



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

Request for Quotation

RFO NUMBER
858C2029

PAGE
1

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

VENDOR

RFQ COPY
 TYPE NAME/ADDRESS HERE

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>ENERGY ABSORPTION SYSTEM/MAINTENANCE</p> <p>OPEN END CONTRACT</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

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**GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.
14. **HIPAA Business Associate Addendum -** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

SIGNED BID TO:

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



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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>						

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<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>						

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<p>() BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR</p> <p>() BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD-QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHIP INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR</p> <p>() BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION.</p> <p>B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p> <p>() BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID; OR</p> <p>() BIDDER IS A NONRESIDENT VENDOR EMPLOYING A</p>						

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<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 & 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>						

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<p>CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: -----</p> <p>DATE: -----</p> <p>SIGNED: -----</p> <p>TITLE: -----</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>						

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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:						

CONTACT PERSON (PLEASE PRINT CLEARLY):						

***** THIS IS THE END OF RFQ 858C2029 ***** TOTAL: _____						

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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:

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

NOTE: Vendors can complete Bid Schedule at Purchasing's Web Site www.state.wv.us/admin/purchase

Vendors should type Bid Schedule

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems GREAT Attenuators (Continued)				
		GREAT chain rail assemblies and parts				
30	1	GREAT 8 ft. 11 in. "A" chain rail section w/ proof coil chains	7			NA
31	1	GREAT 9 ft. 3-1/4 in. "A" chain rail section w/ proof coil chains	7			NA
32	1	GREAT 18 ft. "B" chain rail section w/ proof coil chains	7			NA
33	1	GREAT 9 ft. "B" or "C" chain rail section w/ proof coil chains	7			351000
34	1	GREAT 3 ft. "C" chain rail section w/ proof coil chains	7			352000
35	1	GREAT 6 ft. "C" chain rail section w/ proof coil chains	7			353000
36	1	GREAT proof coil chain w/ clevis & keeper pin	7			354000
		GREAT backups and parts				
37	1	GREAT NJ barrier 30" metal backup	10			NA
38	1	GREAT NJ barrier 24" uni-directional metal backup	9			NA
39	1	GREAT NJ barrier 24" bi-directional metal backup	10			NA
40	1	GREAT NJ barrier 30" metal backup right attachment bracket w/ attachment to metal backup hardware	10			NA
41	1	GREAT NJ barrier 30" metal backup left attachment bracket w/ attachment to metal backup hardware	10			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			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			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			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			NA
46	1	GREAT NJ barrier 24 inch bi-directional metal backup right attachment bracket w/ attachment to metal backup hardware	10			NA
47	1	GREAT NJ barrier 24 inch bi-directional metal backup left attachment bracket w/ attachment to metal backup hardware	10			NA
48	1	GREAT w-beam post steel backup w/ connection to w-beam post hardware	12			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			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			NA
		GREAT cartridges and parts				
51	1	GREAT Hexfoam II Type 51 cartridge	NA			371000
52	1	GREAT concrete block backup cartridge support bracket	8			NA
53	1	GREAT NJ barrier metal backup cartridge support bracket w/ connection hardware	11			NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard Attenuators				
		Quadguard 24" to 36" units				
		Quadguard diaphragms and parts (24" to 36")				
54	1	Quadguard 24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15			811100
55	1	Quadguard 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15			811200
56	1	Quadguard 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	15			811300
		Quadguard nose cover and parts (24" to 36")				
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			812100
		Quadguard backups and parts (24" to 36")				
58	1	Quadguard 24" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19			NA
59	1	Quadguard 30" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19			NA
60	1	Quadguard 36" tension strut backup with cartridge support bracket, side panel, and side panel connection hardware.	19			NA
61	1	Quadguard concrete block backup 24" front face w/ side panel and side panel connection hardware.	20			NA
62	1	Quadguard concrete block backup 30" front face w/ side panel and side panel connection hardware.	20			NA
63	1	Quadguard concrete block backup 36" front face w/ side panel and side panel connection hardware.	20			NA
		Quadguard panels and parts (24" to 36")				
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			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			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			814300
67	1	Quadguard quad beam to thrie beam transition panel w/ diagonal brace, diagonal brace connection hardware, and connection to post #2 bar washers (24" unit)	24			814400
68	1	Quadguard quad beam to thrie beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (30" unit)	24			814500
69	1	Quadguard quad beam to thrie beam transition panel w/ diagonal brace, diagonal brace connection hardware, brace blockouts, and connection to post #2 bar washers (36" unit)	24			814600

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard Attenuators (Continued)				
		Quadguard 69" and 90" units				
		Quadguard diaphragms and parts (69" and 90" units)				
70	1	Quadguard 26.50" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821100
71	1	Quadguard 26.95" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821110
72	1	Quadguard 32.80" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821120
73	1	Quadguard 35.94" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821130
74	1	Quadguard 39.09" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821140
75	1	Quadguard 42.24" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			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			821160
77	1	Quadguard 48.54" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821170
78	1	Quadguard 50.12" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821180
79	1	Quadguard 51.69" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821190
80	1	Quadguard 54.84" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821200
81	1	Quadguard 57.99" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821210
82	1	Quadguard 59.57" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821220
83	1	Quadguard 61.14" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821230
84	1	Quadguard 64.29" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821240
85	1	Quadguard 68.07" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821250
86	1	Quadguard 70.59" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821260
87	1	Quadguard 73.74" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821270
88	1	Quadguard 76.89" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821280
89	1	Quadguard 80.04" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			821290
		Quadguard nose cover and parts (69" and 90")				
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			822100

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard Attenuators (Continued)				
		Quadguard 69" and 90" units (Continued)				
		Quadguard backups and parts (69" and 90")				
91	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, catridge support bracket, support bracket locking bar, and connection hardware (69" unit)	29			NA
92	1	Quadguard tension strut backup w/ side panel, hinge plates, telespar struts, catridge support bracket, support bracket locking bar, and connection hardware. (90" unit)	29			NA
93	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (69" unit)	30			NA
94	1	Quadguard concrete block backup front face w/ hinge plate, side panel, telespar struts, and connection hardware. (90" unit)	30			NA
		Quadguard panels and parts (69" and 90")				
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			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			824200

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard Attenuators (Continued)				
		Quadguard 120" units				
		Quadguard diaphragms and parts (120" units)				
97	1	Quadguard 45.39" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	35			841100
NA	NA	Quadguard 57.99" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides USE LINE ITEM 81	26	NA	NA	NA
NA	NA	Quadguard 70.59" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides USE LINE ITEM 86	26	NA	NA	NA
98	1	Quadguard 82.68" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			841200
99	1	Quadguard 95.31" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			841200
100	1	Quadguard 108" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides	26			841300
		Quadguard nose cover and parts (120" units)				
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) USE LINE ITEM 90	27	NA	NA	NA
		Quadguard backups and parts (120" units)				
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			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			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			NA

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Energy Absorption Systems Quadguard Attenuators (Continued)				
		Quadguard common parts (all units)				
		Quadguard panels and parts (all units)				
104	1	Quadguard mushroom bolt assembly	17			831100
105	1	Quadguard fender panel w/ connection to diaphragm hardware and mushroom bolt assembly	17			831200
106	1	Quadguard NJ barrier backup left side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22			831300
107	1	Quadguard NJ barrier backup right side 4 inch offset transition panel w/ support bracket, and connection to support bracket hardware.	22			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			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			NA
		Quadguard backups and parts (all units)				
110	1	Quadguard concrete block backup end shoe attachment w/connection to block MP-3 anchors	21			832100
111	1	Quadguard concrete block backup wheel deflector w/ connection to block MP-3 anchors	25			832200
		Quadguard monorails and parts (all units)				
112	1	Quadguard one bay monorail section	18, 28			833100
113	1	Quadguard two bay monorail section	18, 28			833200
114	1	Quadguard three bay monorail section	18, 28			833300
115	1	Quadguard monorail end cap w/ connection to monorail hardware	18, 28			833400
		Quadguard cartridges (all units)				
116	1	Quadguard type I cartridge	NA			834100
117	1	Quadguard type II cartridge	NA			834200

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			851100
119	1	Quadguard-HS 30" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34			851200
120	1	Quadguard-HS 36" diaphragm w/ monorail guides, cartridge support brackets, and hardware for guides (diaphragms 1 thru 3 only)	34			851300

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
		Trinity Industries TRACC Attenuators				
		TRACC common parts				
		Base components				
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
		9-bay unit rip plate components				
127	1	Rip plate, stage 3, bottom (part # 25984G)	49, 50			211100
128	1	Rip plate, stage 3, middle (part # 25985G)	49, 50			211150
129	1	Rip plate, stage 3, top (part # 25986G)	49, 50			211200
130	1	Rip plate, stage 2, (part # 25983G)	49, 50			211250
		6-bay unit rip plate components				
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
		doubler plates				
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
		fender panels				
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
		sled and frames (diaphragms)				
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

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	PART DETAIL SHEET(S)	UNIT PRICE	TOTAL AMOUNT	(DOH USE ONLY) INVENTORY SUBCODE
Trinity Industries TRACC Attenuators (Continued)						
TRACC to w-beam transition components						
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
TRACC to thrie beam transition components						
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
TRACC to 24" concrete block transition components						
168	1	24" concrete block end shoe (part # PC33367G) w/ connection to barrier h/w	43, 44			214300
TRACC to NJ barrier transition components						
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
		Trinity Industries TRACC Attenuators (Continued)				
		TRACC to single slope barrier components				
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
		TRACC miscellaneous hardware				
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
BID TOTAL →						

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 exceed 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 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.

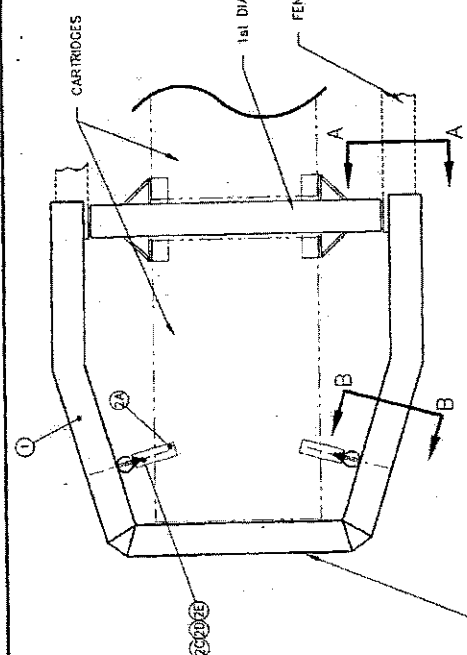
Vendor's Name: _____

Authorized Signature: _____ Date: _____

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

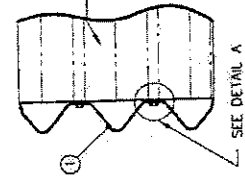
PARTS LIST			REV
ITEM	QTY	DESCRIPTION	
1	1	COVER, NOSE, GREAT, GRAY	1
2	2	COVER, NOSE, GREAT, GRAY	2
2A	2	NOSE, LEG ASSY	2
2B	2	LEG, PLASTIC, GREAT, NOSE	2
2C	2	TAB, GREAT NOSE LEG	2
2D	6	WASHER, FLAT, 3/8X1.5	6
2E	6	NUT, HEX, 3/8	6
2F	6	BOLT, CR, 3/8XZ 1/2, G2 D	6

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

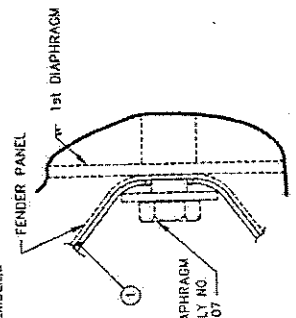


PLAN VIEW

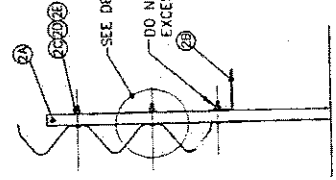
DELINEATION SHOULD BE ADDED TO THE NOSE AS REQUIRED BY LOCAL POLICES. MAX. WEIGHT TO BE ADDED: 7LBS. (3.18 KG)



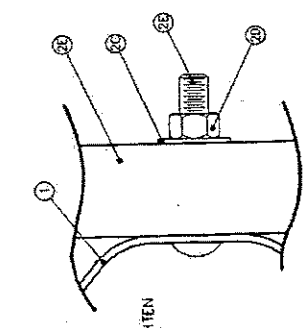
SECTION A-A



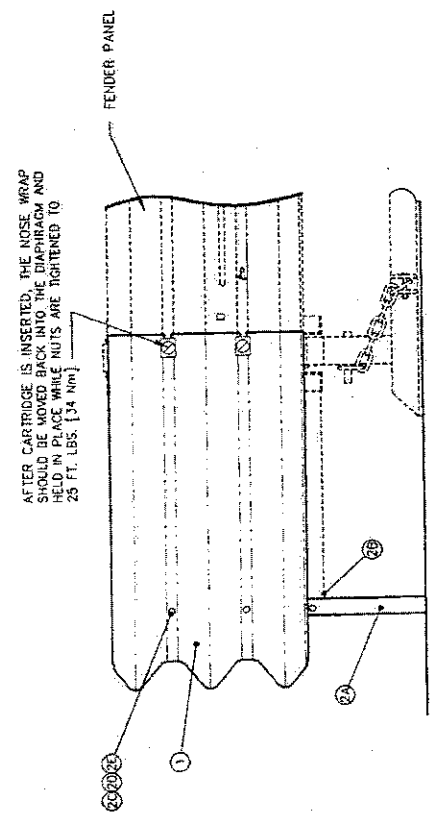
DETAIL A



SECTION B-B



DETAIL B



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]

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. IB	1	2	3	4	5	6	7	8	9	10	11	12
1A	SEE TABLE	DIAPHRAGM, IB	1	2	3	4	5	6	7	8	9	10	11	12
1B	2706261-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G	1	2	3	4	5	6	7	8	9	10	11	12
1C	2704091-0000	NUT, HX, 3/4 x 2, G	4	8	12	16	20	24	28	32	36	40	44	48
1D	2705791-0000	WASHER, FENDER PANEL	4	8	12	16	20	24	28	32	36	40	44	48
2	2753240-0000	CABLE GUIDE, ASSY. GREAT	1	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	2706001-0000	BOLT, HX, 3/4 x 2, G5, C	2	4	4	4	4	4	4	4	4	4	4	4
2C	2704091-0000	NUT, HX, 3/4 x 2, G	2	4	4	4	4	4	4	4	4	4	4	4
2D	2705001-0000	WASHER, FLAT, 3/4 x 2, G	2	4	4	4	4	4	4	4	4	4	4	4

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

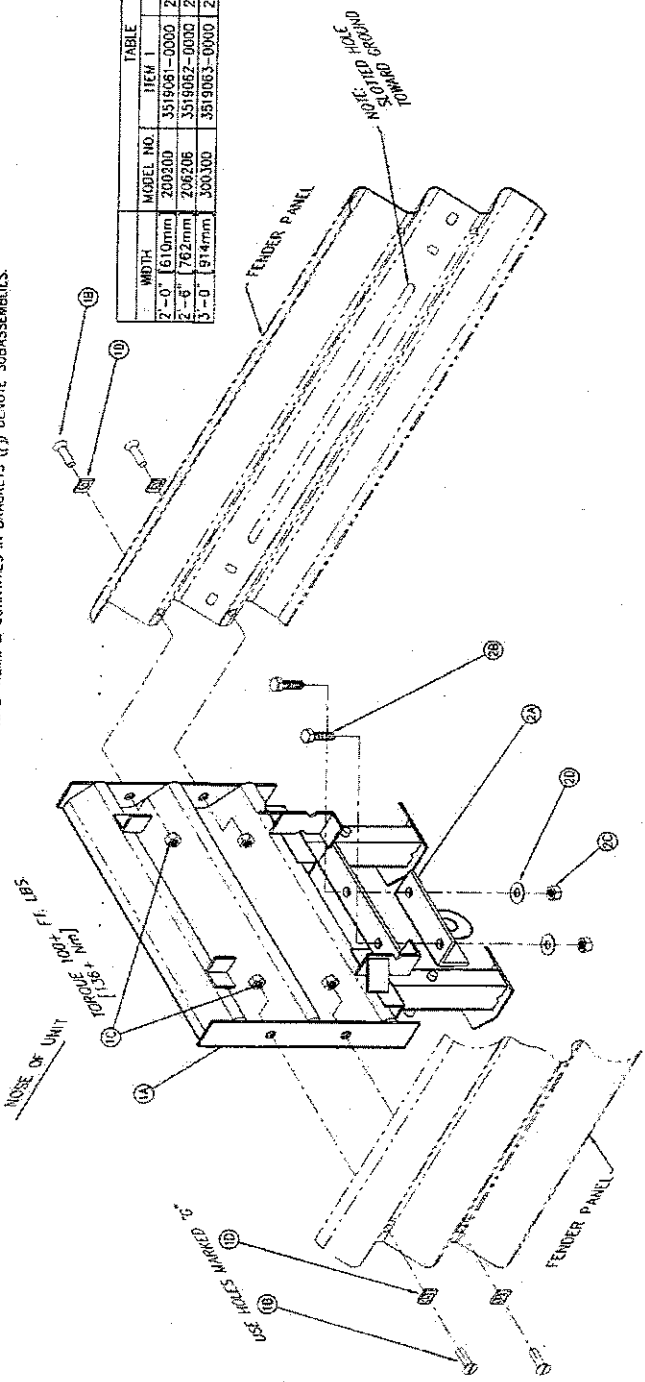


TABLE		
WIDTH	MODEL NO.	ITEM 1A
2'-0"	260200	3519061-0000 2720061-0000
2'-6"	266206	3519062-0000 2720062-0000
3'-0"	300300	3519063-0000 2720063-0000

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

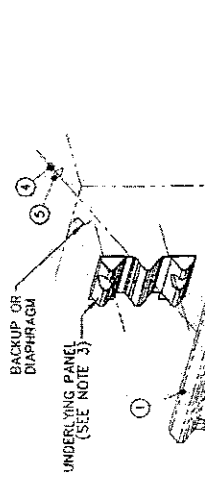
G-R-E-A-T® SYSTEM
DIAPHRAGM ASSEMBLY
FOR
HEX-FOAM® II CARTRIDGES

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.

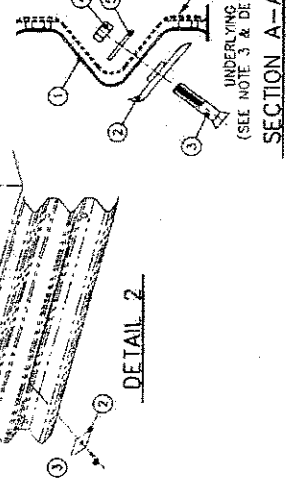
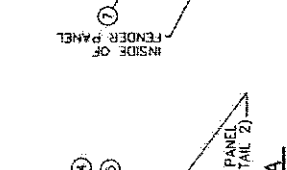
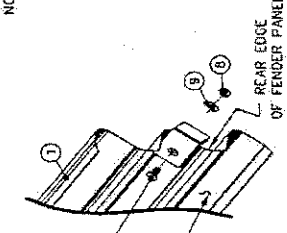
PARTS LIST															
ITEM	STOCK #	DESCRIPTION	QTY.	1	2	3	4	5	6	7	8	9	10	11	12
1	273811-0000	PANEL, FB, FENDER	2	2	4	6	8	10	12	14	16	18	20	22	24
2	270853-0000	WASHER, MUSHROOM FORGED, G	2	2	4	6	8	10	12	14	16	18	20	22	24
3	2701731-0100	BOLT, FL, 5/8X3, GB, P, ALLEN, SOCKET	2	2	4	6	8	10	12	14	16	18	20	22	24
4	2704141-0000	NUT, HEX, 3/8, G	2	2	4	6	8	10	12	14	16	18	20	22	24
5	2709391-0000	WASHER, BAR, 2X2X1/4, G	2	2	4	6	8	10	12	14	16	18	20	22	24
6	2752651-0000	DEFLECTOR, MUSHROOM	0	2	4	6	8	10	12	14	16	18	20	22	24
7	2706181-0000	SCREW, FL, 1/2X1, SLOTTED, G	0	2	4	6	8	10	12	14	16	18	20	22	24
8	2704011-0000	NUT, HEX, 1/2, G	0	2	4	6	8	10	12	14	16	18	20	22	24
9	2709311-0000	WASHER, FLAT, 1/2X1, 3/8, G	0	2	4	6	8	10	12	14	16	18	20	22	24

2752013-0000
BOLT ASSY, MUSHROOM

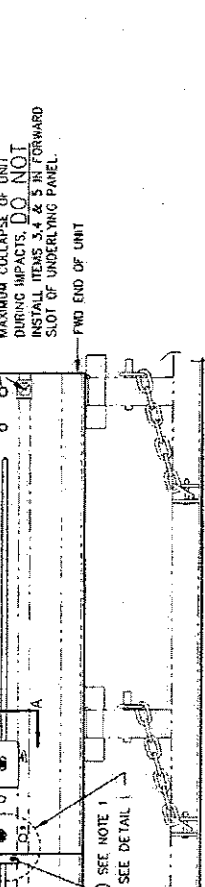
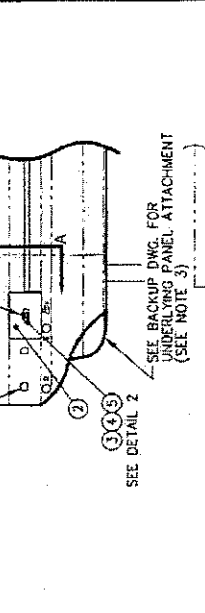
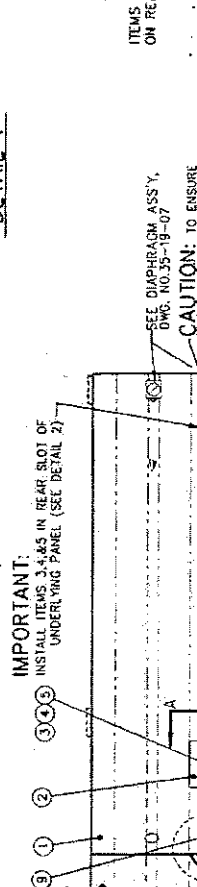
2752650-0000
MUSHROOM BOLT
DEFLECTOR ASSY



- 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" (10mm) ALLEN WRENCH AND TORQUE WRENCH TO 50 FT.LB ± 10 (L.B. (8).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 HAZARD 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) MIN. ON ANY SIDE, WHERE TRAFFIC APPROACHES FROM REAR; 1 1/2" (38mm) MAX. ON ANY SIDE, WHERE TRAFFIC APPROACHES NOSE HEAD-ON.



IMPORTANT:
INSTALL ITEMS 3, 4 & 5 IN REAR SLOT OF UNDERLYING PANEL (SEE DETAIL 2)



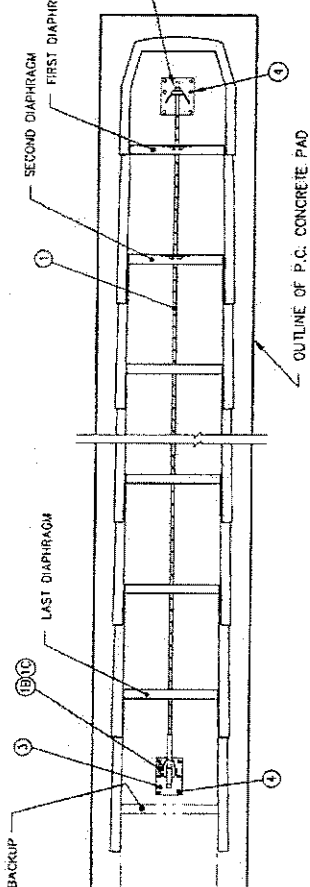
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

ITEM	SIKOR NO.	DESCRIPTION	RECORD
1	SEE TABLE A	CABLE, RESTRAINING, 7/8" φ	1
1A	2704121-0000	NUT, HK, 1 1/2" G	1
1B	2702021-0000	GLEVIS PIN, 1 5/8 X 4 5/16	1
1C	2702231-0000	PIN, COTTER, 5/16 X 2 1/2	1
2	2753251-0000	ANCHOR, CABLE, (STUD END)	1
3	2752391-0000	ANCHOR, CABLE	1
4	352512D-0000	ANCHOR, MP-3 KIT, 3/4 X 6 1/2	2
5	2708491-0000	WASHER, BAR, 3 X 3 X 1/4, C	6

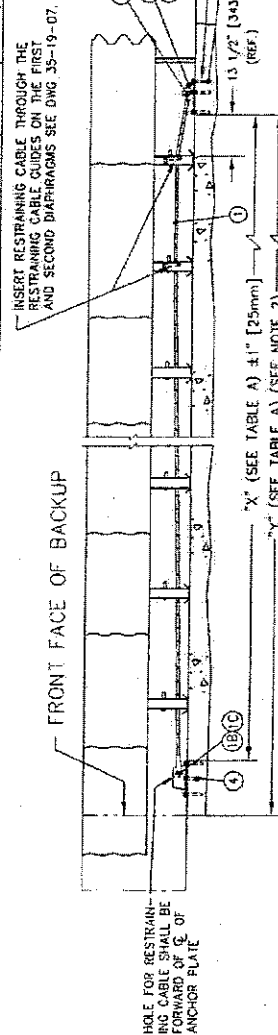
* DÉNOTE LES SUBASSEMBLES

IF NECESSARY TO TENSION CABLE, USE BAR WASHER(S), (ITEM 5) 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	274211-0000	4	11'-7 1/4" [3537mm]	13'-1 1/2" [400mm]	13'-0" [3962mm]
3506090-0500	274212-0000	5	14'-7 1/4" [4451mm]	18'-1 1/2" [4915mm]	18'-0" [4877mm]
3506090-0600	274213-0000	6	17'-7 1/4" [5336mm]	19'-1 1/2" [5630mm]	19'-0" [5791mm]
3506090-0700	274214-0000	7	20'-7 1/4" [6280mm]	22'-1 1/2" [6741mm]	22'-0" [6706mm]
3506090-0800	274215-0000	8	23'-7 1/4" [7194mm]	25'-1 1/2" [7650mm]	25'-0" [7620mm]
3506090-0900	274216-0000	9	26'-7 1/4" [8109mm]	28'-1 1/2" [8573mm]	28'-0" [8534mm]
3506090-1000	274217-0000	10	29'-7 1/4" [9023mm]	31'-1 1/2" [9449mm]	31'-0" [9419mm]
3506090-1100	274218-0000	11	32'-7 1/4" [9939mm]	34'-1 1/2" [10400mm]	34'-0" [10360mm]
3506090-1200	274219-0000	12	35'-7 1/4" [10856mm]	37'-1 1/2" [11313mm]	37'-0" [11283mm]



ELEVATION

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

- NOTES:
- USE ITEM 8 AS REQUIRED FOR SHIM.
 - FRONT AND REAR ANCHORAGE MAY BE SIMULTANEOUSLY MOVED REARWARD 5" [76mm] TO AVOID REBAR.

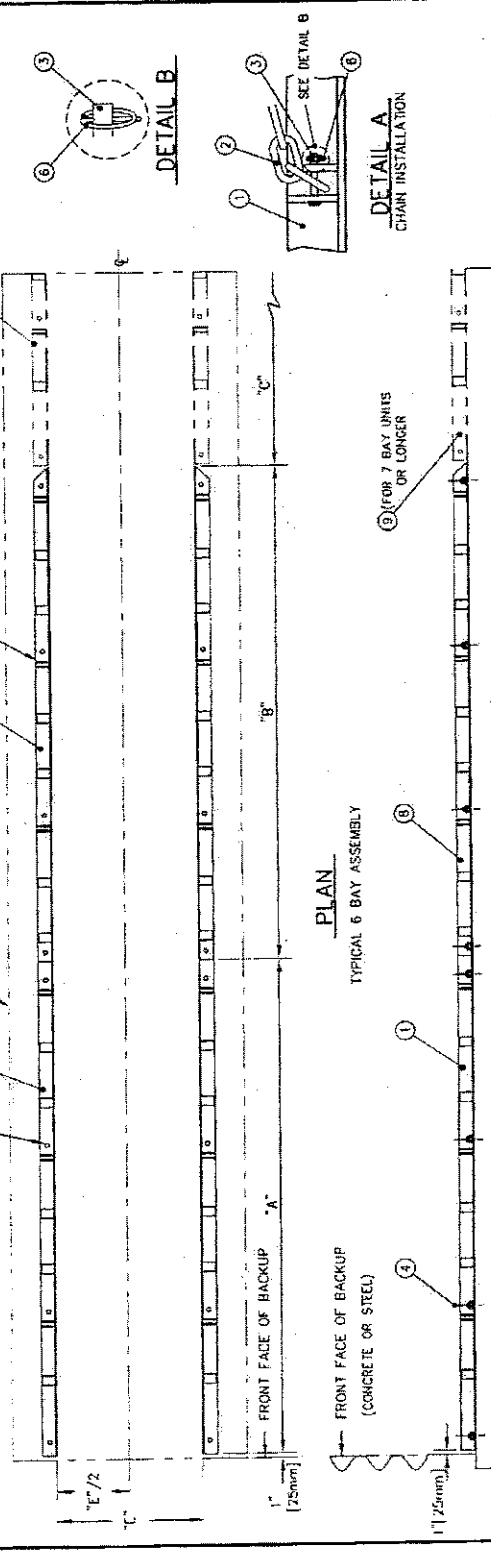
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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
3518040-0100	2	2'-11" (683mm)	"A"	2'-11" (683mm) (2722031-0000)	1	2	3	4	5	6	7	8	9	10	11	12
3518040-0200	2	5'-11" (1803mm)	"A"	5'-11" (1803mm) (2722032-0000)	2	2	2	2	2	2	2	2	2	2	2	2
3518040-0300	3	8'-11" (2718mm)	"A"	8'-11" (2718mm) (2722033-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0400	4	11'-11" (3632mm)	"A"	11'-11" (3632mm) (2722034-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0500	5	14'-11" (4547mm)	"A"	14'-11" (4547mm) (2722035-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0600	6	17'-11" (5461mm)	"A"	17'-11" (5461mm) (2722036-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0700	7	20'-11" (6375mm)	"A"	20'-11" (6375mm) (2722037-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0800	8	23'-11" (7290mm)	"A"	23'-11" (7290mm) (2722038-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-0900	9	26'-11" (8204mm)	"A"	26'-11" (8204mm) (2722039-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-1000	10	29'-11" (9119mm)	"A"	29'-11" (9119mm) (2722040-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-1100	11	32'-11" (10033mm)	"A"	32'-11" (10033mm) (2722041-0000)	2	4	6	8	10	12	14	16	18	20	22	24
3518040-1200	12	35'-11" (10948mm)	"A"	35'-11" (10948mm) (2722042-0000)	2	4	6	8	10	12	14	16	18	20	22	24

UNIT	MODEL NO.	QTY	QTY
1	2722031	2	2
2	2722032	2	2
3	2722033	2	2
4	2722034	2	2
5	2722035	2	2
6	2722036	2	2
7	2722037	2	2
8	2722038	2	2
9	2722039	2	2
10	2722040	2	2
11	2722041	2	2
12	2722042	2	2

USE ITEM 4 TO SECURE CHAIN RAILS TO CONCRETE. RECOMMENDED HOLE DEPTH: 5" (127mm) FINAL TORQUE TO BE: 120 FT.-LBS. (163 Nm)



PLAN
TYPICAL 6 BAY ASSEMBLY

ELEVATION

CONCRETE PAD OR ROADWAY

FOR 7 BAY UNITS OR LONGER

FOR 7 BAY UNITS OR LONGER

DETAIL A
CHAIN INSTALLATION

DETAIL B

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.

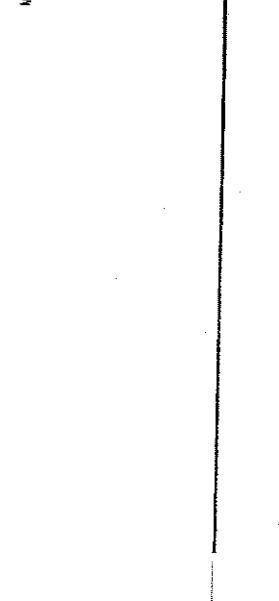
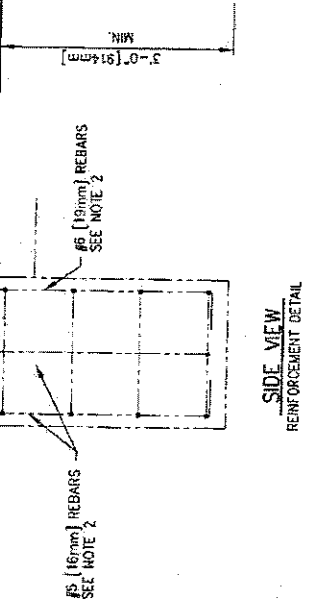
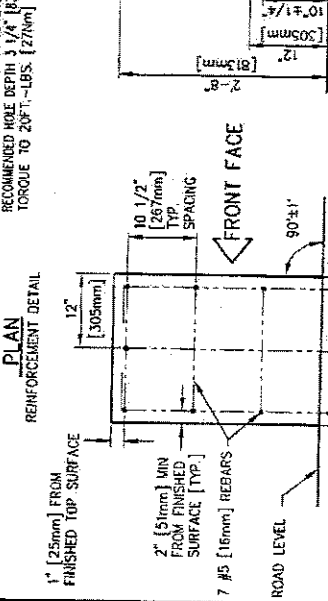
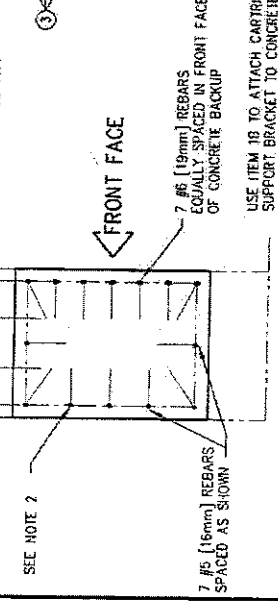
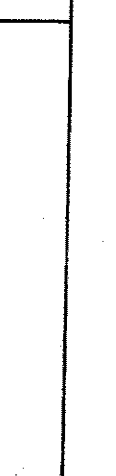
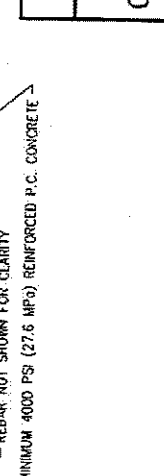
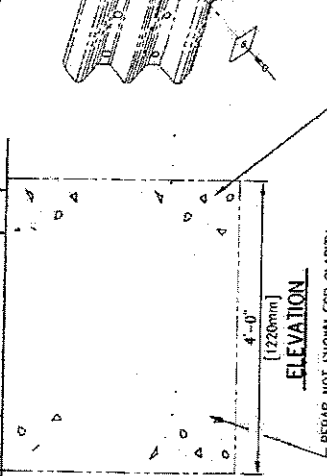
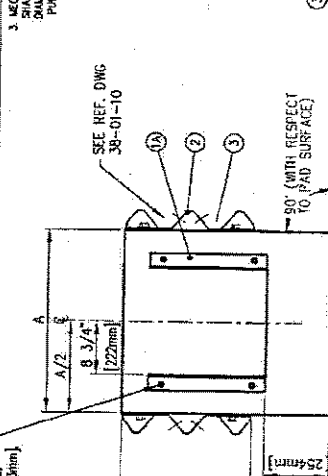
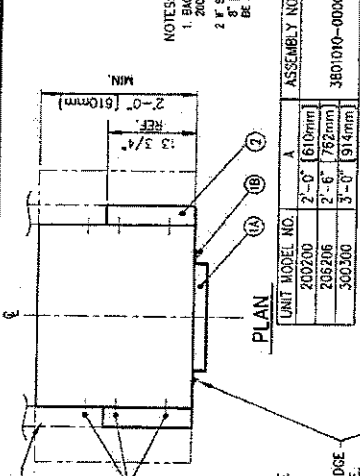
ITEM	STOCK NO.	DESCRIPTION	REQD.
1	2752600-0000	BRACKET ASSY., CART. SUPPORT, CONG.	1
1A	2752601-0000	BRACKET, CARTRIDGE SUPPORT, C-B/U.	1
1B	3525060-0000	ANCHOR, MP-3 KIT, 3/8" x 4"	1
2	2752121-0000	PANEL, SIDE, CONG. BACKUP	2
3	3525130-0000	ANCHOR, MP-3 KIT, 3/4" x 6 1/2"	2

INDENTED QUANTITIES INDICATE SUBASSEMBLIES.

NOTES:
 1. BACKUP MUST BE ABLE TO WITHSTAND A MAXIMUM OVERTURNING MOMENT OF 2000 LBS.-IN. (228480mm) AT DECKLINE FOR DURATIONS OF 40S. MIN.
 2. IF SYSTEM IS TO BE LOCATED ON 7" (178mm) MIN. DECK STRUCTURE OR 8" (203mm) MIN. NON-REINFORCED ROADWAY ALL VERTICAL STEEL SHALL BE DOUBLE END P.C. CONCRETE A MIN. OF 5" (127mm).

UNIT MODEL NO.	A	CONCRETE	IN FEEDING	REBAR	#5	#5
200200	2'-0"	610mm	9 YD	0.7m ³	84 FT	2.26m ³
205206	2'-6"	762mm	9 YD	0.7m ³	91 FT	2.27m ³
300200	3'-0"	914mm	9 YD	0.7m ³	98 FT	2.29m ³

MECHANICAL TYPE ANCHORS MAY BE SUBSTITUTED IN HORIZONTAL APPLICATIONS AND SHALL BE SUPPLIED BY OTHERS. THE SUBSTITUTION SHALL BE THE SAME DIAMETER AS THE MP-3 ANCHORS AND SHALL HAVE THE FOLLOWING MINIMUM PULLOUT STRENGTHS: 3/8" DIA. - 2160 POUNDS (2282 N) 3/4" DIA. - 3100 POUNDS (2850 N)



TRANSITION OPTIONS MAY BE NECESSARY - SEE TRANS. ASSY.

2" (51mm) MIN. FROM FINISHED SURFACE TYP.

7 #5 (19mm) REBARS EQUALLY SPACED IN FRONT FACE OF CONCRETE BACKUP

USE ITEM 1B TO ATTACH CARTRIDGE SUPPORT BRACKET TO CONCRETE. RECOMMENDED HOLE DEPTH 3 1/4" (83mm). TORQUE TO 20FT.-LBS. (27Nm)

SEE NOTE 2

7 #5 (16mm) REBARS SPACED AS SHOWN

1" (25mm) FROM FINISHED TOP SURFACE

2" (51mm) MIN FROM FINISHED SURFACE [TYP.]

7 #5 (16mm) REBARS

ROAD LEVEL

#5 (16mm) REBARS SEE NOTE 2

SEE REF. DWG 38-01-10

90° WITH RESPECT TO PAD SURFACE

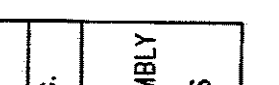
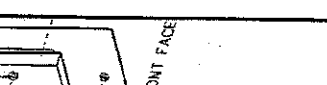
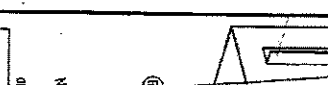
MIN.

3'-0" (914mm)

10 ± 1/4" (254mm)

4'-0" (1220mm)

REBAR NOT SHOWN FOR CLARITY MINIMUM 4000 PSI (27.5 MPa) REINFORCED P.C. CONCRETE



STUD IF EXTENSION OR PANEL IS NECESSARY.

USE THIS HOLE FOR MUSHROOM BOLT INSTALLATION. (SEE FENDER PANEL ASSY.)

FRONT FACE

4" REF. (102mm)

FRONT FACE

FRENDER PANEL

SCALE: NONE

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* MECHANICAL THE ANCHORS MAY BE SUBSTITUTED IN HORIZONTAL ANCHORS AND SHALL BE SUPPLIED BY OTHERS. THE SUBSTITUTED ANCHORS BE THE SAME DIAMETER AS THE MP-3 ANCHORS AND SHALL HAVE THE SAME PULLOUT STRENGTHS:

3/4" - 2760 POUNDS (123.4 kN)
 3/4" - 31,000 POUNDS (140.0 kN)

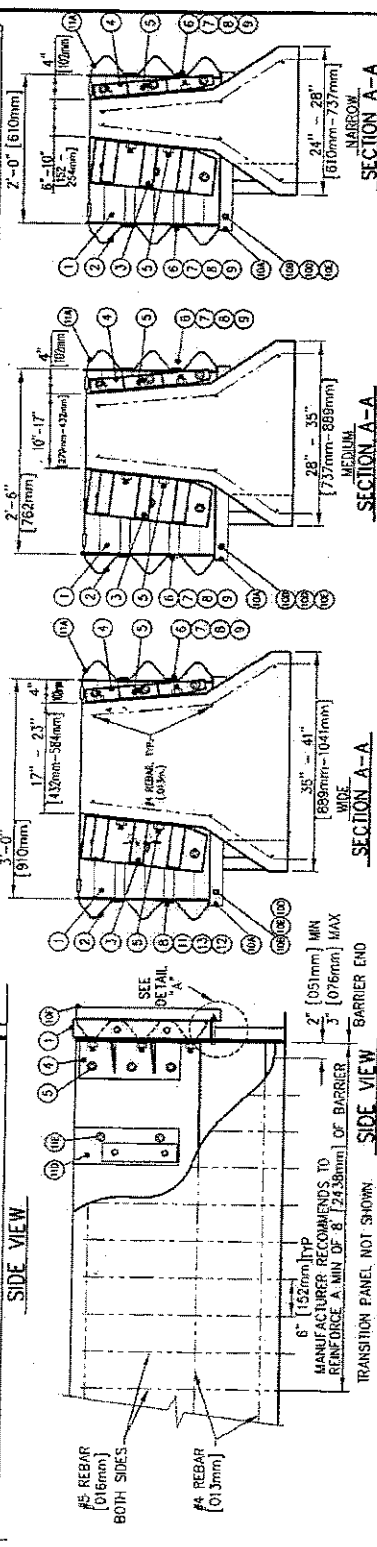
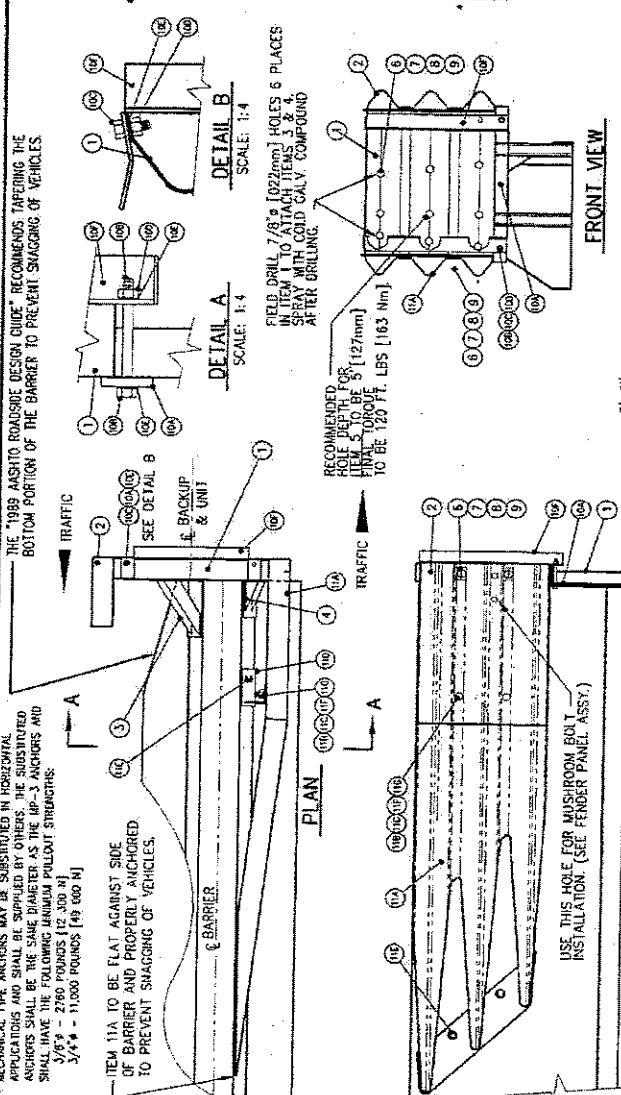
ITEM 11A TO BE FLAT AGAINST SIDE OF BARRIER AND PROPERLY ANCHORED TO PREVENT SWAGGING OF VEHICLES.

THE '1089 ASBESTO ROUSIDE DESIGN GUIDE' RECOMMENDS TAPERING THE BOTTOM PORTION OF THE BARRIER TO PREVENT SWAGGING OF VEHICLES.

ITEM	ITEM NO.	DESCRIPTION	RECD
1	SEE TABLE	BACKUP, M.J. OFFSET L.	1
2	2752111-0000	PANEL, SIDE, STEEL BACKUP	1
3	2752191-0000	BRACKET, ATTACHMENT, N.J. R.	1
4	2752201-0000	BRACKET, ATTACHMENT, N.J. L.	1
5	3525130-0000	ANCHOR, MP-3 KIT, 3/4" x 6 1/2"	2
6	2705761-0000	SCREW, FLAT, SLOTTED, 3/4" x 2, G	10
7	2708191-0000	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	2752481-0000	BAR, CLAMPING, CART, SUPT. BRACKET	1
10B	2701331-0000	BOLT, HK, 3/8 x 4 1/2, G2, G	2
10C	2701721-0000	BOLT, HK, 3/8 x 1, G2, G	2
10D	2704931-0000	NUT, HK, 3/8, G	4
10E	2708002-0000	WASHER, FLAT, 3/8 x 1, G	6
10F	2752591-0000	BRACKET, CARTRIDGE SUPPORT, ST BU	1
11	2752241-0000	PANEL ASSY, TRANS, L, 4, OFFSET	1
11A	2752241-0000	PANEL, TRANSITION, 4, OFFSET, L	1
11B	2708201-0000	WASHER, LOCK, 3/4, G	2
11C	2701381-0000	BOLT, HK, 3/4 x 2, G2, G	2
11D	2752271-0000	BRACKET, SUPPORT, TRANS PNL-NUCNB	1
11E	3525130-0000	ANCHOR, MP-3 KIT, 3/4" x 6 1/2"	1
11F	2708001-0000	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.
200200	2903211-0000
206206	2903212-0000
300300	2903213-0000



ASSEMBLY NO. (SEE TABLE)

ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT

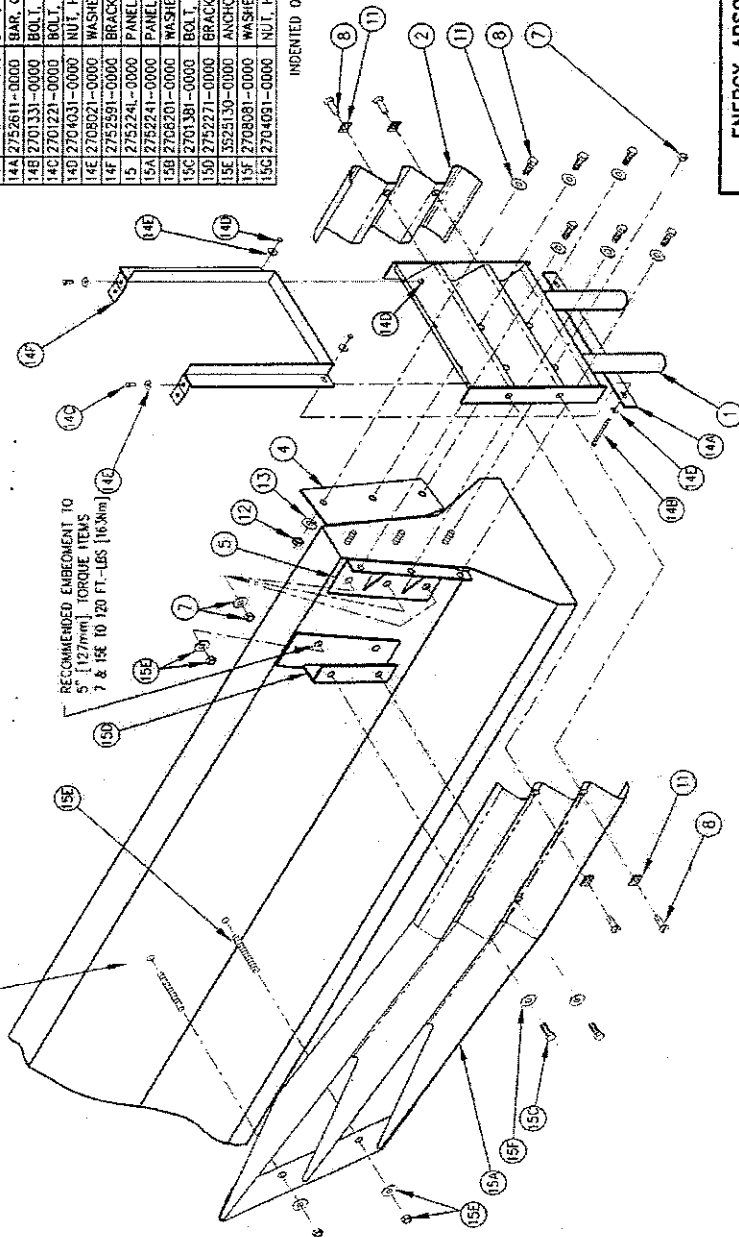
G-R-E-A-T® SYSTEM
 BACKUP ASSEMBLY FOR
 NEW JERSEY MEDIAN BARRIER
 BI-DIRECTIONAL

MODEL NUMBER	ITEM 1 PART NO.	ITEM 4 PART NO.	ASSEMBLY NUMBER
200200	2903211-0000	2752191-0001	3621021-0000
208206	2903212-0000	2752641-0000	3621022-0000
300300	2903213-0000	2753052-0000	3621023-0000

PARTS LIST

ITEM	STOCK NO	DESCRIPTION	QTY
1	SEE TABLE	BACKUP, NJ, OFFSET L	1
2	2752111-0000	PANEL, SIDE, STEEL, BACKUP	1
3	DELETED		
4	SEE TABLE	BRACKET, ATTACHMENT, NJ, R	1
5	2752201-0000	BRACKET, ATTACHMENT, NJ, L	1
6	DELETED		
7	3525130-0000	ANCHOR, MP-3 KIT, 3/4 x 6 1/2	2
8	2705761-0000	SCREW, FLAT, SLOTTED, 3/4 x 2, G	10
9	DELETED		
10	DELETED		
11	2708791-0000	WASHER, FENDER, PANEL	10
12	2704691-0000	NUT, HK, 3/4, G	10
13	2708201-0000	WASHER, LOCK, 3/4, G	10
14	2752990-0000	BRACKET ASSY, CART. SUPPORT, ST	1
14A	2752611-0000	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	2708621-0000	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	1
15A	2752241-0000	PANEL, TRANSITION, 4, OFFSET, L	1
15B	2708201-0000	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-NICHB	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	2704691-0000	NUT, HK, 3/4, G	2

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



INDENTED QUANTITIES INDICATE SUB ASSEMBLIES

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

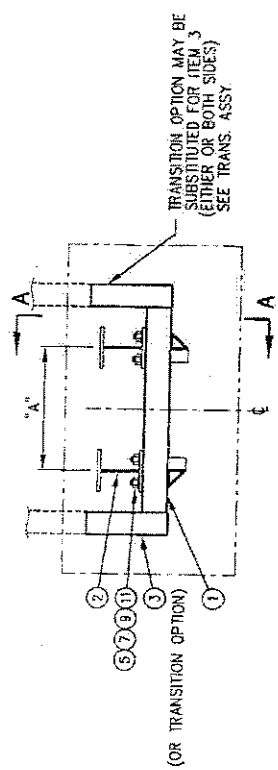
NEW JERSEY
MEDIAN BARRIER
ATTACHED BACKUP
BI-DIRECTIONAL

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE	BACKUP, WF, 24", 30", 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, HK, 3/4, G	12
8	2708791-0000	WASHER, FENDER PANEL	12
11	2708201-0000	WASHER, LOCK, 3/4, G	6

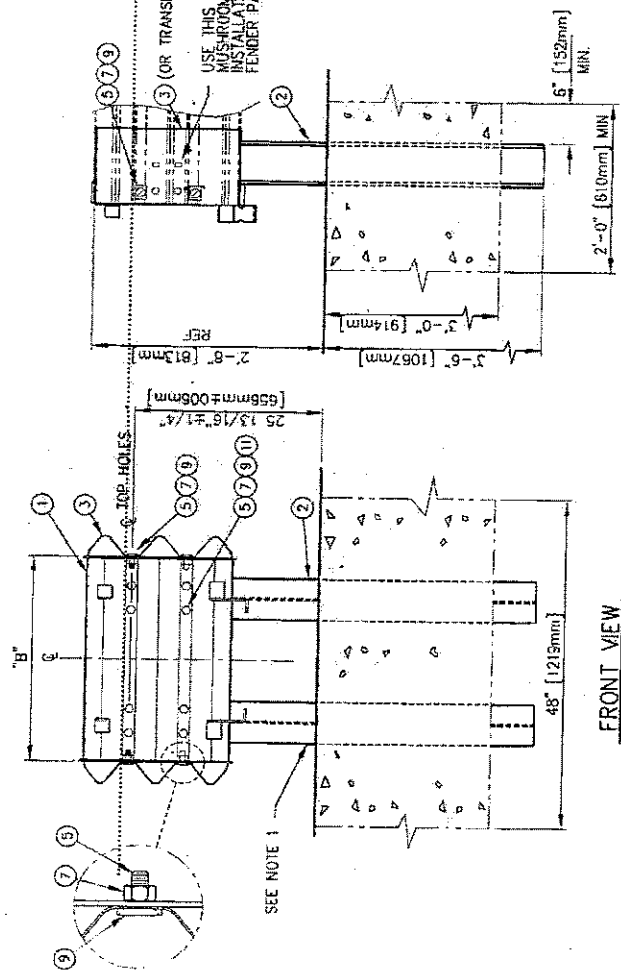
MODEL NUMBER	ASSEMBLY NUMBER	PART NO.	"A"	"B"
200200	3831011-0000	2903321-0000	1'-0" [305mm]	2'-0" [610mm]
206206	3831012-0000	2903322-0000	1'-6" [457mm]	2'-6" [762mm]
300300	3831013-0000	2903323-0000	2'-0" [610mm]	3'-0" [914mm]

PARTS LIST	
ITEM	DESCRIPTION
1	SEE TABLE
2	2903311-0000
3	2752111-0000
5	2706761-0000
7	2704091-0000
8	2708791-0000
11	2708201-0000

INDENTED QUANTITIES INDICATE SUB ASSEMBLIES.



TOP VIEW



FRONT VIEW

SIDE VIEW

SEE PAGE 26 FOR FORWARD PAD DETAILS

ASSEMBLY NO. (SEE TABLE)

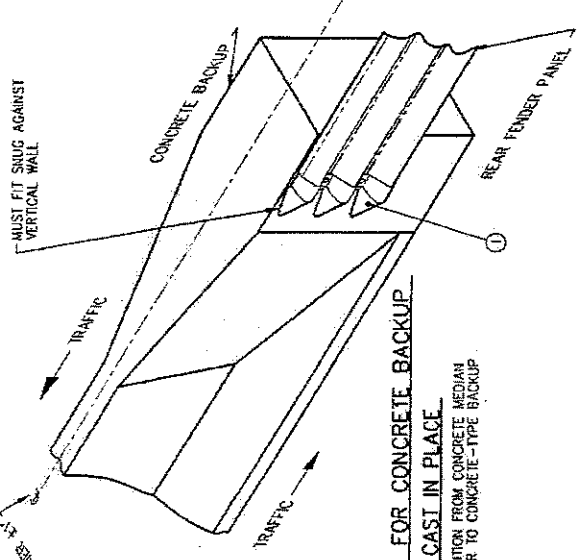
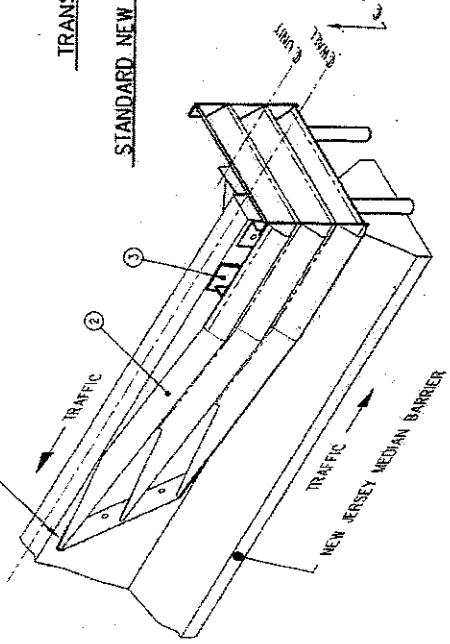
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

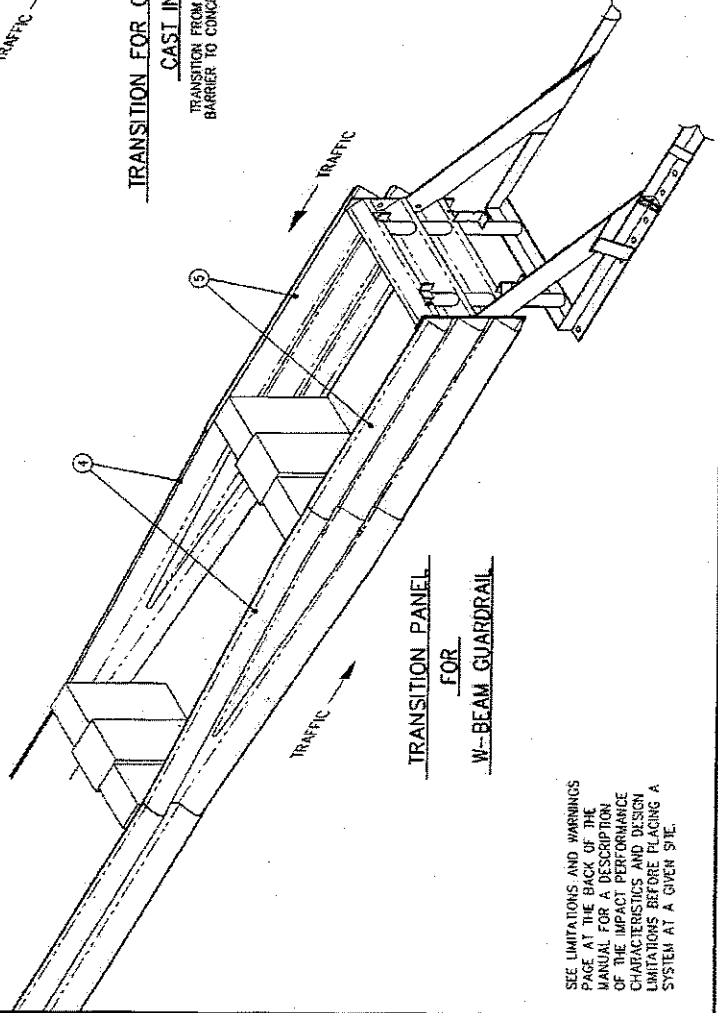
PARTS LIST		
ITEM	STOCK NO.	DESCRIPTION
1	275207-0000	REFLECTOR, TB, CONC BACKUP
2	275224-0000	PANEL, TRANSITION, 4 OFFSET, L
3	275227-0000	BRACKET, SUPPORT, TRANS PIN - RJ CMB
4	2752161-0000	PANEL, TRANSITION, W-THREE BEAM
5	2752781-0000	PANEL, EXTENSION, 2 DEG. 50

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

TRANSITION PANEL
FOR
STANDARD NEW JERSEY MEDIAN BARRIER



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.

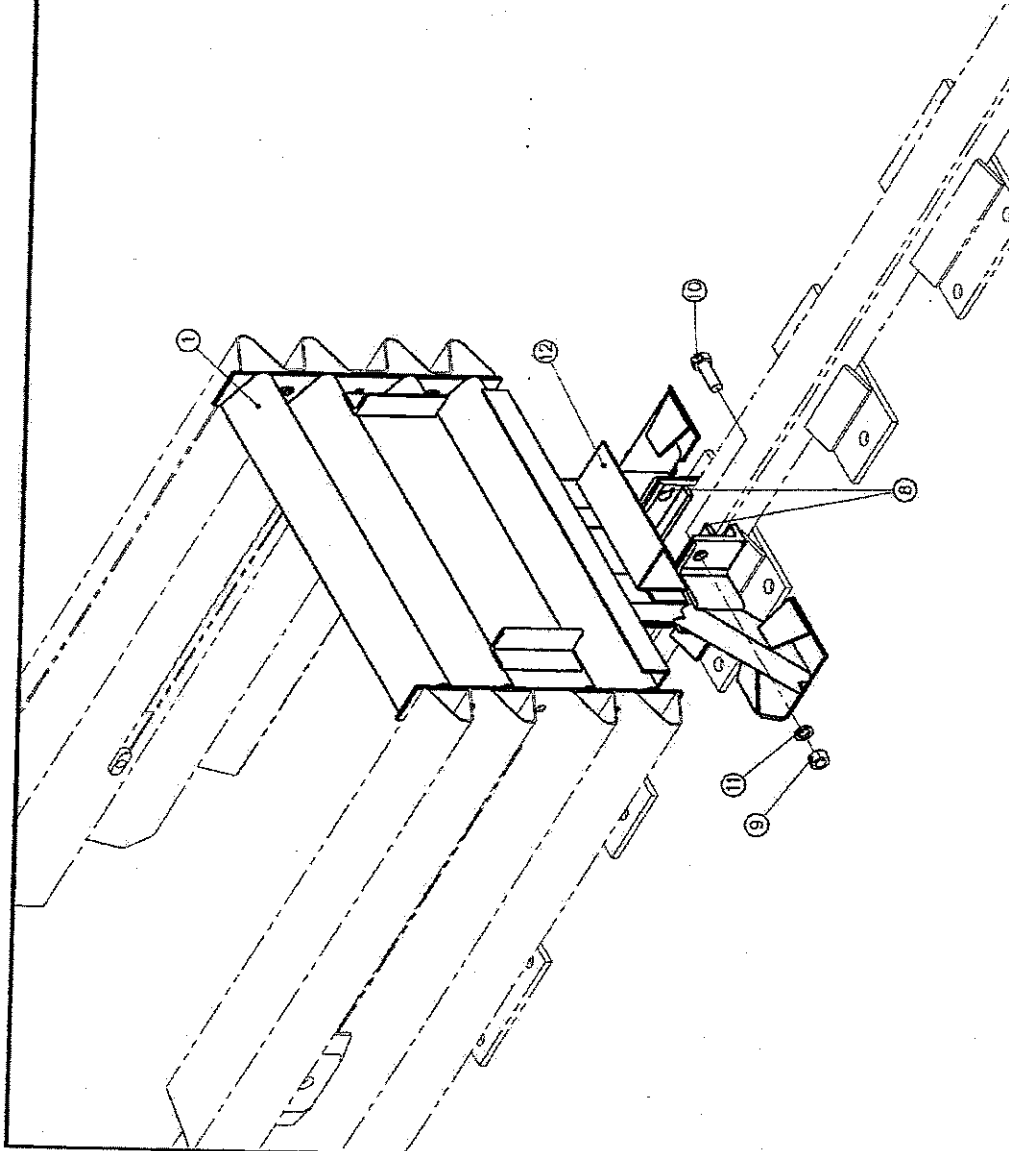
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT
G-R-E-A-T® SYSTEM
TRANSITION PANELS
FOR BI-DIRECTIONAL TRAFFIC

**QUADGUARD SYSTEM
FOR NARROW HAZARDS**

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE A	DIAPHRAGM, QB, QG, G	1.00
8	2760091-0000	MONORAIL GUIDE, QG, G	2.00
9	2704341-0000	NUT, HK, 3/4, G, GR, DH	4.00
10	2699121-0000	BOL, LHX, 3/4, 2, GB, G	4.00
11	2708201-0000	WASHERLOCK, J, 4, G	4.00
12	2760292-0000	BRACKET, CART, SUPPORT, DIAPHRAGM	2.00

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540071-0000	2761011-0000	DIAPHRAGM, QB, 24, QG, G	610 (24.00)
3540072-0000	2761021-0000	DIAPHRAGM, QB, 30, QG, G	760 (30.00)
3540073-0000	2761031-0000	DIAPHRAGM, QB, 36, QG, G	915 (36.00)



ASSEMBLY NO. SEE TABLE A

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
DIAPHRAGM ASSY, QG

N.T.S. 35-40-07 1 of 1 D

DATE: 9-2-96
DRAWN BY: J. Ephaeza
CHECKED BY: S. Trageser
APPROVED BY: J. Machado
DATE: 5/17/96
DATE: 5/17/96
DWG FILE: 35-4007.dwg
PLOT ASSIGNED

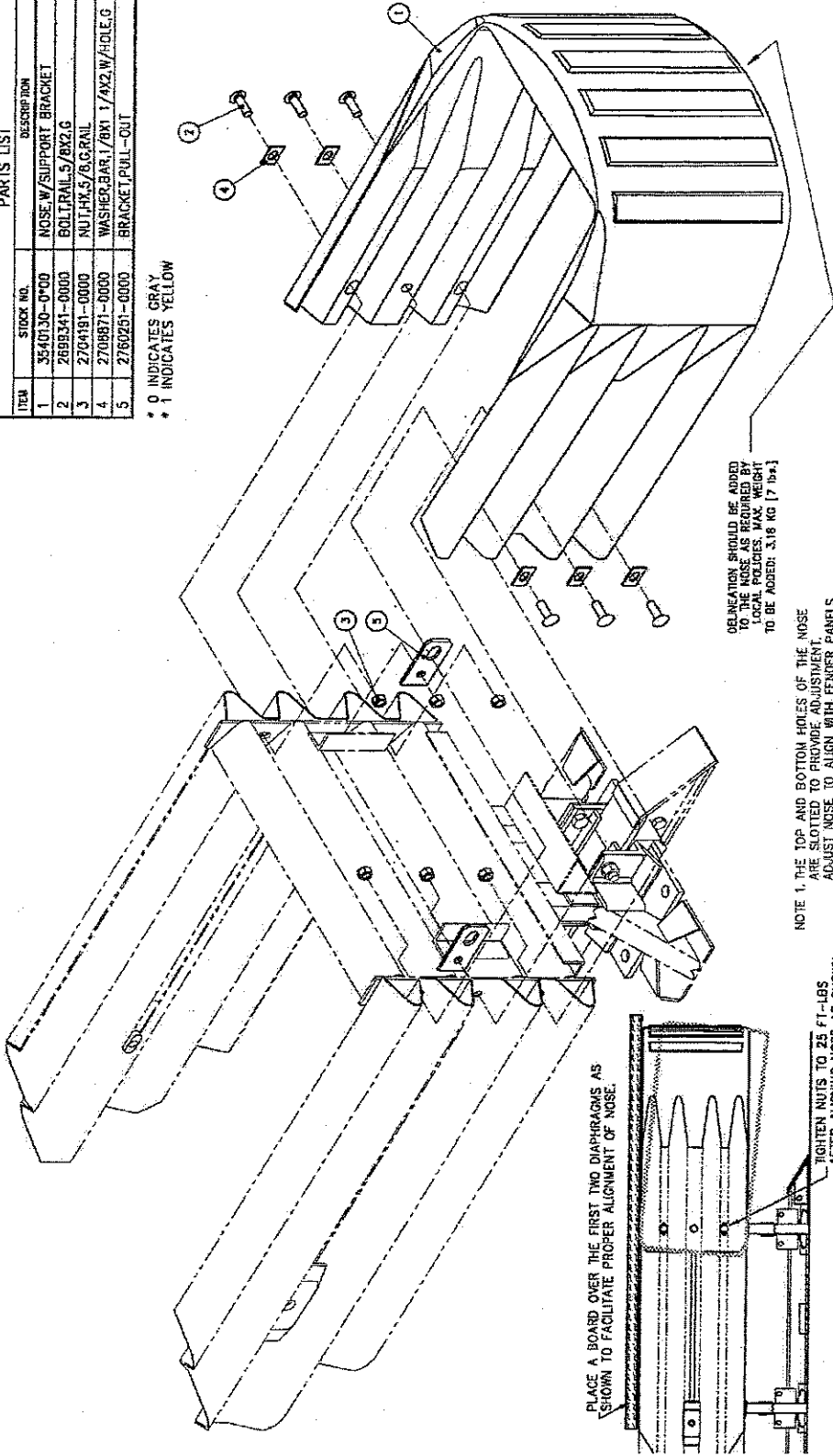
REFERENCES

Rev.	Date	Rev. By	Chg. Appr.
1	11/24/93	D	ROC (RM) DLI
2	07/02/96	B	DLS STI JAM
3	07/02/96	C	CS (M) STI

15

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	3540130-0700	NOSE, W/SUPPORT BRACKET	1.00
2	2699341-0000	BOLTRAIL, 5/8X2.0	6.00
3	2704191-0000	NUT, HK, 5/8, G, RAL	6.00
4	2708871-0000	WASHER BAR, 1/8X1 1/4X2, W/HOLE, G	6.00
5	2760261-0000	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, 06

REV	DATE	BY	CHKD	APP'D
0	5/20/96	D. Steub		
1	3/1/96	MHO/JVM		
2	5/21/96	S. Trogner		
3	5/22/96	M. Oberth		

354005.dwg
 2/26/96

REFERENCES

Revisions	Date	Rev.	By	Chd.	App.
MODIFIED DEFINITION OF ENCAP	10/11/97	B	TD	BB	SPT
UPDATED CARTRIDGE SUPPORT	11/07/97	C	RCC	NORM	DLJ
ADDED DETAIL "A"	05/22/98	D	TB	GM	SPT

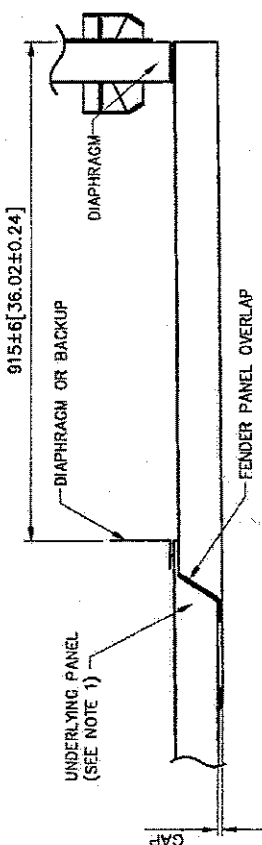
DETAIL "A"
 SCALE: 1:20

SCALE: 1:10
 SHEET: 35-40-05
 OF: 1 of 1
 D

QUADGUARD SYSTEM
FOR NARROW HAZARDS

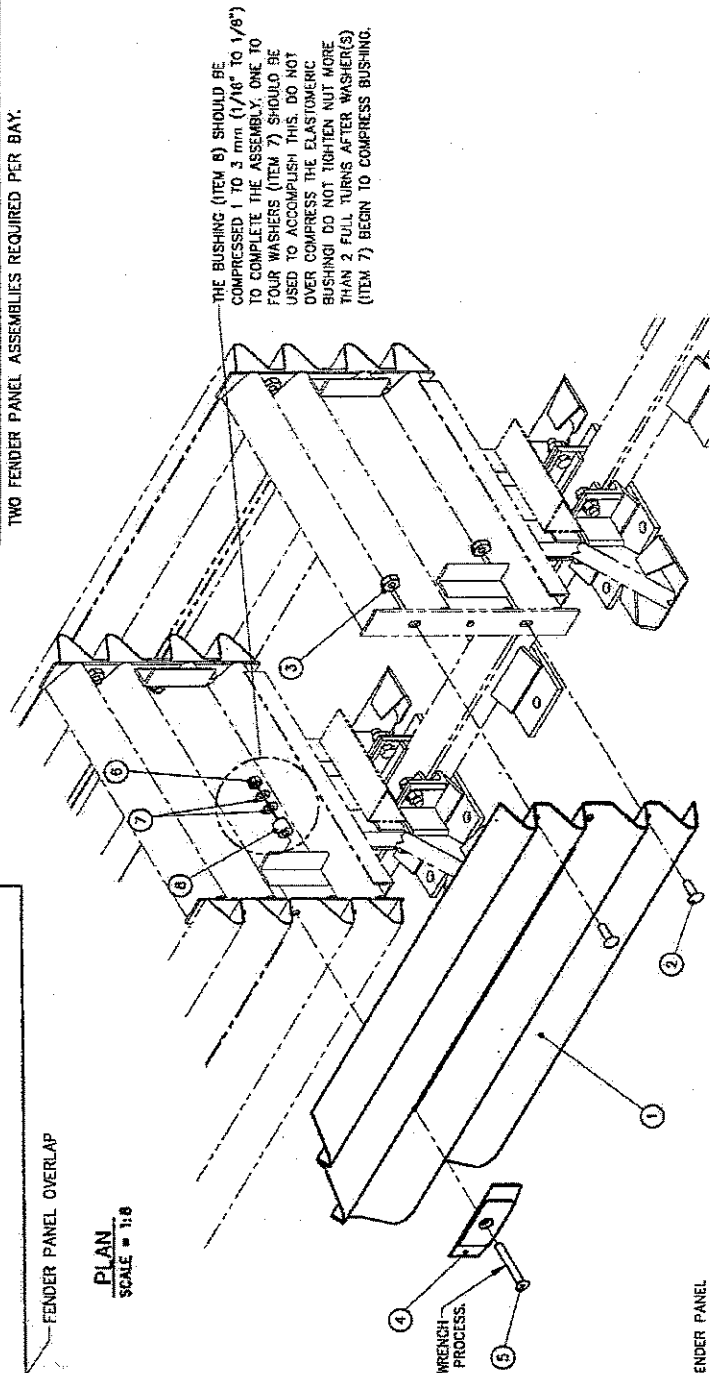
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQD
1	27800B1-0000	PANEL FENDER, QG.G	1.00
2	2699341-0000	BOLT, RAIL, 5/8X2.0	2.00
3	2704191-0000	NUT, HK, 5/8, G, RAIL	2.00
4	2708B41-0000	WASHER, MUSHROOM, CAST, QG.G	1.00
5	2706604-0000	SCREW, FL, 5/8X5.0, G, G, SOCKET	1.00
6	2704141-0000	NUT, HK, 5/8, G	1.00
7	2708291-0000	WASHER, FLAT, 5/8X1.3, A, G	4.00
8	2021611-0000	BUSHING, ELASTOMERIC, 32X16X32	1.00

TWO FENDER PANEL ASSEMBLIES REQUIRED PER BAY.



PLAN
SCALE = 1:8

CAUTION
-20 (0.78) MAX.
FOR PROPER IMPACT
PERFORMANCE.



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	App.
CORRECTED DIAPHRAGM SPACING	6/26/96	G	RGS	SIT, KRM
ITEM B WAS SPRINGOURTHANE	10/1/96	E	TB	BB, DLJ
CHGD NOTE 3 & ADDED CAUTION LABEL	4/15/98	F	DM	RM, SPT

REFERENCES

DATE	BY	APP.
5/21/96	J. Espinoza	JVM/MHO
3/1/96	S. Trageser	S. Trageser
5/21/96	J. Machado	J. Machado

354004.dwg
NEXT ASSIGNED: 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.	TOTAL RAIL LENGTH	*ITEM 1	*ITEM 2	*ITEM 3	*ITEM 5	NO. OF BAYS
3540060-0100	0	0	0	0	0	1
3540060-0200	915 (36.0)	1	0	0	2	2
3540060-0300	1830 (72.0)	0	1	0	3	3
3540060-0400	2745 (108.1)	0	0	1	4	4
3540060-0500	3660 (144.1)	1	0	1	5	5
3540060-0600	4575 (180.1)	0	1	1	6	6
3540060-0700	5490 (216.1)	0	0	2	7	7
3540060-0800	6405 (252.1)	1	0	2	8	8
3540060-0900	7320 (288.2)	0	1	3	9	9
3540060-1000	8235 (324.2)	0	0	3	10	10
3540060-1100	9150 (360.2)	1	0	3	12	11
3540060-1200	10065 (396.2)	0	1	3	13	12

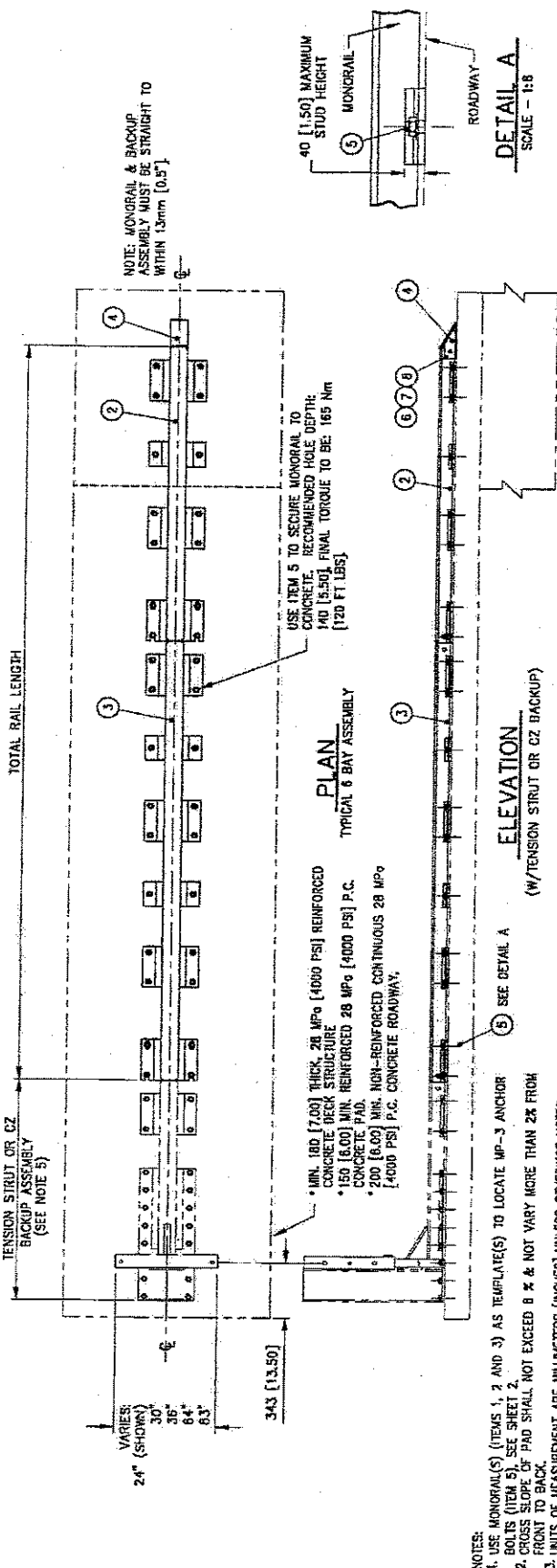
NOT APPLICABLE FOR 68" & 90" OR CZ QG SYSTEMS

NOT APPLICABLE FOR CZ QG SYSTEMS

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
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	2760041-0000	END CAP MONORAIL QG,G	1.00
5	3525300-0000	ANCHOR MP-3 PT-MT-3/4X1/2	1.00
6	2699571-0000	BOLT, HEX. 5/8X3.1/2, SS, G	1.00
7	2704141-0000	NUT, HEX. 5/8, G	1.00
8	2708231-0000	WASHER, LOCK, 5/8, G	1.00

* 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. 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 L

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
MONORAIL ASSY, QG

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

REFERENCES

DATE	BY	REVISION
5-8-96	G. Stutz	5-8-96
3-1-96	MHO/JVM	3-1-96
5/17/96	S. Troesser	5/17/96
5/17/96	M. Oberth	5/17/96

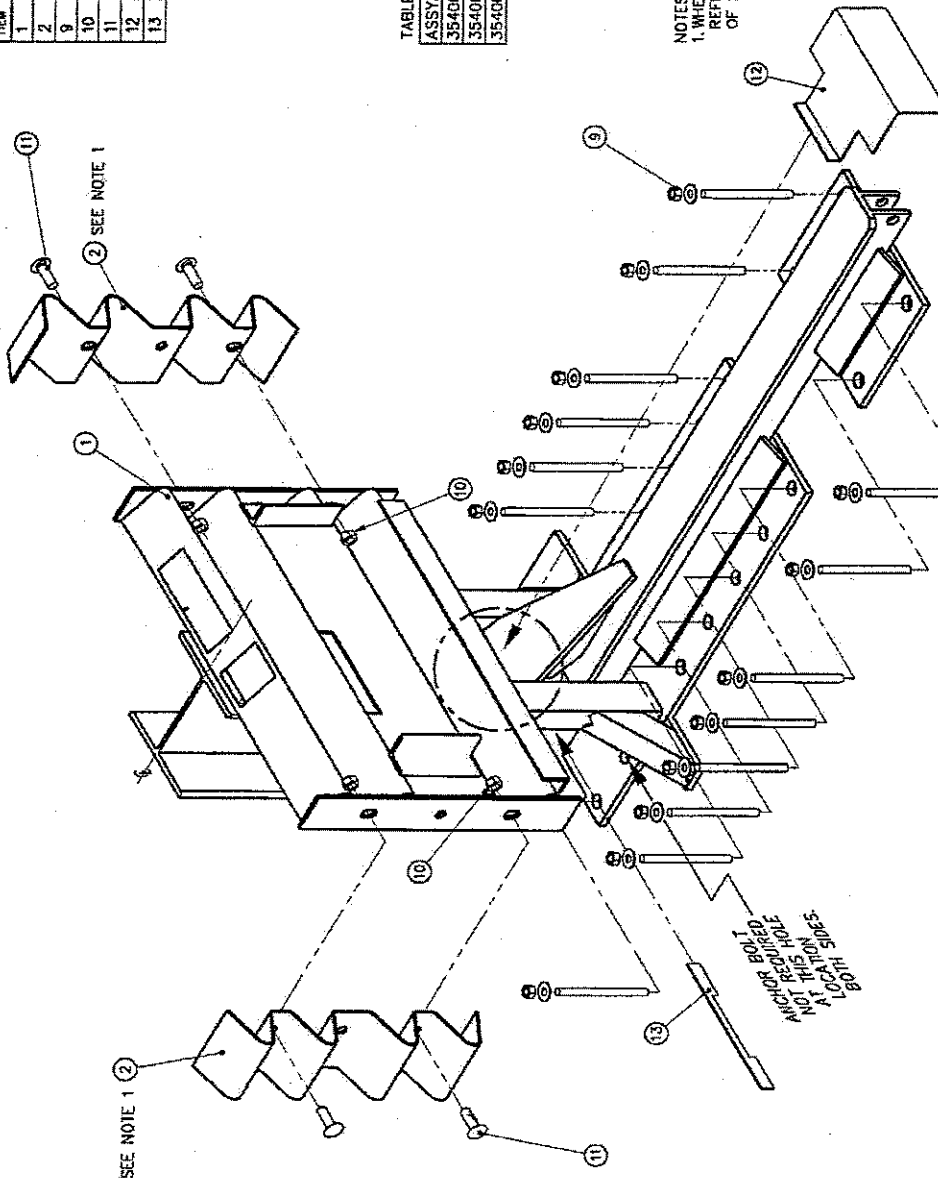
35-4006.dwg
SPT. ASSEMBLY

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BACKUP, TS, QG, G	1.00
2	2760141-0000	PANEL, SIDE, QG, G	2.00
9	3523100-0000	ANCHOR, MP-3, PT-KIT, 3/4X7, VT	3.00
10	2704191-0000	NUT, HK, 5/8, G, RAIL	4.00
11	2699341-0000	BOL, L, RAIL, 5/8X2, G	4.00
12	2760293-0000	BRACKET, CARTRIDGE SUPPORT, IS B/U	1.00
13	2760294-0000	LOCKING BAR, CARTRIDGE SUPPORT	1.00

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540031-0000	2760011-0000	BACKUP, IS, 24, QG, G	610 [24, 00]
3540032-0000	2760021-0000	BACKUP, IS, 30, QG, G	760 [30, 00]
3540033-0000	2760031-0000	BACKUP, IS, 36, QG, 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, IS, QG

N.T.S. 35-40-03 1 of 1 F

DATE	4-22-96
DESIGNED BY	S. LEMIS
CHECKED BY	JVM/MHO
DATE	3-1-96
DESIGNED BY	S. Trogriser
CHECKED BY	J. Machado
DATE	5/16/96
DATE	5/16/96
FILE NO.	354003.dwg
SCALE	AS SHOWN

REFERENCES

Revisions	Date	Rev.	By	Chk.	App.
ALL ITEMS 3, 5, 7, 8, 10, 12 & 13.	10/21/95	E	SOC	GM	DLJ
REMOVED 1 ANCHOR BOLT & AIPED NOTE	10/19/94	F	LINC	KM	SPT
QTY # WAS 4	10/08/94	D	#	BB	SPT

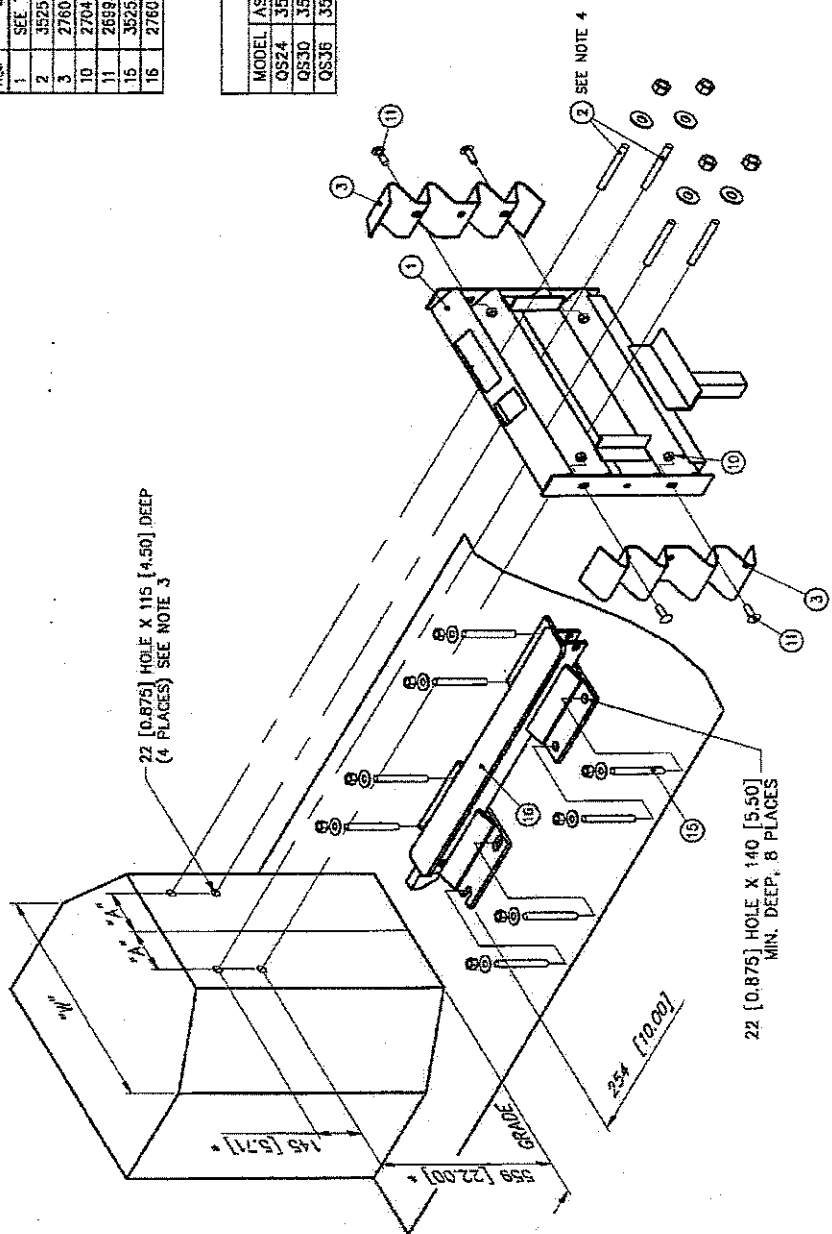
QUADGUARD SYSTEM
 FOR NARROW HAZARDS

QUADGUARD SYSTEM FOR NARROW HAZARDS

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	BACKUP, CONCRETE, FRONT FACE, QG	1.00
2	3525130-0000	ANCHOR, MP-3, PT. 411.3/4X6.1/2 HDR	1.00
3	2760141-0000	PANEL, SIDE, QG,G	2.00
10	2704191-0000	NUT, HX. 5/8 G. RAIL	4.00
11	2699341-0000	BOL, T. RAIL, 5/8X2.6	4.00
16	3525300-0000	ANCHOR, MP-3, PT. 411.3/4X7.1/2 VT	2.00
16	2760051-0000	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	2760191-0000
QS36	3540143-0000	914	36.00	191	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 REBAR 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.

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 H

35-40-08

CONCRETE BACKUP, QG

REFERENCES

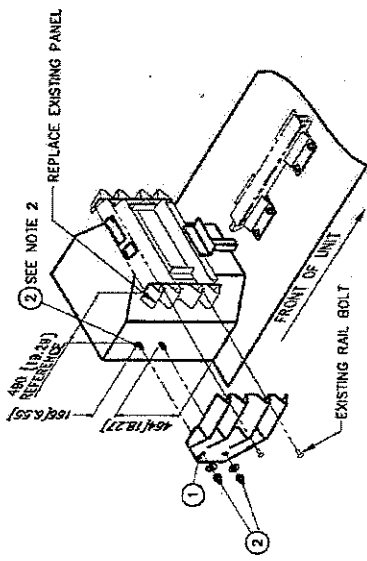
CONCRETE BACKUP, QG

DATE	BY	REV.	APP.
5/24/96	D. Stous	1	5/24/96
3/1/96	W. Kroge	2	3/1/96
6/5/96	S. Trogeser	3	6/5/96
6/5/96	W. Kroge	4	6/5/96

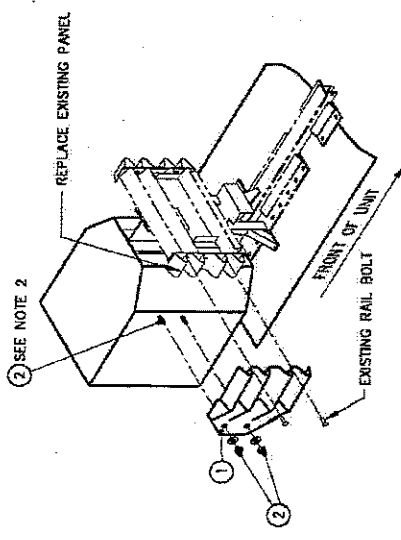
354014.dwg
 REV. ASSY.

Revisions	Date	Rev.	By	App.
BACKUP HD 2 LEGS	06/03/96	1	W. Kroge	W. Kroge
DEL ITEMS 4, 6, 7 AND UPDATED CART SUPPORT	11/04/96	F	REC. KRM	D.J.
ADDED LEGS AND NUTS 3 & 4	2/8/98	C	DIS. NM	SPT

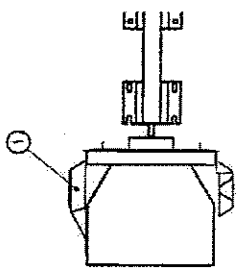
PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760271-0000	SIDE PANEL/END SHOE,CG,0	1.00
2	3525130-0000	ANCHOR,WP-3,PT KIT,3/4X6 1/2 HOR	1.00



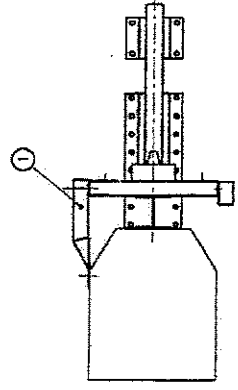
CONCRETE BACKUP



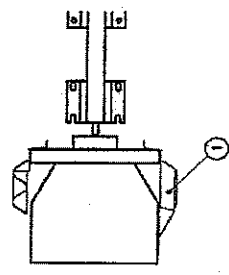
TENSION STRUT BACKUP



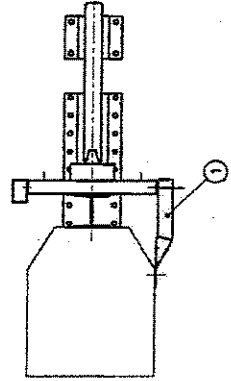
RIGHT SIDE APPLICATION



RIGHT SIDE APPLICATION



LEFT 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 18.3Nm (120 FT.-LBS) (TYP).
 ANCHOR STUD END SHOULD BE FLUSH WITH
 OUTSIDE SURFACE OF ANCHOR NUT.

Revisions	Date	Rev. By	Code/App.
UPDATED TITLE BLOCK TEXT WAS TM, NOW ©/M/75/95	0	LWC	RM SPY
COMBINED DWG. 3540270-0000 WITH 35-40-15/04/96	1	LWC	RM SPY
REV TO SHOW 1 LEG FOR CONE B/O	2	DLS	RM BB

REFERENCES

NAME	DATE
D. Slous	5/24/96
WICK	3/1/96
S. Trogeser	6/5/96
W. Kröge	6/5/96

35-4015.dwg
REV ASSEMBLY

ASSEMBLY NO. 3540150-0000
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD® SYSTEM
 END SHOE ASSY, QG

SCALE	N.T.S.	DWG. NO.	35-40-15	SHEET	1 of 1
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**QUADGUARD SYSTEM
 FOR NARROW HAZARDS**

**QUADGUARD SYSTEM
FOR NARROW HAZARDS**

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	PANEL TRANSITION, 4 OFFSET, QG	1.00
2	2760301-0000	BRACKETS/SUPPORT, 4 TRANS TO CMR	1.00
3	3525130-0000	ANCHOR, MP-3, FT KIT, 3/4XG 1/2 HOR	1.00
4	2698341-0000	ROL 1 RAIL, 5/8X2, G	3.00
5	2704191-0000	WUT-HA, 5/8, G, RAIL	3.00

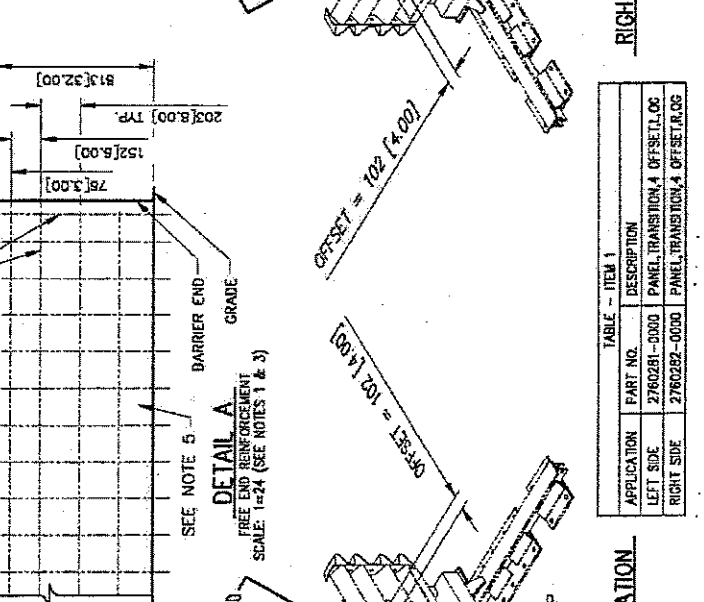
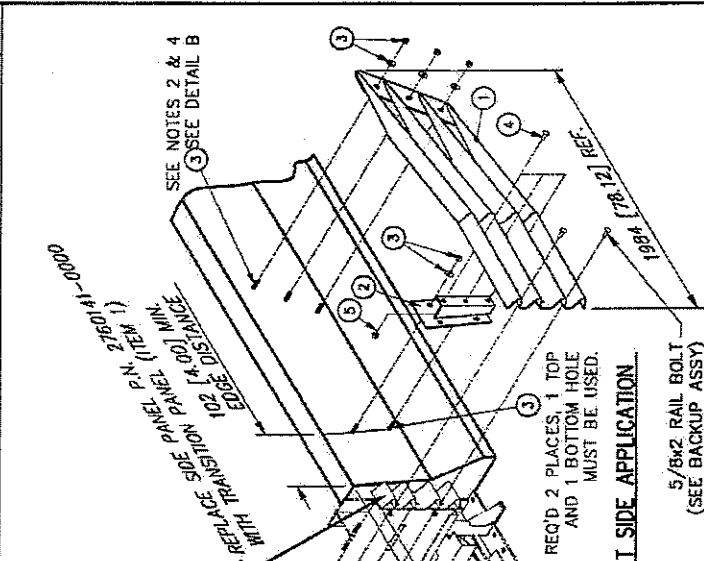
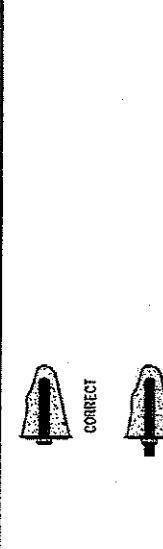
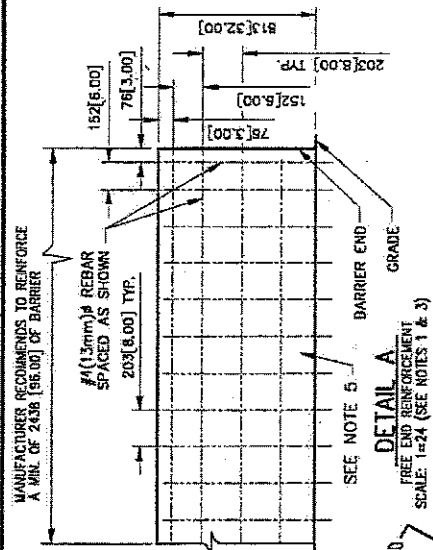


TABLE - ITEM 1

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

NOTES:

- THE CONCRETE BARRIER REINFORCEMENT SHOWN IN DETAIL "A" IS RECOMMENDED TO ENSURE ADEQUATE BARRIER INTEGRITY FOR PROPER IMPACT PERFORMANCE. THIS 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.
- USE TRANSITION PANEL AS TEMPLATE. FOR DRILLING, RECOMMENDED HOLE DEPTH 127 [5.00] FINAL TORQUE TO BE 163Nm [120 FT-LBS] (TYP).
- IMPACT FORCES COULD BE TRANSFERRED INTO TERMINAL END OF THE BARRIER. ADEQUATE ANCHORAGE IS REQUIRED FOR PROPER IMPACT PERFORMANCE.
- ANCHOR STUD END SHOULD BE FLUSH WITH OUTSIDE SURFACE OF ANCHOR NUT, SEE DETAIL B.
- MIN. 27.6 MPa [4000 PSI] P.C. CONCRETE MEDIUM BARRIER. (SEE BACKUP ASSY)

REFERENCES

NAME	DATE
J. Espinoza	09/21/96
WELCH	9/21/96
B. Burger	8/27/96
S. Turner	8/27/96

354018.dwg
NEXT ASSEMBLY

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

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

TRANSITION ASSY, 4 OFFSET, QG

N.T.S. 35-40-18 1 of 1 F

Revisions

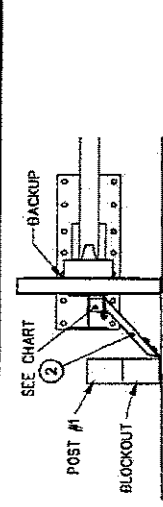
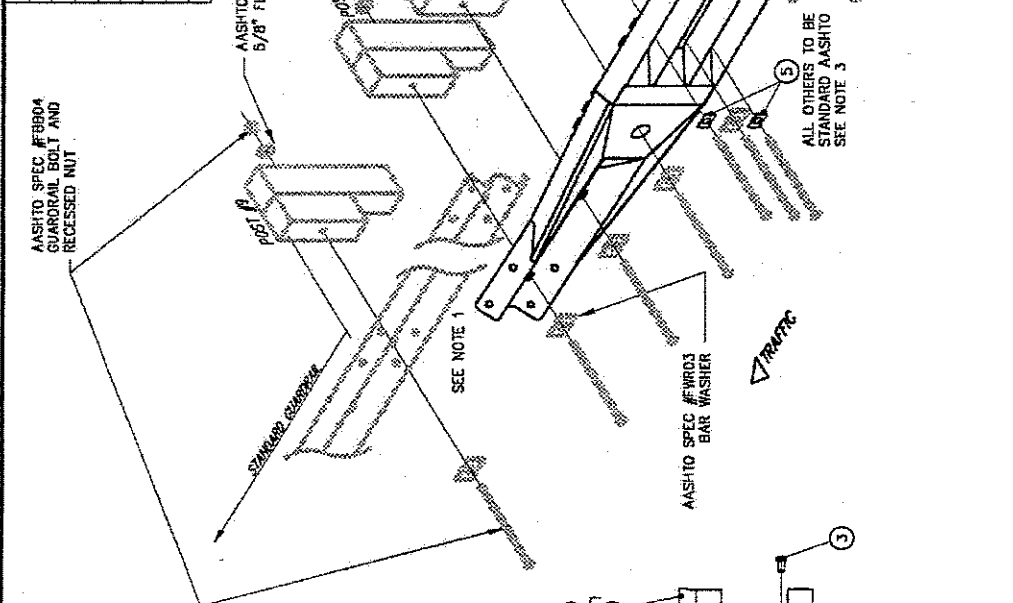
Date	Rev.	By	Chd.	App.
10/21/97	D	RCC	KRM	SPT
07/24/96	E	ROS	KRM	SPT
07/25/96	F	LWC	KM	SPT

UPDATED CHRT SUPPORT & RAIL END HOLE
REMOVED DIM'S.

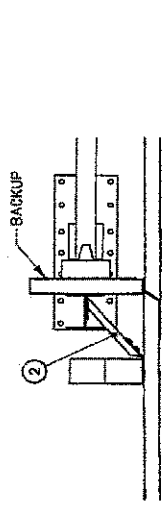
PARTS LIST		REQ'D			
ITEM	STOCK NO.	DESCRIPTION	N	M	W
1	2760321-0000	QUADGUARD TO W-BEAM TRANS. PANEL	1	1	1
2	2760341-0000	DIAGONAL BRACE	1	1	1
3	2699341-0000	BOLT, TRAIL-5/8X2.5	4	6	6
4	2704191-0000	NUT, HK, 5/8 G	4	6	6
5	2708871-0000	WASHER, BAR, 1/8X1 1/4X2, W/HOLE	2	2	2
6	2760342-0000	DIAGONAL BRACE BLOCKOUT, 3"	0	1	0
7	2760343-0000	DIAGONAL BRACE BLOCKOUT, 6"	0	0	1

SYSTEM WIDTH	ASSEMBLY #	BLOCKOUT
610 (24.00)	N 354021N-0000	NOT REQ'D
762 (30.00)	M 354021M-0000	ITEM #6*
914 (36.00)	W 354021W-0000	ITEM #7*

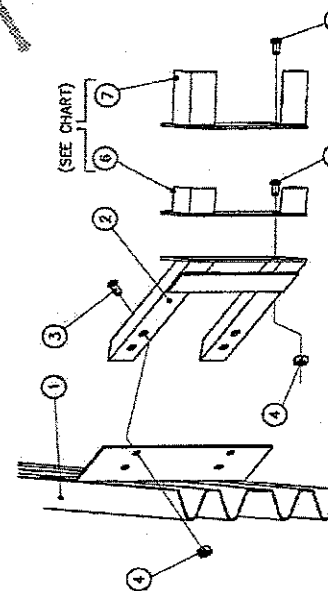
*SEE PARTS LIST ABOVE FOR QTY REQ'D



DETAIL A
FINAL CONFIGURATION OF DIAGONAL BRACE
FOR MEDIUM OR WIDE (762(30.00) OR 914(36.00)) SYSTEMS



DETAIL A
FINAL CONFIGURATION OF DIAGONAL BRACE
FOR NARROW (610(24.00)) SYSTEMS



DIAGONAL BRACE ASSEMBLY

- 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.
 - RIGHT SIDE OF ROAD APPLICATION SHOWN. ASSEMBLY MAY BE USED ON EITHER OR BOTH SIDES FOR LEFT, RIGHT, MEDIUM OR GORE APPLICATIONS. SEE NOTE 1.
 - THIS ASSEMBLY IS NOT INCLUDED IN THE MODEL NUMBER AND MUST BE ORDERED SEPARATELY.
 - 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.

Revisions	Date	Rev.	By	Chd/App.
ADDED #6&7 FOR MED. & WIDE SYSTEMS	07/04/97	A	JF	BB SPT
UPDATED CARTRIDGE SUPPORT BRACKETS	11/06/97	B	RCC/KRM	SPT
CHANGED SQUARE TAIL OVER CAP & BRACKET CONNECTION	07/06/98	C	LWC	BB JAM

REFERENCES

DATE	BY	DATE	BY
09/20/96	T. Bussse	08/21/96	JYM
10/11/96	SML	10/11/96	J. Machado
10/11/96	J. Machado	10/11/96	J. Machado

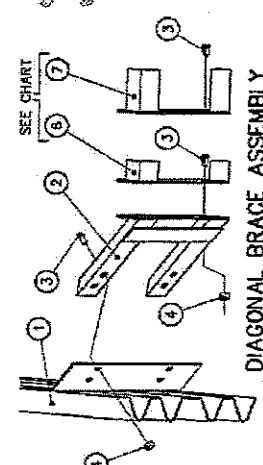
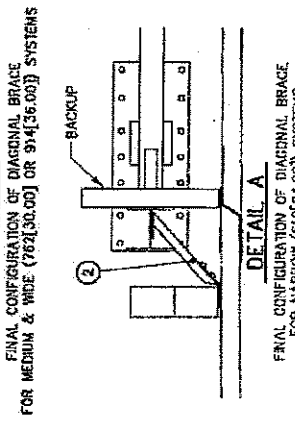
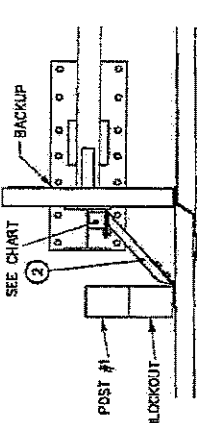
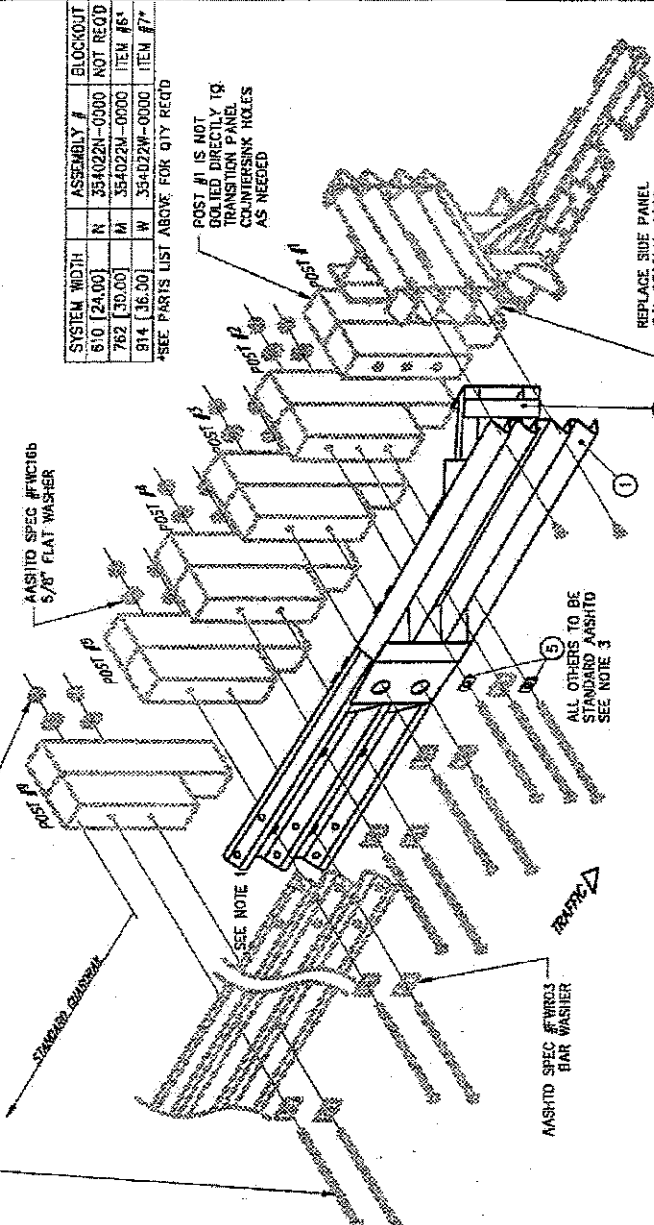
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

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

**QUADGUARD SYSTEM
FOR NARROW HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	PARTS LIST			REQD		
			N	W	W	N	W	W
1	2760331-0000	Guardrail TO THRE-BEAM TRANS. PANEL				1	1	1
2	2760341-0000	DIAGONAL BRACE				1	1	1
3	2699341-0000	BOL, GAL. 5/8X2.5				4	0	6
4	2704191-0000	NUT, HK. 3/8 GAL.				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



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 INDUSTRIAL CONNECTION.
- RIGHT SIDE OF ROAD INDICATION SHOWN. ASSEMBLY MAY BE USED ON EITHER OR BOTH SIDES FOR LEFT, RIGHT, MEDIUM OR GORE APPLICATIONS. SEE NOTE 1 FOR TRAFFIC DIRECTION. THIS ASSEMBLY IS NOT INCLUDED IN THE MODEL NUMBER AND MUST BE ORDERED SEPARATELY.
- 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.

Revisions	Date	Rev. By	Chd/APP
ADDED #6&7 FOR MED. & WIDE SYSTEMS	10/29/91	A JF	BB/SP1

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

**TRANSITION ASSEMBLY
QUAD-BEAM TO THRE-BEAM**

N.T.S. 35-40-22 1 of 2 A

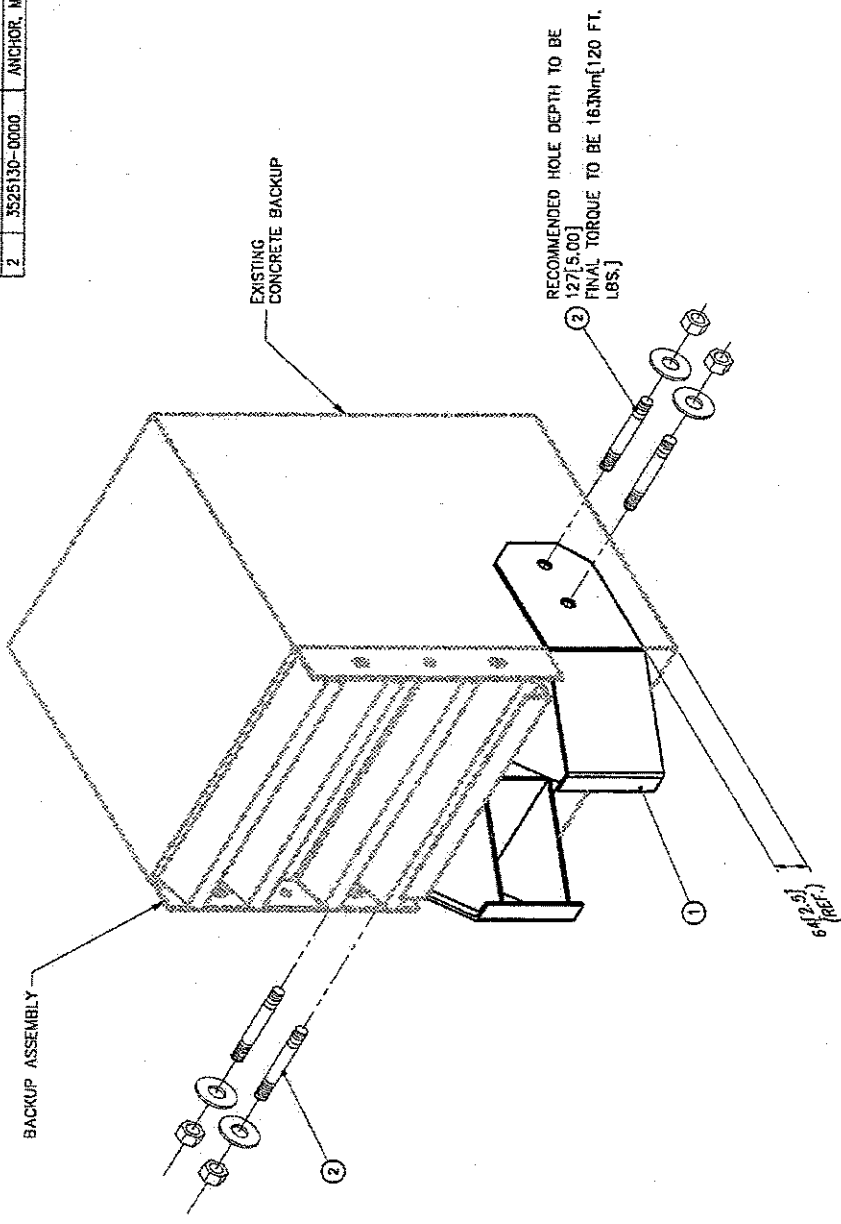
DATE	BY	DESCRIPTION
09/23/86	T. Busse	REVISED
05/21/86	JDM	REVISED
10/14/86	SMU	REVISED
10/14/86	J. Mochalo	REVISED

354022.dwg
DET. ASSEMBLY

**GUARDRAIL SYSTEM
FOR NARROW HAZARDS**

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REQD
1	2780311-0000	DEFLECTOR, CONCRETE BACKUP, QG	2
2	3525130-0000	ANCHOR, MP-3 KIT, 3/4x6 1/2, HORIZ	1



NOTE:
 1. USE DEFLECTOR AS A TEMPLATE TO LOCATE AND DRILL 23(0.88)Ø HOLES.
 2. DIMENSIONS ARE IN MILLIMETERS (INCHES), UNLESS OTHERWISE NOTED.

Revisions	Date	Rev.	By	App.
CHGD PART NO. TO ASSY NO.	11/11/98	A	RGD	SM WK
CHGD TITLE BLOCK	11/11/98	B	SC	BE/SPT

REFERENCES

DESIGNER	DATE	CHKD	DATE
R. CUMMINS	08/26/96		
W. KRAGE	08/26/96		
SM	9/23/98		
WCK	9/24/96		

PROJ NO: 354020.dwg
 DESK ASSY: 3

ASSY NO. 3540200-0000

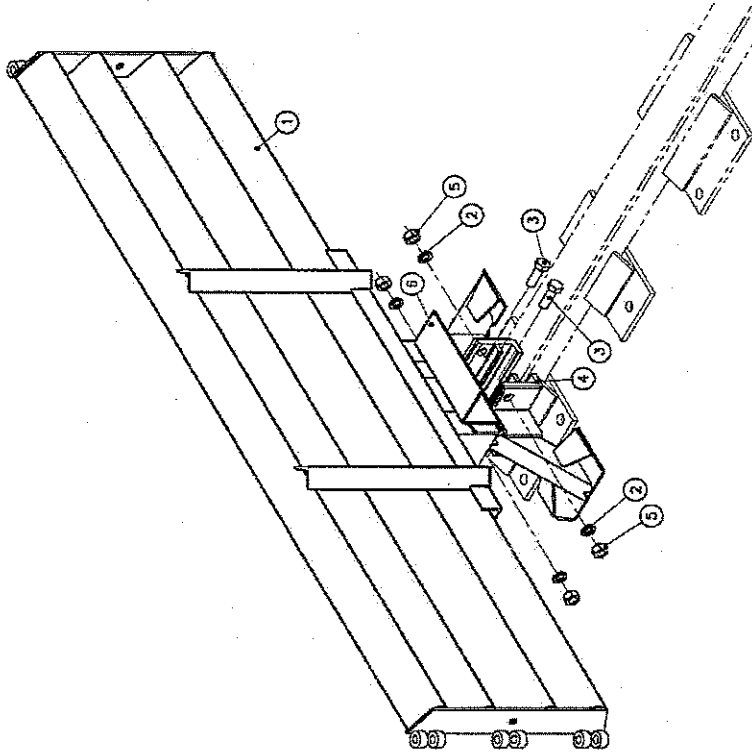
ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT

DEFLECTOR ASSEMBLY,
 CONCRETE BACKUP
 RETROFIT, QG

SCALE	1=4	FIG NO	35-40-20	SHEET	1 of 1	NO	B
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QUADGUARD SYSTEM
 FOR NARROW HAZARDS

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**



ITEM	STOCK NO.	DESCRIPTION	REQ'D
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, GR, G	4.00
4	2760091-0000	MONORAIL, GUIDE, QG, G	2.00
5	2704341-0000	NUT, H.K., 3/4, G, GR, OH	4.00
6	2760292-0000	BRACKET, CARTRIDGE SUPPORT, DIAPHRAGM	2.00

ASSEMBLY NO.	DESCRIPTION	ITEM 1 PART Nbr.
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
3540340-0893	DIAPHRAGM ASSY, QG, 0893	2761041-0893
3540340-1073	DIAPHRAGM ASSY, QG, 1073	2761041-1073
3540340-1153	DIAPHRAGM ASSY, QG, 1153	2761041-1153
3540340-1233	DIAPHRAGM ASSY, QG, 1233	2761041-1233
3540340-1273	DIAPHRAGM ASSY, QG, 1273	2761041-1273
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
3540340-1553	DIAPHRAGM ASSY, QG, 1553	2761041-1553
3540340-1633	DIAPHRAGM ASSY, QG, 1633	2761041-1633
3540340-1729	DIAPHRAGM ASSY, QG, 1729	2761041-1729
3540340-1793	DIAPHRAGM ASSY, QG, 1793	2761041-1793
3540340-1873	DIAPHRAGM ASSY, QG, 1873	2761041-1873
3540340-1953	DIAPHRAGM ASSY, QG, 1953	2761041-1953
3540340-2033	DIAPHRAGM ASSY, QG, 2033	2761041-2033

(SEE TABLE A)

ASSEMBLY NO. 3540340-

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

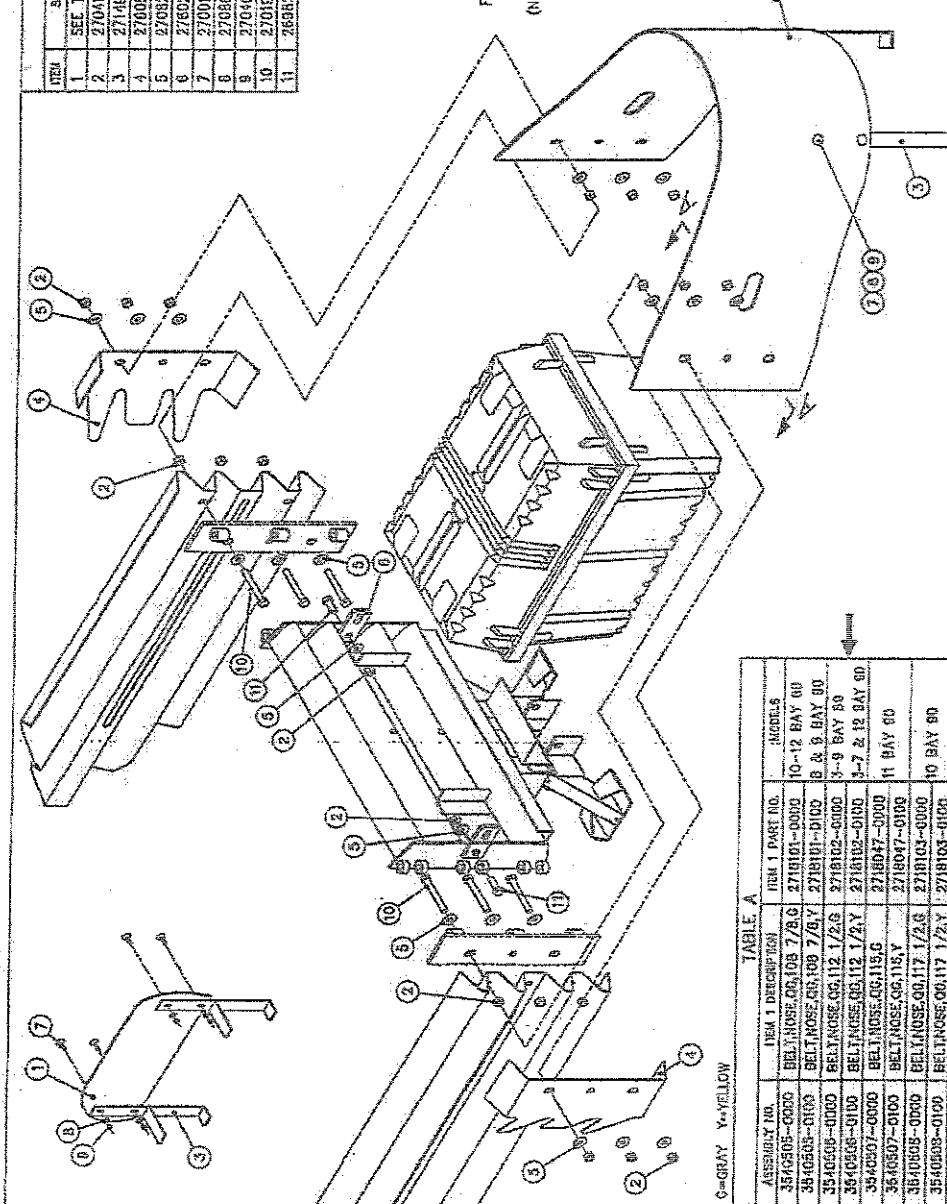
QUADGUARD SYSTEM
DIAPHRAGM ASSY, QG, WIDE

DATE	1:12	3540340-0000	1 of 2
DATE	5/12/97	DESIGNED BY	J. Machado
DATE	5/13/97	CHECKED BY	KRM
DATE	7/2/97	APPROVED BY	J. Machado
DATE	7/7/97	DATE	3540340-0000.dwg
DATE		REV. NO.	

REFERENCES

Revisions	Date	Rev. By	Chk. App.
DELETED ITEMS 2, 4, 5, 6, RE-NUMBERED	04/21/96	G	DDPS/STI KM
SEE SHEET 2	07/22/96	II	TPH KM SPT
REV CHG TO MATCH SHEET 2	07/23/96	I	DLS KM DLJ

ITEM	SUBEX NO.	DESCRIPTION	QTY
1	SEE TABLE A	BELT NOSE ASSEMBLY	1.00
2	270A147-0000	NUT 1/4 X 3/8	20.00
3	271A052-0000	LEVER SUPPORT FOR FLEX BELTING	2.00
4	2700504-0000	CLAMP BELTING	2.00
5	2708291-0000	WASHER, FLAT, 5/16 X 3/4 G	20.00
6	2700291-0000	BRACKET, PULL BELT	2.00
7	2700151-0000	SOLEY, 3/8 X 1/4, 4.02 B	4.00
8	2708027-0000	WASHER, FLAT, 3/8 X 1/2	4.00
9	2704031-0000	NUT, 1/4 X 3/8 G	4.00
10	2701984-0000	ROLL PIN, 5/16 X .65, G, ALL THREAD	6.00
11	268R241-0000	ROLL PIN, 5/16 X 1/4, 5.9 G	2.00



ASSEMBLY NO.	ITEM 1 DESCRIPTION	ITEM 1 PART NO.	MODELS
3540505-0000	BELT NOSE, 00, 10B 7/8 G	2710101-0000	10-12 BAY 60
3540505-0100	BELT NOSE, 00, 10B 7/8 Y	2710101-0100	10 & 8 BAY 90
3540505-0000	BELT NOSE, 00, 11Z 1/2 G	2710102-0000	3-9 BAY 60
3540505-0100	BELT NOSE, 00, 11Z 1/2 Y	2710102-0100	3-7 & 12 BAY 90
3540507-0000	BELT NOSE, 00, 11S G	2710047-0000	11 BAY 60
3540505-0000	BELT NOSE, 00, 11Z 1/2 G	2710103-0000	10 BAY 90
3540505-0100	BELT NOSE, 00, 11Z 1/2 Y	2710103-0100	

ASSEMBLY NO. SEE TABLE
ENERGY ASSORTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD[®] SYSTEM
 NOSE ASSY, 00, G OR Y, 60/90

DATE: 05/07/90
 DRAWN BY: T. BURRO
 CHECKED BY: JRM
 APPROVED BY: SFT
 PART NO.: 3540505.4W0
 PART ASSY: 3540505

REVISIONS

Rev.	Date	By	App.
1	05/07/90	T. BURRO	JRM
2	05/21/90	JRM	SFT
3	05/21/90	SFT	3540505.4W0

SCALE: 1:10
 VIEW A-A
 FACE OF WASHER (ITEM 5) TO BE FLUSH WITH HUMP ON FENDER PANEL (TYPICAL IN 6 PLACES).

QUADGUARD SYSTEM FOR WIDE HAZARDS

TABLE 1

ASSEMBLY NO.	TOTAL RAIL LENGTH	*ITEM 1	*ITEM 2	*ITEM 3	*ITEM 4	*ITEM 5	NO. OF BAYS
3540060-0100	0	0	0	0	0	0	1
3540060-0200	915 (36.0)	1	0	0	2	2	2
3540060-0300	1830 (72.0)	0	1	0	3	3	3
3540060-0400	2745 (108.1)	0	0	1	4	4	4
3540060-0500	3660 (144.1)	1	0	1	5	5	5
3540060-0600	4575 (180.1)	0	1	1	6	6	6
3540060-0700	5490 (216.1)	0	0	2	7	7	7
3540060-0800	6405 (252.1)	0	1	2	8	8	8
3540060-0900	7320 (288.2)	0	1	2	9	9	9
3540060-1000	8235 (324.2)	0	0	3	10	10	10
3540060-1100	9150 (360.2)	1	0	3	12	12	12
3540060-1200	10065 (398.2)	0	1	3	13	13	13

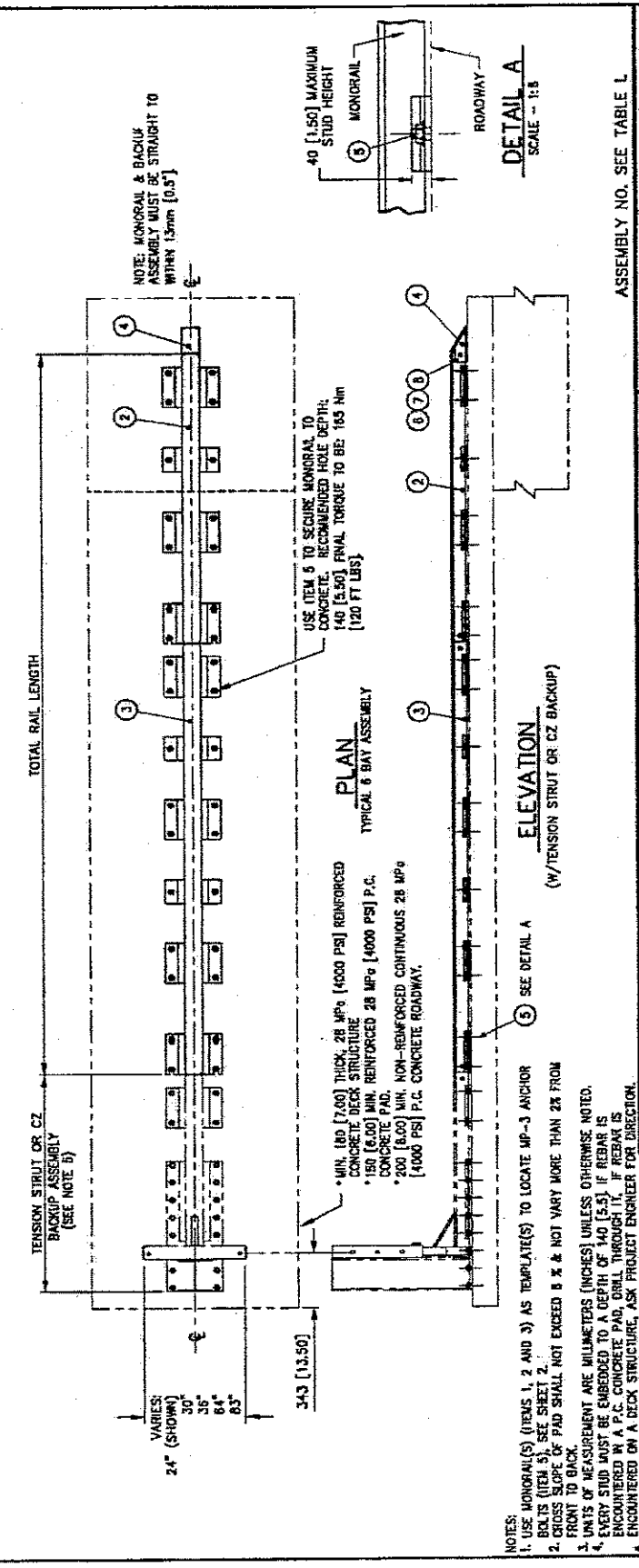
NOT APPLICABLE FOR 60° & 90° OR CZ SYSTEMS

NOT APPLICABLE FOR CZ OR CQ SYSTEMS

PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	REV'D
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	2760041-0000	END CAP, MONORAIL, QG, G	1.00
5	3525309-0000	ANCHOR MP-3, FT-KIT-3/447, VT	*
6	2699571-0000	BOLT, 1/4" X 5/8" X 3 1/2, 6S, G	1.00
7	2704141-0000	NUT, 1/4" X 5/8" G	1.00
8	2708231-0000	WASHER, LOCK, 5/8" G	1.00

* SEE TABLE



ASSEMBLY NO. SEE TABLE L

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

QUADGUARD® SYSTEM
MONORAIL ASSY, QG

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

NO.	DATE	BY	CHK.	APP.
5-8-96				
3-1-96				
5/17/98				
5/17/98				

DESIGNED BY: M. Oberth

DATE: 5/17/98

NO. OF BAYS: 354006.dwg

REV. ADDRESS:

REFERENCES

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

2. CROSS SLOPE OF PAD SHALL NOT EXCEED 8% & NOT VARY MORE THAN 28 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 BY 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.

Revisions	Date	Rev. By	Chk.	App.
ITEM 6 REDESIGNED	06/09/98	K	IB	KM
ITEM 4 REDESIGNED	07/07/98	L	LWC	KM
	07/07/98	I	STI	KM
				SPT

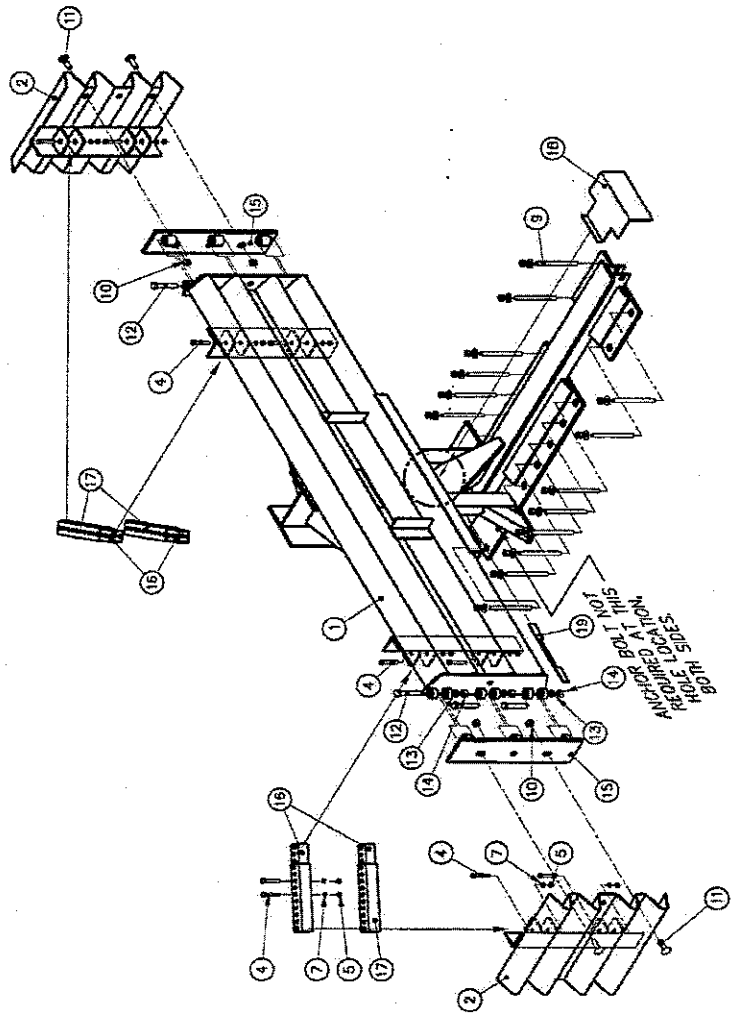
PARTS LIST

ITEM	STOCK NO.	DESCRIPTION	QTY
1	SEE TABLE A	BACKUP TS, QG WDE.G	1.00
2	2760471-0000	PANEL SIDE QG WDE.G	2.00
4	2699501-0000	BOLT, HK, 3/8X3 1/2, G2, G, ALL THREAD	16.0
5	2704031-0000	NUT, HK, 3/8, G	16.0
7	2708041-0000	WASHER LOCK, 3/8, G	16.0
9	3525300-0000	ANCHOR, MP-3 PT-KIT, 3/4X7, Y/T	3.00
10	2704191-0000	NUT, HK, 5/8, G, RAL	4.00
11	2699341-0000	BOLT, RAL, 5/8X2, G	4.00
12	2701991-0000	BOLT, HK, 5/8X4, G5, 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, QG, G	2.00
16	2760501-0000	TEL ST 1 3/4X1 3/4X12GA, HSS, G, 10" LG	4.00
17	2760502-0000	TEL ST 2X2X12GA, HSS, G, 10" LONG	4.00
18	2760293-0000	BRACKET, CAR, BRIDGE SUPPORT, TS B/U	1.00
19	2760294-0000	LOCKING BAR, CART SUPPORT, QG	1.00

TABLE A

ASSY. NO.	STOCK NO.	DESCRIPTION	WIDTH
3540391-0000	2760451-0000	BACKUP TS, 64, QG WDE.G	1620 [64"]
3540392-0000	2760452-0000	BACKUP TS, 83, QG WDE.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, QG WIDE

DESIGNED BY	D. Sloub	DATE	7/1/97
CHECKED BY	J. Machado	DATE	6/2/97
DESIGNED BY	B. Krage	DATE	7/17/97
CHECKED BY	J. Machado	DATE	7/17/97
CAD FILE	3540390-0000.dwg		
REV. ASSY	E		

REFERENCES

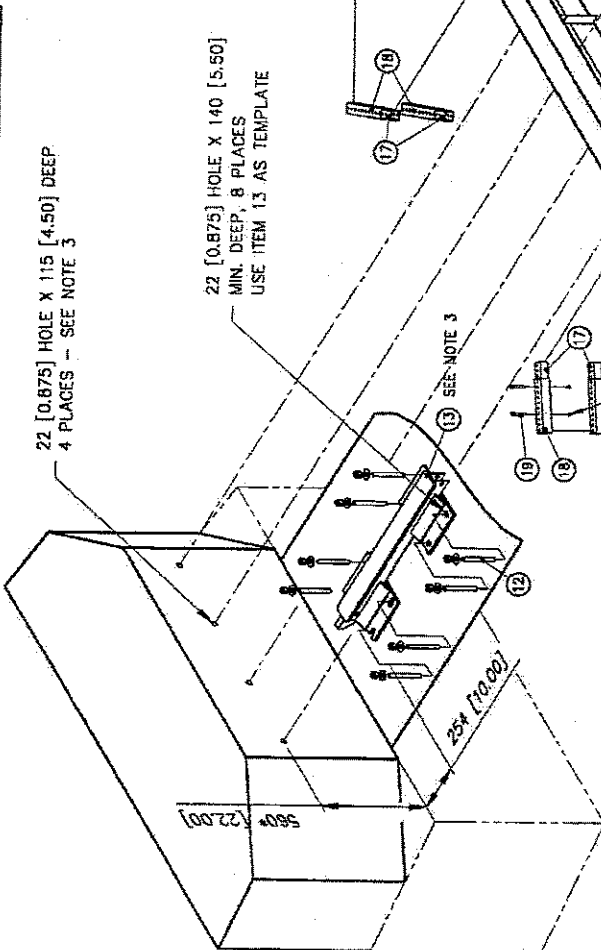
Revisions	Date	Rev.	By	Chk/ App.
ITEM 12 WAS 2699341-0000	12/7/96	E	LWC/BMK	SPT
REMOVED 1 ANCHOR BOLT & ADD'D NOTE	8/19/95	C	LWC/RM	SPT
UPDATED HINGES, ITEM 15 WAS 2760433-0000	12/10/94	D	DK	BB SPT

**QUADGUARD SYSTEM
 FOR WIDE HAZARDS**

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

TABLE

ASSY. NO.	ITEM 1	DESCRIPTION	WIDTH
3540401-0000	2760491-0000	BACKUP FACE CONC. 64.0G WIDE G	1620 [64"]
3540402-0000	2760481-0000	BACKUP FACE CONC. 83.0G WIDE G	2100 [83"]



ITEM	STOCK NO.	DESCRIPTION	REQ'D
1	SEE TABLE	BACKUP FACE CONC. .OG WIDE G	1.00
2	3525130-0000	ANCHOR MP - 3 FT KIT. 3/4XG 1/2 HOR	1.00
3	2760435-0000	HINGE PLATE, FENDER PANEL, OGC	2.00
5	2760471-0000	PANEL SIDE, OG WIDE G	2.00
6	2704031-0000	NUT, HK, 3/8 G	16.0
10	2701991-0000	BOL, LHX, 5/8X4.65 G	8.00
11	2708231-0000	WASHER, LOCK, 5/8 G	8.00
12	3525300-0000	ANCHOR MP - 3 FT KIT. 3/4X7 VT	2.00
13	2760051-0000	MONORAIL ONE BAY, OGC	1.00
14	2704191-0000	NUT, HK, 5/8 G	8.00
15	2704191-0000	BOL, LHX, 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 3/4X126A, HAS, G, 10" LG	4.00
18	2760502-0000	TEL ST. 2X2X126A, HAS, G, 10" LONG	4.00
19	2699601-0000	BOL, LHX, 3/8X3 1/2, BZ, G, ALL THREAD	16.0

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

22 [0.875] HOLE X 140 [5.50]
MINI 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 6.
4. A REGAR CUTTING BIT WILL LIKELY BE REQUIRED TO ACHIEVE PROPER ANCHOR INSTALLATION.

REFERENCES

CONCRETE BACKUP-OG WIDE 35-40-41

ASSEMBLY NO. (SEE TABLE)
ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

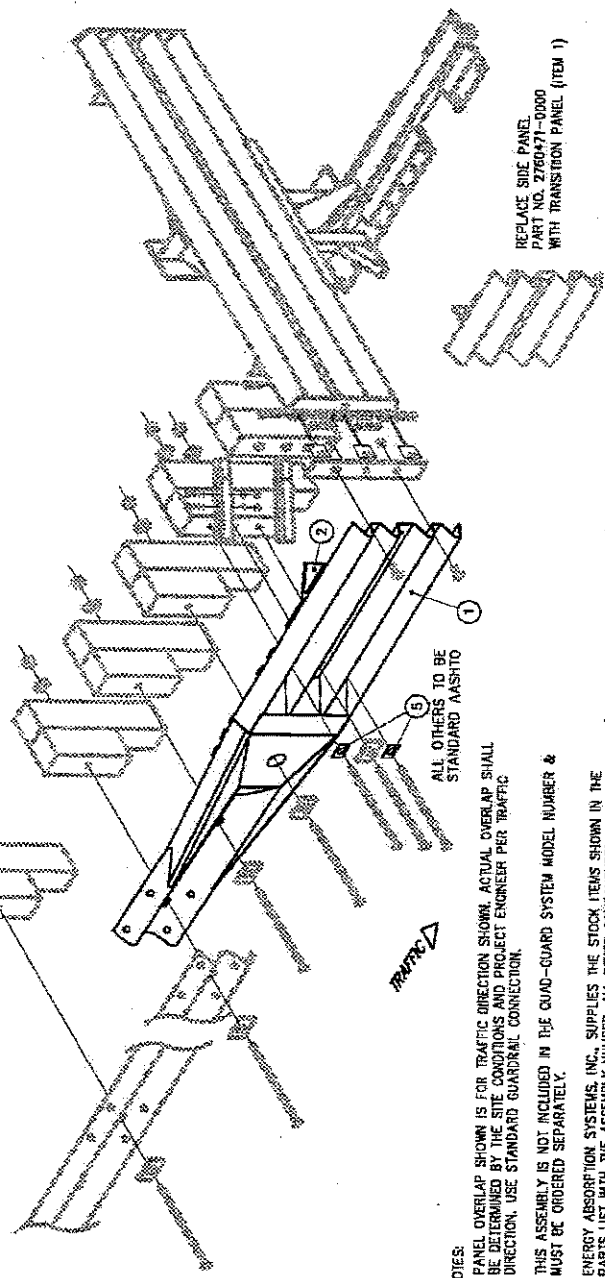
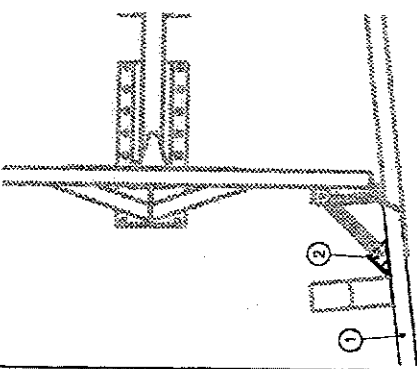
Revisions	Date	Rev.	By	Chk	App.
ITEM 10 WAS 2698571-0000	2/20/99	D	LWC	BNK	SPT
ADDED LEGS	2/8/99	B	DLS	RM	SPT
CHGD ITEM 3, WAS 2760433-0000	12/8/98	C	DK	RM	BB

BACKUP ASSY, CONCRETE, .OG 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	2760503-0000	BRACKET, PIVOT SUPPORT, TRANS. CG
3	2701811-0000	BOLT, RAIL, 5/8X1 1/4, G
4	2704191-0000	NUT, HX, 5/8, G
5	2708871-0000	WASHER, BAR, 1/8X1 1/4XZ, W/RIELE



REPLACE 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.

REFERENCES

ASSEMBLY NO. 35-40211-0000
ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT

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

DATE: N.T.S. 35-40211-0000 1 of 2

DATE	BY	REV
5/28/97	T. Russe	1
8/21/86	JVM	2
3/6/97	KRM	3
3/6/97	J. Machado	4

35-40211-0000.dwg
 REV. ASSY

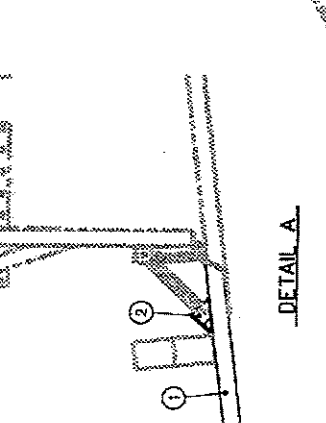
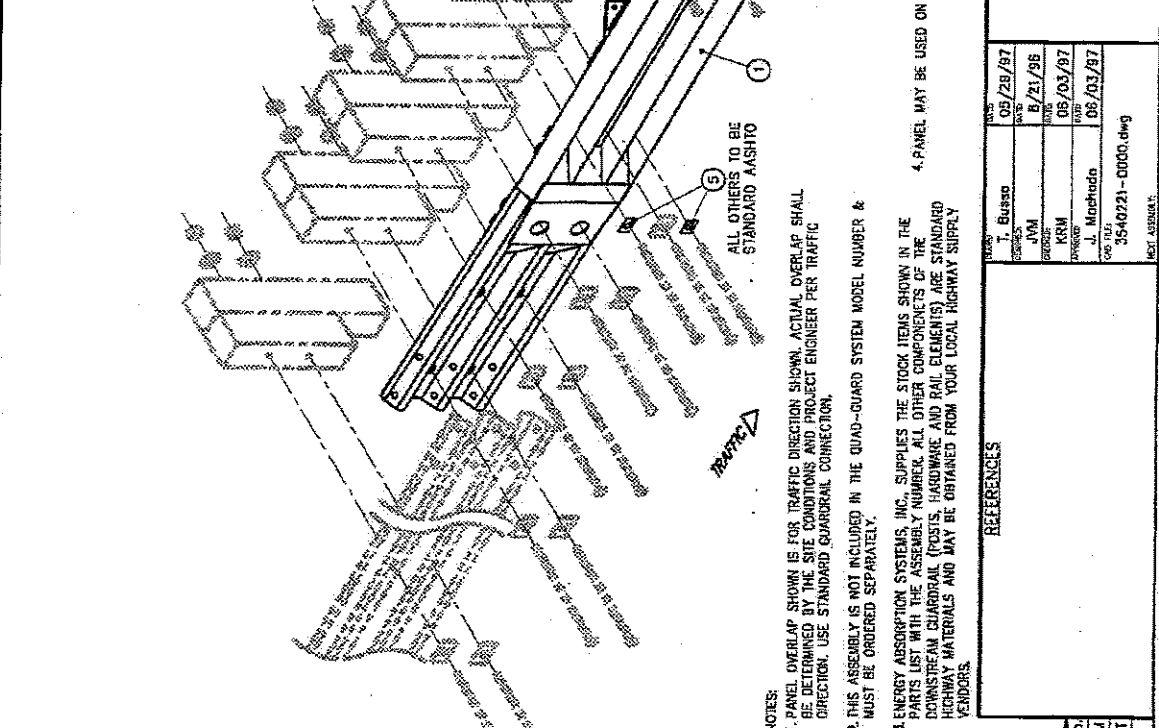
ITEM 2 ASSEMBLY

Revisions	Date	Rev. By	Check/App.
MULTIPLE REVS	9/29/97	RLS	KM JVM
UPDATED ROLT LAYOUT FOR ITEM 2 ASSY	11/24/98	B	RCC GE SPT

ITEMS 3 & 4
REQUIRED 4 PLACES

**QUADGUARD SYSTEM
FOR WIDE HAZARDS**

ITEM	STOCK NO.	DESCRIPTION	REQD
1	2760331-0000	QUADGUARD TO THREE-BEAM TRANS. PANEL	1.00
2	2760303-0000	BRACKET, P.WOT. SUPPORT, TRANS. QG	1.00
3	2701811-0000	BOLT, RAIL, 5/8X1 1/4, C	4.00
4	2704191-0000	NUT, HM. 5/8, G	4.00
5	2708871-0000	WASHER, BR. 1/2X1 1/4X2 W/HOLE	2.00



ASSEMBLY NO. 3540221-0000

ENERGY ABSORPTION SYSTEMS, INC.
ENGINEERING AND RESEARCH DEPARTMENT

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

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

DATE	BY	REVISION
05/28/97	J. Busso	REVISED
06/21/98	J.M.	REVISED
06/03/97	K.M.	REVISED
06/03/97	J. Madhoo	REVISED

3540221-0000.dwg
NEXT ASSEMBLY:

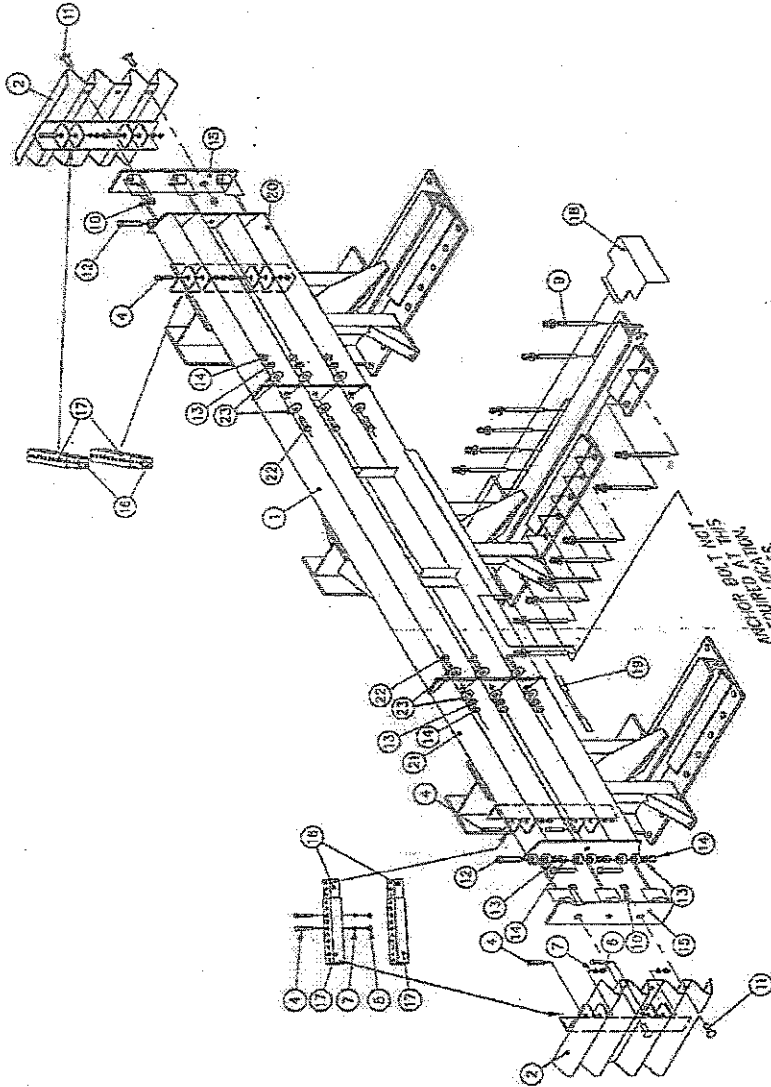
REFERENCES

DATE	REV.	BY	APP.
9/29/97	A	DLS	KM
11/24/99	B	RCC	BB

UPDATED BOLT LAYOUT FOR ITEM 2 ASSY

ITEM	STOCK NO.	DESCRIPTION	QTY
1	2760451-0000	BACKUP, TS, 120,0G WIDE CENTER SECTION	1.00
2	2760471-0000	PANEL, SIDE, 0G WIDE, G	2.00
4	2699601-0000	BOLT, HK, 3/8X3 1/2, C2, S, ALL THREAD	16.0
5	2704031-0000	BOLT, HK, 3/8, G	16.0
7	2708041-0000	WASHER, LOCK, 3/8, G	16.0
8	3523300-0000	ANCHOR, WP--3PT--KIT-3/4X7.11	8.00
10	2704181-0000	BOLT, HK, 5/8, G, S, H, L	4.00
11	2699341-0000	BOLT, FR, 1/5, 7/8X2, G	4.00
12	2701801-0000	BOLT, HK, 3/8X4, G, G	6.00
13	2708231-0000	WASHER, LOCK, 3/8, G	12.0
14	2708141-0000	RUT, 1/2X5/8, G	12.0
15	2760435-0000	HINGE PLATE, FENDER PANEL, 0G, G	2.00
16	2760501-0000	TEL ST 1 3/4X1 3/4X120A, H, 5G, 10' LG	4.00
17	2760502-0000	TEL ST 22X212GA, H, 23G, 10' LONG	4.00
18	2760293-0000	BRACKET, CARTRIDGE SUPPORT, TS B/A	1.00
19	2760294-0000	LOGGING BAR, CART SUPPORT, 0G	1.00
20	2760605-0000	BACKUP, TS, 120,0G WIDE RT SECTION	1.00
21	2760607-0000	BACKUP, TS, 120,0G WIDE LT SECTION	1.00
22	2700501-0000	BOLT, 5/8X3, 02, G	6.00
23	2708291-0000	WASHER, FLAT, 5/8X1 3/4, G	12.0

NOTES:
 1. WHEN TRANSITIONING QUADGUARD SYSTEM TO EXISTING BARRIER, REFER TO THE TRANSITION ASSEMBLY DRAWINGS FOR PROPER USE OF SIDE PANEL, ITEM 2, AND DIAGONAL BRACES, ITEMS 16 & 17.

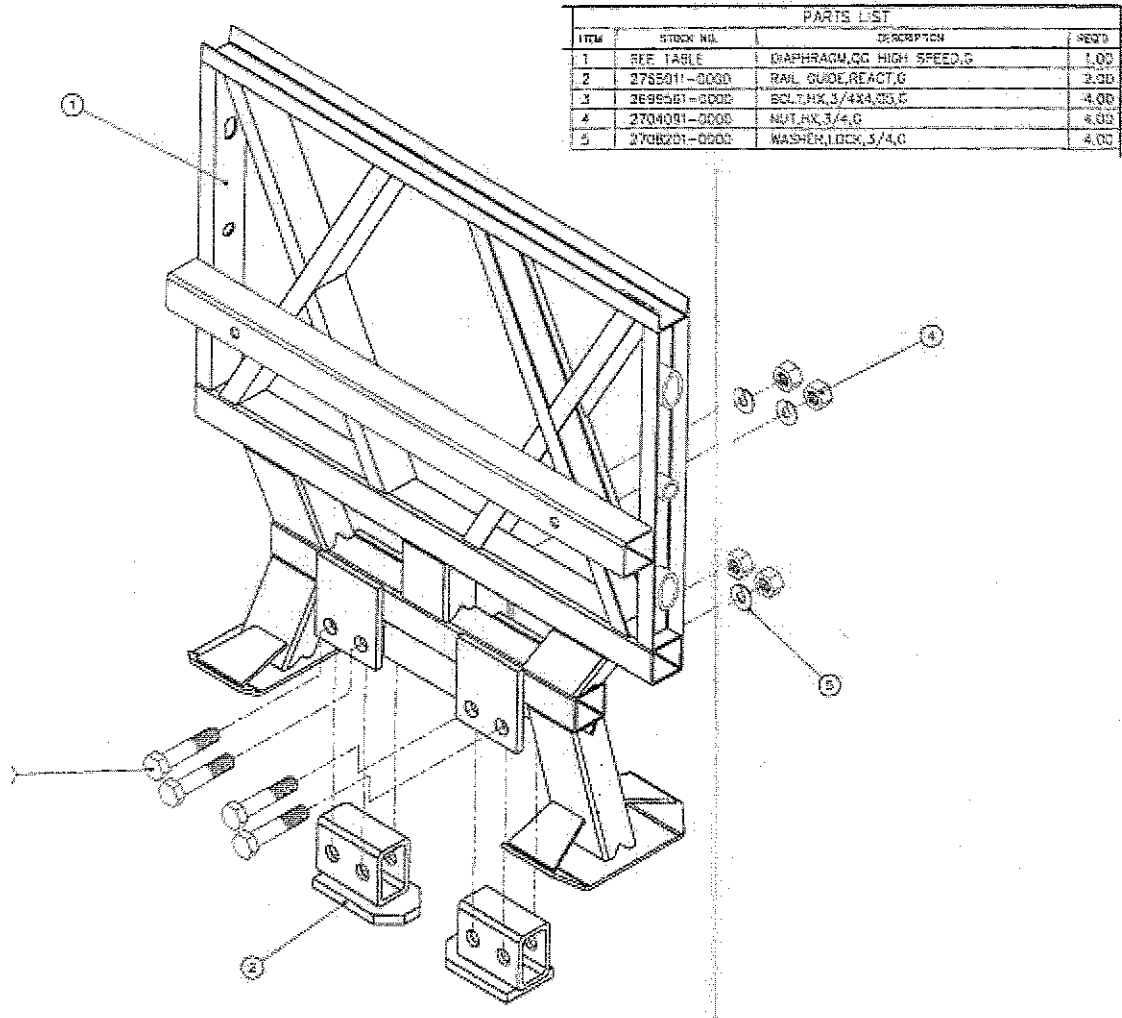


ASSEMBLY NO. 6012210-0000
 ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
 QUADGUARD® SYSTEM
 BACKUP ASSY, TS, 120,0G WIDE

DESIGNER	H. NGUYEN	DATE	01/08/01
CHECKER	BB	DATE	01/19/01
APPROVER	SPT	DATE	01/19/01
FILE NO.	601221 51003.dwg		
REV. OF ASSY			

Revisions	Date	Rev.	By	Desc
REV CHANGED TO MATCH SHT 2	10/29/00	A	DPH/STT	SPT

SCALE: 1:20
 SHEET NO: 60-12-21
 OF 5
 3 of 5

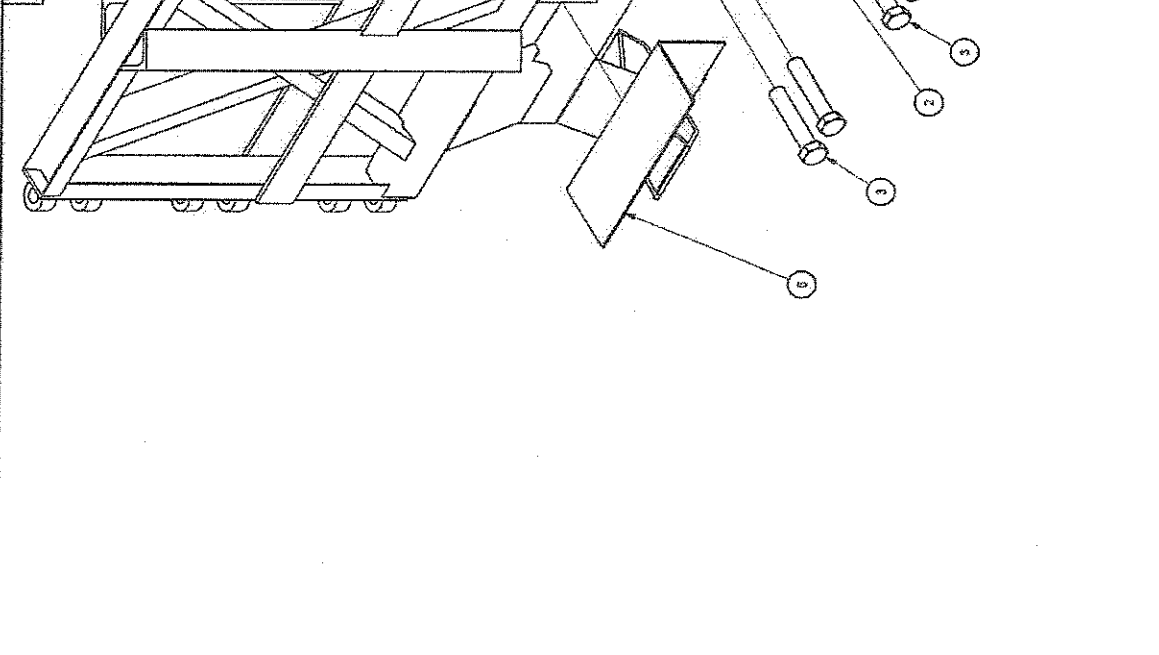


PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY
1	REF TABLE	DIAPHRAGM,CG HIGH SPEED,G	1,00
2	278501-0000	RAIL GUIDE,REACT,G	2,00
3	269501-0000	BOLT,HX,3/4X4,00,G	4,00
4	270401-0000	NUT,HX,3/4,G	4,00
5	2708201-0000	WASHER,LOCK,5/4,G	4,00

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

PARTS LIST			
ITEM	STOCK NO.	DESCRIPTION	QTY.
1	2761041-1153	DIAPHRAGM QG, EX-WIDE, 1153, G	1
2	2765511-0000	RAIL GUIDE REACT, G	2
3	2856561-0000	BOLT, TX, 3/8X4, 05, G	4
4	2754001-0200	NUT, HX, 3/4, G	4
5	2768201-0000	WASHER, LOCK, 3/4, G	4
6	2769922-0000	BRACKET, CARTRIDGE SUPT, DIA, 03, G	2

SEE PARTS LIST FOR PARTS LIST
 FOR ASSEMBLY OF 478" TO 479" DIAPHRAGM REACTOR

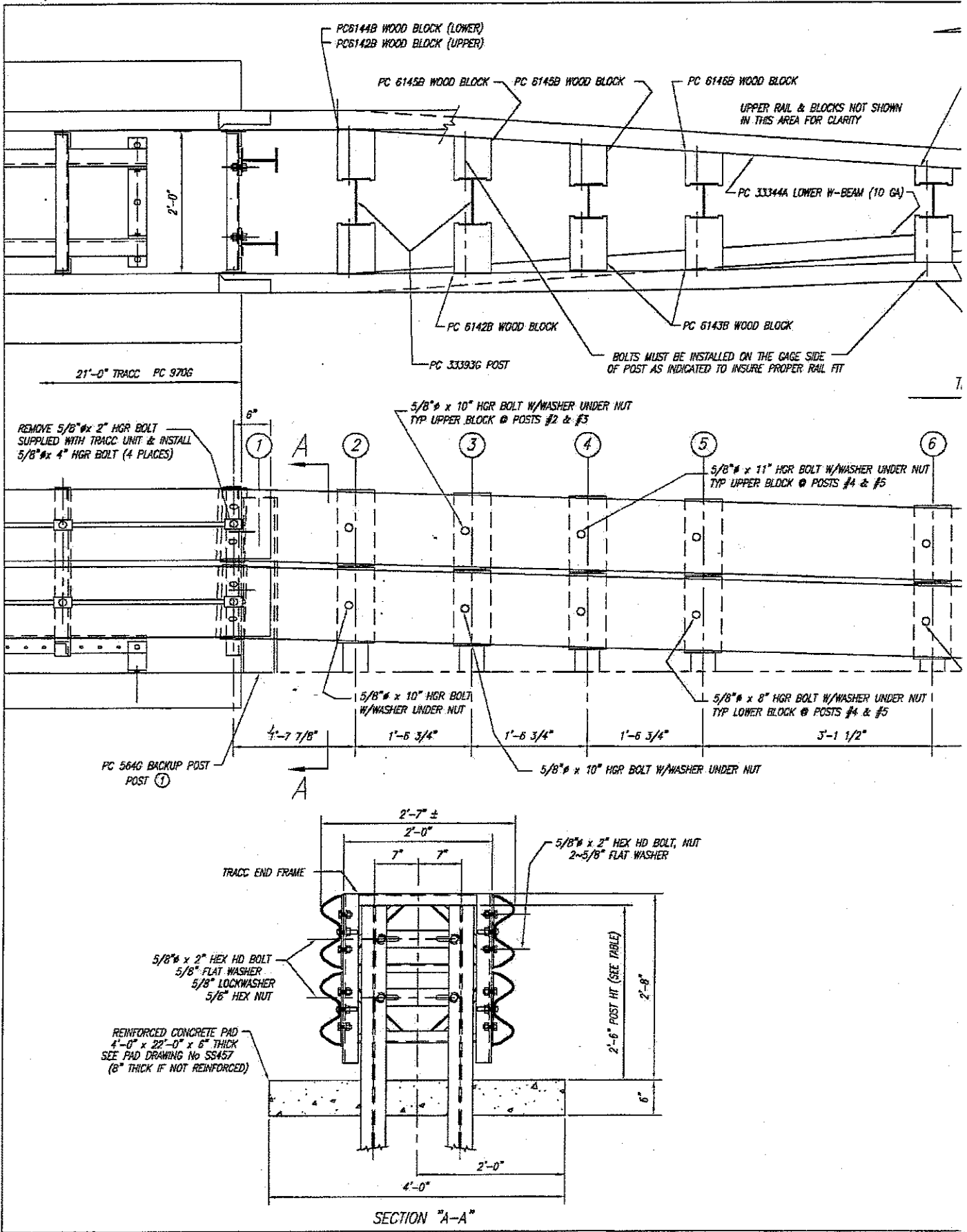


NOTES:
 1. ASSEMBLE ITEMS 2 WITH FASTENERS AS SHOWN.

ASSEMBLY NO. 6010432-1153
ENERGY ABSORPTION SYSTEMS, INC.
 ENGINEERING AND RESEARCH DEPARTMENT
DIAPHRAGM ASSY, QG, EX-WIDE, 1153

DESIGNED BY	D. Kalfeld	DATE	11/01/2003
REVIEWED BY	A. Franklin	DATE	10/31/2003
APPROVED BY	A. Franklin	DATE	11/10/2003
PROJECT	SPT	DATE	11/18/2003
STATUS	SIT	DATE	11/11/2003
6010432-1153			

REV. 3/08-1
 6010432-1153
 1 of 1

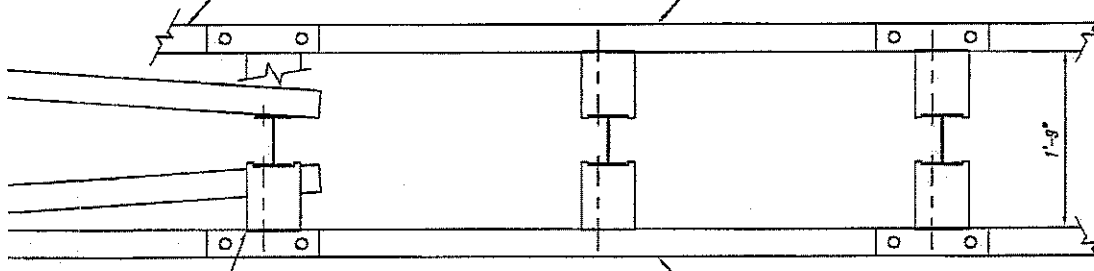


TRAFFIC

PC 6147B WOOD BLOCK

PC 33344A UPPER W-BEAM (10 GA)

PC 105G W-BEAM (10 GA)

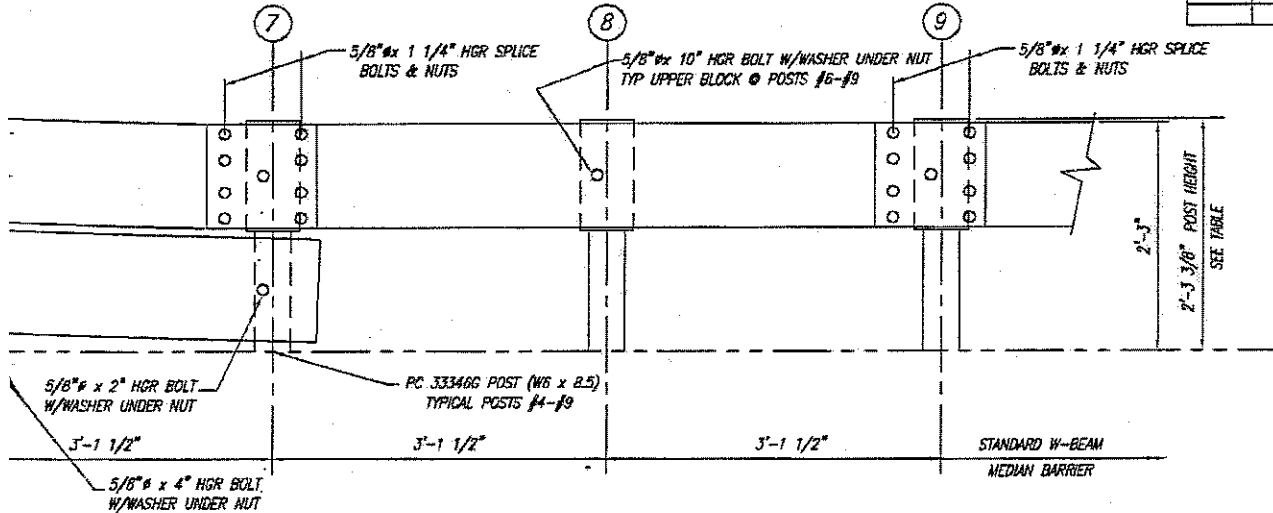


PC 6141B WOOD BLOCK
TYPICAL POSTS #6-#9

PC 105G W-BEAM (10 GA)

PC 33344A UPPER W-BEAM (10 GA)

TRUCK



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"

TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
105G	2	10/63/TRACC (GUARDRAIL)
584C	2	BACKUP POST (W6 x 8.5 x 6'-6")
33344A	4	10/126/TRACC (GUARDRAIL)
33393C	2	POST W6 x 13 x 7'-6"
33346G	6	POST W6 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	60	5/8" HGR HEX NUT
3320G	32	5/8" FLAT WASHER (Ø 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

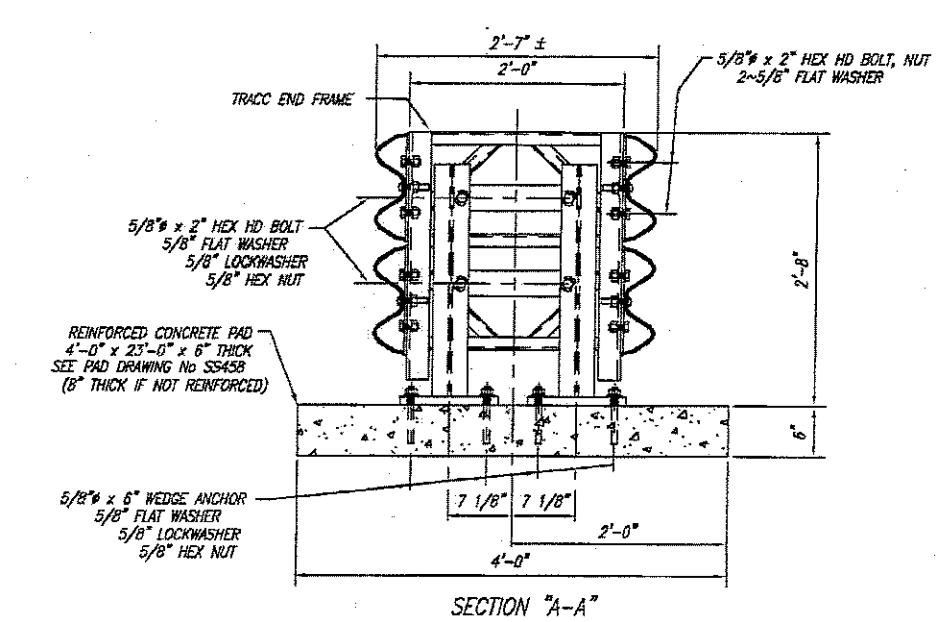
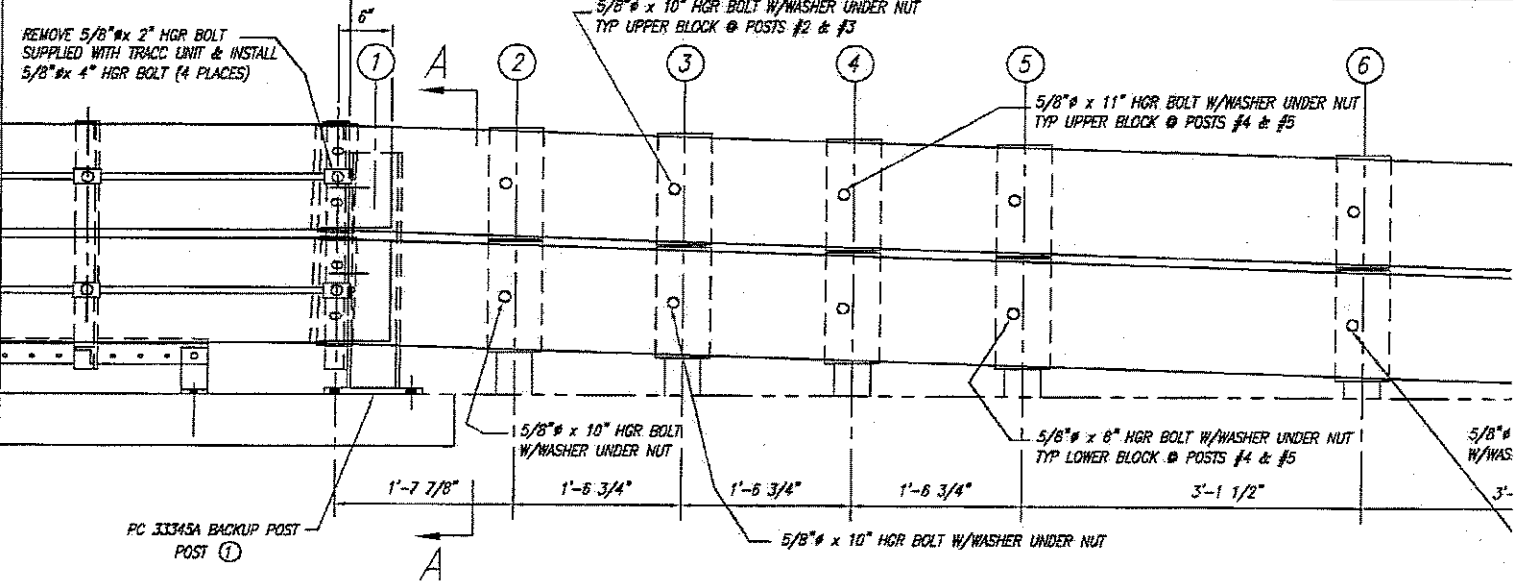
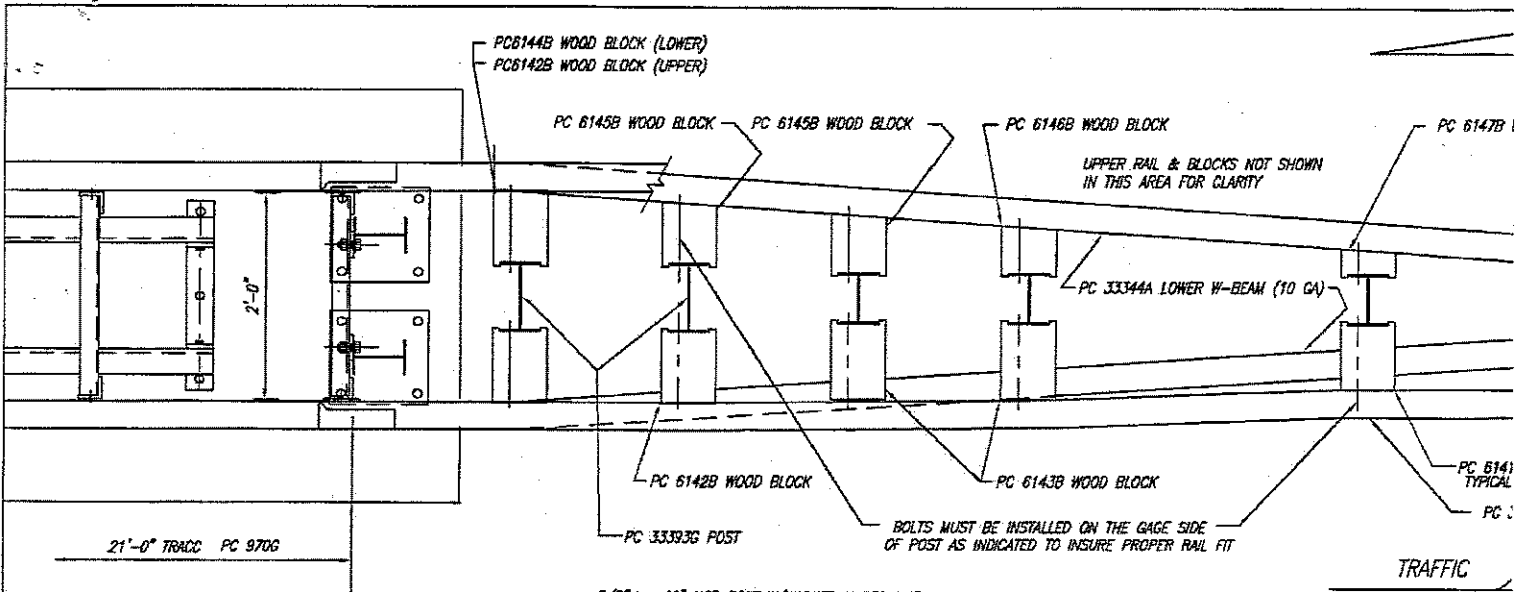
1	BT	6-7-01	REVISED POSTS #2 & #3 AND LENGTH OF TRANSITION.
REV.	CHKD	BY	DATE
REMARKS			
TRACC TRANSITION TO W-BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS (ALL DRIVEN POSTS)			DRAWN B.T. CHECKED APPROVED DATE 8/16/00 ENG FILE # SS453-01E SHE.No. E1 OF 1 DRAWING NO. SS 453
TRINITY INDUSTRIES, INC.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

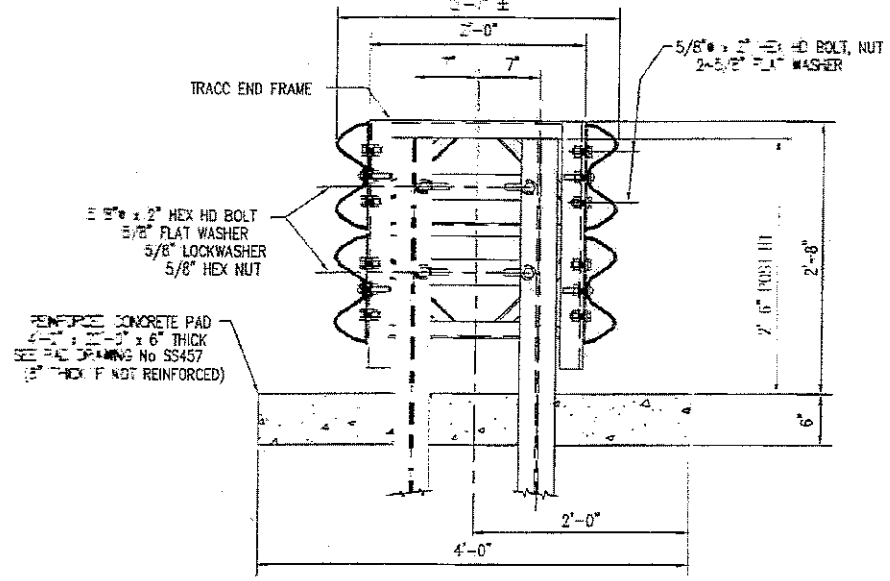
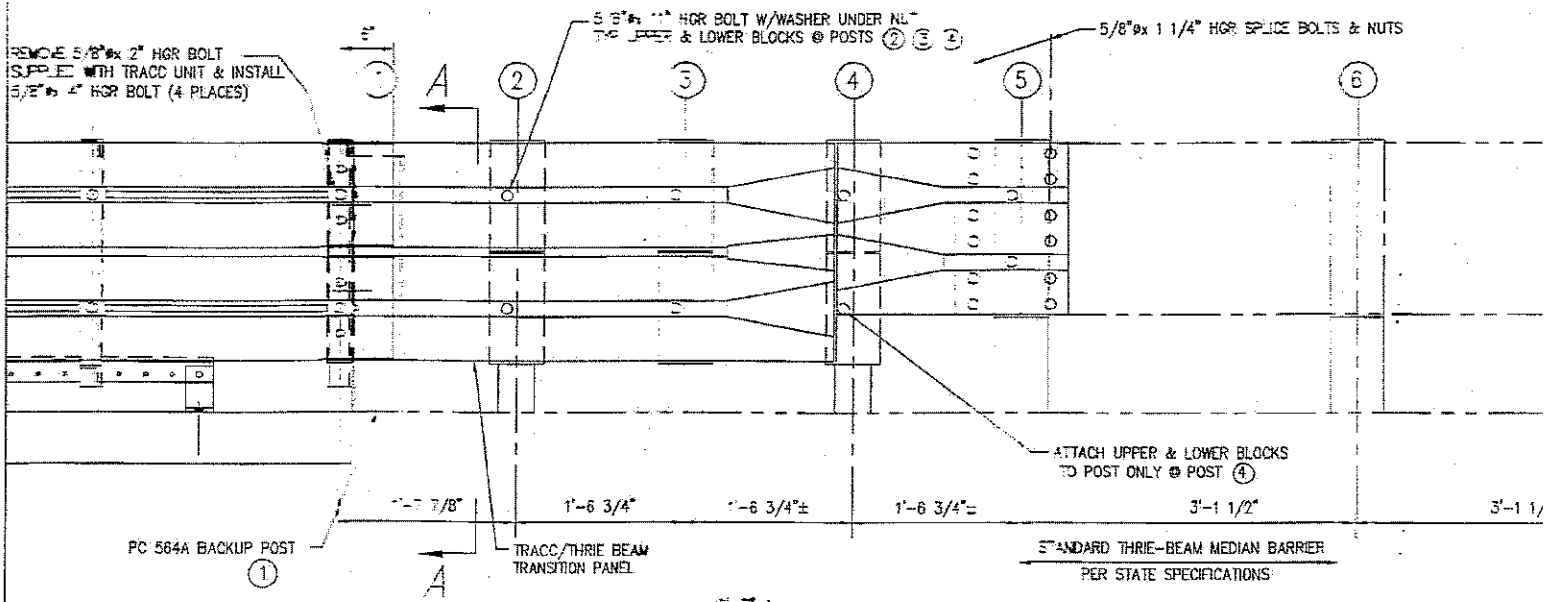
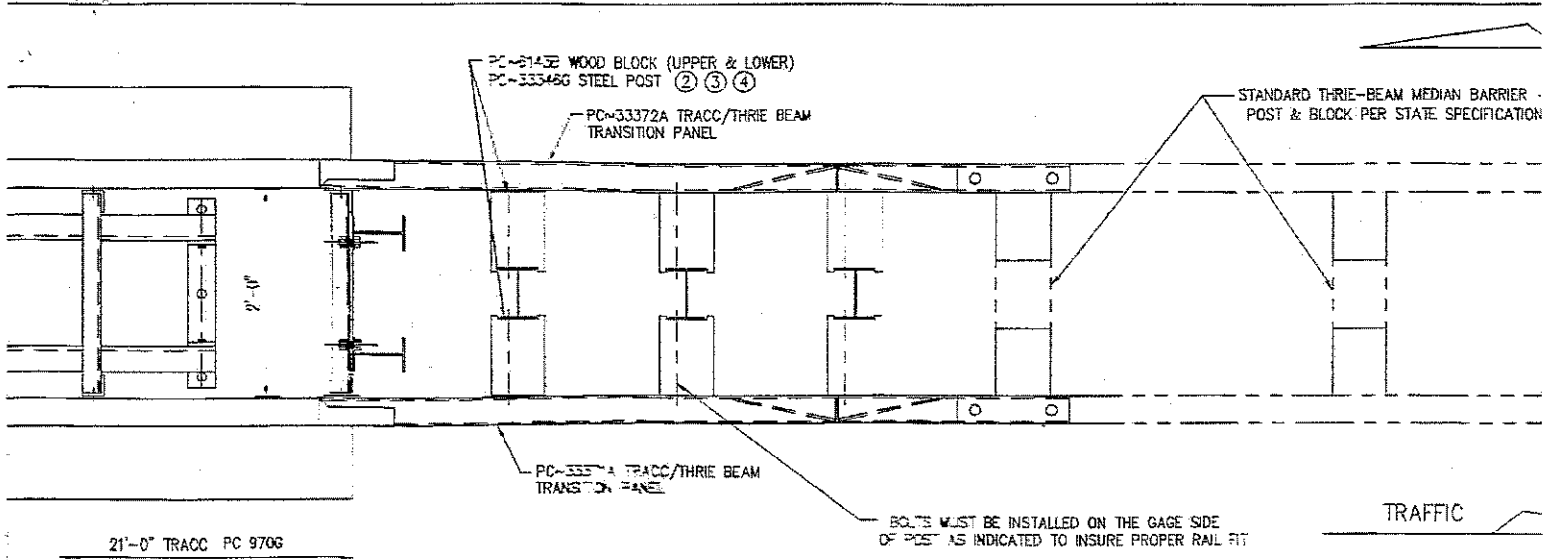
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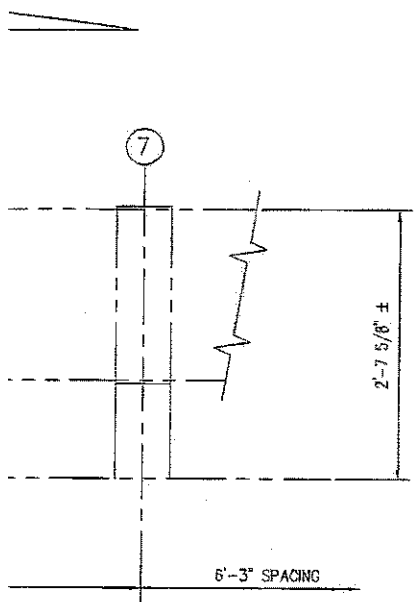
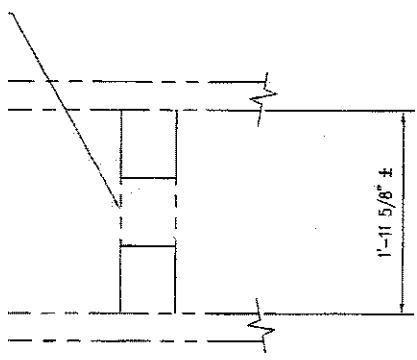
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 36





SECTION A-A

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)
33346G	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"φ x 4" HGR POST BOLT
3510G	12	5/8"φ x 11" HGR POST BOLT
3360G	24	5/8"φ x 1 1/4" HGR SPLICE BOLT
3340G	36	5/8" HGR HEX NUT
3300G	12	5/8" FLAT WASHER (@ HGR POST BOLTS)
3404G	12	5/8"φ x 2" HEX HD BOLT (A325)
4372G	20	5/8" WASHER
3310G	4	5/8" LOCKWASHER
3361G	12	5/8" HEX NUT

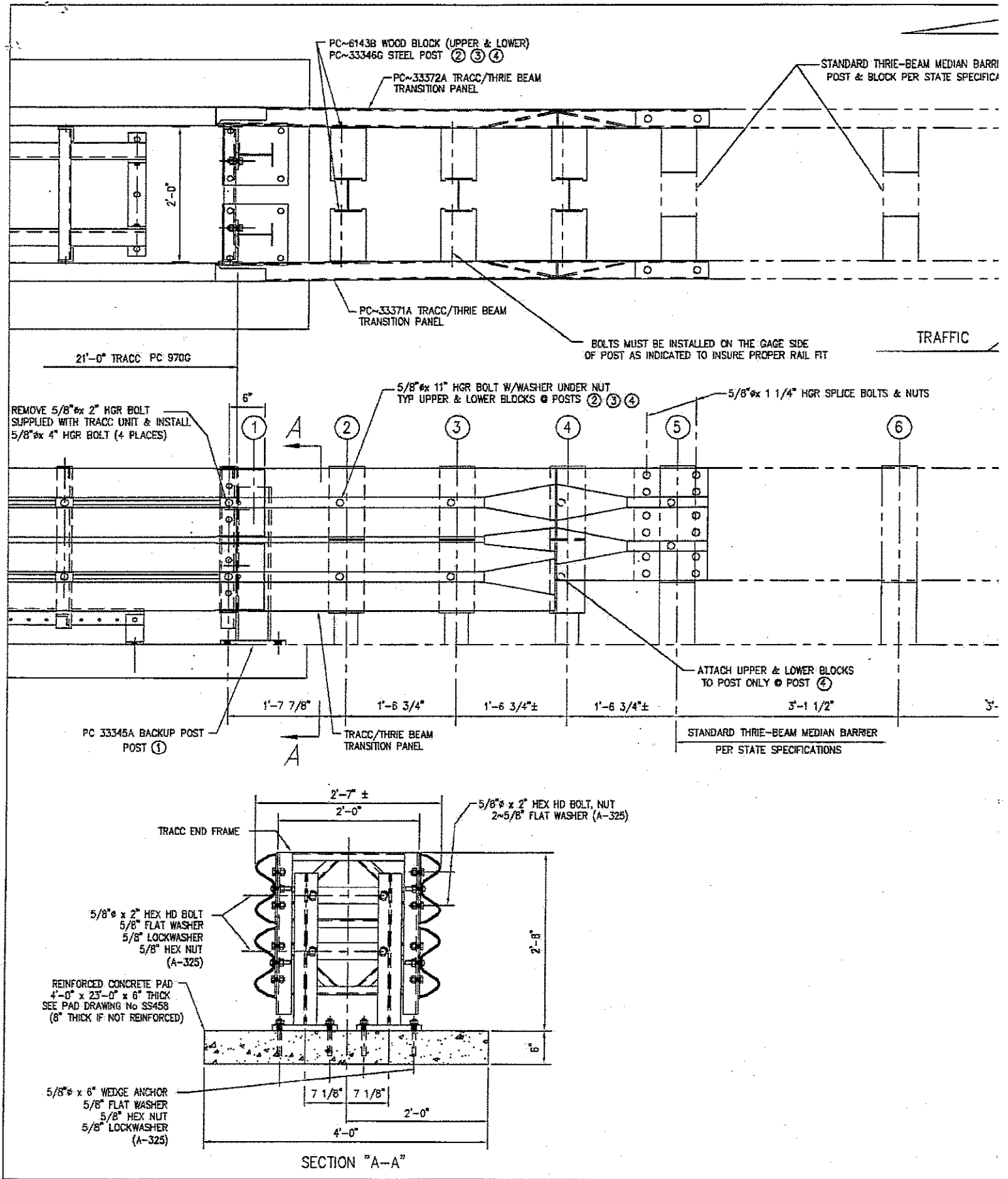
REV.	CHG'D	BY	DATE	REMARKS
				DRAWN B.T. CHECKED APPROVED DATE 8-22-00 ENG. FILE # SS454-01E SHT.No. E1 OF 1 DRAWING NO. SS 454 REV. 0
TRACC TRANSITION TO THRIE BEAM MEDIAN BARRIER PLAN, ELEVATION & SECTIONS (ALL DRIVEN POSTS)				TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY,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

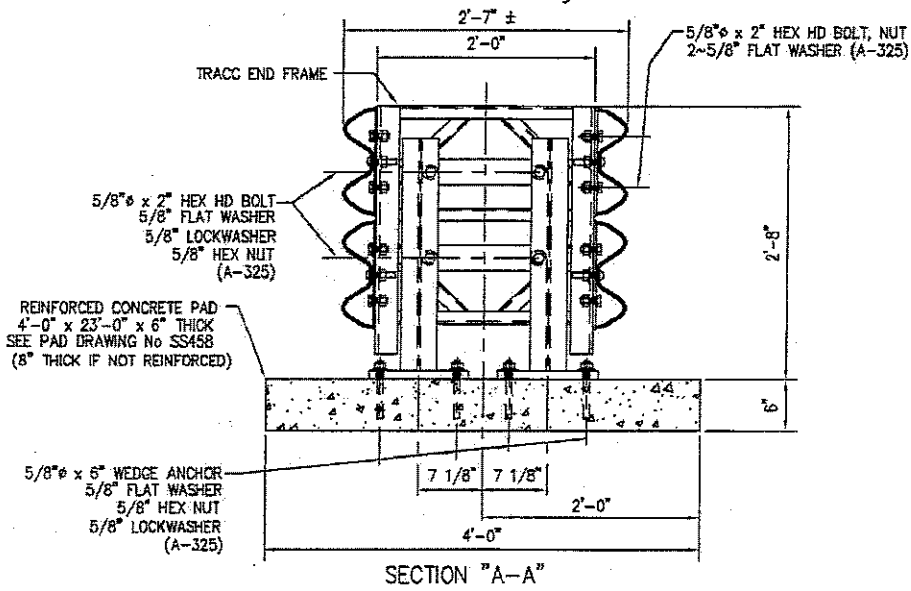
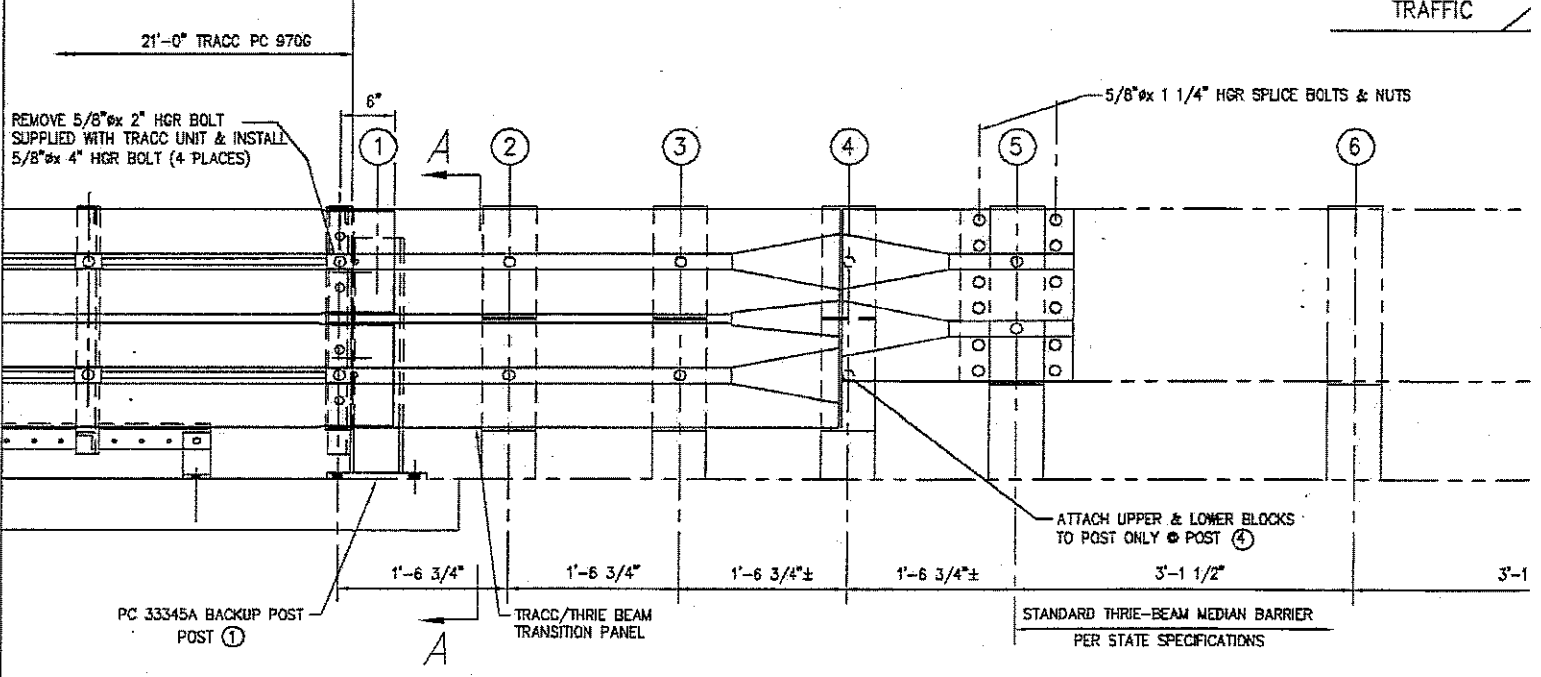
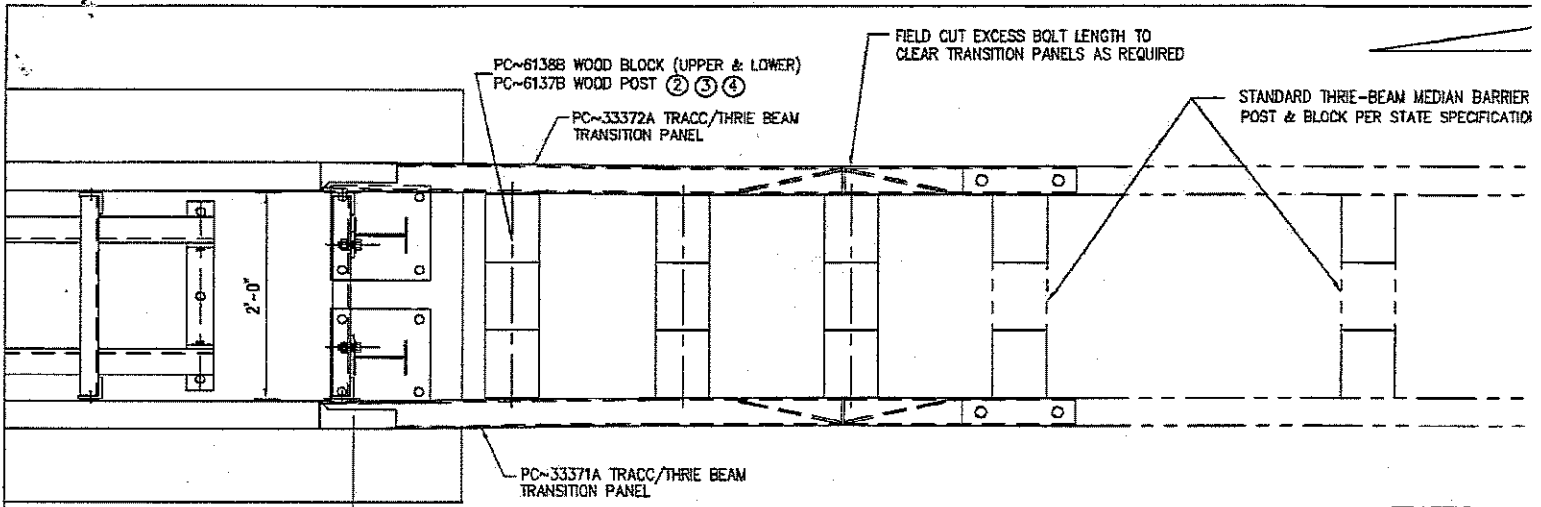
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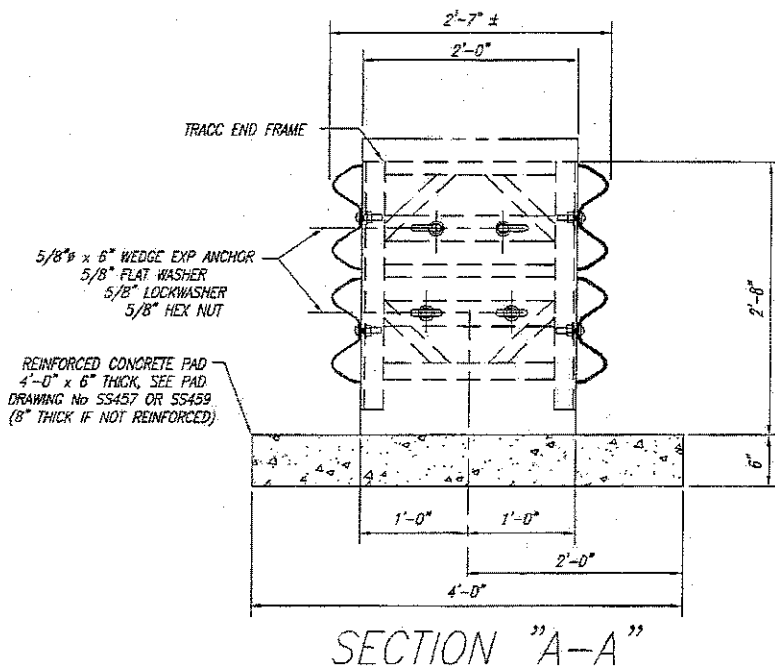
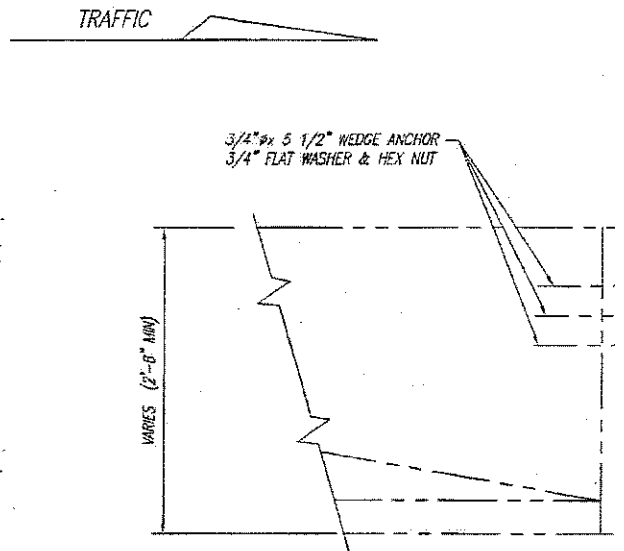
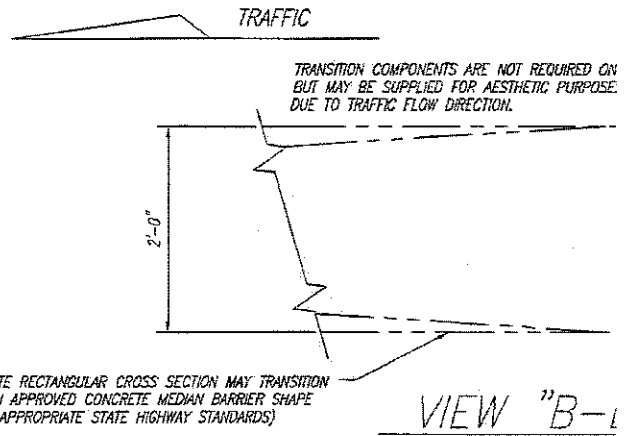
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40

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 39

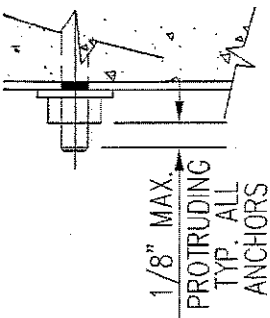
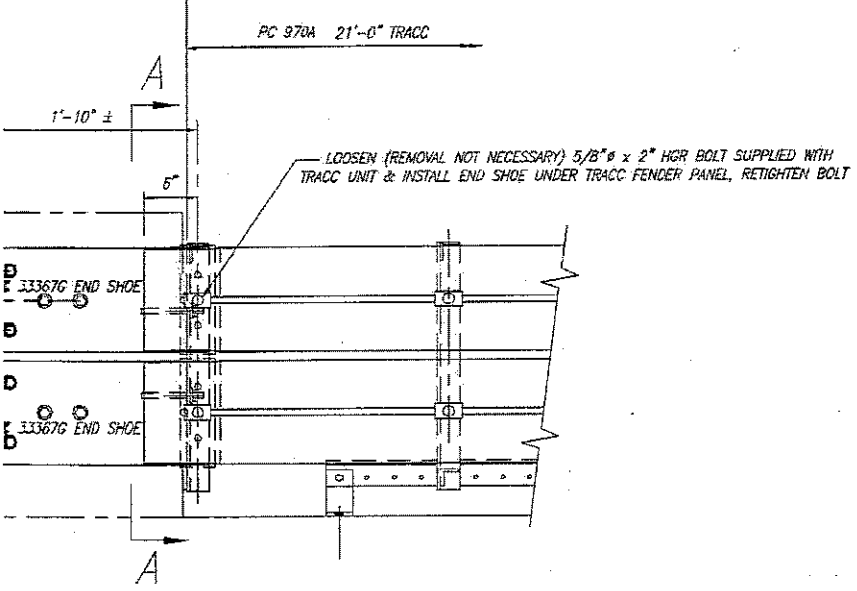
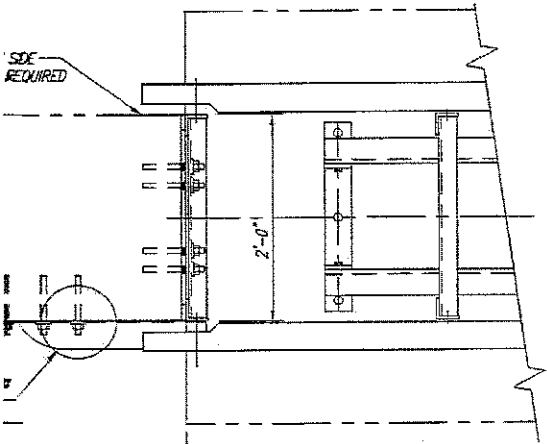






TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
33367G	2	TRACC 100A END SHOE
HARDWARE		
3310G	4	5/8" LOCKWASHER
4451G	4	5/8" x 6" WEDGE EXP ANCHOR
4888G	8	3/4" x 5 1/2" WEDGE EXP ANCHOR



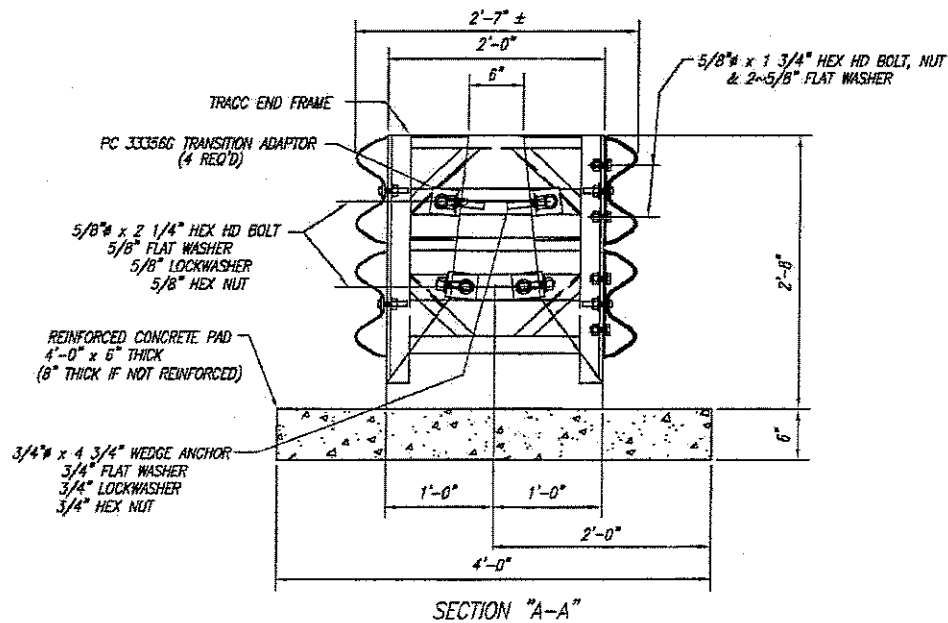
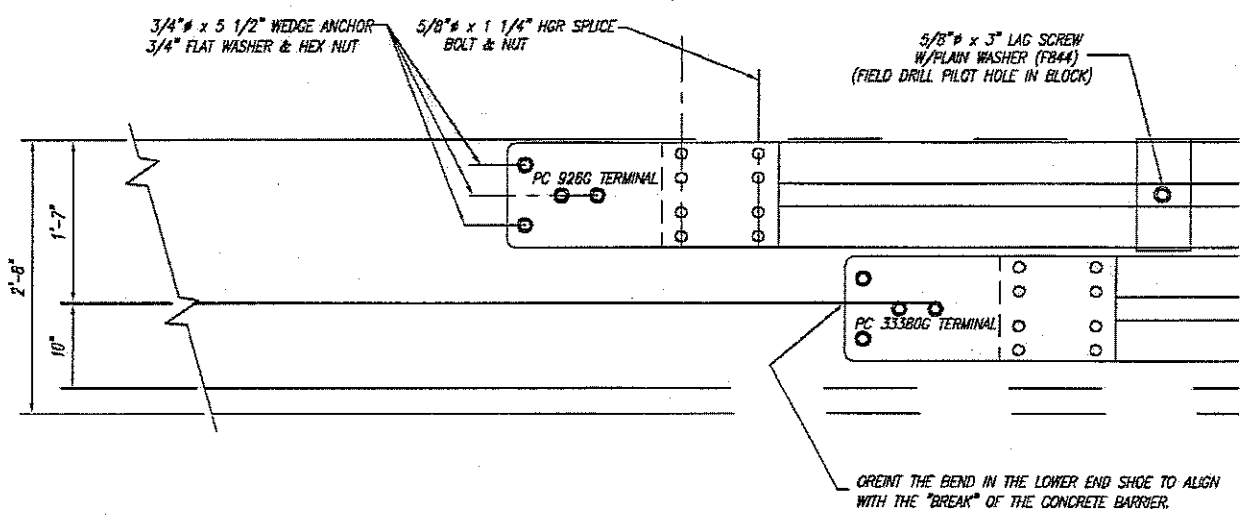
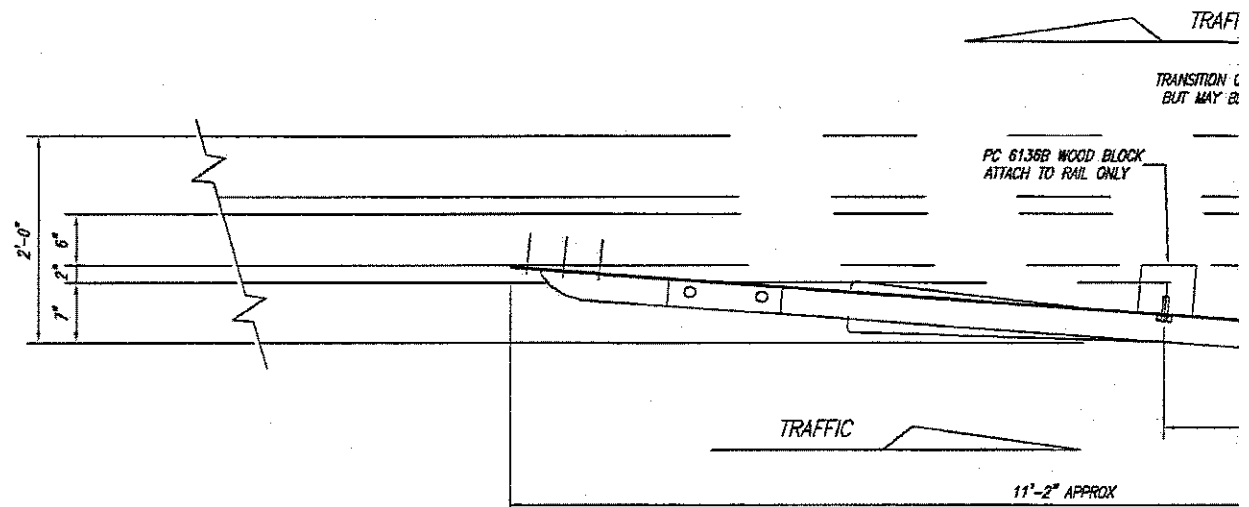
"B-B"

1	B.T.	L.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 ENC. FILE # SS456-01E SHEET: E1 OF 1 DRAWING NO.: SS 456 REV.: 1
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75356				

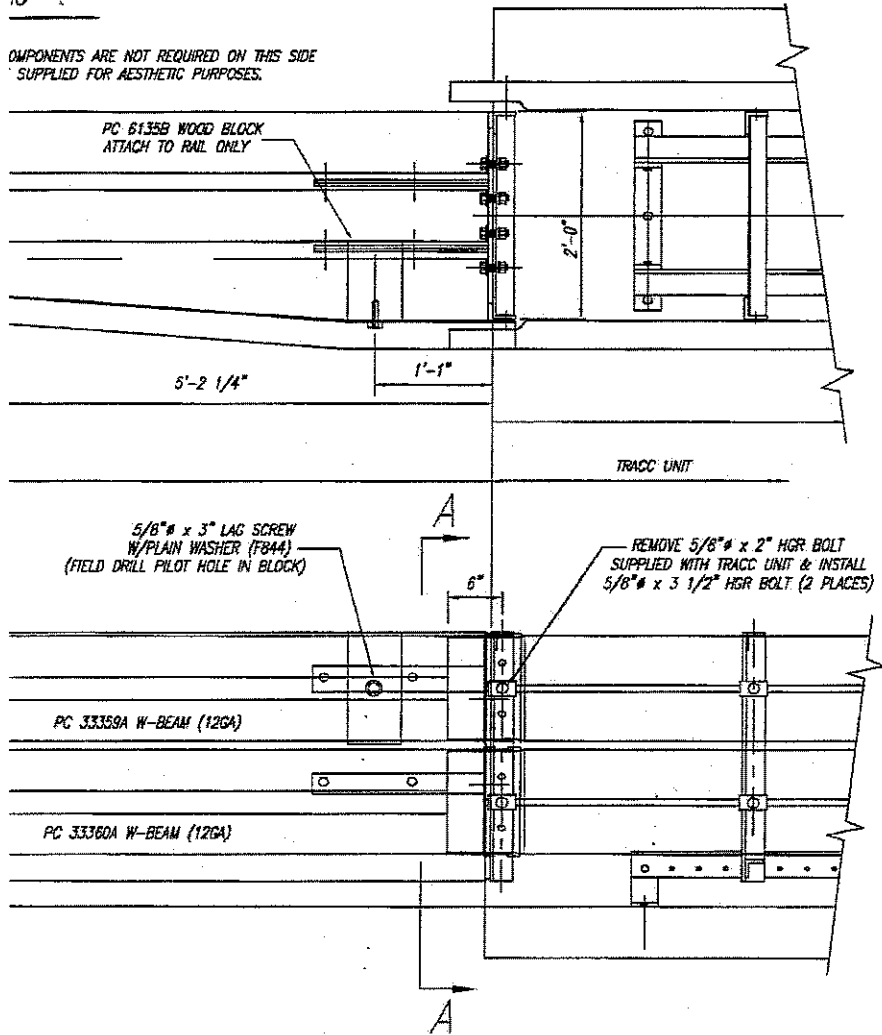
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44

MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET 43




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



TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
928G	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	12/16"O/TRACC (UPPER GUARDRAIL)
33360A	1	12/6"O.5"/TRACC (LOWER GUARDRAIL)
33360G	1	10/END SHOE/EXTRA HOLE/BEND (LOWER)
HARDWARE		
3360G	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
3361C	8	5/8" HEX NUT (A563 DH)
4688G	8	3/4" x 5 1/2" WEDGE ANCHOR
5138C	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

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 PC326 & PC33360, CHG QTY HARDWARE	
3	BT	3-29-00	DELETED PC4421, ADDED PC4412	
2	BT	11-5-99	DELETED PC8130, 6140, 5307 & 4441, ADDED PC6135, 6136 & 4412	
1	BT	6-30-99	DELETED PC33357G & 33358, ADDED 2 MORE PC33356, CHGD SECT A-A & HDWR	
REV.	CHK'D	BY	DATE	REMARKS



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

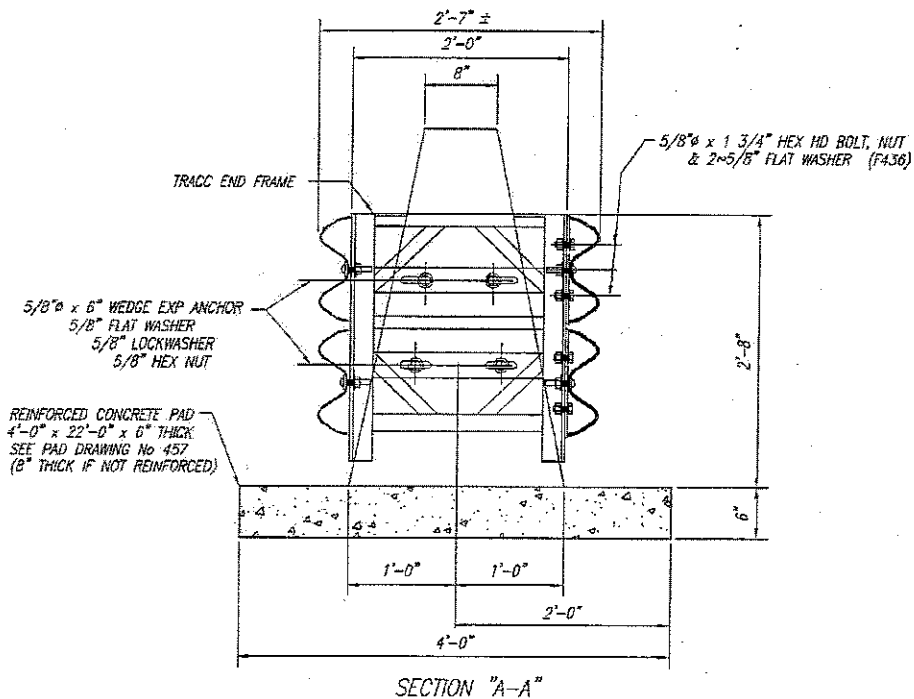
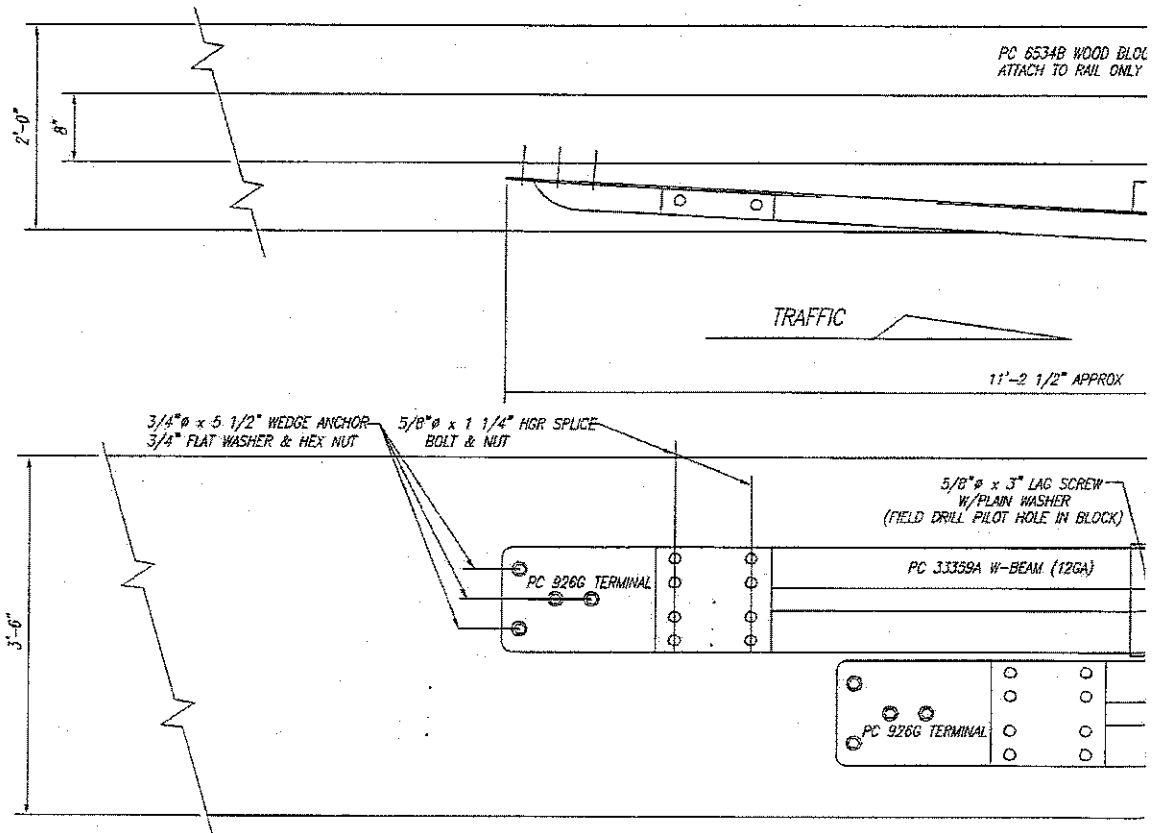
ENG. FILE # SS461-01E

SHT. NO. E1 OF 1

DRAWING NO. REV.

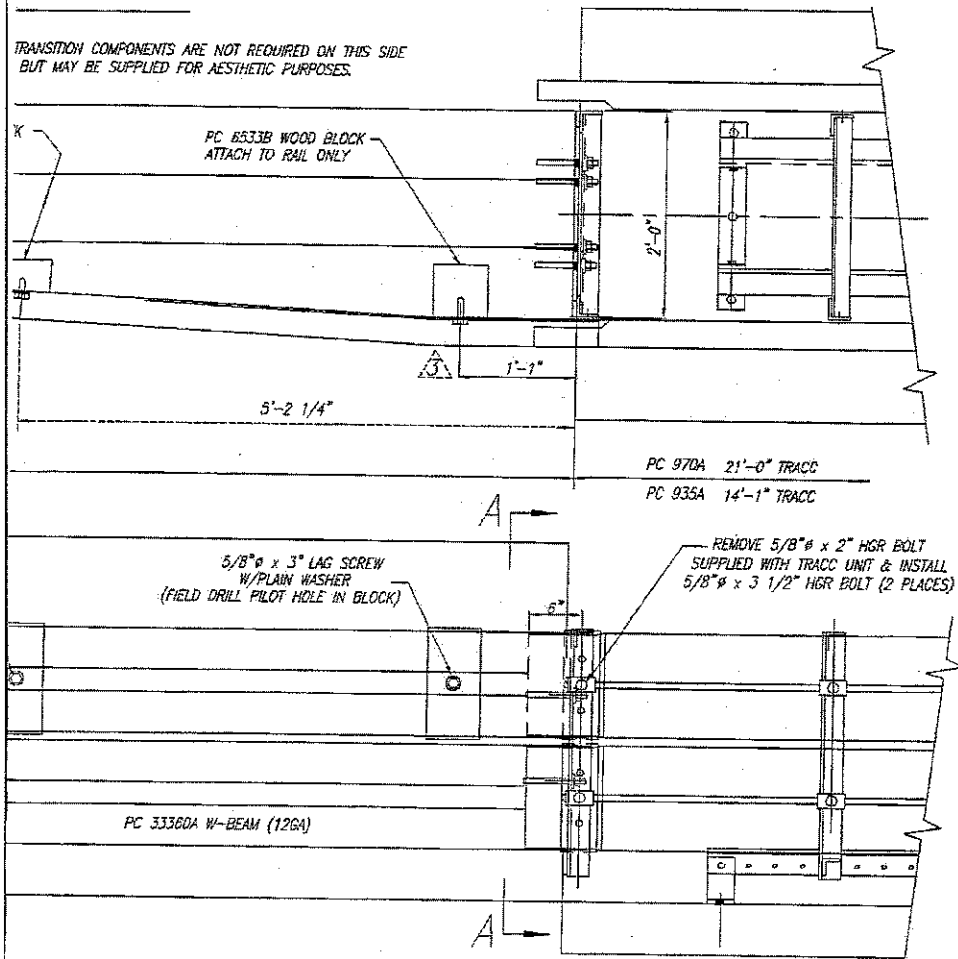
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TRAFFIC

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



TRACC TRANSITION BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
926G	2	10' END SHOE
6533B	1	TAPERED WD BLK 1'-1" (6 1/8 x 6)
6534B	1	MITERED WD BLK 1'-1" (6 x 3 3/4)
33359A	1	12/10'0"/TRACC (UPPER GUARDRAIL)
33360A	1	12/6'10.5"/TRACC (LOWER GUARDRAIL)
HARDWARE		
3360G	16	5/8"φ x 1 1/4" HGR SPLICE BOLT
3391G	4	5/8"φ x 1 3/4" HEX BOLT
3435G	2	5/8"φ x 3 1/2" HGR POST BOLT
4412G	2	5/8"φ x 3" LAG SCREW
3300G	6	5/8" WASHER (F844)
3340G	16	5/8" HGR NUT
4372G	8	5/8" WASHER (F438)
3310G	4	5/8" LOCKWASHER
3381G	8	5/8" HEX NUT (A563 DH)
4451G	4	5/8"φ x 6" WEDGE EXP ANCHOR
4688G	8	3/4"φ x 5 1/2" WEDGE EXP ANCHOR
3701G	8	3/4" WASHER
3710G	8	3/4" HEX NUT

REV.	CHK'D	BY	DATE	REMARKS
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		8-2-00	DELETED PC33361 & PC 4717, ADDED PC926, CHG QTY HARDWARE

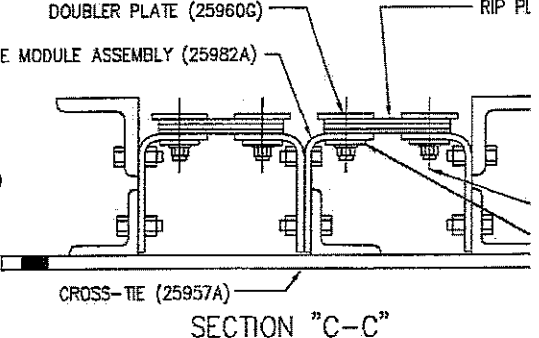
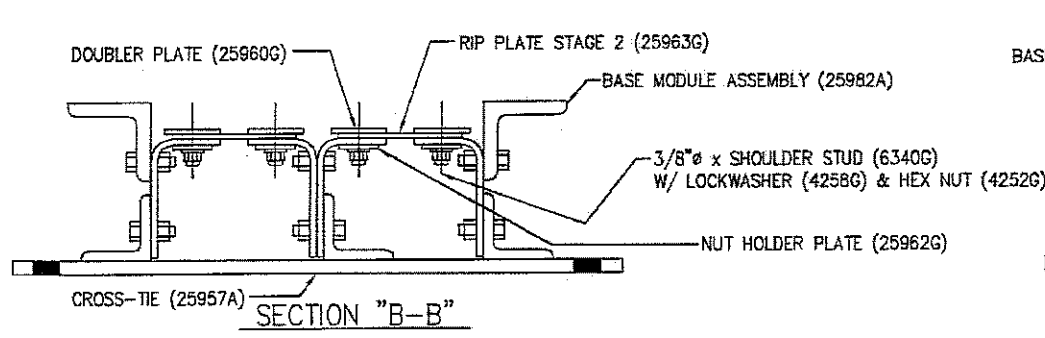
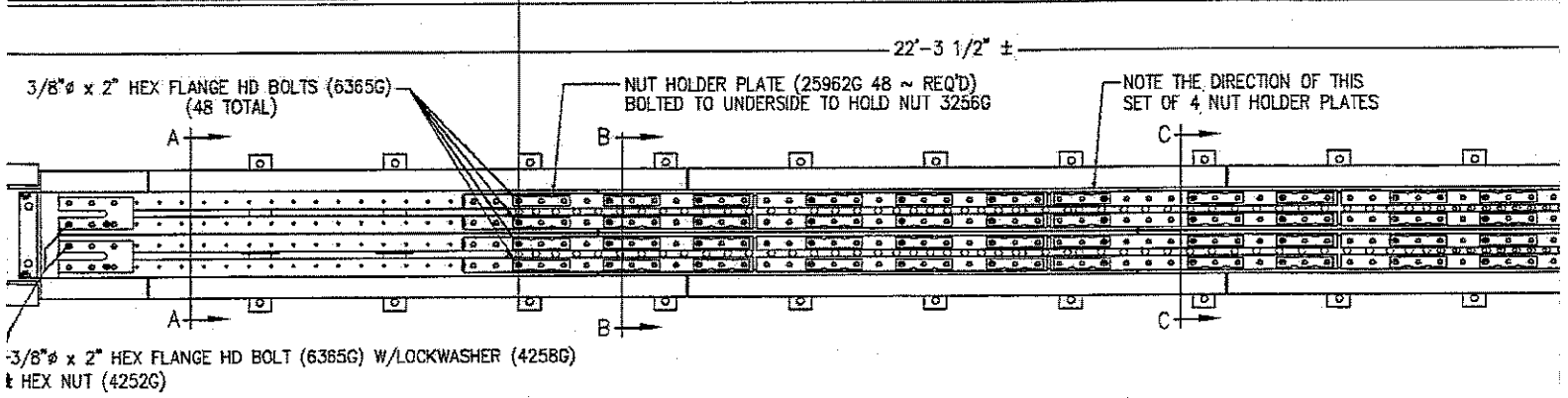
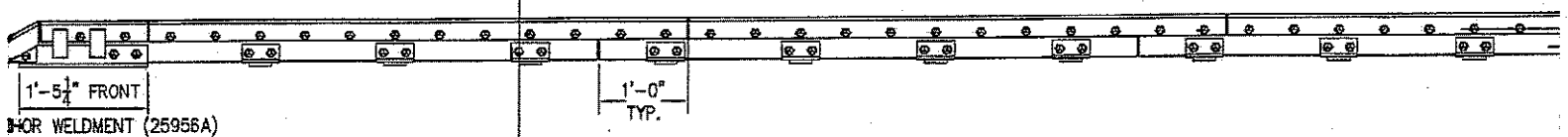
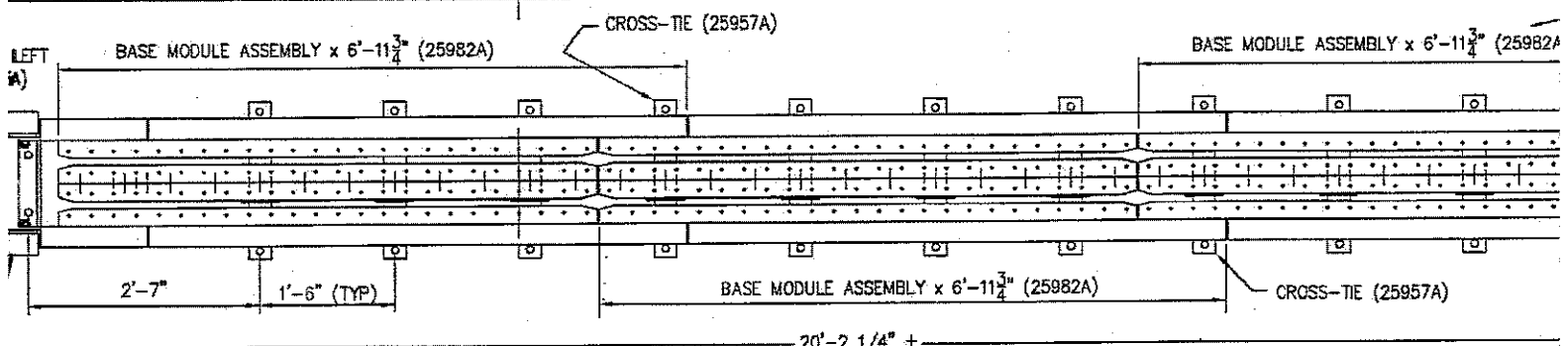
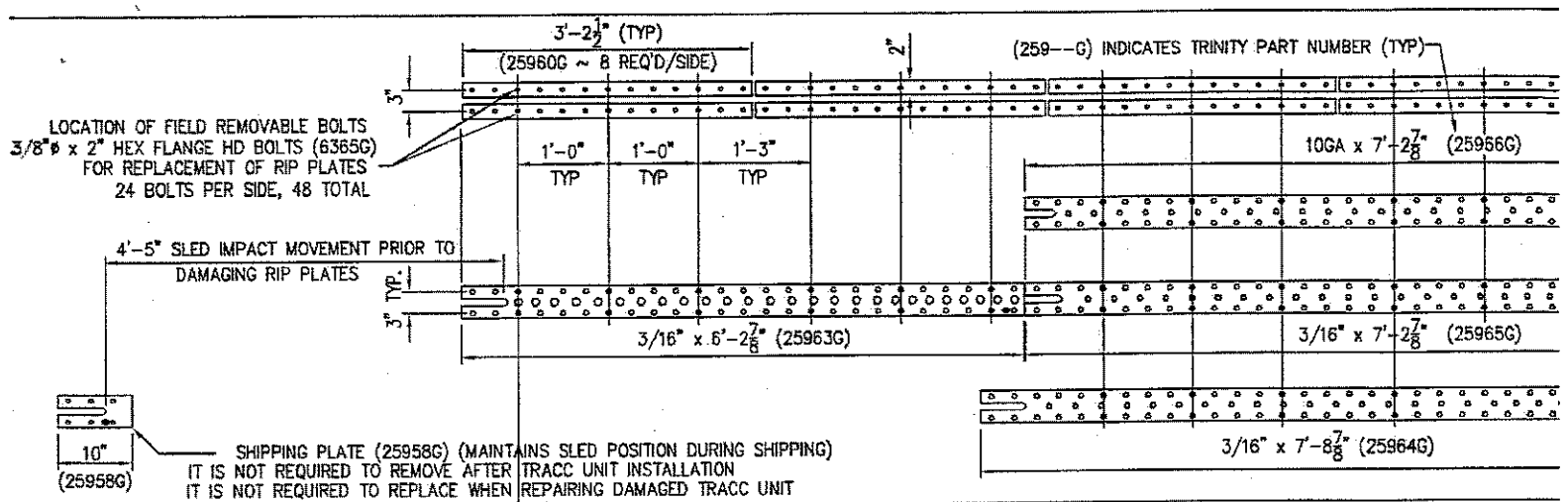
TRACC

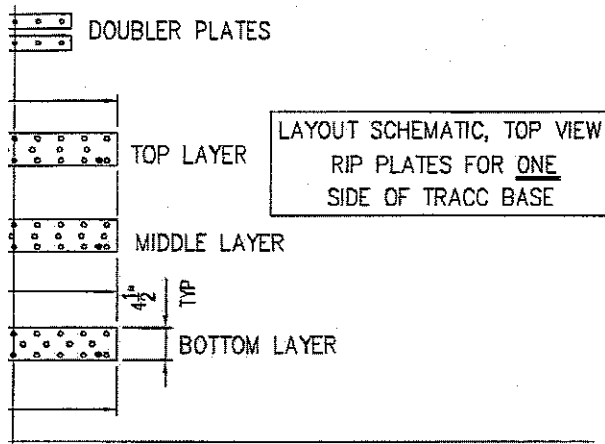
TRACC TRANSITION TO
CONCRETE BARRIER SINGLE SLOPE
PLAN, ELEVATION & SECTIONS

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

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

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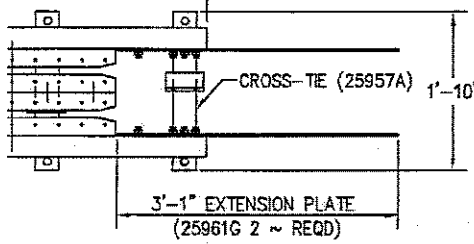




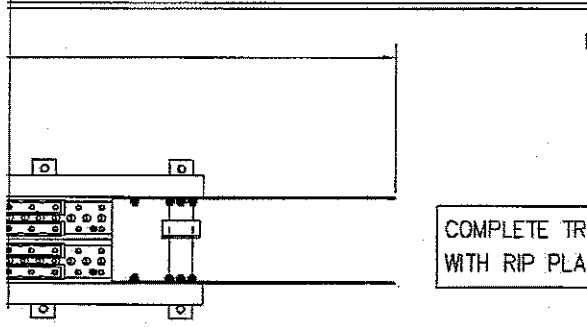
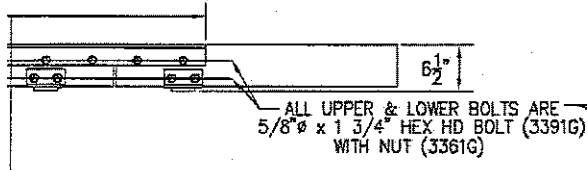
LAYOUT SCHEMATIC, TOP VIEW
RIP PLATES FOR ONE
SIDE OF TRACC BASE

TRACC BASE (25981A) BILL OF MATERIALS				
Part #	Description	Qty	WT. EACH (#)	TOTAL WT.
D3258G	3/8" Shoulder Nut	48	0.030	1.44
D3361G	5/8" Heavy Hex Nut (A563 DH)	40	0.120	4.8
D3391G	5/8" x 1 3/4" Hex Head Bolt (A525)	40	0.210	8.4
D4252G	3/8" Hex Nut	180	0.030	5.4
D4258G	3/8" Lock Washer	180	0.006	1.08
D6340G	3/8" X 1 1/2" Shoulder Stud	178	0.060	10.68
D6365G	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	18.000	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

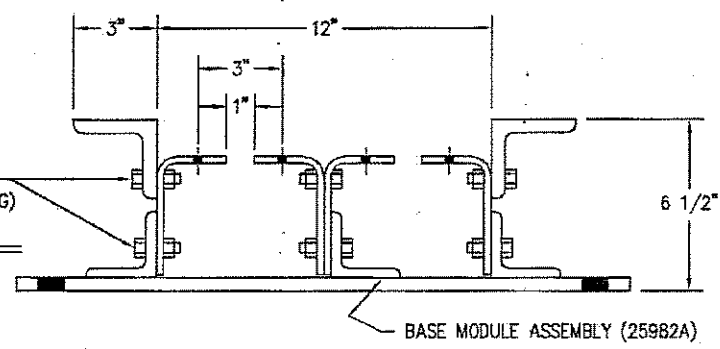
NOTE:
SEE DRAWING PN 25982 FOR ASSEMBLY
OF BASE MODULE COMPONENTS.



TRACC BASE ASSEMBLY
WITHOUT RIP PLATES
AND DOUBLER PLATES



COMPLETE TRACC BASE ASSEMBLY
WITH RIP PLATES AND DOUBLERS



SECTION "A-A"

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

3/8"Ø 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.	CHKD	BY	DATE
			REMARKS

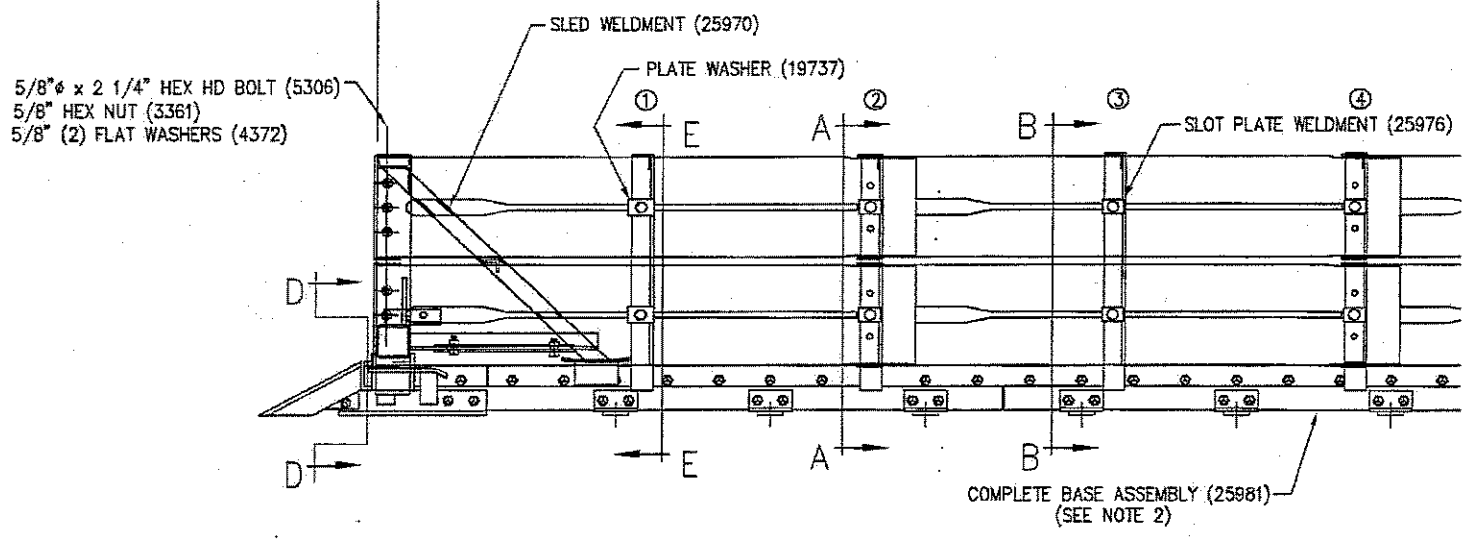
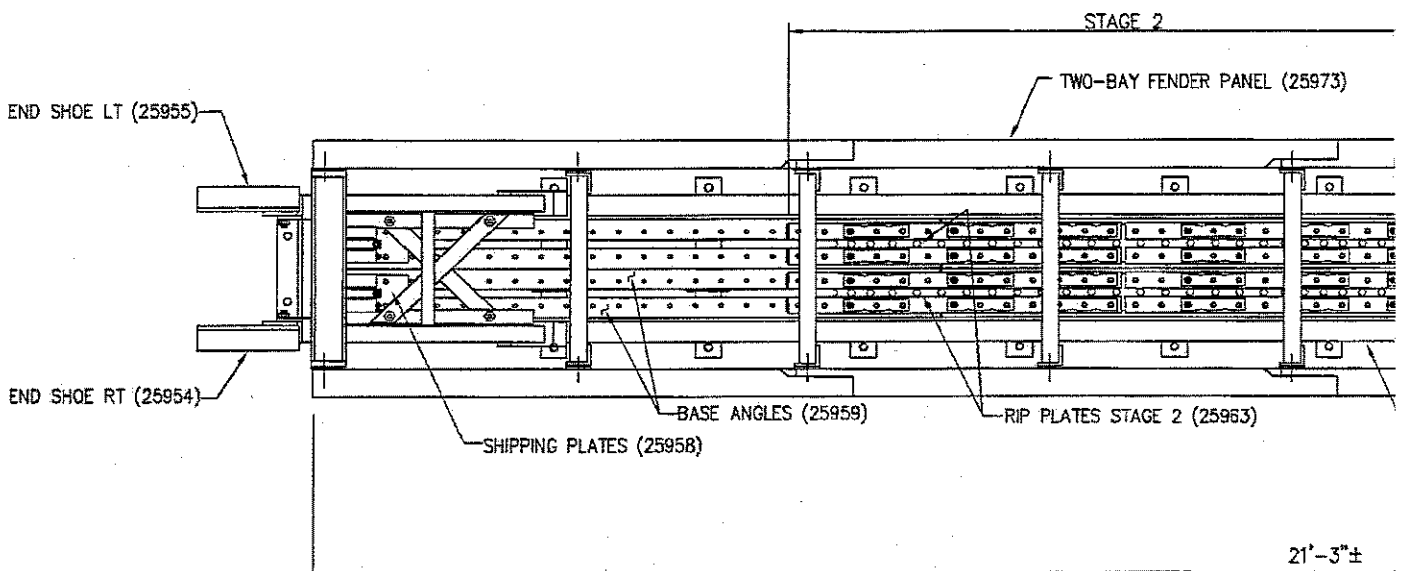
TRACC

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
SFT. No.	E1 OF 1
DRAWING NO.	SS 1001/PN 25981
REV.	2

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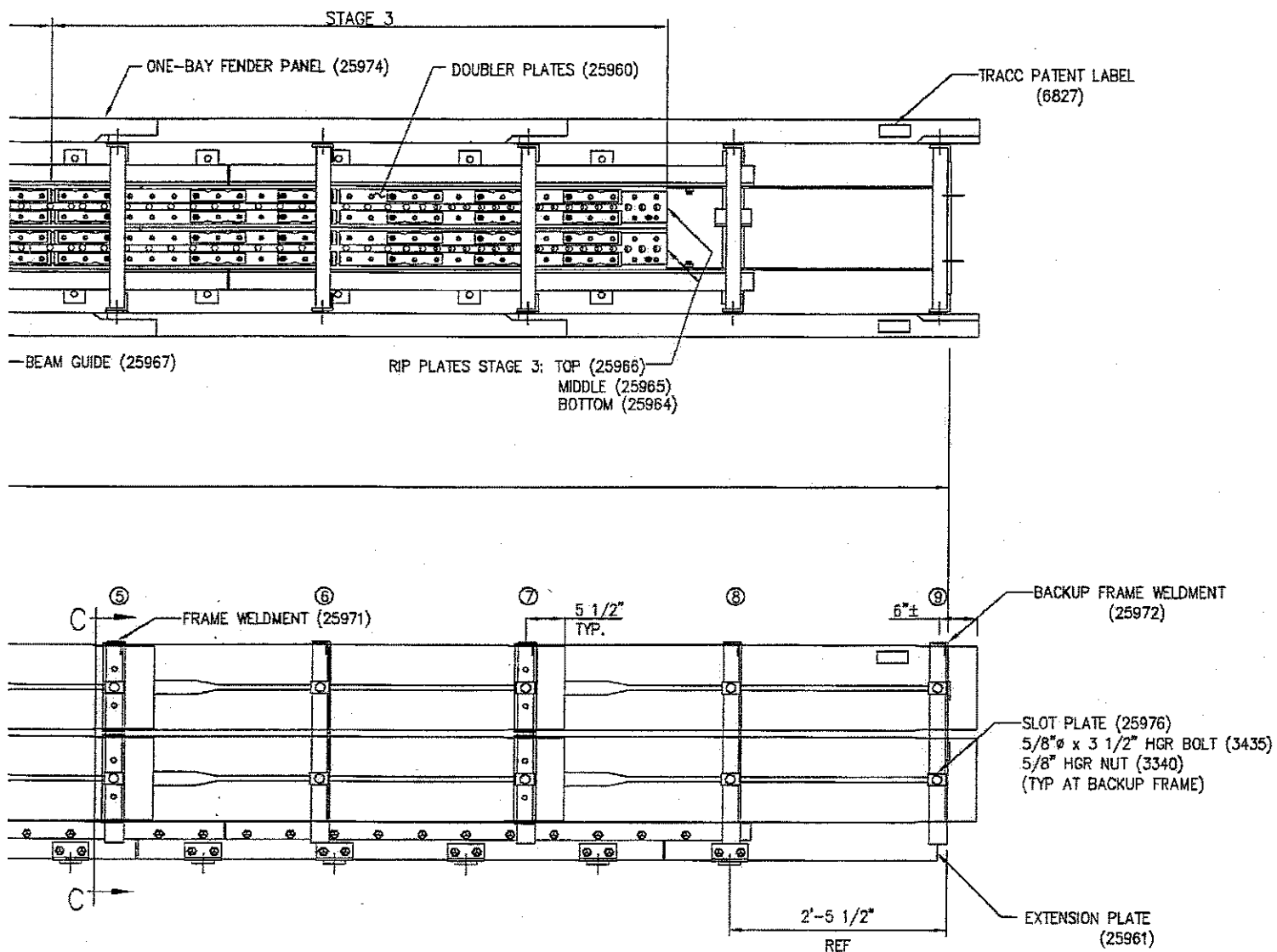


TRACC BILL OF MATERIAL (PN 25980)

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" x 1 3/4" HEX HD BOLT	A325
3400G	12	5/8" x 2" HGR BOLT	A307 GR A
3435G	20	5/8" 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" x 2 1/4" HEX HD BOLT	A325
6827B	2	TRACC PATENT LABEL	

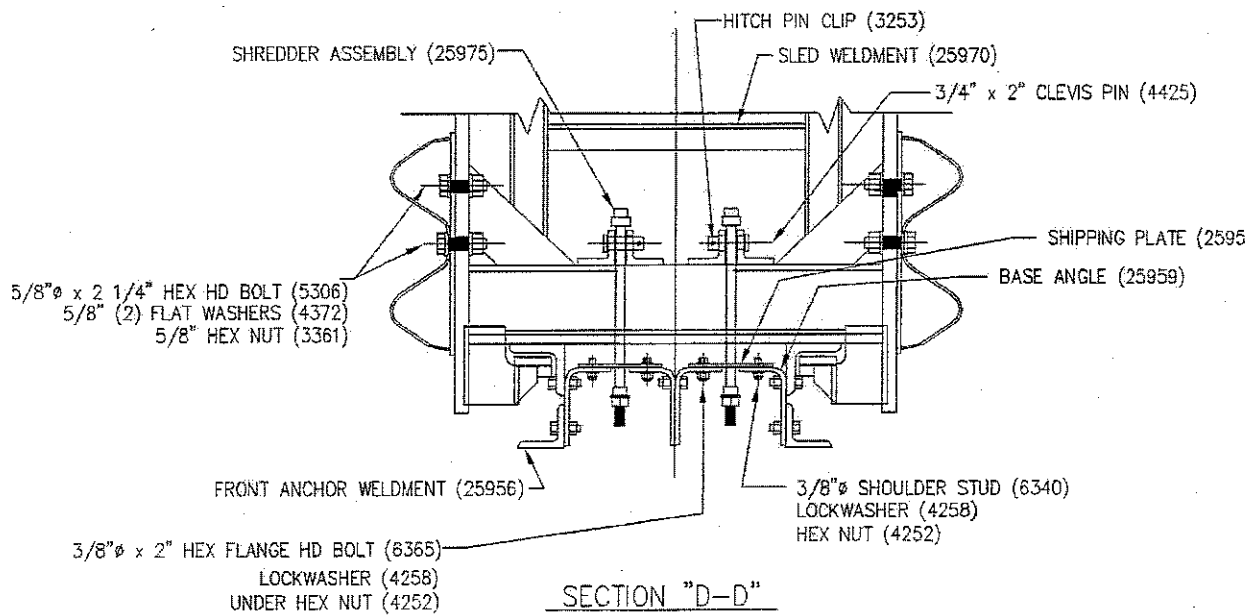
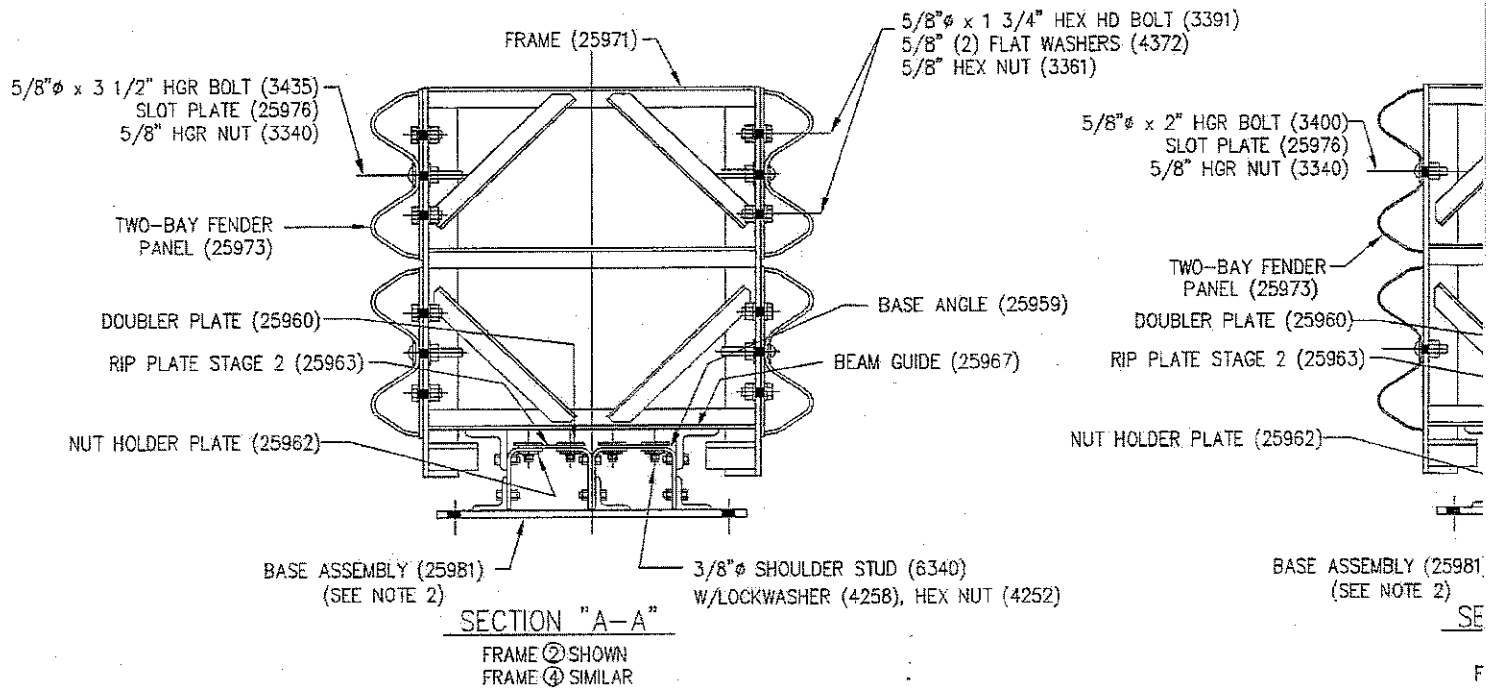


NOTES:

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

1	SAR	6/18/05	FIXED WEIGHT & ADDED STAGES 2 & 3	
REV.	CHK'D	BY	DATE	REMARKS
TRACC 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 / PN 25980
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75207				REV. 1

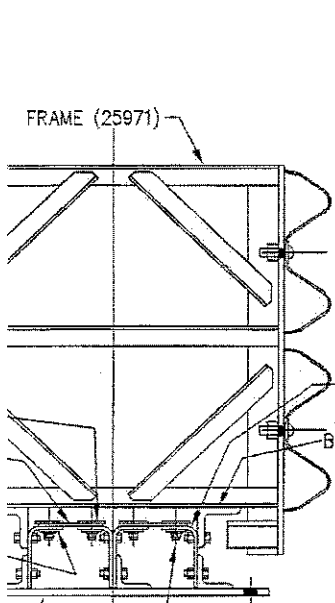
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NOTES:
1.) FOR PLAN & ELEV;
2.) SEE DRAWING SS10
OF ALL BASE COMP

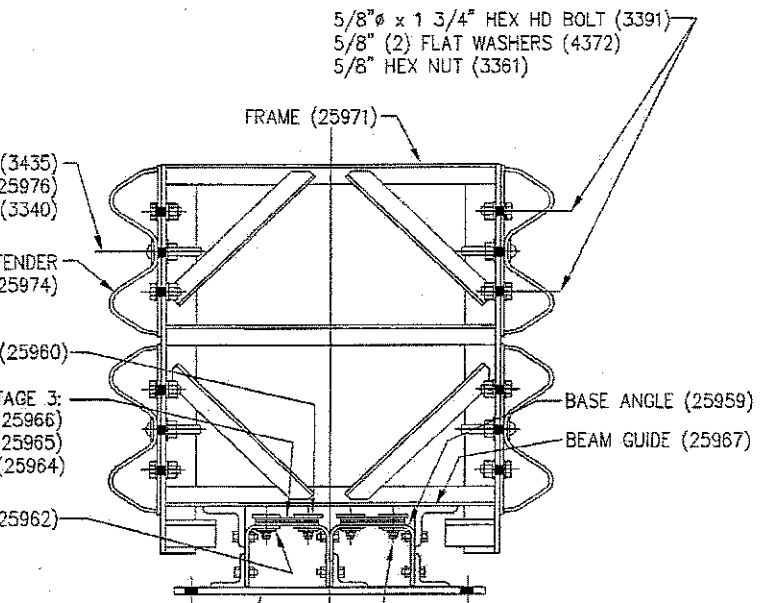
53

MATCH RIGHT SIDE OF SHEET WITH LEFT SIDE OF SHEET 54



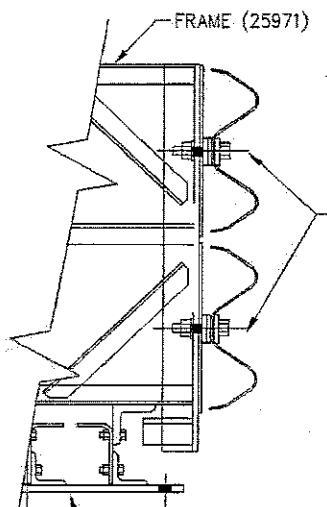
- 5/8" ϕ x 3 1/2" HGR BOLT (3435)
- SLOT PLATE (25976)
- 5/8" HGR NUT (3340)
- ONE-BAY FENDER PANEL (25974)
- DOUBLER PLATE (25960)
- RIP PLATES STAGE 3:
 - TOP (25966)
 - MIDDLE (25965)
 - BOTTOM (25964)
- NUT HOLDER PLATE (25962)

SECTION "B-B"
 FRAME ③ SHOWN
 FRAME ⑥ & ⑧ SIMILAR



- 5/8" ϕ x 1 3/4" HEX HD BOLT (3391)
- 5/8" (2) FLAT WASHERS (4372)
- 5/8" HEX NUT (3361)
- FRAME (25971)
- BASE ANGLE (25959)
- BEAM GUIDE (25967)
- 3/8" ϕ SHOULDER STUD (6340)
- W/LOCKWASHER (4258), HEX NUT (4252)
- BASE ASSEMBLY (25981) (SEE NOTE 2)

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



- 5/8" ϕ x 2 1/4" HEX HD BOLT (5306)
- 3-1/4" x 3" x 2 1/4" TRACC PLATE WASHERS (19737)
- ONE PLATE WASHER UNDER BOLT HEAD, 2 PLATE WASHERS BETWEEN PANEL & FRAME
- 5/8" FLAT WASHER (4372) UNDER NUT
- 5/8" HEX HD NUT (3361)

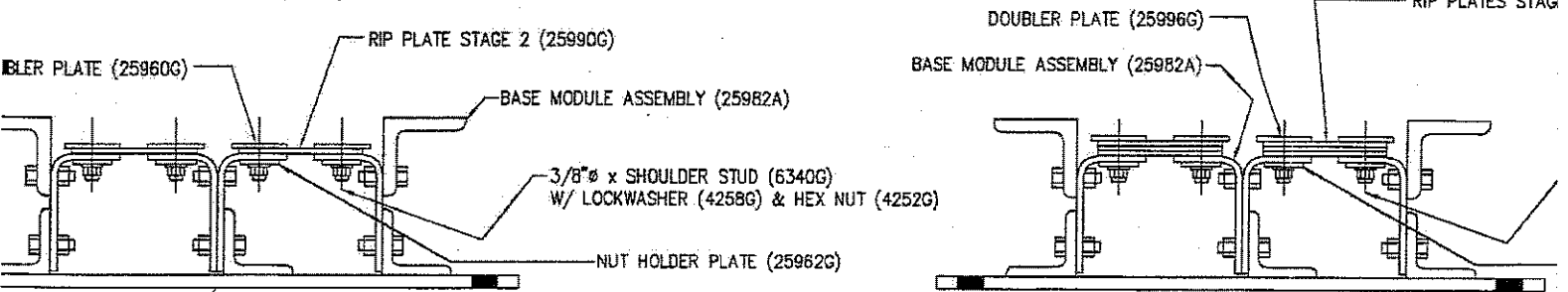
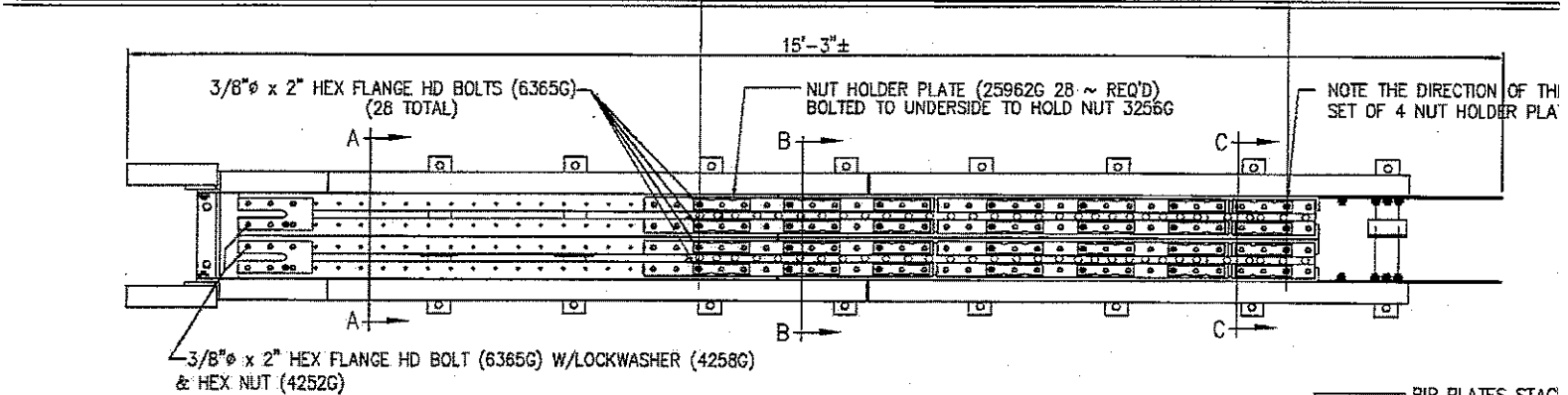
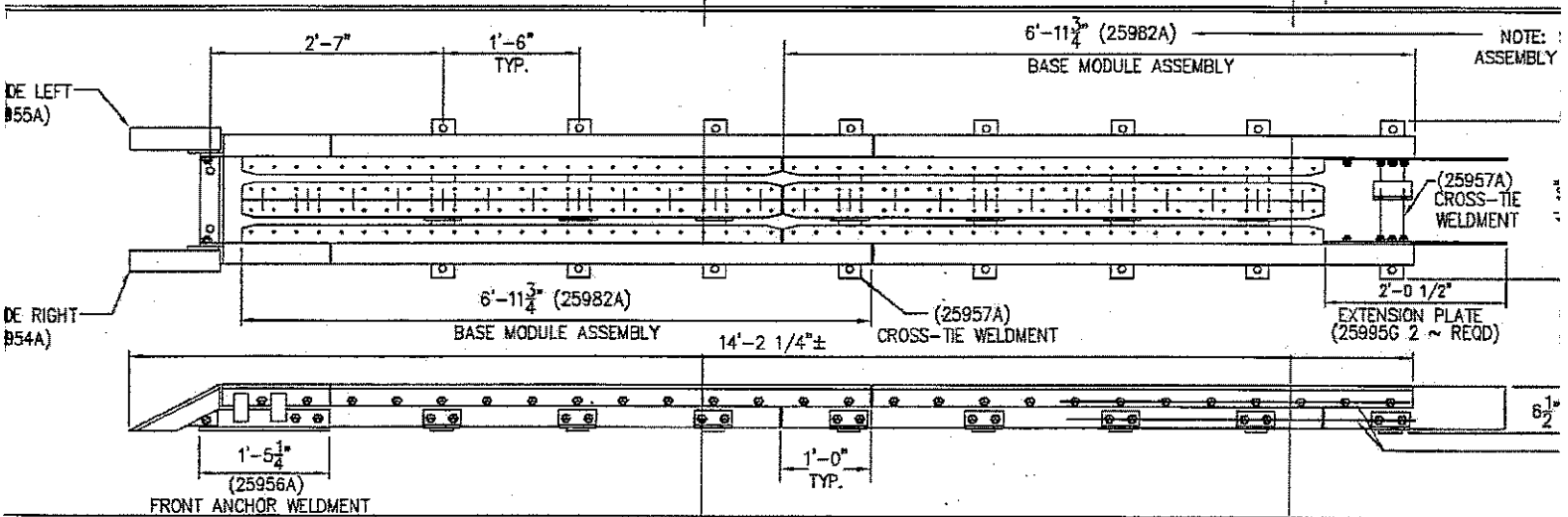
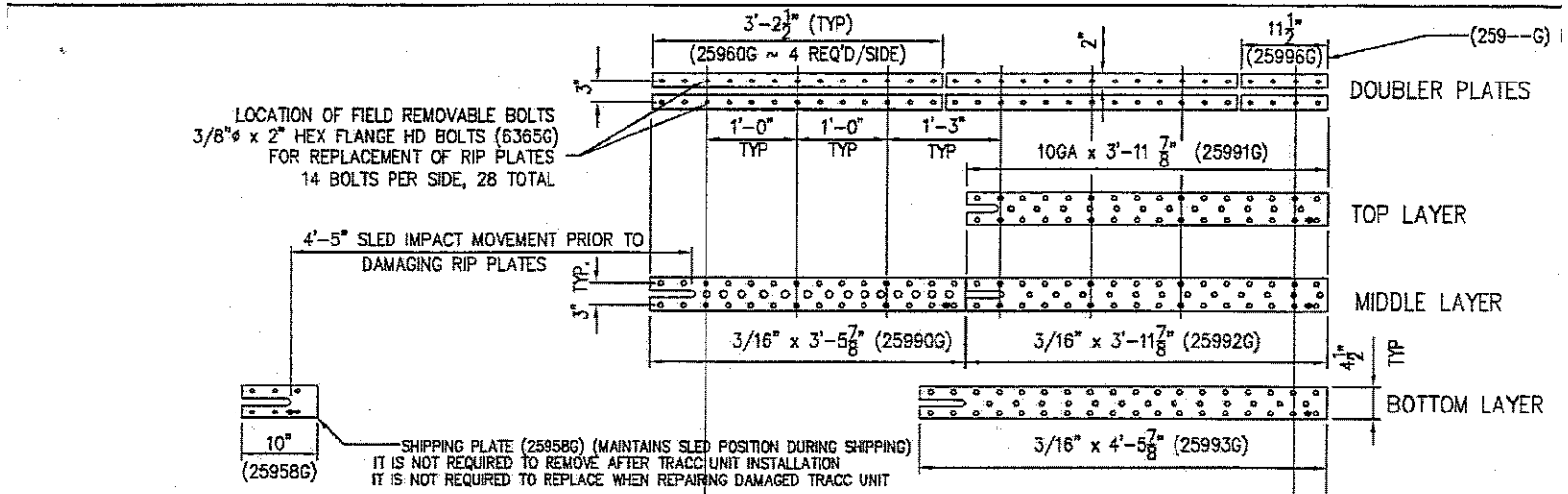
3)

SECTION "E-E"
 FRAME ① SHOWN

SECTION VIEW SEE SHEET E1 OF 2.
 01 (PN 25981) FOR ASSEMBLY
 ORIENTATIONS.

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



CROSS-TIE (25957A) SECTION "B-B" SECTION "C-C"

INDICATES TRINITY PART NUMBER (TYP)

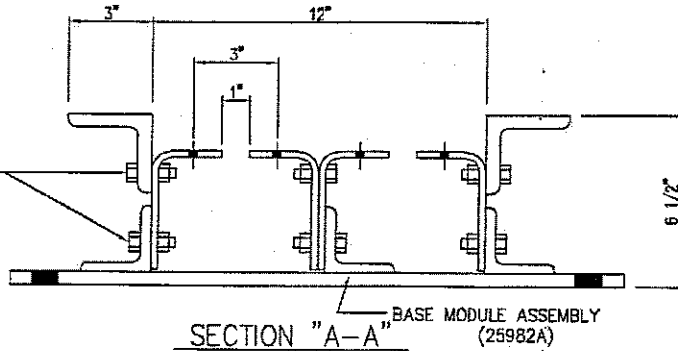
SHORTRACC BASE (25994A) BILL OF MATERIALS

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

E DRAWING PN 25982 FOR
F BASE MODULE COMPONENTS

TRACC BASE ASSEMBLY
WITHOUT RIP PLATES
AND DOUBLER PLATES



ALL UPPER & LOWER BOLTS ARE
5/8" Ø x 1 3/4" HEX HD BOLT (3391G)
WITH NUT (3361G)

COMPLETE TRACC BASE ASSEMBLY
WITH RIP PLATES AND DOUBLERS

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

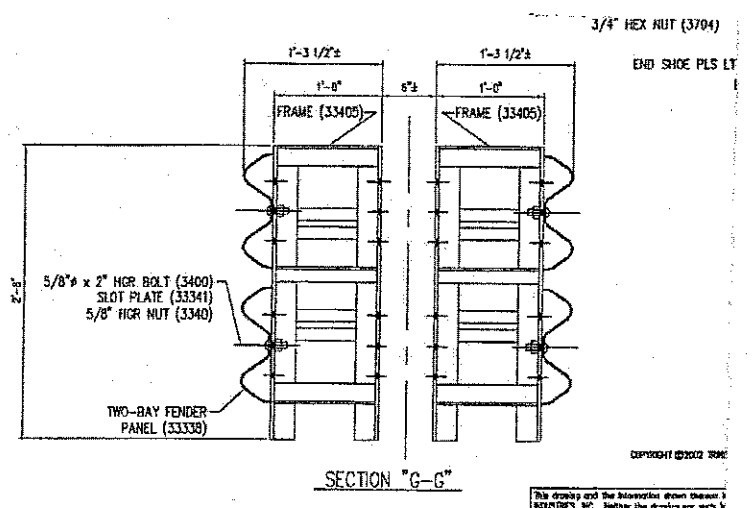
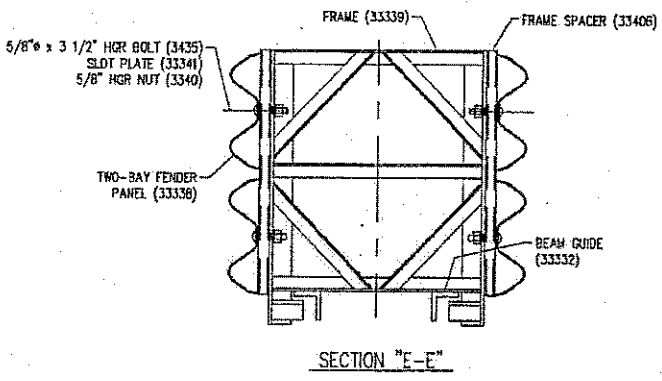
3/8" Ø x SHOULDER STUD (6340G)
W/ LOCKWASHER (4258G) & HEX NUT (4252G)

NUT HOLDER PLATE (25962G)

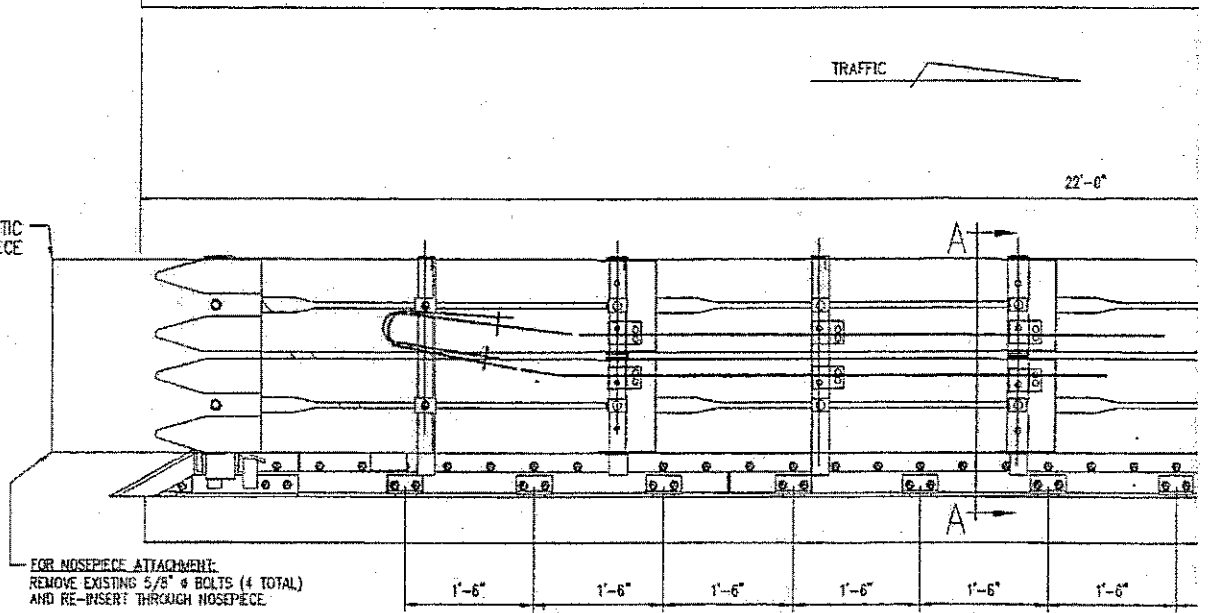
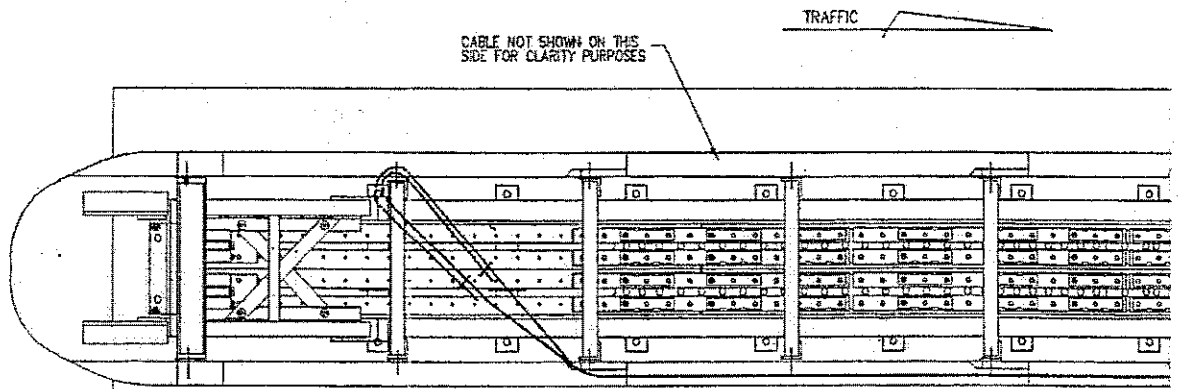
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1	SAR	6/17/05	UPDATED PART NUMBERS
REV.	CHK'D	BY	DATE
SHORTRACC CRASH-CUSHION ATTENUATING TERMINAL ASSEMBLED BASE UNIT PN 25994			
DRAWN		LH	
CHECKED		B.T.	
APPROVED			
DATE		05/16/05	
ENG. FILE # SS1004-01E			
SNTNG. E1 OF 1			
DRAWING NO.		SS 1004 / DAI_25994	
REV. 1			
TRINITY INDUSTRIES, INC. HIGHWAY SAFETY PRODUCTS 2525 STEMMONS FREEWAY, DALLAS, TX 75207			



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FOR NOSEPIECE ATTACHMENT:
REMOVE EXISTING 5/8" Ø BOLTS (4 TOTAL)
AND RE-INSERT THROUGH NOSEPIECE

WIDE TRACC BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
25905A	1	139" WDETTRACC 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)
5209B	FILLER HIT HY150 (FILLER TUBE)
5209B	B1 TE-C+ 11/16-18 (11/16" Ø BIT)

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

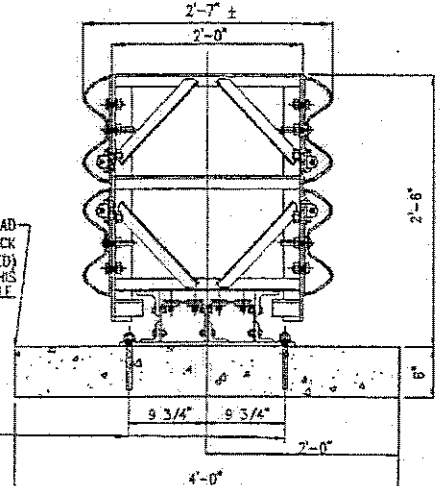
★ EACH CARTRIDGE INCLUDES 1 EACH: MIXER HY 150 CARTRIDGE(NOZZLE)
; FILLER HIT HY 150 (FILLER TUBE)

** ANCHOR HARDWARE (CONCRETE BASE)		
5204B	26	5/8" Ø x 7 1/16" ANCHOR STUD
3310G	26	5/8" LOCKWASHER
3361G	26	5/8" HEX NUT
3306G	26	5/8" FLAT WASHER
★ 5206B	2	ADHESIVE HIT HY150(CARTRIDGE)
** ANCHOR HARDWARE (ASPHALT BASE)		
6380G	26	5/8" Ø x 18" ALL THD ROD
3310G	26	5/8" LOCKWASHER
3361G	26	5/8" HEX NUT
3306G	26	5/8" FLAT WASHER
★ 5206B	6	ADHESIVE HIT HY150(CARTRIDGE)

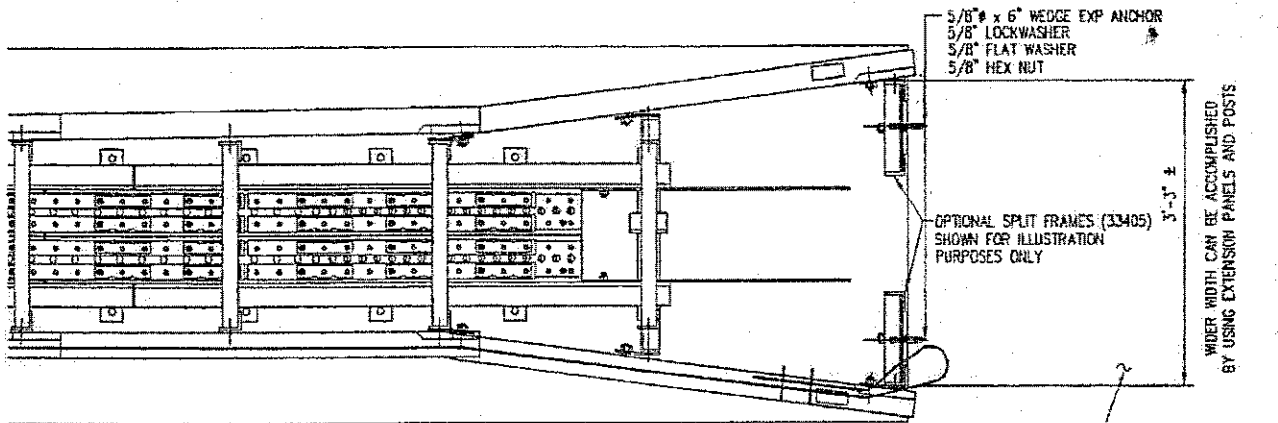
** SEE PRODUCT MANUAL

REINFORCED CONCRETE PAD
4'-0" x 22'-0" x 6" THICK
(8" THICK IF NOT REINFORCED)
REINFORCEMENT DRAWINGS FOR THIS
PAD AND OTHER SIZES ARE AVAILABLE.

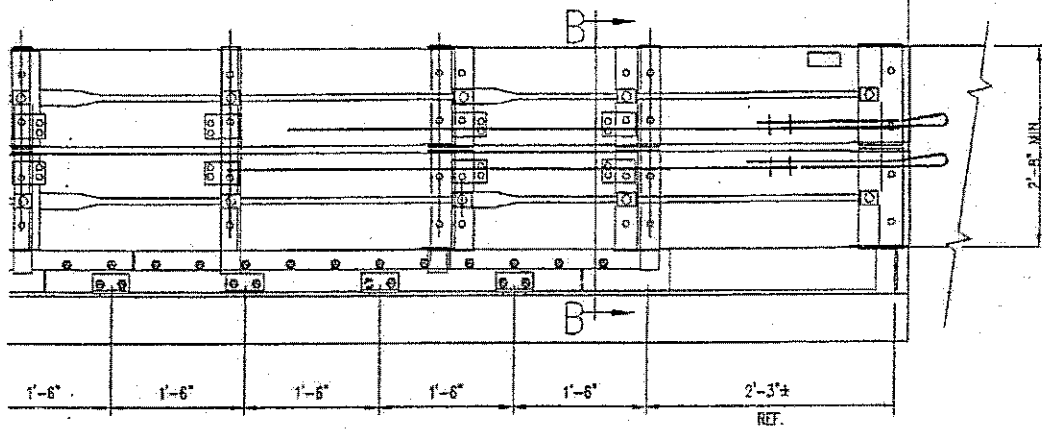
ADHESIVE ANCHORED
** 5/8" Ø x 7 1/16" ANCHOR STUD
5/8" FLAT WASHER
5/8" LOCKWASHER
5/8" HEX NUT



SECTION "A-A"

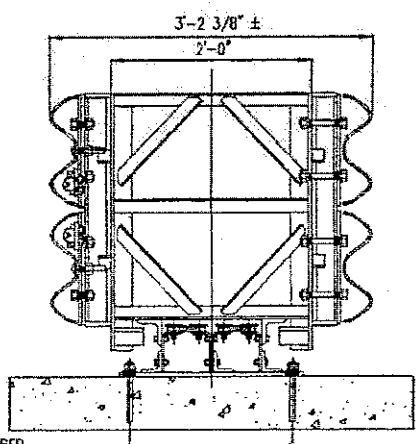


ATTACHMENT SHOWN IS TO SHAPES WITH RECTANGULAR CROSS SECTIONS SUCH AS PIERS, PARAPETS AND MODIFIED CONCRETE BARRIER. TRAFFIC FLOW IS UNIDIRECTIONAL.



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



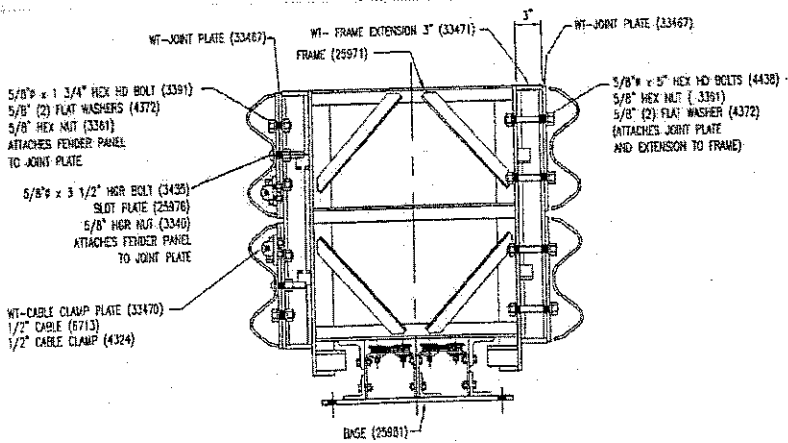
ADHESIVE ANCHORED
15/8" x 7 1/16" ANCHOR STUD
5/8" FLAT WASHER
5/8" LOCKWASHER
5/8" HEX NUT

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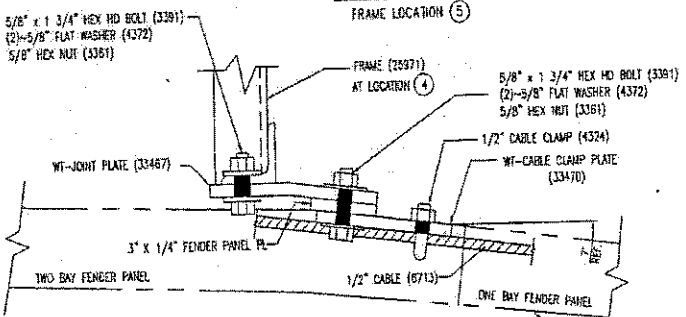
1				L.H.	05/12/06	MOVED LOCATION OF SLOT PLATES AT FRAMES 7 & 8
REV.	CHKD	BY	DATE	REMARKS		
39" WIDETRACC DOUBLE FLARE CRASH-CUSHION ATTENUATING TERMINAL PLAN, ELEVATION & SECTIONS (UNIDIRECTIONAL, DIRECT ATTACHMENT)						
DRAWN				L.H.		
CHECKED				C.C.		
APPROVED						
DATE				10-26-05		
DWG. FILE #				SS1021-DIE		
SHEET #				ET OF 1		
DRAWING NO.				SS1021		
				REV. 1		

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

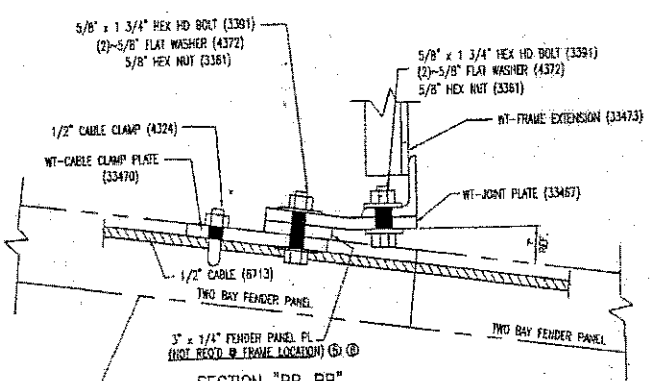
MATCH LEFT SIDE OF SHEET WITH RIGHT SIDE OF SHEET



SECTION "E-E"
FRAME LOCATION ⑤

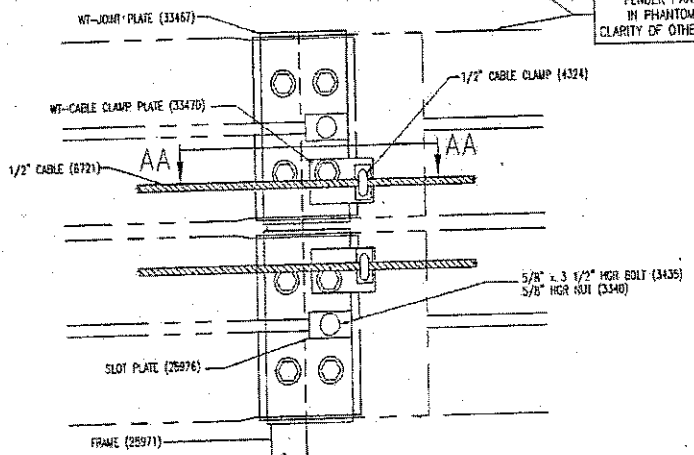


SECTION "AA-AA"

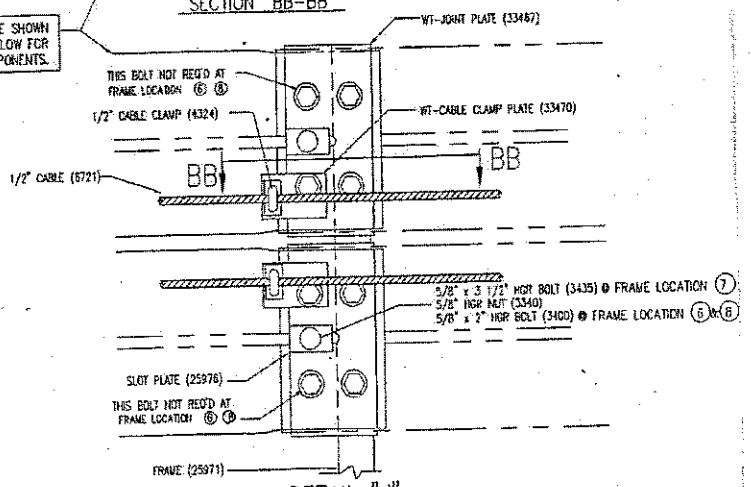


SECTION "BB-BB"

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

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