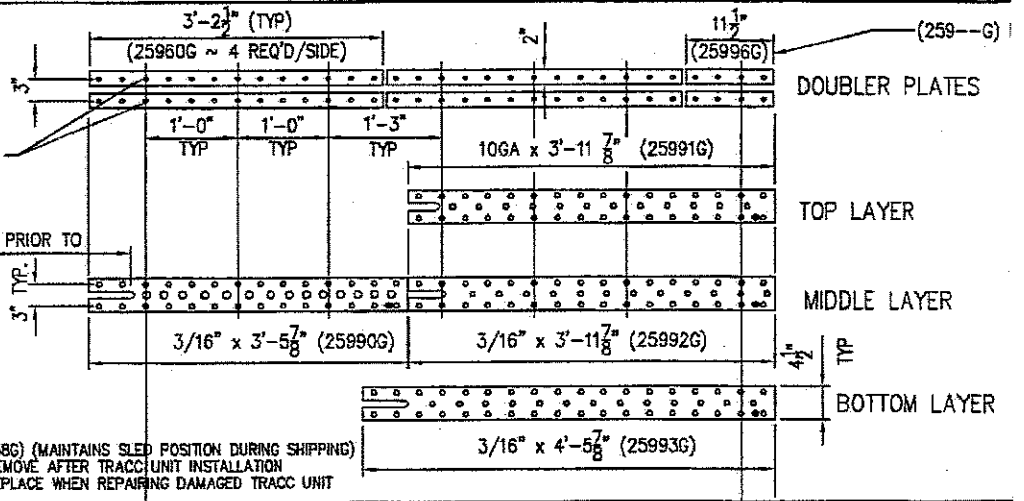
COPYRIGHT © 2004 TRINITY INDUSTRIES, INC.  
 This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically prepared by TRINITY INDUSTRIES, INC.

LOCATION OF FIELD REMOVABLE BOLTS  
 3/8"  $\phi$  x 2" HEX FLANGE HD BOLTS (6365G)  
 FOR REPLACEMENT OF RIP PLATES  
 14 BOLTS PER SIDE, 28 TOTAL

4'-5" SLED IMPACT MOVEMENT PRIOR TO  
 DAMAGING RIP PLATES



SHIPPING PLATE (25958G) (MAINTAINS SLED POSITION DURING SHIPPING)  
 IT IS NOT REQUIRED TO REMOVE AFTER TRACC UNIT INSTALLATION  
 IT IS NOT REQUIRED TO REPLACE WHEN REPAIRING DAMAGED TRACC UNIT



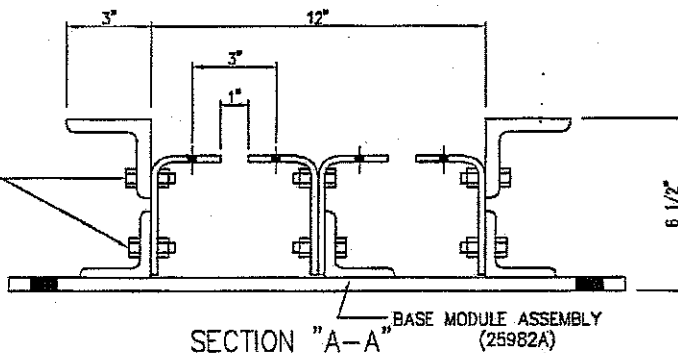
SHORTRACC BASE (25994A) BILL OF MATERIALS

Part #	Description	Qty	WT. EACH (#)	TOTAL WT.
03256G	3/8" Shoulder Nut	28	0.03	0.84
03361G	5/8" Heavy Hex Nut (A563 DH)	30	0.12	3.6
03391G	5/8" x 1 3/4" Hex Head Bolt (A325)	30	0.21	6.3
04252G	3/8" Hex Nut	104	0.03	3.12
04258G	3/8" Lock Washer	104	0.006	0.624
06340G	3/8" X 1 1/2" Shoulder Stud	102	0.06	6.12
06365G	3/8" x 2" Hex Flange Head Bolt (GR-5)	30	0.07	2.1
25954A	End Shoe, Right	1	11.0	11
25955A	End Shoe, Left	1	11.0	11
25956A	Front Anchor Weldment	1	67.0	67
25957A	Cross Tie	2	18.0	36
25958G	Rip Plate, Stage 1 (Shipping Plate)	2	0.80	1.6
25960G	Doublers	8	8.0	64
25962G	Nut Holder (Nut Retainer Plate)	28	0.50	14
25982A	Base Module Assembly	2	329	658
25990G	Rip Plate, Stage 2	2	9.0	18
25991G	Rip Plate, Stage 3, Top	2	8.0	16
25992G	Rip Plate, Stage 3, Middle	2	11.0	22
25993G	Rip Plate, Stage 3, Bottom	2	12.0	24
25995G	Extension Plate, Rear	2	11.0	22
25996G	Doubler Plate, Stage-3 (11 1/2")	4	2.5	10
TOTAL WEIGHT				997

LAYOUT SCHEMATIC, TOP VIEW  
RIP PLATES FOR ONE  
SIDE OF TRACC BASE

DRAWING PN 25982 FOR  
BASE MODULE COMPONENTS

TRACC BASE ASSEMBLY  
WITHOUT RIP PLATES  
AND DOUBLER PLATES



COMPLETE TRACC BASE ASSEMBLY  
WITH RIP PLATES AND DOUBLERS

3 { (TOP) (25991G)  
(MIDDLE) (25992G)  
(BOTTOM) (25993G)

3/8" x SHOULDER STUD (6340G)  
W/ LOCKWASHER (4258G) & HEX NUT (4252G)

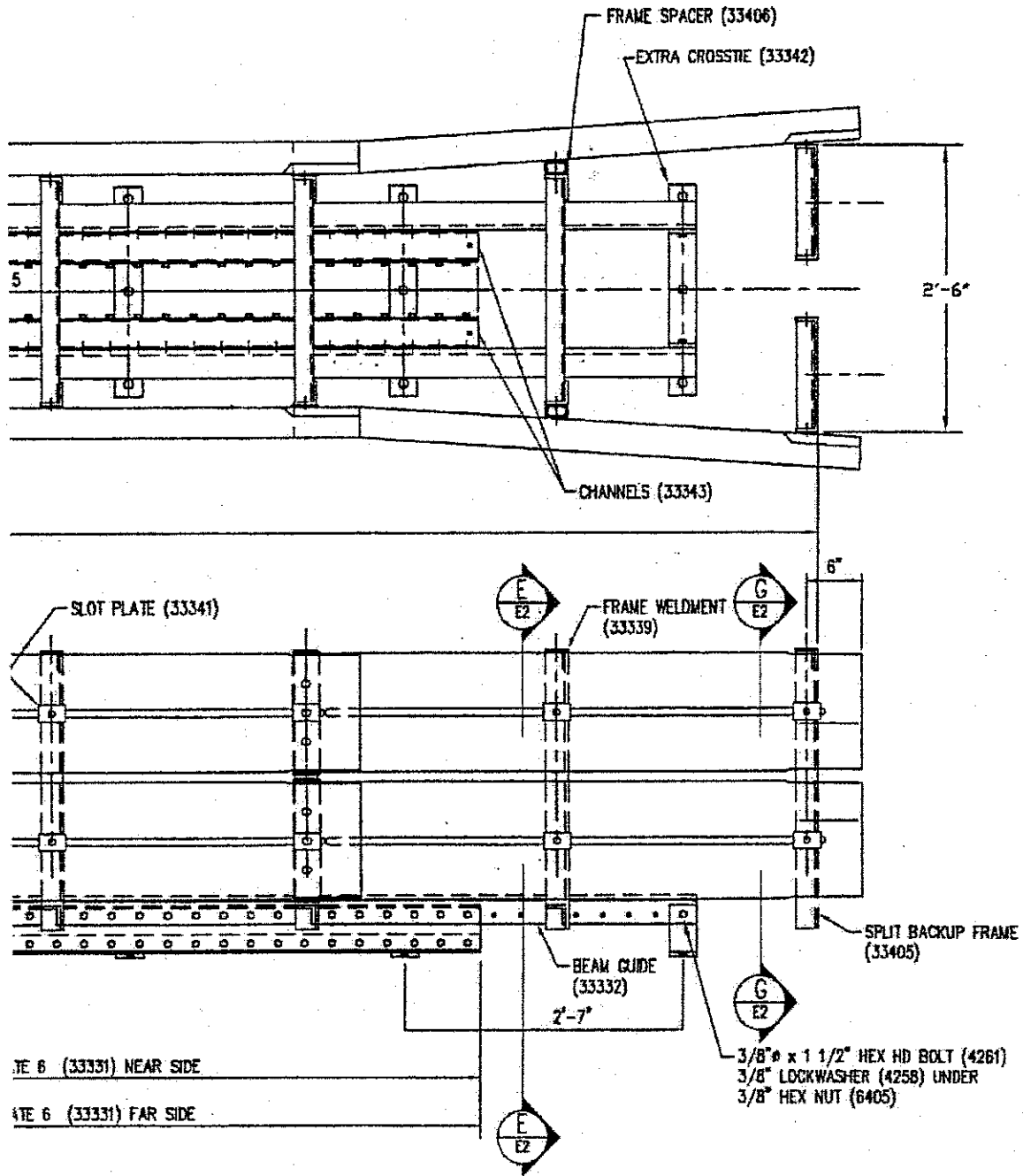
NUT HOLDER PLATE (25962G)

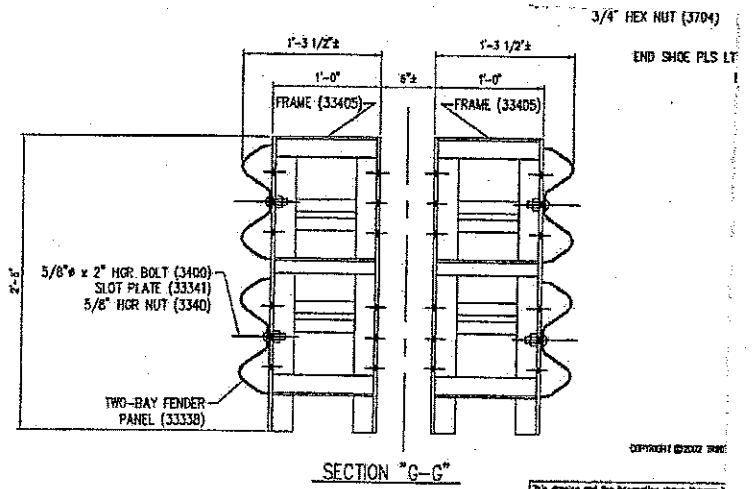
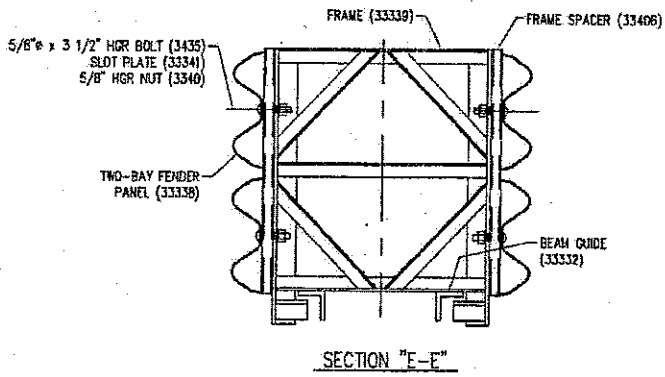
1	SAR 16/17/05	UPDATED PART NUMBERS	REMARKS
REV.	CHKD	BY	DATE
SHORTRACC CRASH-CUSHION ATTENUATING TERMINAL ASSEMBLED BASE UNIT PN 25994			
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75207		DRAWN LH CHECKED E.T. APPROVED DATE 05/16/05 ENG. FILE # SS1004-01E SHEET# E1 OF 1 DRAWING NO. SS-1001A/DN-25994A REV. 1	

COPYRIGHT © 2005 TRINITY INDUSTRIES INC  
This drawing and the information shown thereon is the sole property of TRINITY INDUSTRIES, INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY INDUSTRIES, INC. nor is any reproduction authorized without written permission.

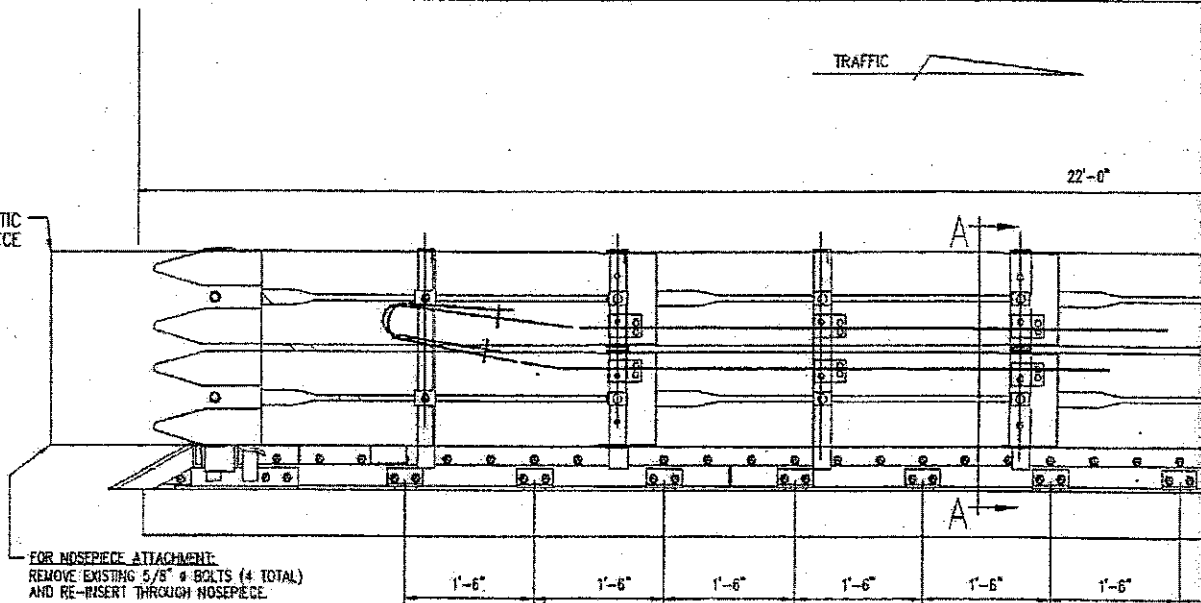
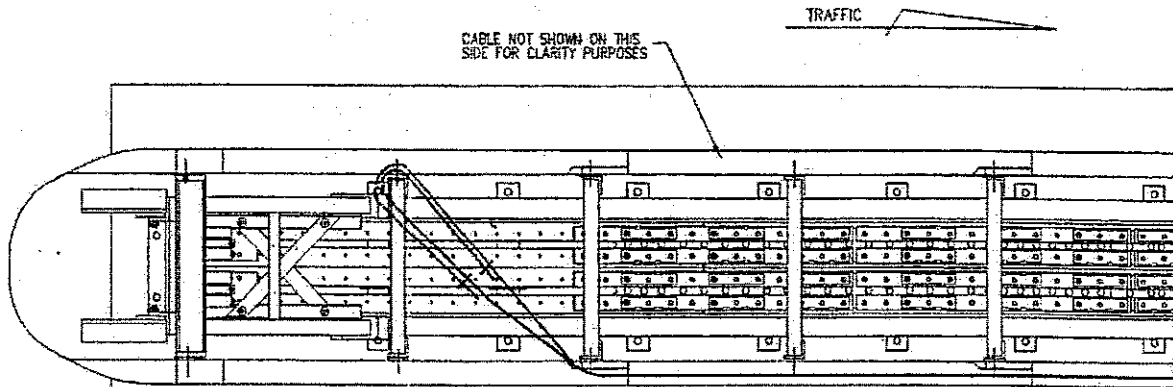
56

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 55





This drawing and the information shown thereon is  
 the property of  
 INDIAN INDUSTRIES, INC. and is not to be  
 reproduced without the written consent of  
 INDIAN INDUSTRIES, INC.



**WIDE TRACC BILL OF MATERIAL**

PRODUCT CODE	QTY	DESCRIPTION
25905A	1	39" WIDE TRACC UNIT ASS'LY
6668B	4	REFLECTIVE TAPE
6531B	1	YELLOW PLASTIC NOSEPIECE

**OPTIONAL TRACC ANCHOR ITEMS**

PRODUCT CODE	DESCRIPTION
5205B	ADHESIVE DISPENSER
5207B	MIXER HIT HY150 (NOZZLE)
5208B	FILLER HIT HY150 (FILLER TUBE)
5209B	BIT TE-C+ 11/16-18 (11/16" # BIT)

EACH TRACC UNIT SHIPS 100% ASSEMBLED (PLASTIC NOSE INSTALLED AFTER PLACEMENT)

★ EACH CARTRIDGE INCLUDES 1 EACH : MIXER HY 150 CARTRIDGE (NOZZLE)  
: FILLER HIT HY 150 (FILLER TUBE)

**\*\* ANCHOR HARDWARE (CONCRETE BASE)**

5204B	26	5/8" x 7 1/16" ANCHOR STUD
3310G	26	15/8" LOCKWASHER
3361G	26	5/8" HEX NUT
3300G	26	15/8" FLAT WASHER
★ 5206B	2	ADHESIVE HIT HY150 (CARTRIDGE)

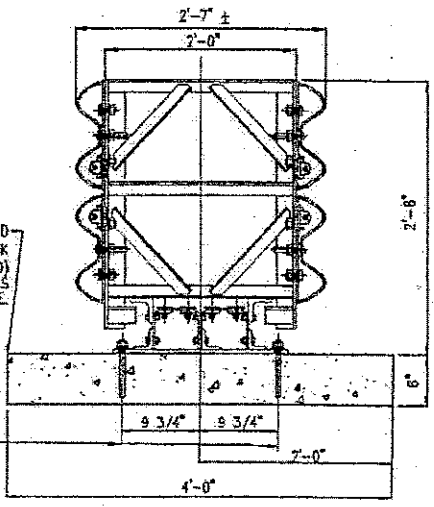
**\*\* ANCHOR HARDWARE (ASPHALT BASE)**

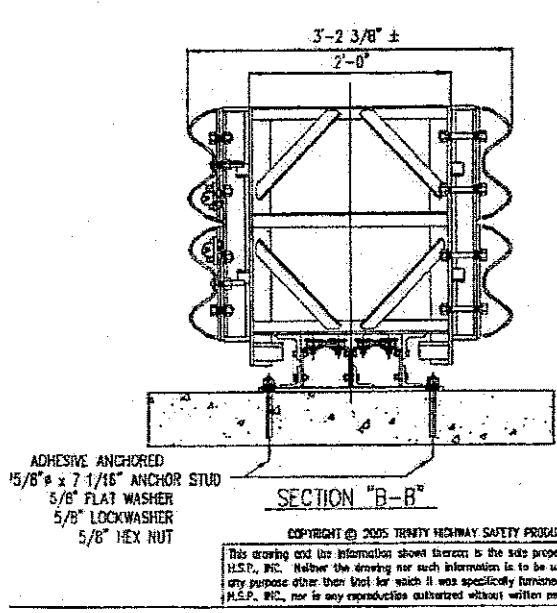
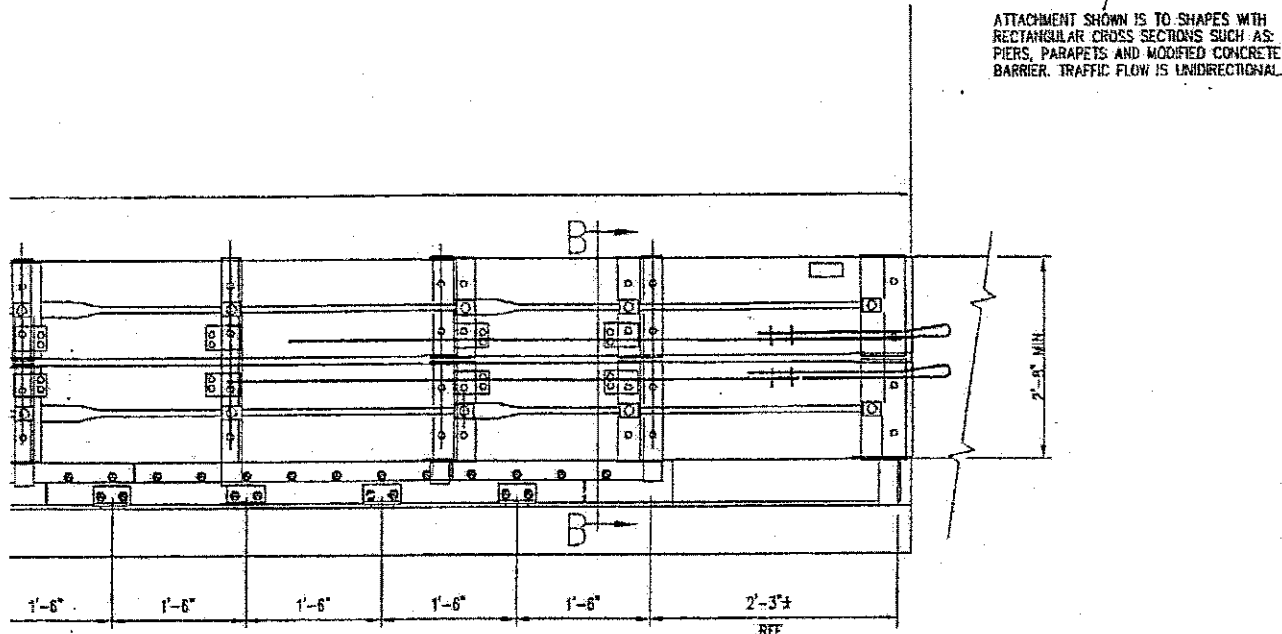
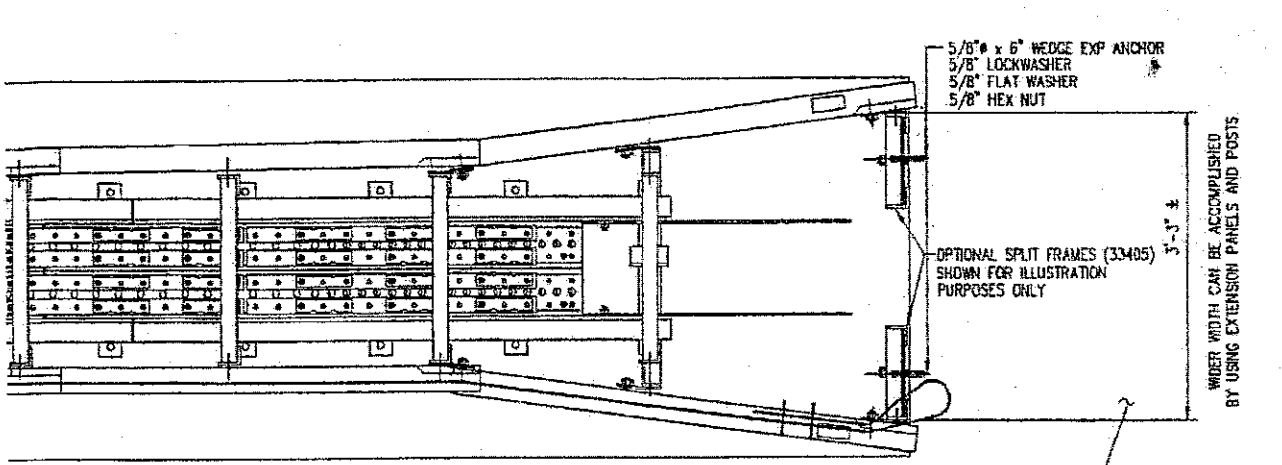
6380G	26	15/8" x 18" ALL THD ROD
3310G	26	15/8" LOCKWASHER
3361G	26	5/8" HEX NUT
3300G	26	15/8" FLAT WASHER
★ 5206B	6	ADHESIVE HIT HY150 (CARTRIDGE)

\*\* SEE PRODUCT MANUAL

REINFORCED CONCRETE PAD  
4'-0" x 22'-0" x 8" THICK  
(8" THICK IF NOT REINFORCED)  
REINFORCEMENT DRAWINGS FOR THIS PAD AND OTHER SIZES ARE AVAILABLE.

\*\* 5/8" x 7 1/16" ANCHOR STUD  
5/8" FLAT WASHER  
5/8" LOCKWASHER  
5/8" HEX NUT





FOUNDATION NOTE:  
6" REINFORCED CONCRETE PAD IS SHOWN

- OTHER OPTIONS ARE:
- a) 8" THICK MINIMUM UNREINFORCED CONCRETE
  - b) 8" MINIMUM THICK ASPHALT
  - c) 3" THICK (MIN) ASPHALT OVER 3" (MIN) CONCRETE
  - d) 6" THICK ASPHALT OVER 6" COMPACTED SUBBASE

REV.	DRWD	BY	DATE	REMARKS
1	L.H.	06/12/06		MOVED LOCATION OF SLOT PLATES AT FRAMES 7 & 8

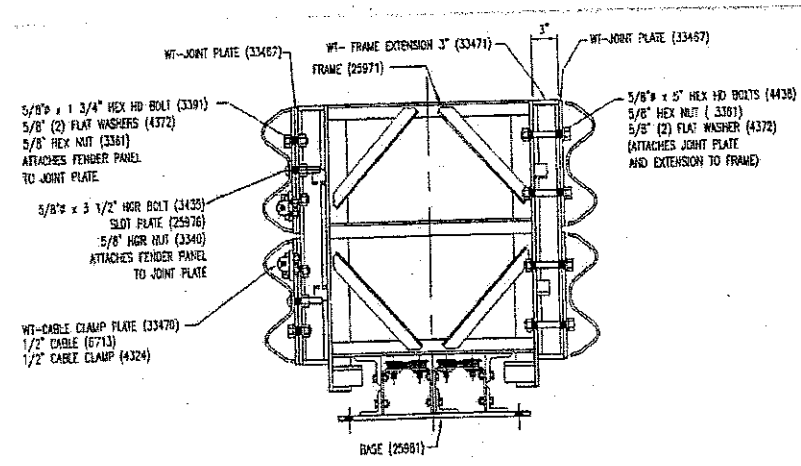
**TRACC**

**39" WIDETRACC DOUBLE FLARE  
CRASH-CUSHION ATTENUATING TERMINAL  
PLAN, ELEVATION & SECTIONS  
(UNIDIRECTIONAL, DIRECT ATTACHMENT)**

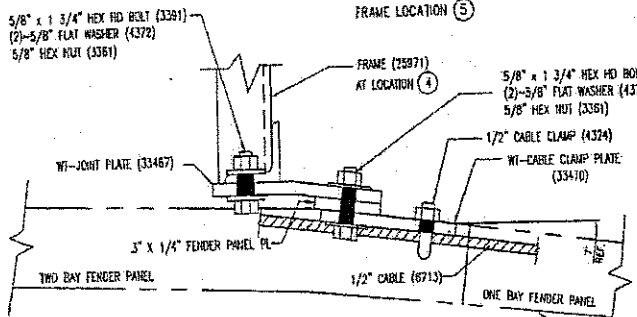
DRAWN	L.H.
CHECKED	C.C.
APPROVED	
DATE	10-26-05
ENG. FILE #	SS1021-DIE
SRTL#	E1 OF 1
DRAWING NO.	SS1021
REV.	1

**TRINITY HIGHWAY SAFETY PRODUCTS, INC.**  
2525 STEAMONS FREEWAY,  
DALLAS, TX 75207

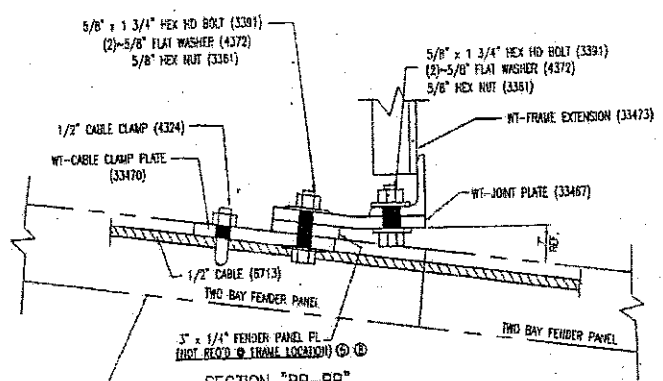
COPYRIGHT © 2005 TRINITY HIGHWAY SAFETY PRODUCTS INC  
This drawing and the information shown hereon is the sole property of TRINITY H.S.P., INC. Neither the drawing nor such information is to be used for any purpose other than that for which it was specifically furnished by TRINITY H.S.P., INC., nor is any reproduction authorized without written permission.



SECTION "E-E"  
 FRAME LOCATION (5)

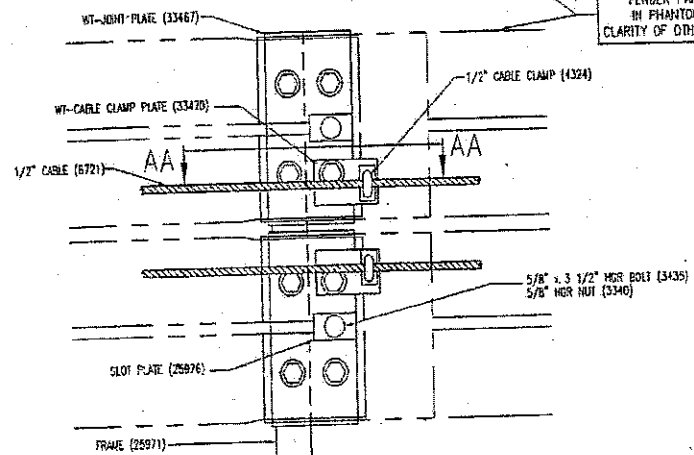


SECTION "AA-AA"

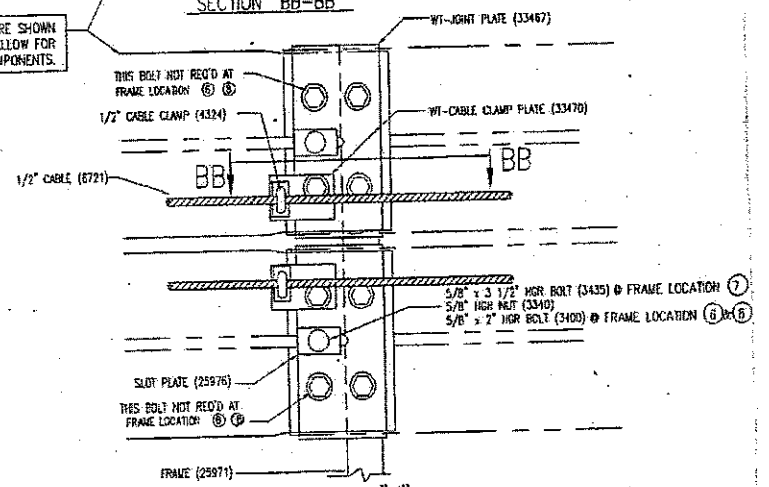


SECTION "BB-BB"

FENDER PANELS ARE SHOWN IN PHANTOM TO ALLOW FOR CLARITY OF OTHER COMPONENTS.



DETAIL "H"  
 FRAME LOCATION (4)



DETAIL "J"  
 FRAME LOCATION (7) SHOWN  
 LOCATION (6) & (8) SIMILAR

Copyright © 2005 BENTON INDUSTRIES  
 This drawing and the information shown thereon is the sole property of BENTON INDUSTRIES, INC. No other use or reproduction is permitted without the express written consent of BENTON INDUSTRIES, INC.